

**Evaluating ALBA: A Pragmatic Evaluation of a Behaviour  
Change Intervention Designed to Increase Physical Activity  
to Improve Mental Wellbeing**

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## **Abstract**

**Introduction:** Physical activity (PA) is beneficial for improving both physical and mental health. However, people with mental health conditions are more likely to be inactive. In order to encourage adherence to PA, the Scottish Association for Mental Health (SAMH) funded by the Scottish Government, developed the Active Living Becomes Achievable (ALBA) intervention, which aimed to help people with poor physical and mental health to increase and maintain their PA levels. The main aim of this thesis was to evaluate the effectiveness of the ALBA intervention at increasing PA levels, improving mental wellbeing, self-efficacy for exercise, self-esteem and patient activation.

**Method:** A mixed method approach consisting of four interrelated studies:

Study 1: a formative investigation, in the form of a systematic review was conducted to assess the effectiveness of cognitive-behavioural interventions in increasing adherence to PA in mental health populations. Electronic searches conducted in MEDLINE, CINAHL, Cochrane Library (Trials), SPORTDiscus and PsycINFO. Ten studies were included in the synthesis.

Study 2: a qualitative process evaluation, using focus groups with ALBA participants. Fourteen people (11 females and 3 males) who had taken part in the intervention were interviewed in three focus groups. Thematic analysis was used to analyse the data, barriers against and facilitators to promoting adherence to the intervention were identified using the Theoretical Domains Framework (TDF).

Study 3: a qualitative process evaluation using focus groups with the Behaviour Change Practitioners (BCP) who delivered the ALBA intervention. Thematic analysis was used to identify themes, which were then mapped onto the TDF, to identify the barriers and facilitators to the implementation of the intervention.

Study 4: A quantitative outcome evaluation, with a before and after design was carried out to assess the effectiveness of the intervention. Participants completed 5 outcome

measures – the Scottish Physical Activity Questionnaire (SPAQ), the Self-Efficacy for Exercise Scale (SEE), the Warwick Edinburgh Mental Wellbeing Scale (WEMWBS), the Patient Activation Measure (PAM) and the Rosenberg Self Esteem Scale - and wore an activity tracker for 16 weeks. Adherence was measured by attendance at BCP appointments and level of activity as measured by the activity trackers. Participants who opted into the long-term study were monitored for up to 12-months. In total, 318 participants were recruited to take part, 68% were female, 90.3% were White-British, 20.8% came from the most deprived decile as measured by the Scottish Index of Multiple Deprivation (SIMD) and the average age was 41.2 (min 18, max 80).

**Results:** The formative evaluation concluded that there was limited evidence to support the use of cognitive-behavioural interventions for increasing PA adherence in mental health populations. However, this review highlighted the complexity of measuring adherence.

The process evaluation revealed the important role that the BCPs played in supporting individuals. The BCPs were very knowledgeable about the intervention and highly skilled in interpersonal skills which helped facilitate delivery. Participants reported that the social support that they received from the BCP helped facilitate changes in their beliefs about their capabilities, goals, beliefs about consequences. This in turn helped them to develop a greater sense of purpose and feel socially connected, central components of mental wellbeing. Barriers to delivering ALBA were related to the environmental context, particularly the relationship with the Leisure Trust, and a lack of organisational support.

The outcome evaluation revealed that 53% of the participants adhered to the intervention, although the intervention did not appear to increase adherence to PA. The ALBA intervention had a significant positive impact on mental wellbeing, patient activation and self-efficacy, but not self-esteem.

**Conclusions:** The ALBA intervention was effective at improving mental wellbeing but did not have a significant effect on PA levels. This suggests that the additional support

offered through the ALBA intervention was key to improving wellbeing and encouraging PA in mental health population and the role of PA should be considered in a wider context of recovery.

## **Declaration of Authorship**

I hereby declare that this thesis which has been submitted to the Research Degrees Office of Edinburgh Napier University that:

- a) This work has not been submitted for any other degree or professional qualification;
- b) That this thesis is the result of my own independent work;
- c) That all published work associated with this project has been clearly stated in the dissemination section, and where relevant peer reviewed work has been included in the appendix.

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## Abbreviations

|        |   |
|--------|---|
| ALBA   | Active Living Becomes Achievable                                      |
| ANA    | Active North Ayrshire   |
| BCP    | Behaviour Change Practitioner   |
| CBT    | Cognitive Behavioural Therapy   |
| CHD    | Coronary Heart Disease  |
| CIMSPA | Chartered Institute for the Management of Sport and Physical Activity |
| CMO    | Chief Medical Officer   |
| COM-B  | Capability, Opportunity, Motivation and Behaviour                     |
| CPD    | Continued Professional Development                                    |
| CVD    | Cardiovascular Disease  |
| ERS    | Exercise Referral Scheme  |
| FSLT   | Fife Sport and Leisure Trust  |
| GP     | General Practitioner  |
| HADS   | Hospital Anxiety and Depression Scale                                 |
| LLTTF  | Living Life to the Full   |
| MRC    | Medical Research Council  |
| MVPA   | Moderate to Vigorous Physical Activity                                |
| NCD    | Non-Communicable Diseases   |
| NHS    | National Health Service   |
| NICE   | National Institute for Health and Care Excellence                     |
| PA     | Physical Activity   |
| PAM 13 | Patient Activation Measure 13   |
| PVG    | Protecting Vulnerable Groups  |
| RCT    | Randomised Control Trial  |
| RSE    | Rosenberg Self Esteem   |
| SAMH   | Scottish Association for Mental Health                                |
| SD     | Standard Deviation  |
| SEE    | Self-Efficacy for Exercise  |



|        |  |
|--------|--|
| SG     | Scottish Government                      |
| SIMD   | Scottish Index of Multiple Deprivation   |
| SMD    | Standard Mean Difference                 |
| SPAQ   | Scottish Physical Activity Questionnaire |
| TDF    | Theoretical Domains Framework            |
| UK     | United Kingdom                           |
| WEMWBS | Warwick-Edinburgh Mental Wellbeing Scale |
| WHO    | World Health Organisation                |

## Dissemination

A version of Chapter 3 has been published in a peer-reviewed journal (See Appendix 3). Details are as follows:

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Peddie, N., Westbury, T., & Snowden, A., (2018) Evaluating ALBA: An Intervention Designed to Increase Adherence to Physical Activity for Improved Physical and Mental Health. (Oral Poster Presentation) International Society of Physical Activity and Health (ISPAH) Congress 2018, at Queen Elizabeth II Conference Centre London, UK, 15th October 2018.

Peddie, N., Westbury, T., & Snowden, A., (2018) Evaluating the Effectiveness of ALBA intervention: An Intervention Designed to Increase Adherence to Physical Activity. (Pecha Kucha Presentation) Edinburgh Napier Post Graduate Research Conference 2018, at the Royal College of Surgeons, Edinburgh, Scotland, 27<sup>th</sup> April 2018.

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- Peddie, N., Westbury, T., & Snowden, A., (2018) Evaluating the effectiveness of ALBA intervention: An Intervention Designed to Increase Adherence to Physical Activity. (Poster presentation) British Academy ECR workshop, "Mental Health Policy and Social Science", Edinburgh, 23<sup>rd</sup> March 2018.
- Peddie, N., Westbury, T., & Snowden, A., (2017) Evaluating the effectiveness of the ALBA intervention: An intervention designed to increase adherence to physical activity for improved physical and mental health. (Poster presentation) British Psychological Society, Division of Sport and Exercise Psychology Conference 2017, at The Radisson Blu, Glasgow, Scotland, 11th December 2017.
- Peddie, N., Westbury, T., & Snowden, A., (2017) Evaluating the long-term Effectiveness of ALBA Intervention: A Behaviour Change Intervention Designed to Increase Adherence to Physical Activity, Leading to Improved Mental and Physical Health. (Poster presentation) Scottish Physical Activity Research Connections Network Conference 2017, at University of Edinburgh, Edinburgh, Scotland, 23<sup>rd</sup> November 2017.
- Peddie, N., Westbury, T., & Snowden, A., (2017) Evaluating the Effectiveness of the ALBA Intervention: An Intervention Designed to Increase Adherence to Physical Activity for Improved Physical and Mental Health. (Poster presentation) Edinburgh Napier Post Graduate Research Conference 2017, at the Royal Society of Edinburgh, Edinburgh, Scotland, 7th April 2017.

## **Chapter 1: Introduction**

### **1.1 Purpose of chapter**

The purpose of this chapter is to provide the context and rationale for this thesis. It will begin with outlining the issues surrounding mental and physical health and go on to describe the role of physical activity in alleviating symptoms, and the issue of physical inactivity in mental health populations. It will then briefly introduce the behaviour change intervention “Active Living Becomes Achievable” (ALBA) before concluding with defining the research objectives of this thesis and provide an overview of the ensuing chapters.

### **1.2 Mental and Physical Health**

Mental health is defined by the World Health Organisation (WHO) as a state of “*well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community*” (WHO, 2004, p10). In this thesis, mental health conditions will be used as the umbrella term to describe common mental health conditions, such as anxiety and depression, which commonly present in community settings. However, some reference will be made to more severe mental health conditions, such as schizophrenia, personality disorders, substance use disorders, obsessive compulsive disorder and psychosis when relevant.

According to the WHO, mental health conditions are a major contributor to the global burden of disease (World Health Organisation, 2013), with mental and addictive disorders accounting for 7% of the global burden of disease, and are one of the leading causes of disability (Rehm & Shield, 2019). Epidemiological research in Scotland suggests that mental health conditions cost an estimated £10.7 billion per year in health and social care costs, output losses, and human costs (*Mental Health in Scotland*, 2014) with 19% of adults exhibiting possible symptoms of a mental health condition (The Scottish Government, 2019).

Mental health conditions have consistently been found to be co-morbid with physical health conditions, such as cardiovascular disease (CVD), cancer, diabetes and other non-communicable diseases (NCD) (Ducat, Philipson, & Anderson, 2014; Hare, Toukhsati, Johansson, & Jaarsma, 2013; Prince et al., 2007). Chronic mental ill-health has been found to have a greater association with poor health outcomes than acute periods of poor mental health (Cohen, Janicki-Deverts, & Miller, 2007). In Scotland, it is estimated that around 2 million people have at least one long term condition, and one in four adults report some form of long term disability or chronic health problem (Mental Health in Scotland, 2014). As a result of this co-morbidity, people living with mental health conditions are more likely to die 15 to 20 years prematurely due to poor physical health (Barber & Thornicroft, 2018; DE Hert et al., 2011). This premature mortality has been attributed to lifestyle behaviours, as evidence suggest that people living with mental health conditions lead less healthy lives; with evidence indicating that people with mental health conditions are more likely to smoke (Prochaska, Das, & Young-Wolff, 2017), have higher rates of obesity (Rajan & Menon, 2017), lower levels of physical activity (Vancampfort et al., 2017), and higher alcohol and drug consumption (Mills & Marel, 2013). Though the relationship between poor lifestyle behaviours and poor mental health appears to be bi-directional, as evidence has shown that depressive symptoms are linked to less physical activity, lower medication adherence, higher BMI, poorer sleep quality, and smoking (Sin, Kumar, Gehi, & Whooley, 2016); however, engaging in poor health behaviour can have a negative impact on mental health, for example decreasing regular PA can increase depressive symptoms and negatively impact mood (Edwards & Loprinzi, 2016).

Poor mental health is also more prevalent in deprived areas, with the standardised mean scores from the Warwick Edinburgh Mental Wellbeing Scale as collected for the Scottish Health survey showing that the mean score for the least deprived areas (51.6) in Scotland were significantly higher than the most deprived areas (47.0) (The Scottish Government, 2019). One of the key aims of the Scottish Government, as outlined in their *Mental Health Strategy 2017-2027* (The Scottish Government, 2017), is to

improve the physical and mental wellbeing of people with mental health conditions, in order to help people experiencing poor mental health to live longer and healthier lives. A means to achieve this is by increasing physical activity.

### **1.3 Physical Activity**

Physical activity (PA) is defined as “*bodily movement produced by skeletal muscles that result in energy expenditure*” (Caspersen, Powell, & Christenson, 1985). The term exercise will be used to refer to PA which is planned, structured, repetitive and purposive in that it aims to improve or maintain fitness (Caspersen et al., 1985).

The UK physical activity guidelines advise adults to aim to be active every day by reducing or breaking up sedentary periods with at least light activity. Adults are recommended to accumulate at least 150 minutes of moderate intensity physical activity, which constitutes an activity that requires moderate effort and elevates the heart rate such as a brisk walk, or 75 minutes of vigorous intensity physical activity per week, or a combination of both accumulated in bouts of any length (UK Chief Medical Officers’ Guidelines on Physical Activity, 2019). Adults are also advised to engage in activities to maintain and strengthen major muscles groups, with muscle strengthening activities recommended on at least two days per week. Adults who do not meet these guidelines are considered to be insufficiently active and are at greater risk of all-cause mortality, meaning they are at an increased risk of an early death. However, it has been recognised that there is a dose-response relationship between PA and the health benefits, with those currently doing the lowest levels of activity (fewer than 30 minutes per week) standing to gain the most, as the improvements in health per additional minute of physical activity will be proportionately greater.

Physical inactivity is the fourth leading risk factors of mortality globally and has been recognised as a major risk factor for many NCD, including coronary heart disease (CHD), cancer, and type 2 diabetes (Lee et al., 2014). The evidence from a large-scale surveillance study suggests that 27.5% of adults worldwide are inactive, as they did not

accumulate at least 150 min of moderate-to-vigorous-intensity physical activity per week (Ding et al., 2019); with inactivity being twice as high in high income countries.

Self-reported evidence suggests that approximately a third of the UK population is inactive, as they do not meet these guidelines on a regular basis. However, it is important to note that UK's surveillance of PA is fragmented across the four home nations, which hinders cross national comparisons of population level data (Strain, Milton, Dall, Standage, & Mutrie, 2019) In Scotland alone, it is estimated that physical inactivity causes 2,500 deaths per year, and costs the NHS an estimated £91 million per annum (Foster & Allender, 2012).

#### **1.4 Role of Physical Activity in Alleviating Mental Health Symptoms**

Over the past two decades, the evidence base for the positive role of PA in improving mental health has been increasing. The evidence for the effectiveness of PA is perhaps strongest for improving depressive symptoms in people with a diagnosis of depression. A recent meta-analysis conducted by Schuch et al. (2016) found a large (SMD = 1.11, 95% CI 0.79 to 1.43) antidepressant effect of exercise on depression when compared to non-active controls. There is also evidence to suggest that PA can help to prevent subsequent depressive episodes (Mammen & Faulkner, 2013). Knapen, Vancampfort, Moriën, & Marchal (2015) found that for mild-to-moderate depression, the effects of PA were comparable to antidepressants and psychotherapy, whereas for severe depression, PA was considered a valuable complimentary treatment. Structured exercise programs are recommended as treatment for mild to moderate depression as part of a stepped care approach, despite the insubstantial evidence for the effectiveness of exercise referral schemes (National Institute for Health and Care Excellence, 2009; Rowley, Mann, Steele, Horton, & Jimenez, 2018). Aside from the evidence that supports the view that PA can help to reduce symptoms of depression, engagement in PA can also have a wide range of social benefits, such as improved quality of life, increased opportunities for social engagement and enjoyment (Eime, Young, Harvey, Charity, & Payne, 2013).

The evidence for the role of PA in the treatment of anxiety is less substantial, nevertheless a systematic review conducted by Herring, O'Connor, & Dishman (2010) found that exercise training significantly reduced anxiety scores among patients with a chronic illness. Evidence of the effectiveness of PA reducing symptoms of anxiety in patients with a diagnoses of anxiety disorder suggests that PA may be an effective adjunctive therapy (Herring, Lindheimer, & O'Connor, 2014), with anaerobic and aerobic PA found to be similarly effective to cognitive behavioural therapy, and more effective than most other anxiety reducing activities i.e. relaxation, mediation, stress management etc (Zschucke, Gaudlitz, & Ströhle, 2013).

The relationship between PA and mental wellbeing is complex and not well understood (Kandola, Ashdown-Franks, Hendrikse, Sabiston, & Stubbs, 2019). There has been a number of hypothesis which have attempted to explain the mechanism by which PA helps to improve mental wellbeing. It has been proposed that the mechanism is biochemical or physiological (Dishman et al., 2006). These theories suggest that engaging in PA increased brain plasticity or can effect changes in the neuroendocrine system. For example, it has been suggested that engaging in PA leads to the release of endorphins which produces the "feel good" effect. However, there has been very little evidence to support this notion (Lubans et al., 2016). Others have hypothesised that the mechanism is psychosocial, as PA can provide increased opportunities for social interaction, or that a sense of mastery of a physical activity can increase self-efficacy, or that PA helps to improve physical self-perception. Physical self-perceptions are a domain of self-esteem which refers to how a person perceives their physical self-concept and body image (Inchley, Kirby, & Currie, 2011). This theory suggests that by improving body composition through PA, body image can improve which increases self-esteem which has a mediating effect on mental health. It has also been suggested that mental wellbeing is improved through PA as PA acts as a distraction from other stresses or that PA increases feelings of self-worth and personal control (Craft, 2005). It has also been suggested that the relationship between PA and mental wellbeing is behavioural, as PA could improve sleep quality or duration, or may help people to



develop better coping and self-regulation skills (Lubans et al., 2016). Whilst it remains unclear what the underlying causal mechanisms are that make PA beneficial (Biddle, 2016), it is likely that a combination of these factors are at work.

### **1.5 Inactivity in Mental Health Populations**

Despite the well-established benefits of PA for mental health, the evidence suggests that people with mental health conditions are less active than the general population (Petzold et al., 2017; Vancampfort et al., 2017). A systematic review conducted by Vancampfort et al. (2017) revealed that people with serious mental health conditions are significantly more sedentary than healthy controls. This review concluded that, given the established health benefits of PA for people with mental health conditions, there is a need for more targeted intervention specific to this population to prevent physical inactivity.

### **1.6 Active Living Becomes Achievable (ALBA)**

In order to address this issue of inactivity and poor physical and mental health in people with a mental health condition, the Scottish Association for Mental Health (SAMH) developed the multicomponent behaviour change intervention Active Living Becomes Achievable, otherwise known as ALBA, which aims to help individuals experiencing poor physical and mental health to increase and maintain their physical activity levels. SAMH received support from the Scottish Government for the implementation of this intervention, and it was identified as one of the actions in the Scottish Government's ten-year mental health strategy (The Scottish Government, 2017). A condition of the funding received from the Scottish Government was that an independent evaluation would be conducted to determine the effectiveness of ALBA.

Plans to evaluate the ALBA intervention were embedded in the proposal submitted by SAMH to the Scottish Government. Therefore, this research project was born out of the necessity for an evaluation to be conducted independently from the implementors, and to establish the effectiveness of the intervention. The evaluation was independent of the development of the intervention, however there were key decisions about the

content of the intervention and the delivery of the intervention were made by SAMH prior to the commencement of the PhD. A challenge that is often faced when inheriting an intervention to evaluate is that key decisions about the implementation have already been predetermined. Due to the time constraints placed on the project due to funding and delivery timescales, it was not possible to unpick some the decisions that were made about outcome measures, specifically, the use of the Storm Activity Trackers and the aims of the intervention had been predetermined by SAMH.

This evaluation was carried out alongside the implementation of the program, and was trialled in real-world conditions, in three communities across Scotland. At times decisions were made during the process of this evaluation which were the result of a trade-off between the importance of the evaluation, satisfying the needs of stakeholders and the constraints of gathering evidence from the real-world setting. This thesis will present a mixed-method pragmatic evaluation of the ALBA intervention effectiveness.

## **1.7 Evaluation Approach**

The main research objective of this thesis is to evaluate the effectiveness of the ALBA intervention. The evaluation approach that will be taken in this thesis to evaluate the ALBA intervention will follow the stages of Bauman and Nutbeam's (2013) theoretical framework for evaluating health programs. This thesis will focus on the first four stages of this model (see figure 1.7.1) and will finish with making recommendations for the dissemination and future monitoring of the intervention.

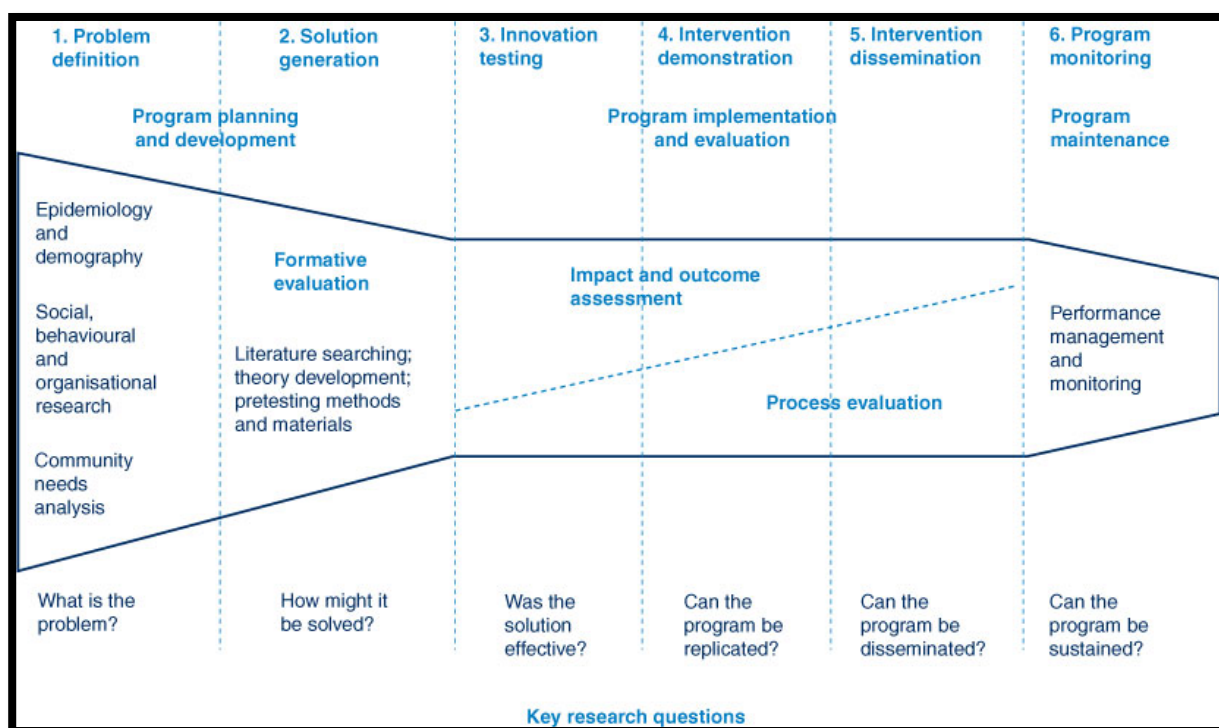


Figure 1.7.1 Bauman and Nutbeam (2013) Model of the Stages of Research and Evaluation

Due to the real-world implementation of the intervention a pragmatic approach has been taken to the evaluation of the intervention's effectiveness. Pragmatism is a philosophy of knowledge that emphasizes practical solutions to applied research questions (Giacobbi, Poczwardowski, & Hager, 2005).

As a philosophy, pragmatism supports the use of a mixed methods approach (Morgan, 2014). In the past, quantitative and qualitative approaches were portrayed as incompatible and, in some cases, mutually exclusive. However, the utility of combining methods has been increasingly recognised as "the third paradigm" (Johnson & Onwuegbuzie, 2004). Mixed methods research involves using techniques from both quantitative and qualitative paradigms in order to generate knowledge. As argued by Giacobbi et al. (2005), using a mixed method approach within a pragmatic philosophy can help address applied research questions from a theoretical perspective, as mixed methods can draw on the strengths and minimize the weaknesses of both paradigms.

In order to evaluate if the ALBA intervention was effective in everyday practice, a mixed method approach was taken. The use of mixed methods to evaluate an intervention

has been used extensively as both qualitative and quantitative methods have their strengths and weakness, therefore using both concurrently can provide a better understanding of the research in question (Abildgaard, Saksvik, & Nielsen, 2016). A quantitative approach has been taken to conduct the outcome evaluation which provides evidence of the effectiveness of the intervention, and a qualitative approach was adopted to conduct the process evaluation, to evaluate the implementation of the intervention. Historically, in health research randomised controlled trials (RCT) have been regarded as the gold standard of evidence when assessing if something works (Bondemark & Ruf, 2015). However, conducting an RCT was not feasible when assessing ALBA, due to the practical and ethical constraints of the intervention being delivered in a community setting. Therefore, a pre-post study design was used to evaluate the effectiveness of ALBA. It has been recognised that in health promotion and public health pre-post design is the only design that is possible (Bauman & Nutbeam, 2013), however this design can be strengthened by having multiple post-intervention measures to assess maintenance effects – this approach has been adopted in this evaluation.

### **1.8 Outline of thesis**

This thesis will combine four parts, which roughly follow the stages laid out in the Bauman and Nutbeam (2013) model.

Part one of this thesis will function as the formative evaluation, this section will provide a description of the problem definition and an in-depth description of the ALBA intervention and its theoretical underpinnings and implementation plan (chapter 2), and a systematic review of the effectiveness of PA behaviour change interventions in mental health populations at improving adherence will be presented, which will highlight how ALBA was adapted to overcome issues (chapter 3).

In part two, the process evaluation of the ALBA intervention will be presented. The aim of this is to evaluate how the intervention was delivered and received by the target group. This will be done through a qualitative analysis of participant experience of

taking part in ALBA (chapter 4), and a qualitative analysis of the practitioner's experience of delivering the intervention (chapter 5).

The third part of this thesis will provide the quantitative outcome evaluation, where the repeated measures data will be analysed to measure the effectiveness of the intervention on the outcomes of interest (chapter 6).

Part four will discuss the findings of the overall evaluation (chapter 7). The strengths and limitations of this evaluation will be discussed, and recommendations made for the future implementation and dissemination of the ALBA intervention.

### **1.9 Chapter Summary**

This chapter briefly summarised some of the extensive literature regarding the importance of PA for both physical and mental health in order to related this to the context of health within Scotland. This chapter also introduced the ALBA intervention, defining its aim and describing the context for its development. The chapter then went on to explain the approach to evaluation which has been adopted for this thesis and provided an outline of the chapters to come. The next chapter will describe in detail the ALBA intervention, including the context for the development of ALBA and the theoretical underpinnings of the intervention.

## **Part I**

### **Chapter 2: The Active Living Becomes Achievable (ALBA) Intervention**

#### **2.1 Purpose of Chapter**

This chapter describes the context for the development of the ALBA intervention. It explores the issues surrounding physical inactivity in Scotland and in people with mental health conditions in particular, to illustrate why SAMH saw the need to develop an intervention to help support people with mental health conditions to become more physically active. The chapter goes on to provide an in-depth description of the ALBA intervention, summarising the planning and development to clarify its theoretical underpinnings. It finishes by describing the planned implementation and delivery of the intervention.

#### **2.2 Problem Definition**

Physical inactivity is a major contributor to the global burden of disease, with an estimated 2,500 deaths per year in Scotland attributed to lack of PA (The Scottish Government, 2018b). One of the Scottish Government's key aims is to help more people become more active, as current figures suggest that only 65% of adults in Scotland meet the current UK Guidelines of 150 minutes of moderate, or 75 minutes of vigorous activity per week (Scottish Public Health Observatory, 2018).

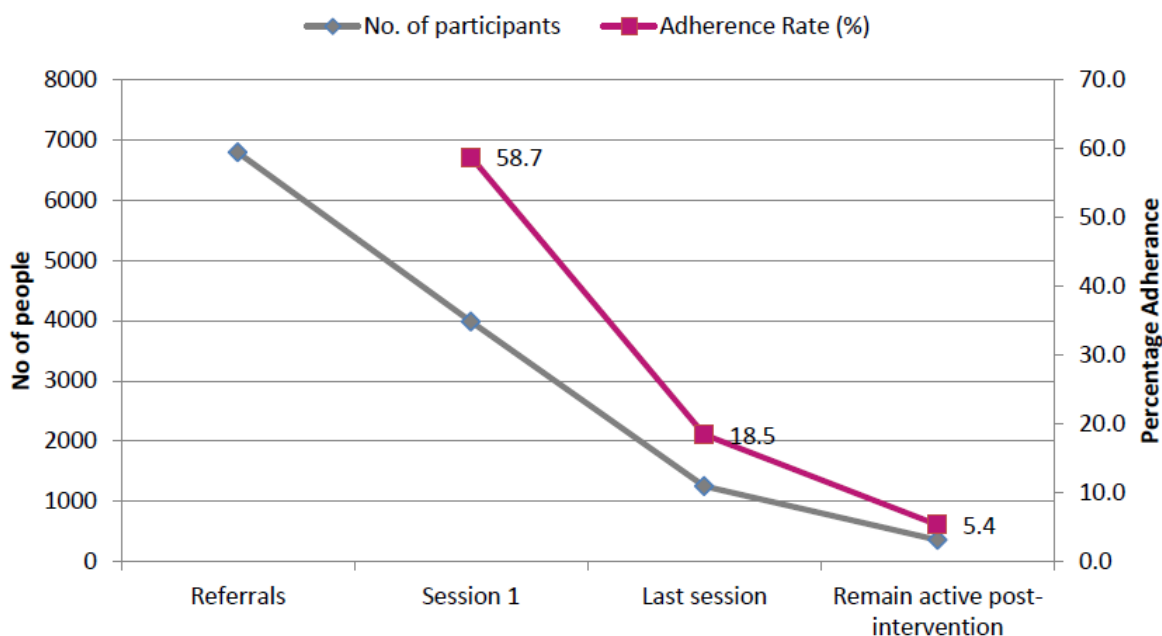
The Scottish Government's Physical Activity Delivery Plan, *a More Active Scotland* (The Scottish Government, 2018a), outlines the Active Scotland Outcome Framework, which sets out the vision and goals for increasing PA. These outcomes include encouraging and enabling the inactive to become active (outcome 1) and supporting wellbeing and resilience in communities through PA and sport (outcome 5). One of the ways in which these outcomes can be achieved is through exercise referral schemes, which provide a pathway for general practitioners (GP's) or other health professionals to refer patients who are inactive and have an existing health condition into PA.

Exercise referral schemes (ERS) also known as “exercise on prescription”, “physical activity referral scheme” (PARS) and “social prescribing”, operate out of community leisure centres across Scotland, and provide health coaching, exercise consultations, gym and exercise classes. Currently, there are 26 ERS operating in Scotland, covering 78% of the health boards in Scotland (Buxton & McGeorge, 2018). The Buxton et al. (2018) report found that features which were key to the success of ERS were the quality of the staff, participant support, flexibility in what is offered by the scheme and links with healthcare professionals. However, no “one size fits all” when it comes to ERS, hence what is offered as part of an ERS varies depending on the local council and/or health board. Nevertheless, ERS involve a referral from a health professional of a patient to the local leisure trust, a consultation with a leisure centre instructor and then a PA program and/or discounted access to the leisure centre for a specific period of time, typically 10-12 weeks.

The National Institute for Clinical Excellence (NICE; 2009) and the Scottish Intercollegiate Guidelines Network (SIGN; 2010) guidelines recommend structured PA programmes as an intervention for people with mild to moderate depression, despite a Cochrane review concluding that the current evidence for the impact of ERS is inadequate, due to inconsistent and weak findings regarding the impact on ERS on PA levels, wellbeing and quality of life (Rowley et al., 2018). A systematic review of eight randomised control trials comparing ERS with no exercise program or usual care controls, found that ERS increased the number of participants who achieved 90-150 minutes of PA at moderate intensity per week and a reduced level of depression (Pavey et al., 2011). However, the evidence also suggests that adherence to ERS remains low, with systematic reviews suggesting adherence ranges between 20 to 49% (Gidlow, Johnston, Crone, & James, 2005; Pavey et al., 2012).

An investigation into the level of adherence to ERS in Scotland conducted by SAMH (2016) identified that despite thousands of individuals being referred into the physical activity interventions (ERS) provided across Scotland, a significant proportion did not start or had dropped out before the end of intervention (see Figure 2.2.1), which

mirrored the findings of Gidlow et al. (2005). This finding suggests, that despite the investment into ERS, a vast majority of individuals referred will fail to attend the first appointment, begin but not complete or complete the intervention but do not continue with PA independently.



*Figure 2.2.1 Adherence to Exercise Referral Schemes, based on monitoring conducted by West Lothian, Fife, North Ayrshire, Edinburgh and North Lanarkshire (SAMH, 2016)*

Similar patterns of adherence to PA have been observed in the general population, suggesting that high dropout rates are not limited to clinical populations, with studies reporting that 50% of individuals who start a PA programme drop out within 6 months (Dishman, 1988). An observational study of gym membership conducted by Sperandei, Vieira, & Reis (2016) found that over half of new members stopped attending after three months, with the probability of a new member staying engaged for a 12-month period being only 3.7%.

The lack of adherence to PA interventions is a significant issue, as people do not adhere long enough to see the health benefits of being active. Research which has explored the barriers to PA has found that numerous factors have been identified as barriers which prevent people from engaging in PA, with some of the most commonly self-reported barriers including lack of time, tiredness, lack of enjoyment, bad weather,



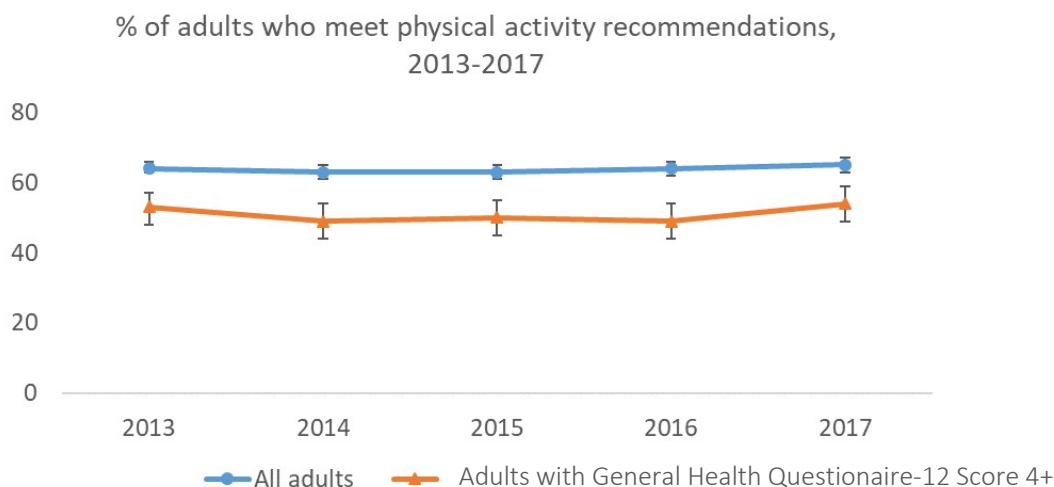
and lack of access to facilities (Trost, Owen, Bauman, Sallis, & Brown, 2002). The role of social support has also been associated with adherence to PA, with evidence suggesting that an absence of social support is a barrier, whether the social support comes in the form of professional/provider support or in the form of a peer or a buddy (Morgan et al., 2016; Pridgeon & Grogan, 2012).

The Scottish Government (2017) is committed to championing mental health as being equally important as physical health. One of the central aims of the *Mental Health Strategy 2017 – 2027* is to improve the physical health of people with mental health conditions and improve the mental health of people with physical health conditions, in order to reduce the health inequality which sees premature mortality in both population groups.

People with mental health conditions have been found to be less active than the general population (Vancampfort et al., 2017), with evidence suggesting they are less likely to meet the PA guidelines (Petzold et al., 2017). Epidemiological evidence from Scotland supports this (See Figure 2.2.2). This relationship between poor mental health could be explained through reverse causality, as people who are less active may develop worse mental health as they are not benefitting from the protective effects of PA. Evidence has shown that engaging in PA can protect against the emergence of anxiety (Schuch et al., 2019) and depression (Schuch et al., 2018), in both non-clinical and clinical populations (Rebar et al., 2015).

This relationship between mental health and PA could also be attributed to people with mental health conditions often facing more barriers to becoming active than the general population, such as dealing with side effects of psychiatric medication, coping with symptoms of their illness and the impact of other co-morbid physical health conditions (Glover, Ferron, & Whitley, 2013). A systematic review of the barriers and facilitators to PA in adults with depression found that the most prominent barriers included low mood, lack of energy and tiredness (Glowacki, Duncan, Gainforth, & Faulkner, 2017a), which are all symptoms associated with depression. This highlights the specific challenges

that face this population and the importance of reducing negative emotions to encourage PA.



*Figure 2.2.2 Comparison of % Adults with a probable mental health condition who meet the CMO guidelines to those without, adapted from Scottish Health Survey 2018 data.*

In addition to these specific barriers, people with mental health conditions also report experiencing barriers to PA that are described by the general populations, but to a greater extent. People with mental health conditions are significantly more likely to report motivational factors, such as being shy or embarrassed and having a lack of support or encouragement as barriers to PA than healthy controls (Chapman, Fraser, Brown, & Burton, 2016; Firth et al., 2016). Therefore, due to their more complex needs, there is a need for more support to become active.

Allen & Morey (2010) suggested that effective PA interventions should incorporate multiple components and include cognitive behavioural strategies, such as goal setting and self-monitoring of the behaviour. In addition, the provision of professional guidance and on-going support enhances long term behaviour change. Evidence also suggests that PA interventions designed for individuals with mental health conditions, need to be individually tailored to the individual's preferences to improve adherence and produce better outcomes (Ussher, Stanbury, Cheeseman, & Faulkner, 2007).

Recognising the benefits of PA to both physical and mental health, and the issue of attrition from ERS, SAMH proposed the development of the ALBA intervention, which aimed to increase long term engagement in PA, and improve the physical and mental wellbeing of people with mental health conditions. It was proposed that the ALBA intervention would be designed to link in with the existing physical activity provision by cooperating with the Leisure Trusts and utilising the exercise referral pathway in order to enhance sustained behaviour change, but would also include an individually tailored, cognitive-behavioural intervention, and would offer a peer support element.

## **2.3 Theoretical Design**

The Medical Research Council (MRC) Guidelines for developing and evaluating complex interventions (Craig et al., 2008; Skivington, Matthews, Craig, Simpson, & Moore, 2018a) advocate the use of theory in interventions development in order to understand the process of change and to enhance the quality and cost effectiveness of the intervention. The use of theory in the development of ALBA helped to inform the theoretical framework which was adopted to evaluate the intervention. The following section will describe the theories which influenced the design of the ALBA intervention.

### *2.3.1 Social Cognitive Theory*

Social Cognitive Theory (SCT) (Bandura, 1986) proposes that human behaviour is purposive and that self-regulation processes lie at the centre of behaviour. According to Bandura, people form beliefs about what they can and cannot do, they anticipate consequences, and they set goals and plan a course of action to achieve the desired outcome. The central mechanism of SCT is self-efficacy, which is considered the main determinant of human behaviour as Bandura puts forward that “*efficacy expectations determine how much effort people will expend and how long they will persist in the face of obstacles and aversive experiences*” (Bandura, 1977). Self-efficacy therefore describes a person’s confidence in their ability to perform a behaviour, their perception of the amount of effort that would be required to carry out the behaviour, and the amount of persistence they will have when faced with challenges.

Self-efficacy beliefs can vary dependent on the “strength”, “level” and “generality” of the belief (Bandura, 1997). Strength of belief refers to one’s certainty in their ability to perform the task, ranging from high to low confidence. The level refers to the complexity or difficulty of the task, and generality refers to how the beliefs can be generalised from one task or activity to another, for example if you are a confident roller skater then you might be quite confident that you could ice skate. Self-efficacy beliefs can be developed through past mastery experience, vicarious learning or modelling, as well as perception of one’s own physiological and psychological state (Beauchamp, Crawford, & Jackson, 2018).

Perceived self-efficacy theoretically affects choice of behaviour, as people who judge themselves to be highly capable of a behaviour derive satisfaction from mastering challenges and are more likely to maintain the behaviour. Self-efficacy beliefs also influence goal-setting, as an Individual who has high self-efficacy is more likely to set themselves higher goals and are more likely to stay committed to achieving them. Whereas individuals with low self-efficacy beliefs are more likely to be discouraged by challenges and obstacles, therefore do not sustain the behaviour change. Therefore, self-efficacy beliefs are relevant for health enhancing behaviours as efficacy beliefs are theorized to influence the degree of effort and the level of persistence which an individual will demonstrate in order to succeed in achieving their goals (McAuley, Szabo, Gothe, & Olson, 2011).

Self-efficacy has been consistently found to be a significant correlate of PA behaviour across lifespan (Bauman et al., 2012), with low self-efficacy being found to be one of the strongest determinant of inactivity (Troost et al., 2002). However, the utility of SCT in the application of PA research has been critiqued by Beauchamp, Crawford, & Jackson (2018), as the model diminishes the role social and environmental factors play in mediating behaviour. Beauchamp et al. (2018) argue that an individual may be confident in their ability to be healthy, but this belief would not change what health services and facilities are available to this person, therefore it is logical to argue that social and physical opportunities have a direct effect on behaviour, as well as a

mediating effect on an individual's perceived capabilities (Michie, van Stralen, & West, 2011). However, self-efficacy is still vital for enabling individuals to find away despite limited social and physical opportunities.

### *2.3.2 The Transtheoretical Model*

The Transtheoretical Model (TTM; Prochaska & DiClemente, 1982) is a stage of change model of behaviour which posits that individuals move through 5 stages of change when they are in the process of taking up and maintaining a new behaviour, therefore, different strategies can be implemented at the different stages in order to sustain the behavioural change, this is referred to as "stage matching".

The stages of change include 1) pre-contemplation: people in this stage do not intend to change their behaviour, 2) contemplation: in this stage, people start to consider making a change, 3) preparation: people now intend to take action in the immediate future, 4) action: in this stage people have made changes to their behaviour and 5) maintenance: in which people continue to make specific changes in their behaviour, for more than six months. This theory, unlike other health behaviour models such as social cognitive theory, proposes that behaviour change is a dynamic process in which progression through the stages is not necessarily linear, and that the time spent in each stage may vary.

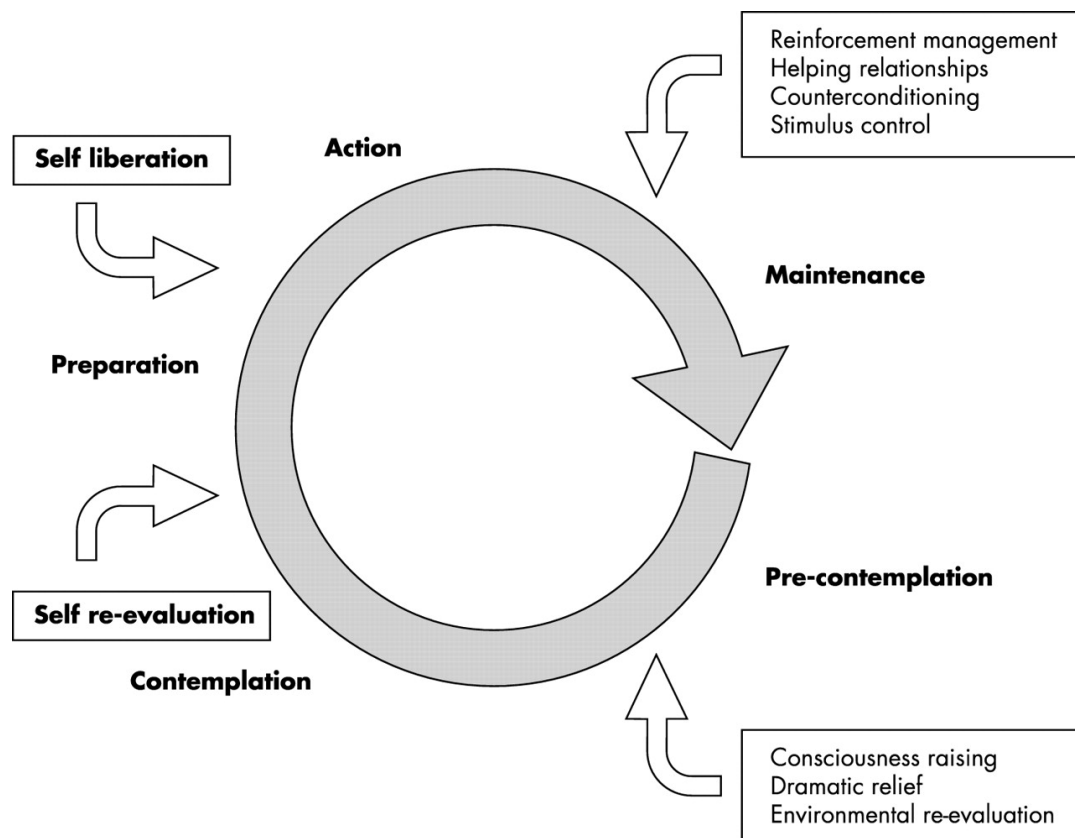


Figure 2.3.1: The transtheoretical model of behaviour change; diagram taken from Adam & White (2003)

The TTM has been utilised in the development of PA interventions, however the evidence of the effectiveness of TTM based interventions is mixed (Buchan, Ollis, Thomas, & Baker, 2012). Numerous studies have found that the stages of change were not related to actual behaviour, in that participants whose profiles suggested they were in the pre-contemplation or contemplation stage were just as likely to adopt exercise as those whose profiles indicated they were ready for change (Blissmer & McAuley, 2002; Naylor, Simmonds, Riddoch, Velleman, & Turton, 1999). A review by Adams and White (2003) concluded that in the short-term, interventions based on the TTM were more effective than non-staged interventions, however there was a lack of evidence for producing sustained change. It has been suggested that these mixed findings may be due to the difference between adopting and maintaining a complex behaviour like PA, and addictive behaviours that the model was based on (Buchan et al., 2012). PA is a multicomponent complex behaviour, which evidence suggests that external and internal factors impact upon, hence it has been argued that models such as TTM do not take into account all of the complexities which encompass changing PA behaviour.

### 2.3.3 The Behaviour Change Wheel and the COM-B Model

The behaviour change wheel (BCW; Michie, van Stralen, & West, 2011a), unlike the previously discussed theories is a whole system approach. Behaviour does not take place in a vacuum; it is influenced by the context and the behaviours of others. The BCW offers an integrated framework of behaviour change across domains which aims to provide an overarching model of behaviour which was developed specifically to aid intervention design and evaluation. The BCW allows for the systematic identification of policy categories and intervention functions which can elicit change. The BCW consists of three layers; at the core of the BCW is the COM-B model (Figure 2.3.2).

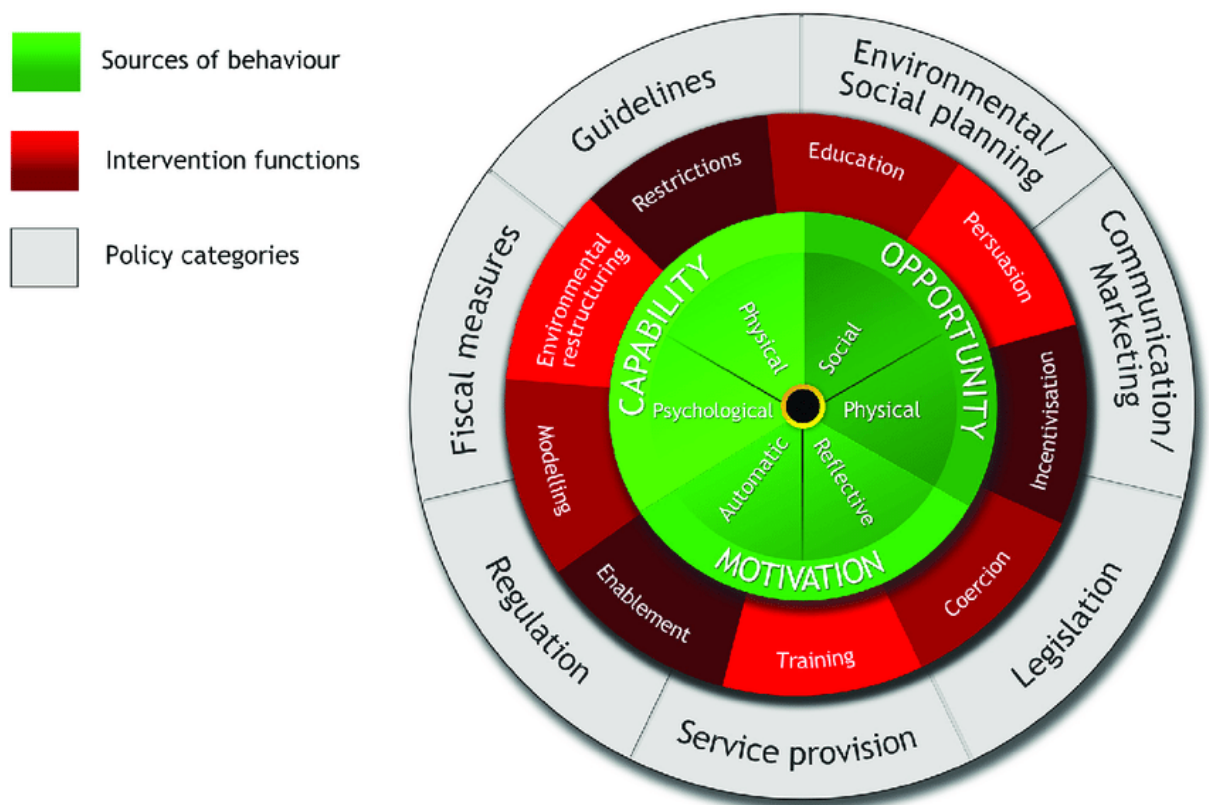


Figure 2.3.2 The Behaviour Change Wheel Retrieved from Michie et al. (2011)

The COM-B model of behaviour change is a simple model of behaviour change, which posits that for a behaviour to take place, the individual needs to have the capability, opportunity and motivation to carry out the behaviour (Figure 2.3.3). As this model not only takes into account the individual, but also the systems and population, it therefore addresses some of the critiques of some of the models presented above. This model

posits that the interaction between the components causes behaviour, hence can provide an explanation for why a behaviour is or is not engaged in. The COM-B model has been applied to explaining non-adherence to medication (Jackson, Eliasson, Barber, & Weinman, 2014); and the COM-B constructs have been found predictive of PA behaviour in healthy populations (Howlett, Schulz, Trivedi, Troop, & Chater, 2017).

The three components of the COM-B model are: capability, opportunity, and motivation. Capability is defined as an individual’s physical and psychological ability to carry out the behaviour, including having the necessary knowledge and skills. Opportunity is defined as all the factors outside of the individual which make the behaviour possible, this covers social economic factors, such as income and availability of resources. Motivation is defined as the brain processes that influence behaviour, this includes habitual responses, emotional responses, and decision making (Michie, Atkins, & West, 2014). The arrows in the figure represent the potential influence between the components of the model: capability can influence motivation, as can opportunity; alternately, enacting the behaviour can influence capability, motivation and opportunity.

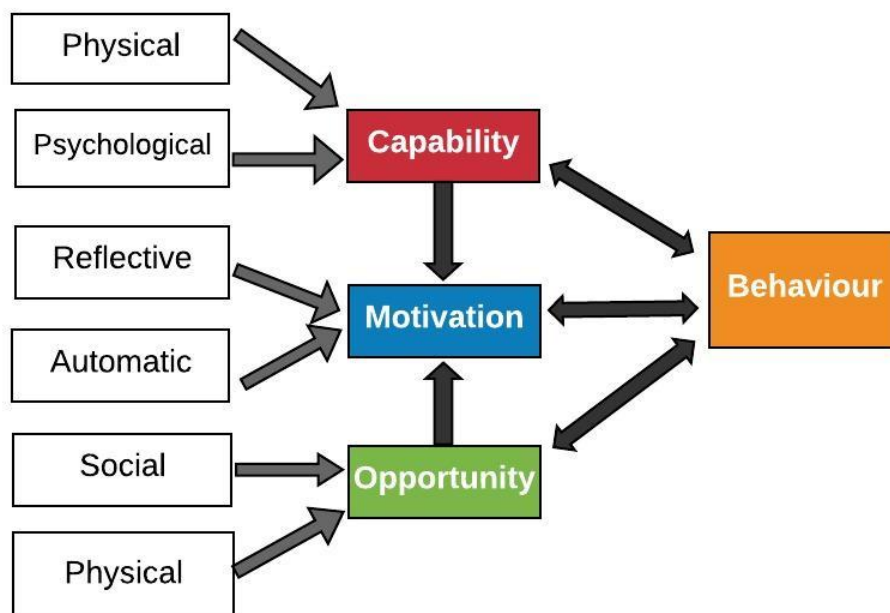


Figure 2.3.3 The COM-B Model of Behaviour Change (Michie et al., 2011)



The BCW guide to designing interventions proposes that there are three stages to developing a behaviour change intervention. The first stage is to understand the behaviour, which involves defining the problem in behavioural terms, selecting the target behaviour and identifying what needs to change. The BCW and the COM-B models were used in the development of the ALBA intervention. The formative evaluation completed by SAMH identified the lack of PA in individuals with mental health and long-term physical health conditions as the issue.

The next stage in the process is to use the COM-B model to identify what is needed to change the behaviour. The behavioural analysis that took place in developing ALBA identified issues around motivation and lack of support as being the biggest barriers to PA, therefore these were identified as needing to change (See appendix 1). As the COM-B model posits, the components of the model interact, thereby increasing opportunity can increase motivation, or by increasing motivation an individual may do things which increase their capability or opportunity. Therefore, ALBA was designed to incorporate multiple components and use cognitive behavioural approaches to increase individual's capability and motivation to engage in PA and utilised the existing ERS pathways to maximise opportunity to engage in PA.

## **2.4 ALBA Components**

The planned intervention consisted of the following components: (a) weekly, and then fortnightly 1:1 face-to-face hourly meetings with a behaviour change practitioner (BCP) over the course of 16 weeks; (b) access to the exercise referral programme that was offered by the local leisure centre; (c) an activity tracker and the "Get Active" app which was designed to increase motivation and facilitate self-monitoring of behaviour; and (d) access to peer supporters, who have been through the ALBA intervention and peer supporter training who can offer support outside of the sessions with the BCPs. How these components map onto the COM-B model is demonstrated in figure 2.4.1 and are described in detail below.

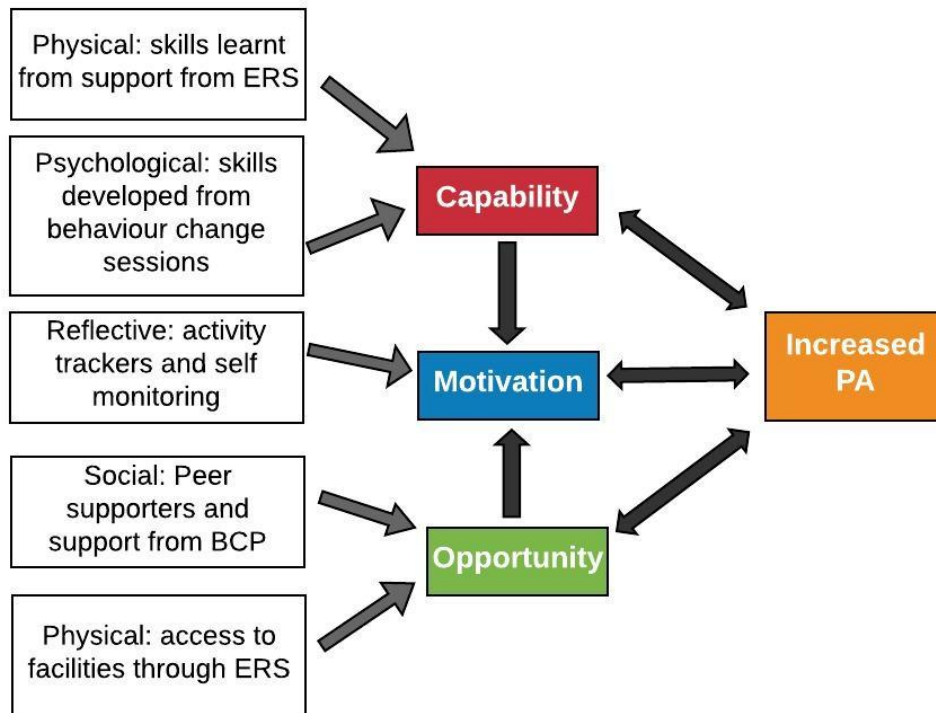


Figure 2.4.1: ALBA Components mapped onto the COM-B model

#### 2.4.1 Behaviour Change Sessions

Each individual who took part in ALBA met with one BCP who was based in their local area. The BCPs met with the participants in the Leisure Centres or other local community centres. These meetings were to initially take place every week and then decrease to fortnightly once the individual begins their exercise referral, therefore on average each participant met with the BCP ten times. In the 1:1 sessions, the BCPs used behaviour change techniques (BCT) and motivational interviewing inspired techniques, in order to help elicit behaviour change and encourage participants to set goals and overcome barriers which prevented them from engaging in physical activity.

The BCPs used materials including the “Living Life to The Full” (LLTTF) workbooks which focused on developing life skills whilst using a Cognitive Behavioural approach. These workbooks are designed to be accessible, as they are aimed at a reading level of 12 years and use minimal jargon. All of the workbooks include action planning and homework. Details of the content of the workbooks can be found in the appendices.

These materials were validated by a randomised controlled trial in a community setting in Glasgow, which found that at 6-month follow-up, there were statistical and clinically significant between-group differences on all outcome measures (Patient Health Questionnaire-9 mean group difference:  $-3.64$ , 95% CI  $-6.06$  to  $-1.23$ ;  $P = 0.004$ , Generalised Anxiety Disorder Scale-7 mean group difference  $-2.83$ , 95% CI  $-5.03$  to  $0.64$ ,  $P = 0.012$ , Work and Social Adjustment Scale mean group difference:  $-5.31$ , 95% CI  $-9.35$  to  $-1.27$ ,  $P = 0.011$ ), demonstrating that the LLTTF intervention was effective in improving symptoms of depression, anxiety and social function (Williams et al., 2018). However, this study used the materials in group settings only, and a large number of the participants were lost to follow up.

Other materials that the BCPs used to facilitate delivering the ALBA intervention included the “Supporting Behaviour Change Worksheets”. These worksheets were developed by Edinburgh Napier University. The worksheets are based on the COM-B model and on motivational interviewing principles. Copies of these worksheets can also be found in the appendices.

To undertake the role of BCP, the recruited practitioners underwent a thorough training program. This training program involved undertaking three specific training courses which were developed for ALBA:

1. Mental Health Awareness Training – an e-learning module specifically developed by SAMH aimed at BCP/Physical activity practitioners. This course covered understanding the meaning of mental health and wellbeing, triggers of poor mental health and strategies for promoting good mental health. This training is accredited by CIMSPA, and completion is worth 1 CIMSPA CPD point.
2. “Get Active” Platform Workshop – this training was facilitated by Storm Health, who taught a 3-hour workshop which covered how the activity trackers worked, how to access the co-ordinator app and how to set up customer profiles on the Get Active app.

3. **Enhancing Behaviour Change Training** – this training was facilitated by an expert in motivational interviewing from Edinburgh Napier School of Health and Social Care. This training was developed separately from the evaluation and was facilitated by individuals who worked directly with SAMH to develop the content. This training involved an e-learning module and a 1-day face-to-face training course which was specifically developed for delivering the ALBA intervention. The course aims to introduce the theory behind behaviour change interventions ways to support individuals on their physical activity journey. This training has also accredited by CIMSPA and has been offered to staff from the Leisure Trust, who can receive 8 CPD points for completing.

Alongside the ALBA specific training, BCPs also completed a course of training programs to prepare them for working one-to-one with participants (Table 2.2.4.1). This training program was intended to take place before the BCPs began working with clients.

*Table 2.2.4.1: BCP Training Courses*

| <b>Name of Course</b>   | <b>Length of Course</b>                              | <b>Facilitated by</b>                         | <b>Learning Outcomes</b>  |
|---|--|---|---|
| <b>Living Life to the Full Training for low mood and stress</b> | 1 day  | Dr Chris Williams;<br>Living Life to the Full | The training aims to equip participants with CBT skills and techniques, and the skills required for working one to one.               |
| <b>Motivational interviewing</b>                                | 2 day  | Jeff Allison<br>Training LTD                  | The course forms an introductory course that focuses on developing the skills and knowledge for delivering motivational interviewing. |
| <b>MAP Training</b>   | 1-day face-to-face workshop and an e-learning course | NHS Education for Scotland<br>Psychology      | This course focuses on developing skills to Motivate, Action and Prompt individuals to change their behaviour.                        |
| <b>Health Behaviour Change</b>                                  | 4 hours  | NHS Health Scotland                           | The course aims to provide more in-depth knowledge and  |

|   |         |                      |  |
|---|---------|----------------------|--|
|   |         |                      | confidence in using health behaviour change techniques to discuss lifestyle issues and support change.   |
| <b>Eat Well, Be Active, Feel Good!</b>                      | 1 day   | NHS Health Scotland  | Aims to provide the skills required to support adults to adopt healthier lifestyles.   |
| <b>Applied Suicide Intervention Skills Training (ASIST)</b> | 2 day   | SAMH                 | ASIST focuses on providing the skills to recognise when someone is having suicidal thoughts and how to work with them safely.  |
| <b>Safe TALK</b>  | 3 hours | NHS Health Scotland, | Focuses on recognising and engaging people who might be having suicidal thoughts and to connect them with community resources trained in suicide intervention.                 |
| <b>Safeguarding</b>   | 1 day   | SAMH                 | The focus of the training course is protecting vulnerable adults safe from harms, such as financial or sexual exploitation. This training is mandatory for all SAMH employees. |

#### 2.4.2 Exercise Referral Schemes

ALBA participants were referred by their GP or a health care professional to their local leisure trust (LT) and were offered the standard ERS pathway. The LT would identify participants who would benefit from ALBA and refer them on to the local BCP.

The ERS that were offered across the three LT that are involved in the ALBA intervention vary in what they offered the participants in terms of pathways. The details of each of the ERS and the differences are presented in the table below.

Alternately to the ERS, participants could be signposted to local community PA provisions, such as walking or running groups, if participants found that the ERS was not suitable to their interests.

Table 2.2.4.2: Description of ERS

| Area                  | ERS Operator                         | No of annual referrals | Uptake and Attrition   | Assessment   | Referral Pathways  | Cost Associated  |
|-----------------------|--------------------------------------|------------------------|--|--|--|--|
| <b>Fife</b>           | Fife Sports and Leisure Trust (FSLT) | 1400                   | 52% of patients who are referred begin an exercise referral scheme.<br><br>31% of those referred attend 70% or more classes over a twelve-week period. | Referrals are sent to FSLT from health care professionals (predominately Physiotherapists) who assess patients and specify which referral route the patient has been referred to. FSLT write to patients an invitation to participate. | Active Options - Fife's general exercise referral scheme which is suitable for people with a range of long-term health conditions. Active Options has four levels of classes with level 1 focusing mainly on strength and balance and chair-based exercises, through to level 4 which operates like a circuit-based exercise class.<br><br>Move more - cancer rehab exercise prescription which is funded in partnership with Macmillan Cancer Care. Patients are offered a choice of joining a walking group, circuit-based exercise classes or gentle movement classes.<br><br>Mind and Be Active (lost funding March 2018)- a specific mental health pathway where a member of the FSLT team worked 1-to-1 over the course of 12 weeks with individuals who were referred due to their mental health. | Attending classes associated with the Active Options costs £3.60 per class.<br><br>Move more offers a free 12-week programme, and Mind and Be Active offer 30% discount on all activities they chose to do during the 12 weeks and for a year after. |
| <b>North Ayrshire</b> | KA Leisure                           | 1440                   | During a 12-month period, a total of 954 people  | Assessment conducted in 1:1 consultation with a physical activity consultant. This assessment involves the   | 69 activity-based classes are offered per week, which include aqua fitness, low impact exercise classes, walking groups and gym based personalised fitness sessions.   | Access to ERS offered at £6.50 a month, with the additional cost of £3.70 per class. Individuals on benefits or over the age   |

|                     |                            |      |   |   |  |  |
|---------------------|----------------------------|------|---|---|--|--|
|                     |                            |      | <p>participated in the Programme.</p> <p>This suggests that two thirds (66%) of the people referred to ANA by their health practitioner follow through and make an appointment for an assessment.</p> | <p>collection of data such as height, weight, blood pressure, medical history and the completion of the measure Scottish Physical Activity Questionnaire (Lowther, Mutrie, Loughlan, &amp; McFarlane, 1999), Quality of Life measure EQ-5D 5-L (Herdman et al., 2011) and the 30 seconds sit to stand test (Jones, Rikli, &amp; Beam, 1999). Individuals who have been referred to the Mind and Be Active program complete the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS; Tennant et al., 2007).</p> | <p>Specific illness related pathways are available, which include Move More (Cancer rehab), Invigor8 (falls prevention), HARP (Stroke, CHD and pulmonary conditions), Weigh to Go and SWAP (weight management), and Mind and Be Active (Mental Health), which offer specific classes for the specific condition, for example Mind and Be Active offers 13 specific classes and Move More offers gardening.</p>   | <p>of 60 are offered the discounted rate of £5.50 per month and £2.70 per class. Individuals who are referred to the Mind and Be Active programme receive a further discounted rate, with classes costing £1.70 or £2.00.</p>  |
| <b>West Lothian</b> | Xcite West Lothian Leisure | 1600 | <p>Xcite is committed to retaining 20% of all referrals. Monitoring of uptake and adherence to the exercise referral scheme found that 41% are still active after 12 weeks.</p>                       | <p>Assessment conducted by the GP exercise referral instructor, who assess the participants suitability, taking measures including height and weight, body mass, peak flow, and psychological measure; The Hospital Anxiety and Depression Scale (HADS; Zigmond &amp; Snaith, 1983) the General Health Questionnaire 12 (GHQ-12; Goldberg &amp; Williams,</p>   | <p>Xcite does not consist of any specific pathway or set programme. Participants receive membership and access to all facilities. Guidance to what activities would be suitable is given by the exercise referral instructors, but the choice is up to the individual. The only restriction currently in place, is that gym inductions and assessments only take place at four of the Xcite Leisure Centres.</p> | <p>12 weeks of a free membership which allows them access to all of Xcite's facilities, After the initial 12 weeks, membership is offered. Premier adult membership costs £39 per month and "Medical Membership" discount costs £26.50 per month. Other discounts are available such as the "Prime of Life" membership for over 60's, for £20 per month,</p> |

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2000) and the Global  
Physical Activity  
Questionnaire (GPAQ;  
Armstrong & Bull, 2006).

or £10 per month if the  
individual is in receipt of  
benefits. Pay as you go  
options are also  
available which vary in  
price from £2.50 - £5.85.

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### 2.4.3 Activity Trackers

ALBA participants were provided with a Storm ID activity tracker for the duration of their participation in the intervention. The activity trackers could be worn on the waist or hip. Participants were signed up on the “Get Active” website and app when they first met with the BCP. The “Get Active” app allows participants to sync their data from the tracker to their smart phone or tablet using Bluetooth connectivity. The data obtained from the activity trackers provides an objective measure of participants PA, which was used in the evaluation of the effectiveness of ALBA.



Figure 2.4.2 Storm Activity Trackers

Evidence suggests that using pedometers in public health interventions is effective for long term self-monitoring and behaviour change (Tudor-Locke & Lutes, 2009). The activity trackers provide instant feedback on PA behaviour which can be acted on in real time, therefore they serve as a motivational tool, as participants can monitor their daily step count and set goals. A review of why using a pedometers is effective found that studies which used a step goal appear to have greatest increase in steps (Bravata et al., 2007). ALBA participants were invited to set their own personal step goals, as a personalised goal is more meaningful and can be adjusted as the individual progresses through the programme.

### 2.4.4 Peer Support

ALBA also offered individuals taking part in the intervention the optional component of peer support. This involved meeting up with a peer support volunteer for an hour a

week to help them engage in physical activity. Examples of this peer support could be meeting up to go for a gym session or class, or a walk or to join a running club. The evidence base for peer support in mental health services suggests that peer supporters can help to promote hope and belief in a successful recovery, as well as increase self-esteem, self-efficacy and help to decrease social exclusion (Repper & Carter, 2011).

Once an individual had completed the intervention, they were also offered the option of becoming a peer supporter. This was a voluntary role and was supervised by a Peer Support Coordinator, who was a member of SAMH staff. Peer supporters were supported through 2 online training modules (mental health awareness and supporting behaviour change) and all of SAMH's volunteer policies and processes. These policies and processes are the same for anyone who is involved in voluntary work with the charity, and includes policies and procedures on boundaries, confidentiality, volunteering, respect at work (anti-bullying), lone-working, health and safety, how to claim expenses, how to raise a complaint and being smoke-free. This training was provided in order to equip them with the knowledge required to productively support a peer through the intervention. Volunteers were also subject to a Protecting Vulnerable Groups (PVG) check.

Peer supporter volunteers were asked to commit to a minimum of 1 hour a week, however there was no maximum amount of time a volunteer can take on and they can support as many people as they felt they could manage. The peer support coordinators were responsible for matching a peer supporter to a participant and coordinating meetings between the two. They were also available to support peer support volunteers after each meeting. Peer support volunteers have monthly review meetings with the peer support coordinators to ensure that they were feeling supported and happy in their role.

As a condition to becoming a peer support volunteer was completing the ALBA intervention, participants in the first cohort of ALBA participants in each area were not offered peer support. In total, 26 peer volunteers were recruited across the three areas.

## 2.5 Stakeholders

The key stakeholders in the delivery and implementation of the ALBA intervention were the Scottish Government, Fife Sport and Leisure Trust, Xcite (West Lothian) and KA Leisure (North Ayrshire), and Storm Health.

The Scottish Government was the key funder of the ALBA project, awarding SAMH £992,000 funding for the delivery of ALBA over a 3-year period (2016-2019). The objectives of the intervention aligned with Scottish Government's goal of improving the health of people living with mental health conditions in order to enable them to live longer and healthier lives and was included as an action in the ten-year mental health strategy that launched in 2017.

Fife, West Lothian and North Ayrshire were selected as all three of the leisure trusts already ran established exercise referral programmes, SAMH had established teams in these areas which could provide support to the ALBA staff, and geographically, all three encompassed areas which were both rural and urban.

In the initial proposal, Edinburgh Leisure was selected to initiate ALBA, however as the project moved through the planning stage, it was decided that West Lothian would be better suited, due to a lack of provision of mental health services in the area, therefore it was deemed that there was a greater need for an intervention like ALBA.

An agreement was reached between the Leisure trusts (LT) and SAMH, where it was agreed that the LT staff would refer suitable participants to the ALBA team and would support them as per the usual exercise referral participants. In return, SAMH will help to support the continued professional development of staff from the Leisure centres.

The involvement of Storm Health was decided upon by SAMH who were keen to imbed an objective measure of PA into their proposal to the Scottish Government. Storm Health is a social enterprise, specialising in digital services that aim to empower and motivate health and well-being. Storm health are responsible for the development of

the “Get Active” platform. The “Get Active” platform encompasses the activity trackers and the corresponding mobile app and co-ordinator app.

## 2.6 ALBA Implementation and Delivery

### 2.6.1 ALBA Staff

To manage the implementation and delivery of the ALBA intervention, SAMH appointed a project co-ordinator, whose role was to support the set-up of the intervention, manage partnership relationships and oversee the delivery of the intervention. SAMH also appointed a project assistant, whose role was to handle the day-to-day administration of the project.

A team of six BCPs were recruited and trained for the role of delivering the ALBA intervention. Two BCPs were situated in each of the three areas. Two peer volunteer co-ordinators were appointed to oversee the training and management of volunteers. One peer co-ordinator oversaw Fife and West Lothian, and the other North Ayrshire.

### 2.6.2 Delivery of the intervention

As previously mentioned, the ALBA intervention was designed to be integrated into the existing exercise referral schemes in order to utilise established referral pathways and partnerships between health practitioners and local PA providers. It was hoped that this would facilitate the recruitment of appropriate individuals and improve the uptake and adherence to PA in the population group who stands to benefit the most. Figure 2.6.1 shows the pathway of a participant from point of referral through the ALBA intervention.

*Table 2.6.1 ALBA Participant Pathway*

| <b>Timeline</b>   | <b>Intervention</b>   |
|-------------------|---|
| Recruitment       | Participant is referred by a GP or healthcare professional to the ERS, who assess to ensure participant meets inclusion criteria. Participant is then referred on to ALBA |
| Baseline Measures | Participant meets with BCP, consent to participate is given and baseline measures are completed.  |

|                     |   |
|---------------------|---|
|                     | Participant begins 16-week intervention receiving 1:1 behaviour change sessions with BCP and ERS, and when possible support from peer support volunteer.  |
| 16 Weeks            | After completing intervention participant completes post intervention outcome measure and is offered the opportunity to continue into the long term follow up. Participants are also offered option to become a peer support volunteer.   |
| 6 Months Follow-up  | Participants have a check in call with BCP every 3 weeks. At 6 month point they complete outcome measures. If participant has agreed to become a peer supporter, they receive training and are matched with a participant beginning ALBA. |
| 12 Months Follow-up | At 12-month point participants complete outcome measures.   |

Individuals who had been referred by their GP or healthcare professional to the ERS were offered the ALBA intervention at point of referral to the local LT. If the individual decides to participate in ALBA, then they met with a behaviour change practitioner (BCP) who set them up with their activity tracker, and they were asked to complete the baseline questionnaire measures. The participants would then go on to engage in the behaviour change sessions. At the end of the 16-week intervention period participants are asked to complete the post-intervention questionnaire measures.

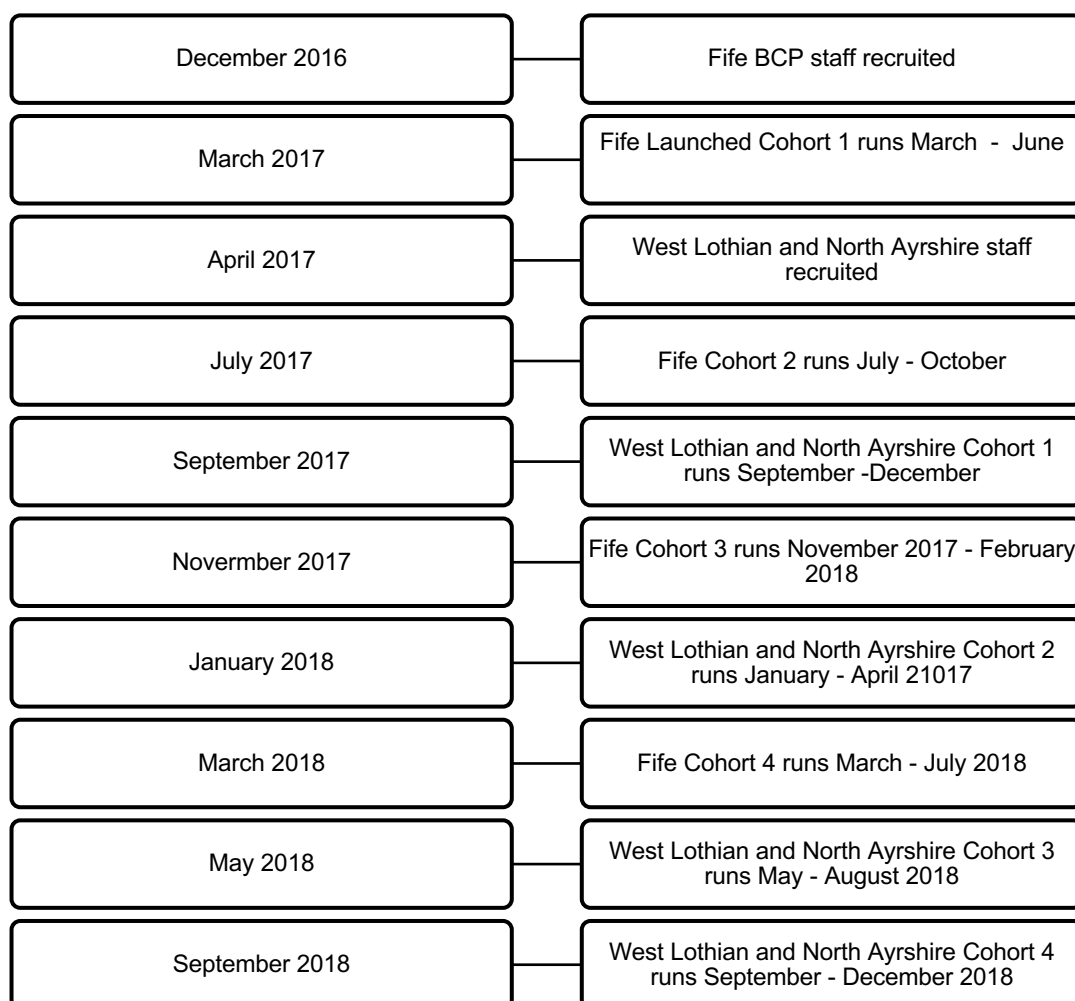
At this point participants are asked if they are willing to opt-in to the follow up study, where they receive additional support from the BCP in the form of brief catch ups every 3 weeks, and they would continue to wear their activity tracker, and complete the questionnaire measures at 6- and 12-months post intervention.

### 2.6.3 Timescale

The delivery of the intervention was planned to commence in March 2017 with staff being appointed to the role of BCP by January 2017, to allow for adequate time for training to take place. It was planned that the intervention would launch first in Fife, and then would be rolled out in North Ayrshire and West Lothian at a later date. It was planned that the intervention would recruit participants in cohorts, and that a total of

four cohorts would be recruited from each area. The dates of the cohorts are detailed below.

*Table 2.6.1 ALBA Delivery Timeline*



## 2.7 Chapter Summary

This chapter highlights the key problem that adherence to PA is low and that people with mental health conditions face more barriers that prevent them from engaging in regular PA. This is detrimental to both their physical and mental wellbeing. This chapter also described the context within Scotland that led to the development of the ALBA intervention. A third of the Scottish population is inactive, with evidence suggesting that less than 20% of those referred into PA are still engaged at the end of the programme. As the Scottish Government is committed to increasing PA levels and reducing the

health inequality between people with mental health conditions, they supported the development of ALBA.

The ALBA intervention aims to help improve the physical health of people with mental health conditions through increasing adherence to the existing PA provisions. This chapter described the theoretical basis which influenced the design of the ALBA intervention, and how the components of the intervention mapped onto the theory. To aid understanding of the interventions components and the delivery, this chapter provided a full description of the planned implementations, including the key stakeholders, the roles of the individuals responsible for the delivery, and how the intervention was delivered. The next chapter will present a systematic review of the evidence for cognitive behavioural interventions increasing adherence to PA in mental health populations.

### **3 Searching the literature**

#### **3.1 Purpose of this Chapter**

This chapter will present a systematic review of the evidence for the effectiveness of cognitive behavioural change interventions at increasing adherence to physical activity in mental health populations. This section of the thesis will act as the solution generation phase of the formative evaluation, as the evidence for previous cognitive behaviour change interventions will be reviewed. The chapter will then go on to discuss the results of this review in relation to the ALBA intervention.

#### **3.2 Rationale**

##### *3.2.1 PA as Treatment for Mental Health Conditions*

There is strong and growing evidence for the benefits of PA for mental health and wellbeing in both clinical and non-clinical populations (Rebar & Taylor, 2017). PA has been found to be an effective treatment option for depression (Schuch, Vancampfort, Richards, et al., 2016), with evidence suggesting that PA is no more or less effective than antidepressants or psychological therapies for reducing symptoms (Knapen et al., 2015). PA has also been associated with reduced symptoms of anxiety in both clinical and non-clinical populations (Kandola et al., 2018), with evidence suggesting that PA is as an acceptable treatment (Herring et al., 2014). However, the lack of methodologically robust studies of PA interventions for anxiety makes it difficult to draw any conclusions about the effectiveness (Stonerock, Hoffman, Smith, & Blumenthal, 2015). There is also substantial evidence which supports the benefits of PA for people who experience severe and enduring mental illness, such as schizophrenia (Vancampfort et al., 2017), with evidence suggesting that PA could help to alleviate secondary symptoms, such as anxiety and depression, and reductions in other negative symptoms of schizophrenia (Faulkner, Gorczynski, & Arbour-Nicitopoulos, 2013). This increasingly extensive body of evidence of the positive effects of PA and exercise on a broad range of mental health conditions has led to the recommendation that PA should be used as an adjunct to usual treatment for a range



of conditions, including anxiety disorders, depression, substance abuse and schizophrenia (Rosenbaum et al., 2016).

Aside from the benefits of PA for mental health, as discussed in chapter 2, being active is essential for maintaining physical health and has been associated with reduced risk of chronic diseases, such as cardiovascular disease (CVD), type 2 diabetes, hypertension, and respiratory illnesses (Pedersen & Saltin, 2006). This is particularly relevant for individuals with a mental health condition, as the evidence suggests there is a 10 to 25 year mortality gap in people who have mental health conditions, compared to those that do not (Barber & Thornicroft, 2018). Much of this mortality is linked to cardiovascular issues, for example people with anxiety disorders are 52% more likely to develop a CVD than the general population (Batelaan, Seldenrijk, Bot, van Balkom, & Penninx, 2016), and that individuals with depression have a 1.5-fold increased risk of CVD than people without depression (Kemp & Quintana, 2013). It has been established that PA is associated with a reduction in risk of CVD (Nocon et al., 2008), and therefore should be encouraged to help reduce mortality in mental health populations.

However, despite the well-established benefits of PA, people with diagnosed mental illness have been found less active than healthy controls (Nyboe & Lund, 2013), with evidence suggesting that approximately 50% of people with a severe mental illness do not meet the recommendation of at least 150 minutes of moderate PA per week (Vancampfort et al., 2017). This finding prompted Vancampfort et al. (2017) to argue that in order to improve the physical and mental health of individuals with mental health conditions, it is imperative that evidence-based interventions which aim to promote PA and reduce sedentary behaviour should be incorporated into usual care.

### *3.2.2 Cognitive Behavioural Interventions*

Due to the increased number of barriers to PA that are faced by people who experience poor mental health, such as low self-worth, lack of energy and motivation, weak physical fitness and co-morbid health conditions (Glover et al., 2013; Glowacki et

al., 2017a), it has been recommended that strategies that encourage motivation and help to overcome these additional barriers should be included in PA interventions (Knapen et al., 2015). Examples of strategies which can be implemented to encourage motivation include cognitive behavioural techniques, such as goal setting, action planning, self-monitoring, incentives or rewards, counselling to enhance self-efficacy and provide feedback.

Cognitive behavioural interventions will, for the purpose of this chapter, be defined as formal interventions which use cognitive behavioural techniques to elicit behaviour change. The cognitive behavioural interventions have been found to be somewhat effective at increasing PA. Allen and Morey (2010) reported that interventions which incorporated multiple components, used cognitive behavioural strategies, or used a tailored or lifestyle approach were more effective for promoting PA. The benefits of including cognitive behavioural techniques alongside PA interventions has been discussed in numerous papers (Knapen et al., 2015; Rastad, Martin, & Åsenlöf, 2014; Vancampfort et al., 2017). This evidence informs the argument that behaviour change interventions which incorporate cognitive behavioural strategies may be what is needed in order to increase PA in individuals with mental health conditions.

Reviews which have looked at adherence to PA interventions in a range of populations, including people with chronic illness, the elderly and obese populations (O'Halloran et al., 2014; Picorelli et al., 2014; Samdal, Eide, Barth, Williams, & Meland, 2017), have found evidence to suggest that interventions which emphasize a person-centred style, facilitate self-regulation and sustained positive motivation are associated with long term effectiveness and maintenance of behaviour change.

For the purpose of this review, an intervention is any deliberate attempt at increasing PA levels. The types of intervention this review will specifically focus on are interventions which are delivered face-to-face and incorporate cognitive behavioural techniques designed to illicit behaviour change. A previous systematic review of PA interventions found evidence that supports the effectiveness of face-to-face

interventions at promoting PA in general populations (Richards, Hillsdon, Thorogood, & Foster, 2013). However, this review concluded that the evidence was not from high quality studies, and limited conclusions could be drawn about the long-term effectiveness and the cost effectiveness of the interventions.

### *3.2.3 Adherence*

Adherence to PA is a complex and multidimensional concept which is difficult to define as it can be discussed in very specific or very general terms. Within the literature, a number of different terms (including adherence, compliance, adoption, maintenance, dropout, retention, attrition) have been used interchangeably when discussing the same concept. This has resulted in a lack of consensus of definition and measurement.

Adherence to PA can be measured using both observational and self-reported measures, however both have methodological weaknesses (Prince et al., 2008), for example, observational measurements such as recording the number of classes or gym attendance can set a standard but do not necessarily take into account all PA that the individual may be engaging in, and evidence suggests that self-reported measures can both overestimate and underestimate levels of activity. Within the literature, there is no defined gold standard measurement of PA adherence. It has been argued that this lack of clear reporting guidelines and rigorously validated measures has created an issue for comparing results across studies due to the variety of methods used, which makes it difficult to draw conclusions about adherence rates (Linke, Gallo, & Norman, 2011).

In a review conducted by Hawley-Hague, Horne, Skelton, & Todd (2016) that examined the definitions of adherence used in studies based on community-based exercise classes, found that adherence had been defined in a variety of ways, including: completion of a prescribed programme of activity (i.e. retention), attendance frequency, duration of adherence, intensity of adherence and uptake. They concluded that there was little consensus on how adherence to PA should be measured, which made

comparison across studies challenging. They suggested that the definition of adherence should depend on the purpose of the measurement.

For the purpose of this review, we are looking at adherence and its impact on health outcomes. Therefore, following Hawley-Hague et al. (2016) recommendations, this chapter will use the following definitions of adherence: completion, those who are still attending the class/attending at follow-up; attendance: percentage of classes attended out of the actual number of sessions offered; duration: adherence to predefined minutes, for example, 30 min, three times a week; and intensity: 'moderate intensity' as per the prescribed exercise regime.

#### *3.2.4 Adherence to PA*

Investigations into adherence to PA recommendation in the general population suggest that approximately a third of adults do not meet the UK PA guidelines (Scholes, 2017), with all of those who do start a PA program dropping out after six months (Linke et al., 2011). In people with mental health conditions, research suggests that they are significantly less likely to adhere to PA than the general population (Vancampfort et al., 2017). However, the accuracy of these estimation is often called into question, as these data are reliant on self-report measures of PA, therefore could be an over or underestimation of how many people actually meet the PA recommendations (Hallal et al., 2012; Sallis & Saelens, 2000).

Previous systematic reviews of drop out from exercise interventions amongst individuals with depression present mixed results. The review by Rethorst, Wipfli, & Landers (2009) reported that average dropout rate across 18 studies was 14.6%, whereas the results of the review conducted by Stubbs et al. (2016) suggested that when adjusted for publication bias, the dropout rate was 18.1%. This review concluded that PA is an acceptable treatment option for individuals with depression. However, the Stubbs et al. (2016) review focused only on major depressive disorder, and included studies which focused on both inpatient and outpatient trials. There is some evidence to suggest that inpatients have better adherence, which could be due to increased

structure or social support. This current review will focus specifically on interventions which have been delivered in a community setting.

Numerous relevant systematic reviews have been conducted previously which have examined the relationship between mental health, PA, and adherence (Rosenbaum, Tiedemann, Sherrington, Curtis, & Ward, 2014; Rosenbaum, Tiedemann, Stanton, et al., 2016; Firth, Rosenbaum, Stubbs, Gorczynski, Yung, & Vancampfort, 2016; Stonerock, Hoffman, Smith & Blumenthal, 2015; Stubbs et al., 2016; Vancampfort, et al., 2017). However, these reviews examine the impact of PA on individuals with mental health conditions, rather than examining how cognitive behavioural techniques can be used to enhance the effectiveness of PA interventions. As the ALBA intervention is based on the principle that using a cognitive behavioural approach will encourage adherence to PA, the aim of this review is to assess how effective cognitive behavioural interventions have been at increasing adherence to PA in adults with mental health conditions. The secondary aim is to examine the relationship between level of adherence to the intervention and the effectiveness.

### **3.3 Methods**

The protocol for this systematic review was registered 24<sup>th</sup> April 2017 on the PROSPERO database prior to conducting this review (CRD42017057918) and can be accessed at

[https://www.crd.york.ac.uk/PROSPERO/display\\_record.asp?ID=CRD42017057918](https://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42017057918).

Reporting has been conducted as per the PRISMA statement (Moher, Liberati, Tetzlaff, & Altman, 2009).

#### *3.3.1 Eligibility Criteria*

To be included in this review, studies had to (1) contain a behaviour change intervention which targeted physical activity using cognitive behavioural/psychological approaches; (2) be delivered to adults aged over 18 with a diagnosis of a mental health condition as defined by relevant editions of the DSM or ICD-10 (3) reported adherence to the intervention; (4) be a Randomised Controlled Trial (RCT) or cluster RCT(s),

quasi-experimental, or studies with pre and post assessment data were included.

Comparison groups included control groups who receive no intervention or usual treatment. Studies without a control group were eligible for inclusion provided pre and post data were available.

As ALBA was designed to be delivered face-to-face, interventions which were delivered online or remotely were not included. Studies were excluded if they were delivered to children or adolescents. Studies which focused on chronic health or physical conditions were excluded although papers which stated participants had co-morbid health conditions were considered based on meeting the other eligibility criteria. Interventions that did not have a psychological or behavioural element or were not behaviour change focused were not included. There was no exclusion based on the duration of intervention, length of follow up or format of intervention. Studies were excluded if they were not available in English, due to practical limitations. Qualitative studies were excluded since it was not within the scope of this review to examine qualitative data. Systematic reviews and study protocols were excluded, as were conference abstracts and papers where no full-text was available.

### *3.3.2 Information Sources and Search*

Electronic searches were performed between May 2017 to March 2019 in the following databases from the year of inception: MEDLINE, CINAHL, Cochrane Library (Trials), Psychology and Behavioural Sciences Collection, SPORTDiscus and PsycINFO. The following search terms were entered in each database: (“Motivational interviewing” OR “Cognitive interventions” OR Behaviour Therapy OR Cognition Therapy OR “Cognitive Behaviour Therapy” OR “Cognitive Behavioural Therapy” OR Cognitive Psychotherapy OR Cognitive Therapy OR Psychotherapy OR Behaviour Change OR Intervention OR treatment OR “Goal setting” OR “Self-monitoring”) AND (Adherence OR Compliance OR Concordance OR “Noncompliance” OR “Non Adherence” OR Engagement) AND (“Physical activity” OR “Leisure activity” OR Exercise OR Running OR Jogging OR Swimming OR Sport OR Cycling OR Inactivity OR Sedentary) AND (Lifestyle OR Gym OR outpatient OR structured exercise) AND (“Mental health” OR “Psychological

wellbeing” OR “Mental well-being” OR “Mental wellbeing” OR Anxiety OR Depression OR Psychosis OR Schizophrenia OR Dementia) NOT (Children OR Adolescents OR Youth OR Child OR Teenager). In addition, hand searches of reference lists and most recent reviews were conducted to identify additional relevant studies reviews (Rebar & Taylor, 2017; Glowacki et al., 2017; Rosenbaum et al., 2014; Schuch et al., 2016).

### *3.3.3 Study Selection*

After the removal of duplicates, all the remaining titles generated from the search were screened. Articles were rejected on initial screening if the reviewer could determine from the title that the articles were an inappropriate design. Titles and abstracts were then screened using the inclusion/exclusion criteria; if an abstract did not provide sufficient exclusion information then the article was obtained for full-text screening. All searches were performed by the author. The supervisory team checked a random set of 20% studies to assess agreement regarding whether they met the inclusion criteria, with any disagreements being resolved through discussion. The final list of included articles was reached through consensus between the author and the supervisory team.

### *3.3.4 Data Extraction*

Data were extracted using a data extraction form. Data were extracted from the method and results sections of the included studies. The following information was extracted for all included studies: study design and method, country, participants (sample size, age, gender, cultural background when reported and diagnosis), intervention (delivery, timing, content and duration), outcome measures and results.

### *3.3.5 Quality Assessment of Selected Studies*

An analysis of the methodological quality of each study included in this review was performed, using the Quality Assessment Tool for Quantitative studies, developed by the Effective Public Health Practice Project, Canada (B. H. Thomas, Ciliska, Dobbins, & Micucci, 2004). This tool was selected as it can be used for a variety of quantitative designs, such as RCTs, quasi-experimental studies and uncontrolled studies (N. Jackson & Waters, 2005) and has been reported to have construct and content validity

(Armijo-Olivo, Stiles, Hagen, Biondo, & Cummings, 2012). This tool assesses six domains: selection bias, study design, confounders, blinding, data collection methods, withdrawals and dropouts, intervention integrity, and statistical analyses. Each domain is rated as either strong, moderate or weak, and the domain scores were averaged to provide a total score to determine the strength of the quality of evidence. The author assessed all of the included studies, whilst the author's supervisors assessed 20% each of the included studies at each phase. Level of agreement was discussed between author and the supervisory team, and where dubiety remained a third person would be consulted, with final adjudication going with majority view. A Cohen's kappa was calculated to determine the level of agreement between reviewers.

### *3.3.6 Data Analysis*

A narrative review of all studies was conducted due to the methodological and clinical heterogeneity between the studies. The narrative review evaluated all relevant data with the aim of summarising key findings pertinent to the research question (Ferrari, 2015).

As meta-analysis was not possible, a Harvest plot (Ogilvie et al., 2008) was constructed to assist the process of synthesis and provide a visual representation of evidence according to whether the interventions favoured the control, the intervention or no difference; how significant the finding was, and whether the effect was low, moderate or high. Where no comparison was available the outcome was excluded from the synthesis.

## **3.4 Results**

### *3.4.1 Study Selection*

In total, 1253 studies were identified through the search. An additional 12 papers were identified through hand searches. 937 papers remained after duplicates were removed. This number was reduced to 56 through the screening of titles and abstracts. The full-texts of these 56 papers were reviewed using the inclusion/exclusion criteria. Of the



full-text papers, 10 met the inclusion criteria. The full results of the search and reasons for exclusion can be seen in the PRISMA flowchart (Figure 3.4.1).

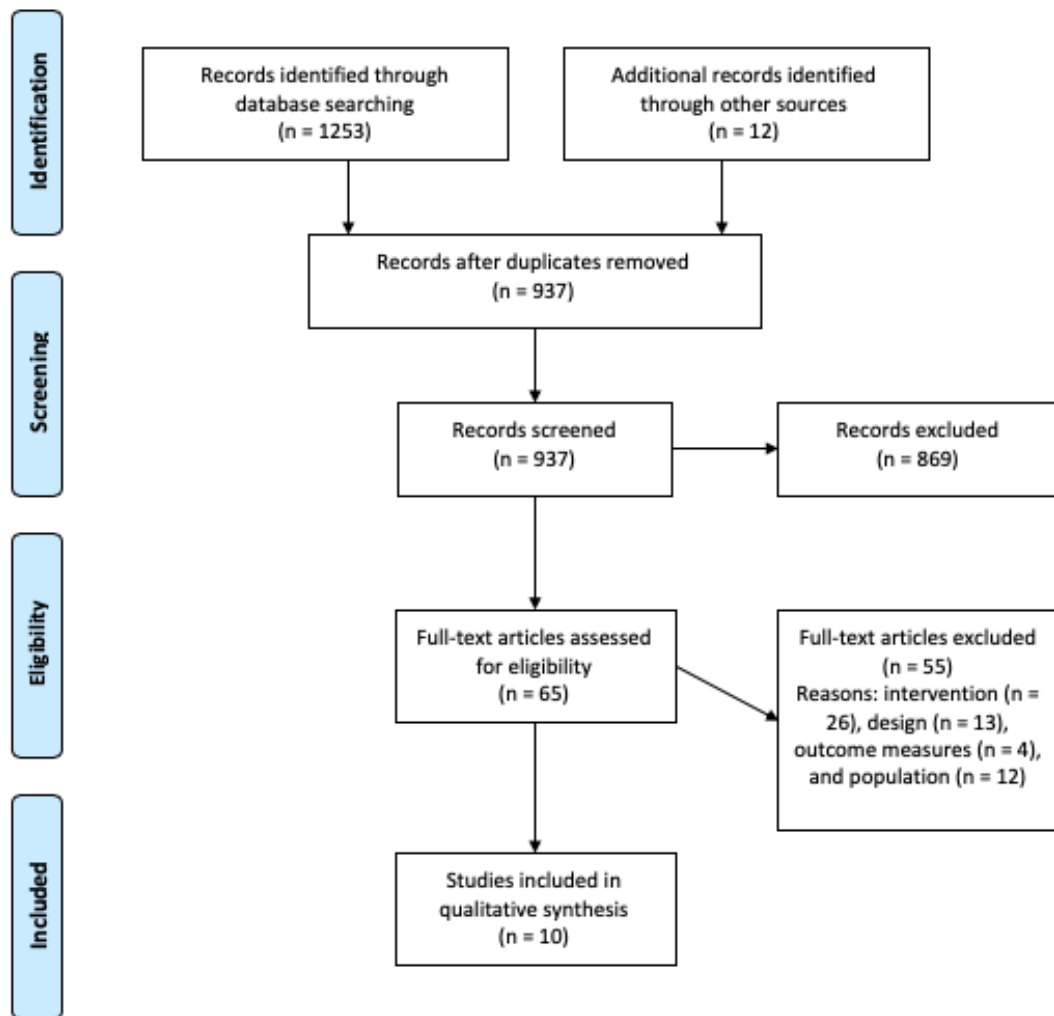


Figure 3.4.1 PRISMA Flow Chart

### 3.4.2 Assessment of Methodological Quality

Methodological quality of the individual studies ranged from low to high. The overall methodological quality constituted weak to moderate evidence. The level of agreement between reviewers was moderate,  $k = 0.445$  (Landis & Koch, 1977).

### 3.4.3 Study Characteristics

The characteristics of the included studies can be seen in Table 4. The synthesis is presented below and illustrated in Figure 10. The studies came from seven countries: Canada, Brazil, Italy, Sweden, UK (n=2), USA (n=2) and Australia (n=2). Four of the included studies targeted populations with severe mental illnesses, such as

schizophrenia, psychosis and other psychotic illnesses; three studies were focused on anxiety and depressive disorder; one study included participants with alcohol dependency, one with OCD and one with exhaustion disorder. Sample sizes ranged from 13 – 347, with four of the studies having sample sizes over 100. The duration of the studies varied from 10 weeks to 12 months, with the number of sessions in which the behavioural interventions was delivered ranging from 4 sessions to 24 sessions. Follow up periods ranged from 6 months – 18 months, although only 6 studies examined the effect of the intervention beyond the intervention period. On average studies consisted of 12 intervention sessions, usually delivered on a weekly basis. PA was the sole targeted behaviour in eight of the included studies. In the other two studies PA was reported alongside diet. This was because the main purpose of increasing PA was principally as a means of weight management rather than to reduce psychological symptoms.

#### *3.4.4 Interventions*

Self-monitoring of behaviour was a common feature of the interventions, with interventions utilising diaries and pedometers (Attux et al., 2013; Brown et al., 2014; Duda et al., 2014; Goracci et al., 2016; Merom et al., 2008). Goal setting was also a commonly used cognitive- behavioural strategy implemented in the interventions (Brown et al., 2014; Duda et al., 2014; Lindegard et al., 2015; Lovell et al., 2014). The use of motivational interviewing was implemented in two of the studies (Curtis et al., 2016; Duda et al., 2014) and psychoeducation featured in three of the studies (Attux et al., 2013; Beebe et al., 2011; Lovell et al., 2014). Two of the interventions combined group CBT with a PA intervention (Merom et al., 2008; Rector et al., 2015).

The majority of the interventions were delivered as an adjunct to supervised exercise programmes or offered access to group activities (Attux et al., 2013; Brown et al., 2014; Curtis et al., 2016; Duda et al., 2014; Lindegard et al., 2015; Lovell, et al., 2014; Rector et al., 2015). Three studies focused on increasing PA through walking (Beebe et al., 2011; Goracci et al., 2016; Merom et al, 2008).

### *3.4.5 Measurement of Physical Activity*

All of the studies measured PA using self-reported measures. The International Physical Activity Questionnaire (IPAQ) was used the most frequently, with three studies using either the full or short form version (Attux et al., 2013; Curtis et al., 2016; Lovell et al., 2014). Other questionnaire measures included the 7-Day Physical Activity Recall (PAR) (Duda et al., 2014), The Paffenbarger Physical Activity Questionnaire (Goracci et al., 2016b), The Active Australia Questionnaire (Merom et al., 2008), and Saltin-Grimby Physical Activity Level Scale (Lindegård, Jonsdottir, Börjesson, Lindwall, & Gerber, 2015). Two studies used a measure of minutes walked (L. Beebe et al., 2011; Merom et al., 2008). None of the included studies used an objective measure of PA (i.e. pedometers or accelerometers).

### *3.4.6 Effect on Physical Activity*

Of the included studies, four reported significant improvements in PA (Attux et al., 2013; Curtis et al., 2016a; Duda et al., 2014; Merom et al., 2008). However, of these studies, only two reported significant effects of the intervention (Curtis et al., 2016a; Merom et al., 2008). Four did not report a significant change in levels of PA (L. Beebe et al., 2011; Brown et al., 2014; Lovell et al., 2014; Rector, Richter, Lerman, & Regev, 2015). Two studies did not report changes in PA, even though measures had been taken at baseline and follow up (Goracci et al., 2016b; Lindegård et al., 2015).

Table 3.4.1 Study Characteristics

| Study & country                      | Design | Participants  | Diagnosis   | Comorbidities Declared?     | Intervention Duration | Follow up    | Intervention  | PA Measure  | Adherence Measure  |
|--------------------------------------|--------|---|---|-----------------------------|-----------------------|--------------|---|---|--|
| <b>Attux et al. (2013)</b><br>Brazil | RCT    | N = 160; 64 female/96 male; average age in intervention group 36.2 (SD = 9.9); 60% Caucasian, 11% Afro-American; 10% other. | Schizophrenia   | No                          | 12 weeks              | 6 months     | 12 one-hour weekly group sessions led by mental health professionals which combined behavioural techniques such as the use of diaries and role play, with psychoeducation components.   | Self-report: International Physical Activity Questionnaire (IPAQ)                                 | Attendance: No. of sessions attended.  |
| <b>Beebe et al. (2011)</b><br>USA    | RCT    | N = 97; age 46.9 (SD = 2.0); 46 female/51 male; Caucasian 54.6%; 44.4% African American, 1% Asian.                          | Schizoaffective disorder (n = 69), Schizophrenia (n = 28) | No                          | 20 weeks              | No follow up | 4 weekly, hour-long group sessions, content was based on self-efficacy theory and included goal setting, barrier identification and behavioural prompts; Walking groups met 3 times weekly for 16 weeks.  | Self-report: Total number of minutes each subject walked during the walking groups each month     | Attendance and duration: No of groups attended and no. of weeks attended at least one group. |
| <b>Brown et al. (2014)</b><br>USA    | RCT    | N = 49; age 44.37 (SD = 10.75); 22 females/27 males; Caucasian 91.3%, 8.7% African American.                                | Alcohol dependence  | Yes: Anxiety and depression | 12 weeks              | 6 months.    | 12 weekly aerobic exercise sessions and brief 15–20 minutes group behavioural sessions; Exercise sessions began at 20 minutes per session and gradually progressed to 40 minutes per session by week 12; Group behavioural sessions involved cognitive and behavioural techniques | Self-report: Health questionnaire and Physical Activity Screen; Timeline Follow Back for Exercise | Attendance: No of sessions attended  |

| Study & country                          | Design      | Participants   | Diagnosis                       | Comorbidities Declared?  | Intervention Duration | Follow up    | Intervention   | PA Measure  | Adherence Measure            |
|--|-------------|--|---------------------------------|--|-----------------------|--------------|--|---|------------------------------|
|  |             |  |                                 |  |                       |              | such as goal setting, barrier identification and relapse prevention techniques aimed to increase motivation and adherence. Monetary incentives provided for participants who attended weekly sessions.   |   |                              |
| <b>Curtis et al. (2016)</b><br>Australia | Quasi-RCT   | N = 28; age 20.7 (SD = 2.2); 17 men/11 women.<br><br>62% Caucasian, 25% Asian and 13% Indigenous.                    | First episode Psychosis         | No   | 12 weeks.             | No follow up | The intervention involved health coaching, dietetic support and supervised exercise prescriptions; delivered by a team that included a clinical nurse consultant, a dietician, an exercise physiologist and youth peer wellness coaches. The health coaching involved goal identification and motivational interviewing. | Self-report: IPAQ-SF                              | Attrition rate.              |
| <b>Duda et al. (2014)</b><br>UK          | Cluster RCT | N = 347; 72.9% female/27.1% male; 74.9% White British, Black African or Caribbean 10.6%, South Asian 9.5%, Mixed 5%. | Probable Anxiety and Depression | Yes: Two or more risk factors for Coronary Heart Disease; Chronic medical conditions: asthma, bronchitis, diabetes, hypertension | 3 months              | 6 months     | A Health and Fitness Advisor had one-to-one contact, in person or via telephone, with participants on four occasions. The intervention used motivational interviewing techniques, such as  | Self-report: 7-Day Physical Activity Recall (PAR) | Completion: Attrition level. |

| Study & country                          | Design | Participants                          | Diagnosis  | Comorbidities Declared?     | Intervention Duration | Follow up | Intervention   | PA Measure  | Adherence Measure   |
|--|--------|---------------------------------------|--|-----------------------------|-----------------------|-----------|--|---|---|
|  |        |                                       |  |                             |                       |           | careful listening, parroting, and handling resistance and double-sided reflection, and Self Determination Theory-based strategies. Participants took part in 10-12 weeks of exercise programmes overseen by the HFA.   |   |   |
| <b>Goracci et al. (2016)</b><br>Italy    | RCT    | N = 160; age 49; 80% female/20% male. | Bi-polar disorder (n = 105) and recurrent Unipolar Depression (n = 55) | No                          | 10-12 weeks           | 12 months | 10 weekly 45-60-minute sessions (12 if participants elected to take part in the smoking cessation module) all sessions included cognitive and behavioural techniques and homework for participants, sessions were run by psychiatrists and dieticians.         | Self-report: The Paffenbarger Physical Activity Questionnaire | Completion: no. completing program.   |
| <b>Lindegård et al. (2015)</b><br>Sweden | Cohort | N = 69; age 42.6; 45 female/24 male.  | Exhaustion Disorder  | Yes: Anxiety and Depression | 12 months             | 18 months | The composition of the program was tailored to each participant's needs. Participants were allowed to self-select the components appropriate for their needs. The frequency and duration of visits were similar for all patients (on average, patients had two | Self-report: Saltin-Grimby Physical Activity Level Scale.     | Duration: Level complied with American College of Sport Medicine Guidelines post-intervention |

| Study & country                         | Design | Participants   | Diagnosis   | Comorbidities Declared? | Intervention Duration | Follow up    | Intervention  | PA Measure  | Adherence Measure                     |
|---|--------|--|---|-------------------------|-----------------------|--------------|---|---|---------------------------------------|
|   |        |  |   |                         |                       |              | consultations lasting 1.5 h and 10 consultations lasting 30 min). The program offered cognitive behavioural group therapy, stress management, and Physical Activity Counselling.  |   |                                       |
| <b>Lovell et al. (2014)</b><br>UK       | RCT    | N = 105; Age 25.7 (SD = 5.7); 63 male/42 female; 82% Caucasian, Black African or Caribbean 2.9%, Indian 2.9%, Pakistani 6.7%, Bangladeshi 1%, Other Asian 3.8%, Other 1% | Schizophrenia, Schizophreniform disorder, Schizoaffective disorder, Delusional disorder, brief reactive Psychosis, or Psychosis not otherwise specified | No                      | 6 months              | 12 months    | Based on Leventhal's Common-Sense Model, the intervention contained behavioural and motivational components, such as psychoeducation, goal setting and action plans. The intervention was delivered by support, time and recovery workers, participants received 7 individual face-to-face sessions over 6 months, with a "booster" session at 9–10 months. | Self-report: IPAQ   | Attendance: No. of sessions attended. |
| <b>Merom et al. (2008)</b><br>Australia | RCT    | N = 85; Age 38.7 (SD = 12.1); 71% female/29% male;   | Generalized Anxiety disorder, Panic Disorder, or Social Phobia  | No                      | 10 weeks              | No follow up | Group CBT, 90-min session delivered once a week for 8 weeks by clinical psychologists. Exercise program delivered by an exercise trainer, with the aim to gradually   | Self-report: The Active Australia Questionnaire; change in minutes of walking "for exercise and recreation" | Attendance: No of sessions attended,  |

| Study & country                       | Design | Participants   | Diagnosis                           | Comorbidities Declared?                                      | Intervention Duration | Follow up    | Intervention   | PA Measure   | Adherence Measure  |
|---------------------------------------|--------|--|-------------------------------------|--|-----------------------|--------------|--|--|--|
|                                       |        |  |                                     |  |                       |              | increase the 30-minute sessions of moderate-intensity exercise to accumulate 150 minutes per week.   |  |  |
| <b>Rector et al. (2015)</b><br>Canada | Cohort | N = 14; Age 35.54 (SD = 8.47); 8 male/6 female; 55% Caucasian, 18% Asian, 9% East Indian and the remaining 18% preferred not to specify. | Obsessive Compulsive Disorder (OCD) | Yes: Binge-eating disorder, major depressive episode, phobia | 15 weeks              | No follow up | Combined CBT and physical exercise delivered in a group format, for 15 consecutive weeks. The physical exercise involved 12 weeks of aerobic exercise. | Self-report: The Physical Activity Readiness Questionnaire | Attendance, duration and intensity; Self-reported exercise logs. |



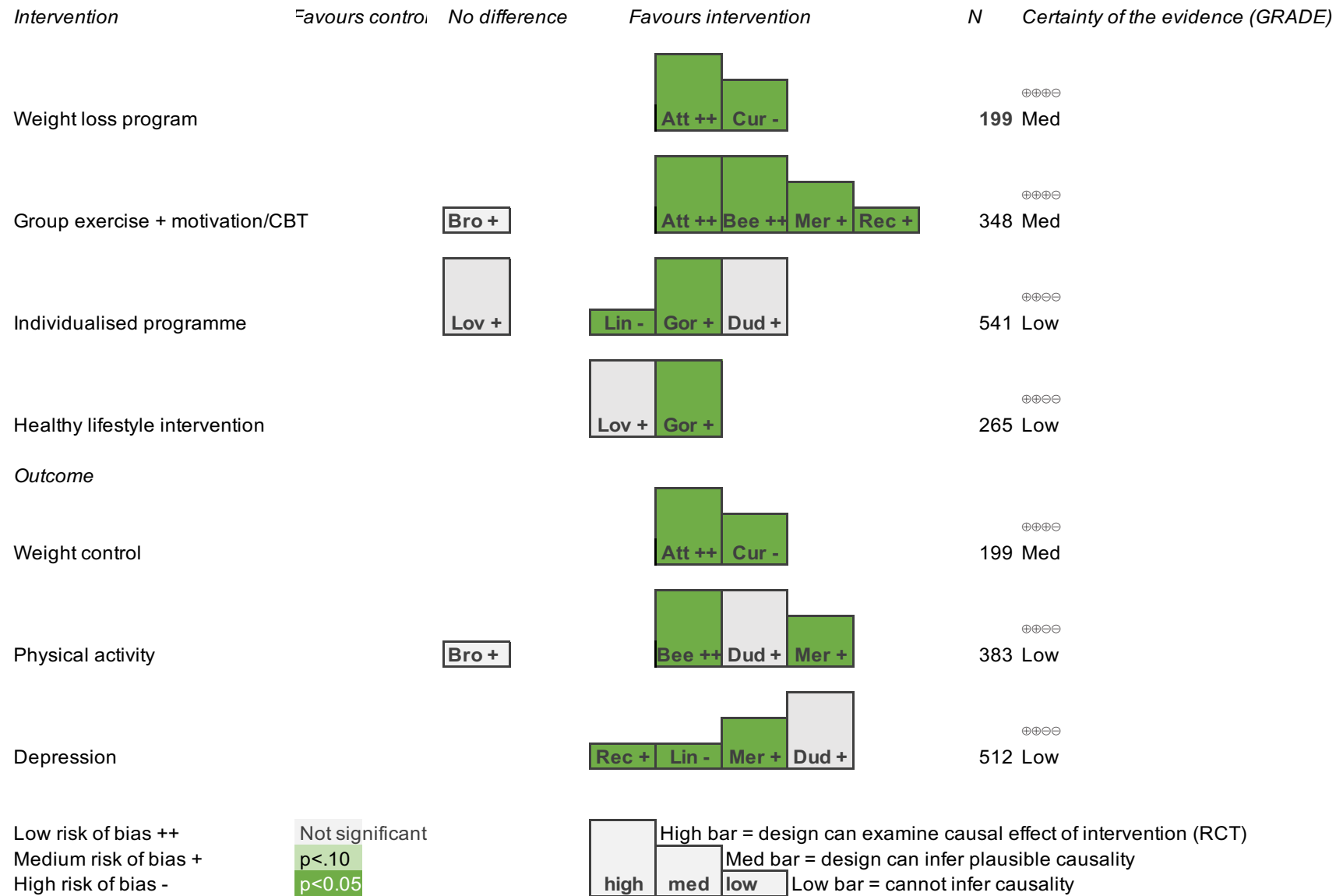


Figure 3.4.2 Harvest Plot

Note: Each bar represents a study, referenced by the first three letters of the first authors' surname, or four where further differentiation is needed.

### *3.4.7 Adherence Outcomes*

The most common measure of adherence was attendance (5 studies, range 39%-79%); followed by attrition (3 studies, range 49.5%-78.1%); only one study used a self-reported exercise log (80.56%) and another used adherence to physical activity guidelines (63%; based on self-report measure).

The reported levels of adherence ranged from 39%-80.56%; with 7 of the included studies reporting adherence higher than 60% (Attux et al., 2013; Brown et al., 2014; Curtis et al., 2016; Goracci et al., 2016; Lovell et al., 2014; Merom et al., 2008; Rector et al., 2015). The highest level of adherence to the intervention was reported in Rector et al. (2015) and the lowest level of adherence was reported in Beebe et al. (2011).

The studies which reported the greatest level of effectiveness of the intervention (Curtis et al., 2016; Merom et al., 2008) reported adherence levels of 62% and 55% respectively. However, as adherence to the intervention was measured in a variety of different ways, it was not possible to meaningfully compare adherence rates across the studies included in this review.

## **3.5 Discussion**

The aim of this systematic review was to assess the effectiveness of cognitive-behavioural interventions at increasing adherence to PA in people with mental health conditions. Due to the heterogeneity in the study designs and mental health conditions targeted it is difficult to draw strong conclusions. This is consistent with the findings of Hawley-Hague et al. (2016), who found there was a lack of consensus in how adherence to PA was both measured and defined. It was hoped that this review would provide evidence to support the use of cognitive-behavioural intervention as this was the approach used in the ALBA intervention, however the findings presented here suggest that the interventions were of limited use. Further, the majority of the studies did not report significant changes in levels of PA. This is consistent with the wider evidence that suggests changing PA behaviour is complex, with many interventions

targeted at adults reporting small effect sizes (Rhodes, Janssen, Bredin, Warburton, & Bauman, 2017).

Changing PA behaviour in people with mental health conditions appears to be particularly challenging. However, the majority of the studies here reported adherence rates above 60%. Given that between 40-50% of adults that begin an exercise program drop out within 6 months (Dishman, 1991; C. R. Richardson et al., 2005), the results of this review can be interpreted as an indicator of the positive potential of cognitive behavioural interventions at improving adherence to PA in this cohort. This supports findings of previous reviews which suggested that cognitive-behavioural strategies, such as self-monitoring, stimulus cuing, goal-setting, and contracting, are beneficial for encouraging and supporting PA maintenance in people with depression (Knapen et al., 2015). Cognitive behavioural interventions are effective, but only moderately. This is important to understand, as future interventions are much more likely to become sustainable if realistic expectations are set (Shelton, Cooper & Stirman; 2018).

When looking at the adherence rates within the individual studies, Merom et al. (2008) found non-completers had significantly lower attendance at weekly sessions and mean minutes of PA than completers. Brown et al. (2014) also found that the intervention was more effective for participants with better adherence. This suggests that adherence to the intervention is an important factor in increasing levels of PA. Similar findings have been found elsewhere: O'Halloran et al. (2014) found that motivational interviewing type interventions had a small but positive effect on self-reported PA. However, the effect was larger when levels of participation in the MI intervention was higher. This highlights the importance of monitoring adherence in intervention studies, as it allows for evaluations to meaningfully assess whether an intervention's lack of effectiveness is due to the intervention being ineffective (poor quality) or due to underexposure to the active component of the intervention.

Given the variability in measurement of PA, it was not possible to meaningfully compare adherence rates between studies. This is unsurprising as no gold standard way of measuring adherence to PA has been established (Nyboe & Lund, 2013). This hinders the understanding of adherence to PA, particularly in mental health populations.

Most of the included studies relied on self-report measures of PA, which are subject to recall and social desirability bias, which can lead to over or underestimations of PA (Rhodes et al., 2017). Non-self-report measures of PA, such as accelerometers, are considered more accurate at measuring actual levels of PA, as findings suggest that self-report measures of adherence to PA are much higher than those that are objectively measured (Prince et al., 2008). Therefore, it is recommended that non-subjective measures should be used in combination with self-report measures, particularly in studies which aim to measure the percentage of participants meeting PA guidelines or actual levels of activity.

Beyond the benefits to mental health, PA is beneficial for improving physical health, which is particularly relevant to people with mental health conditions, as they are at a significantly greater risk of co-morbid conditions, such as heart disease, obesity and diabetes (Nocon et al., 2008). Of the included studies, very few made reference to any co-morbid health-related issues present in the participants under study. In light of this, other outcomes, such as quality of life, sleep quality, self-esteem etc. may be valuable when examining PA interventions, particularly in mental health populations, as the benefits that come from PA are not necessarily just physical (Stubbs et al., 2016). It is possible that psychological benefits, such as improved self-esteem, body image and positive feelings, can accrue without a change in physical fitness. However, in the included studies quality of life outcomes were not always measured, therefore an analysis of the effects was not within the scope of this review, but something that could be considered in future research.

Taking into consideration the nature of complex behavioural change interventions and the fact that terms such as “cognitive” or “motivational” can be used to describe a range of techniques for eliciting behaviour change, it is unsurprising that the included interventions varied in their content and delivery. The majority of the included studies also only provided brief descriptions of the interventions, which often lacked detail, for example, stating that techniques such as goal setting or self-regulation would be used, but not stating how. This made identifying the specific behavioural change techniques and how they were utilised very challenging. This is a recurring issue within behaviour change intervention studies, as noted by Michie, Fixsen, Grimshaw, & Eccles (2009). Complex behaviour change interventions are not well described in journal articles, and when they are the terminology used is often inconsistent. This is usually attributed to space constraints and word limits in journal articles. One way around this problem would be for authors of interventions to publish details online in the form of an appendix or a practitioner manual. That way, authors would be able to refer to this detail in publications, saving space in journal articles, and fellow researchers and clinicians alike would be better able to understand and replicate where appropriate.

As highlighted by the quality assessment, the overall methodological quality of the included studies was moderate to weak. This can be attributed to the particular challenges that are faced in designing methodologically robust studies for people with mental health conditions. RCTs are considered the “gold standard” design for trialling intervention efficacy, however in the community and clinical settings person level randomisation is not always possible for both practical and ethical reasons, particularly in studies in low resource settings (Landsverk, Brown, Reutz, Palinkas, & Horwitz, 2011). The screening and methods of recruitment of participants also threaten the generalisability of the results. For the most part the included studies screened participants for suitability or had very specific inclusion/exclusion criteria, and as a result, the participants may not be truly representative of the general mental health population (Borschmann et al. 2014). Another challenge in developing robustly designed trials of psychological interventions is in blinding. Whilst in medical

interventions placebo treatments can be used to blind participants and practitioners, it is almost impossible to blind participants and practitioners from interventions which involve exercise and psychological interventions (Feliu-Soler et al., 2017; Shean, 2014). One long term solution would be for policy makers to take a different perspective of the research hierarchy when considering 'real world' evidence and place a higher value on observational research conducted in appropriate complex environments. There has certainly been progress in this regard, with a much wider recognition of the limitations of reductionist thinking in relation to multifactorial community interventions (Shelton, Cooper & Stirman; 2018). A less radical method would be to conduct cluster randomised trials (Hemming et al., 2017).

In respect to the principles of exercise prescription (frequency, intensity, time and type), the included studies described were consistent. All studies indicated that participants should aim to engage in moderate to vigorous PA at for at least 150 minutes per week. These public health recommendations have been endorsed by the World Health Organisation, hence the consistency regardless of the studies country of origin. Although PA guidelines advocate the importance of regular moderate to vigorous intensity PA, the intensity of PA which is tolerable for an inactive person is lower than what is tolerable for an active person. Taking into account previous levels of activity is important for designing PA interventions as they have to be acceptable to the target population. The type of PA in the included studies ranged from walking group interventions to individually tailored exercise programs. Although there were considerable variations, all of the interventions focused on aerobic exercise, this is consistent with the literature which suggests that aerobic exercise, at the dosage of public health recommendation, is proposed to reduce symptoms of anxiety and depression (Martinsen, 2008).

In relation to the intervention duration, again it is difficult to compare due to the heterogeneity, and so, despite the intuitive appeal, it is not possible from these studies to say whether longer interventions lead to better adherence. To answer this question, the intervention would need to be standardised and impact monitored over varying

lengths of time. The law of diminishing returns would suggest an optimal amount of intervention is likely (Stebbins, 1944). For example, patients referred to chaplains for their spiritual needs seem to benefit more from having two sessions as opposed to one and benefit more again for three sessions as opposed to two, but don't appear to improve further for having more than three (Snowden, et al., 2018). In fact, benefit reduces at four. Mental health could be different though, as there is evidence of slow but continuous benefit from psychotherapy (Falkenström, Josefsson, Berggren, & Holmqvist, 2016). Dedicated research is needed here to establish any 'dose' of optimal support for people with mental health problems adhering to lifestyle change to incorporate more physical activity.

In relation to long term impact, only six of the included studies examined impact of the intervention beyond the initial intervention period. Very few studies have evaluated long-term PA behaviour change (Fjeldsoe, Neuhaus, Winkler, & Eakin, 2011). There is a number of reasons why there has been a lack of research into the maintenance of PA, post-intervention, such as publication bias for successful interventions (Ferrari, 2015) and the simple fact that there are more short research programmes than there are longer ones. Most concerningly, funding is very difficult to obtain to support long term interventions. Governments and third sector providers alike appear trapped in short term thinking commensurate with their terms of office and so long-term projects are rarely funded even when there is overwhelming evidence of their efficacy. The long-term impact of behaviour change interventions is therefore largely unknown and is likely to remain so without considerable shift in the way public services are funded.

### *3.5.1 Limitations*

A limitation of this review was the range of different conceptualisations of adherence. Because there was wide variation in interpretation and measurement of adherence in the reviewed papers, there is a clear risk that the different interpretations may not have been conceptually comparable. A more restrictive approach to inclusion/exclusion criteria at selection stage would likely have concluded with a more straightforward interpretation. By setting the bar for inclusion criteria very high it is easy to conclude

that 'more evidence is needed'. However, this would not have been a fair representation of the literature. The authors instead concluded that a broad inclusion approach was defensible because despite the heterogeneity, the papers were all measuring similar elements of adherence. Further, this narrative synthesis highlighted the complexity of the issue of measuring adherence to physical activity, hopefully encouraging future researchers to consider the concept very carefully. The elements suggested by Hawley-Hague et al. (2016) could help with standardisation here: completion/retention, frequency, duration and intensity.

This review also has several practical limitations. Although checked by the supervisory team, the search of the literature was conducted by the author, as was data extraction. An important step in the systematic review methodology is that the reviewing and selection of texts is conducted by two or more reviewers, independently of one and other. Multiple reviewers reduce bias and improve the rigor, therefore are an integral part of the systematic review process (Waffenschmidt, Knelangen, Sieben, Bühn, & Pieper, 2019). However, as this review was conducted as part of a PhD project, the onus was on the author to independently conduct the research. The search was limited to studies which were published in English.

### **3.6 Chapter Conclusions and Summary**

The aim of this review was to provide evidence to support the use of cognitive-behavioural intervention as this was the approach used in the ALBA intervention. In conclusion, the studies included in this review varied considerably in terms of their design, delivery, and content. This heterogeneity made drawing conclusions about the effectiveness of cognitive behavioural interventions difficult. This was consistent with the findings of Hawley-Hague et al. (2016), who found the lack of consensus on how to measure and define PA adherence was an obstacle for drawing comparisons between the effectiveness of different interventions.

Regardless of this methodological challenge, all the studies reported higher than average adherence to PA, which suggests that cognitive behavioural interventions



have a limited but positive effect on increasing adherence to PA in mental health populations. Future prospective longitudinal research should be constructed to examine the long-term effects of cognitive behavioural interventions on the adherence and maintenance of physical activity in people with a range of mental health problems. As a result, the findings of this review present limited evidence for the effectiveness of cognitive behavioural interventions for increasing adherence to PA in people with mental health conditions.

## **Part II**

### **Chapter 4: Process Evaluation**

#### **4.1 Purpose of this Chapter**

The purpose of this chapter is to present the qualitative process evaluation of the ALBA intervention. Chapters 4 and 5 relate to stage 4 of Bauman and Nutbeam's (2013) evaluation framework, as process evaluation focuses on understanding how and why an intervention works. This chapter aims to explore the participant's experience of taking part in ALBA, and to identify, using the theoretical domains framework (TDF), the barriers and facilitators which prevented and enabled them to participate in the intervention. A discussion of the barriers and facilitators will be presented, with suggestions of how the implementation of the ALBA intervention could be improved.

#### **4.2 Introduction**

##### *4.2.1 Process Evaluation*

The UK MRC Guidance for developing and evaluating complex interventions recommends that a process evaluation is conducted in order to understand the “*what*” and the “*why*” of an intervention, and explain any differences between the expected and observed outcomes (Moore et al., 2015). The process evaluation can therefore be used to identify whether the intended group received the intervention, and how they responded to it. A process evaluation can also explore “*how*” the delivery was achieved. Complex interventions often operate within established systems, which can result in a change of the dynamics, this can be a difficult process that may face many obstacles. For an evaluation, information is therefore required not only focusing on what was delivered, but how, in order to understand how the results can be replicated and rolled out more generally.

There has been growing recognition in public health research of the importance of gaining insight into the participants' perspective (Cheng & Metcalfe, 2018).

Understanding the participant experience is an important element of process

evaluation, as the feedback received from the participants can be used to improve the delivery of the intervention and identify possible contextual factors which influence the implementation (Bauman & Nutbeam, 2013).

The application of qualitative methods can offer a solution for understanding the complexity of how and what has been implemented in an evaluation of a complex intervention and explaining outcomes (Cheng & Metcalfe, 2018), whilst also giving the participants a voice. Qualitative methods were utilised in the process evaluation of ALBA in order to investigate the implementation of the ALBA intervention, and to understand the contextual factors which influenced the effectiveness of the intervention.

#### *4.2.2 Epistemological Approach*

Epistemology refers to the philosophical theory of knowledge, and the relationship between what is known and the knower (Denzin & Lincoln, 2005). In qualitative research, it is important to define the epistemology, as it is central to the methodology as theoretical frameworks are rooted in specific philosophical positions and assumptions about the “truth” status of knowledge and the role of the researcher (Collins & Stockton, 2018). Therefore, in a qualitative study, the theory of knowledge must guide the methodological approach. As a pragmatic philosophy has been applied, a mixed method approach has been taken in this evaluation to the data collection and analysis (Morgan, 2014).

As a philosophy, pragmatism supports the use of a mixed methods approach (see figure 4.2.1 for visual representation). Mixed methods research involves using techniques from both quantitative and qualitative paradigms in order to generate knowledge. As argued by Giacobbi Jr, Poczwadowski, & Hager (2005), using a mixed method approach within a pragmatic philosophy can help address applied research questions from a theoretical perspective, as mixed methods can draw on the strengths and minimize the weaknesses of both paradigms.

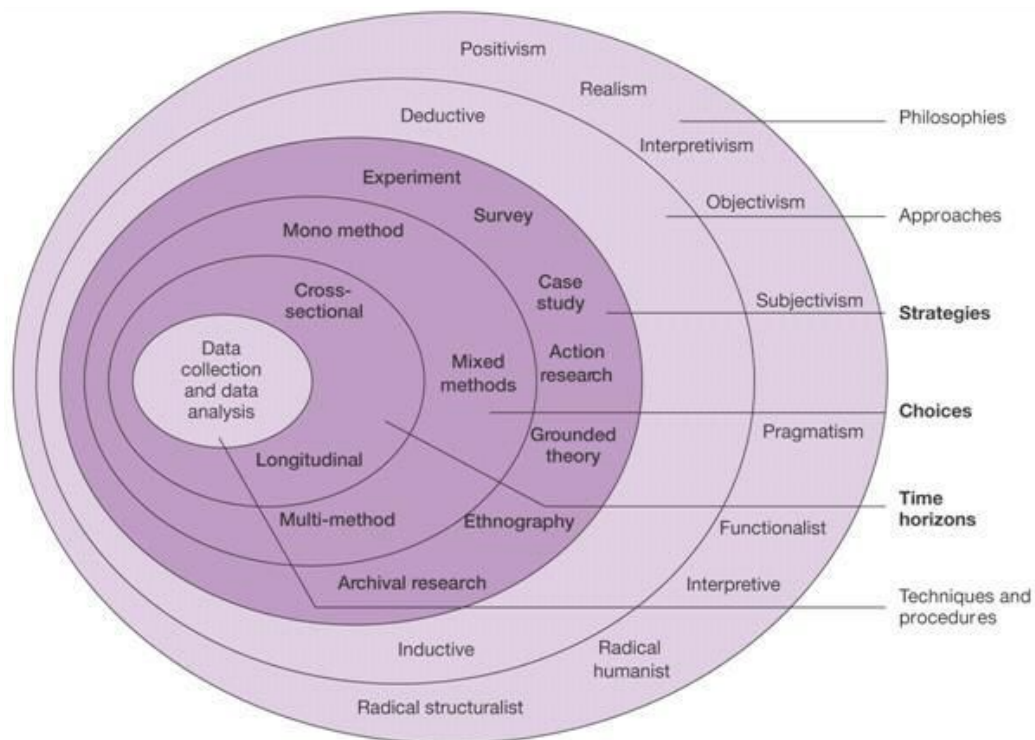


Figure 4.2.1 The Research Onion, adapted from Saunders, Lewis, & Thornhill (2007)

Pragmatism is a philosophy of knowledge construction which emphasizes practical solutions to applied research questions and the consequences of inquiry (Giacobbi et al., 2005). Pragmatism has its origins in the works of William James and C.S Peirce, who viewed it not as an attempt to find an absolute truth, but as an attempt to provide practical solutions to contemporary problems experienced by individuals and society (Scott & Briggs, 2009). Therefore, pragmatism posits that the truth is what works at the time and recognises that research is always situated. With pragmatism, the questions regarding knowledge construction changes from “does this knowledge accurately reflect reality?” to “does this knowledge serve the purpose?”(Cornish & Gillespie, 2009). In physical activity and health research, the aim is to make a practical difference, as research is conducted in the context of complex real-world health problems, where interacting factors on both an individual and societal level impact on health outcomes. Programme success therefore depends on the implementation, acceptability to service users and stakeholder engagement. A pragmatic approach has been adopted for the evaluation of ALBA as a pragmatic approach takes into account the context and focuses on if the intervention is successful in achieving action.

### 4.2.3 Theoretical Domains Framework (TDF)

The TDF was developed as an integrated framework of behaviour change theories and has been used widely in implementation research since it was first developed (Atkins et al., 2017). The TDF is not a theory but a theoretical framework consisting of 14 domains (Cane et al., 2014) in which to view cognitive, affective, social and environmental influences on behaviour. The TDF provides a comprehensive framework which can be used to identify barriers and facilitators which influence behaviour and therefore can be used to improve intervention implementation and development.

The TDF is linked to the Behaviour Change Wheel (BCW), as the 14 domains can be divided into the categories of Capability, Opportunity and Motivation. This compatibility allows for a cohesive approach to evaluating the influences on behaviour. Table 5 shows the TDF domains and definitions.

*Table 4.2.1 The Theoretical Domains Framework and definitions from Cane, O'Connor, & Michie (2012)*

| <b>COM - B</b>     | <b>Domain</b>                                    | <b>Definition</b>  |
|--------------------|--|--|
| <b>Capability</b>  | <b>KNOWLEDGE</b>                                 | An awareness of the existence of something   |
|                    | <b>SKILLS</b>                                    | An ability or proficiency acquired through practice  |
|                    | <b>BEHAVIOURAL REGULATION</b>                    | Anything aimed at managing or changing objectively observed or measured actions.                                       |
|                    | <b>MEMORY, ATTENTION, AND DECISION PROCESSES</b> | The ability to retain information, focus selectively on aspects of the environment and choose between two alternatives |
| <b>Opportunity</b> | <b>ENVIRONMENTAL CONTEXT AND RESOURCES</b>       | Any circumstances of a person's situation that encourages or discourages the development of skills and abilities,      |

|                   |  |   |
|-------------------|--|---|
|                   |  | independence, social competence and adaptive behaviour  |
|                   | <b>SOCIAL INFLUENCES</b>                     | Interpersonal processes that can cause individuals to change their thoughts, feelings or behaviours                         |
| <b>Motivation</b> | <b>SOCIAL/PROFESSIONAL ROLE AND IDENTITY</b> | A coherent set of behaviours and displayed personal qualities of an individual in a social or work setting                  |
|                   | <b>BELIEFS ABOUT CAPABILITIES</b>            | Acceptance of the truth, reality, or validity about talent, ability or facility that a person can put to constructive use   |
|                   | <b>BELIEFS ABOUT CONSEQUENCES</b>            | Acceptance of the truth, reality, or validity about outcomes of a behaviour in a given situation                            |
|                   | <b>GOALS</b>                                 | Mental representations of outcomes or end states that an individual wants to achieve  |
|                   | <b>EMOTION</b>                               | A complex reaction pattern, involving experiential, behavioural and psychological elements                                  |
|                   | <b>OPTIMISM</b>                              | The confidence that things will happen for the best or a desired goal will be obtained                                      |
|                   | <b>INTENTIONS</b>                            | A conscious decision to perform a behaviour   |
|                   | <b>REINFORCEMENT</b>                         | Increasing the probability of a response by arranging a dependent relationship, or contingency between response and stimuli |

The TDF was originally developed as a tool for identifying influences on healthcare professional's behaviour, but the use of the TDF has since extended. It has been frequently used as a framework for evaluating the implementation of interventions

which focus on changing behaviour. Examples of this include general dental practitioners management of bacterial infections (Newlands et al., 2016), the implementation of guidelines for diagnosing and managing dementia (Murphy et al., 2014), and increasing PA in children with motor impairments (Kolehmainen et al., 2011).

In this chapter, the TDF will be used as an evaluation tool, to identify how effectively the ALBA intervention was implemented, and identifying the factors which contributed to the success or failure of the intervention by following the methodology recommended by Atkins et al. (2017).

### **4.3 Methods**

#### *4.3.1 Focus Group*

Focus groups are a type of group interview which uses the communication between participants to generate data (Kitzinger, 1995). This method was chosen as it is considered to be particularly valuable for generating data regarding people's experiences and point of view.

Due to the sensitive nature of the topic of mental health, it was decided that focus groups would also provide a "safety in numbers factor" (Kitzinger, 2005), where participants may feel more comfortable making self-disclosures with others who have been through similar experiences, than alone to an interviewer who was a stranger to them. Focus groups have been successfully used when investigating sensitive or stigmatising topics, as it has been found that participants sharing common experiences can facilitate discussion and members of the group can support each other in expressing feelings that are common to the group. However, for this to occur it is important that there is group cohesion, meaning the group shares similar cultural backgrounds, hierarchical positions and social status (Acocella, 2012).

However, focus groups do have their limitations. Groups which are either too similar or too different can lead to data being either too unbalanced, or a level of conflict which is unpleasant for the participants (Acocella, 2012). While focus groups can allow for

candid expression and group discussion, there is potential that they can be “hijacked” by an outspoken individual who can dominate the discussion, this can lead to conformism (Leung & Savithiri, 2009). Therefore, to avoid conflicts or conformism, focus groups require skilled moderation to facilitate a discussion and allow all voices to be heard.

For these reasons, it was decided that to evaluate ALBA, a focus group would be run in each area. This was to ensure that participants would have had similar experiences of the implementation of ALBA.

#### *4.3.2 Participants and Setting*

All participants of the focus groups were individuals who had either completed the ALBA intervention or were currently taking part in the intervention. Participants were recruited by the BCP who had supported them throughout the intervention: the BCP communicated with previous clients, who had consented to being contacted about participating in a focus group, and current clients inviting them to take part. Informed consent was obtained from all participants on the day of the focus group, prior to the discussion beginning.

Three focus groups in total were run, one in each of the three areas where ALBA was in operation (Fife, West Lothian and North Ayrshire). One of the focus groups took place in a local leisure centre whereas the other two took place at the local SAMH office. The location of the focus groups was dictated by access to facilities and the centrality of the available locations.

All participants took part in only one of the focus groups. The breakdown of attendance at each focus group is presented in the table below. It is noted that attendance was particularly low at West Lothian and North Ayrshire, this was due to a number of participants non-attendance. It was decided that the focus groups would go ahead regardless of having less than the recommended five to 10 members (Krueger, 2001). However, it has been recognised that smaller focus groups can be beneficial, as it has



been found that smaller groups allow for all participants to speak and allows for greater depth to be explored (Masadeh, 2012; Mel Prince & Davies, 2001).

*Table 4.3.1 Focus Group Participant Numbers*

| Focus Group Location | N of Participants |
|----------------------|-------------------|
| Fife                 | 7                 |
| West Lothian         | 3                 |
| North Ayrshire       | 4                 |

#### *4.3.3 Procedure*

The focus groups took place between March 2018 and June 2018. The focus groups lasted for between 60 to 75 minutes and were facilitated by the PhD researcher and the ALBA project assistant. The ALBA project assistant acted as a moderator at all of the focus groups, they were selected as they had knowledge of the topic, were able to assist with the facilitation of the conversation and helped to create a warm and non-threatening environment. The facilitators had no prior relationships with the participants and had not been in communication with them prior to the day of the group.

Before the focus group discussions commenced, the behaviour change practitioners greeted the participants at the venue and introduced them to the interviewer. All participants were provided with an information sheet to take home with them, which informed them of the purpose of the focus group and how the data would be used. Participants were also asked to complete a consent form and a demographics questionnaire.

The focus groups were audio recorded. Before audio recording began the researcher made the group aware that the purpose of the focus group was to stimulate a discussion and explained that there were no right or wrong answers, but to allow everyone the opportunity to express their opinion. An opportunity was given for participants to ask any questions before the discussion began. The same interview

guide was used for all three focus groups. The questions were open-ended and were developed by the researcher using the Theoretical Domains Framework (see appendix for focus group schedule). The focus groups discussions revolved around the participant's experience of taking part in the ALBA intervention.

The focus groups were transcribed verbatim by the PhD researcher in the qualitative data analysis software NVivo 11. All transcriptions were cross-checked by the researcher against the original audio recordings for accuracy and de-identified. Participation in the focus group was voluntary, and any cost incurred in attending were reimbursed by SAMH.

#### *4.3.4 Analysis*

Framework Analysis (Ritchie & Spencer, 1994) was used to analyse the data. Framework Analysis is a qualitative method that is considered compatible with a pragmatic philosophy and applied research, as its main concern is to describe and interpret what is happening in a specific setting (Srivastava & Thomson, 2009). The TDF was used as the 'framework' against which the framework analysis was carried out (Srivastava & Thomson, 2009). The process of using the TDF broadly followed the principles described by Atkins et al. (2017). An inductive approach was taken to coding data and identifying themes. Themes were then sorted in accordance with the preconstructed themes of the TDF.

In more detail, following anonymisation of the transcripts, a familiarisation process was carried out (Srivastava & Thomson, 2009). Broadly following the process detailed by McSherry et al., (2012), the author read and re-read all transcripts, coded these, paying particular attention to statements regarding capability, opportunity and motivation. Codes were then combined into subthemes and allocated, including direct quotes from participants, to one of the 14 domains of the TDF or 'other'. The authors two supervisors (TW & AS) took a random selection of 20% of the transcripts and independently coded those sections using the same 'capability, opportunity and

motivation' lens and the 14 domains. All researchers held regular discussions to compare coding (Ward, Furber, Tierney, & Swallow, 2013).

To enhance rigour, once the first round of coding and condensing was completed, a second cycle was undertaken, focused particularly on elements where greatest dubiety had arisen in the first. The final iteration was agreed between the author and supervisors with codes and themes matched to specific domains of the Theoretical Domains Framework (TDF), where appropriate.

## **4.4 Results**

### *4.4.1 Participant Characteristics*

A total of 14 participants (11 females and 3 males; mean age 46.6; 85% White British) took part in the three focus groups. This sample was considered representative of the ALBA participants, despite males being underrepresented, 21% compared to 32% in the ALBA population as a whole (See ALBA participant breakdown in Table 6.4.1). A total of 28 participants were invited to take part in the focus groups, however 14 (50%) declined. Reasons given for not wishing to attend a group included anxiety about the group setting, difficulty traveling to the focus group location, work and childcare commitments.

### *4.4.2 Classification of Themes using the TDF*

In total, 25 themes were identified, which mapped onto eleven of the fourteen domains from the TDF. The eleven domains were: Beliefs about Capabilities, Social Role and Identity, Beliefs about Consequences, Social influence, Goals, Environmental Context and Resources, Emotion, Skills, Optimism, Intentions and Reinforcement. 10 of the themes were identified as barriers to participating in the intervention and 15 were identified as facilitators. Figure 4.4.1 shows the thematic map of the barriers and facilitators of the ALBA intervention. The below tables (tables 6 and 7) present the themes and subthemes identified by the thematic analysis. Where quotes have been included, participants are referred to with a participant number, i.e. "P1".

*Table 4.4.1 Participant ID and Areas*

| <b>Participant ID</b> | <b>Focus Group Area</b> |
|-----------------------|-------------------------|
| <b>P1</b>             | Fife                    |
| <b>P2</b>             | Fife                    |
| <b>P3</b>             | Fife                    |
| <b>P4</b>             | Fife                    |
| <b>P5</b>             | Fife                    |
| <b>P6</b>             | Fife                    |
| <b>P7</b>             | Fife                    |
| <b>P8</b>             | West Lothian            |
| <b>P9</b>             | West Lothian            |
| <b>P10</b>            | West Lothian            |
| <b>P11</b>            | North Ayrshire          |
| <b>P12</b>            | North Ayrshire          |
| <b>P13</b>            | North Ayrshire          |
| <b>P14</b>            | North Ayrshire          |

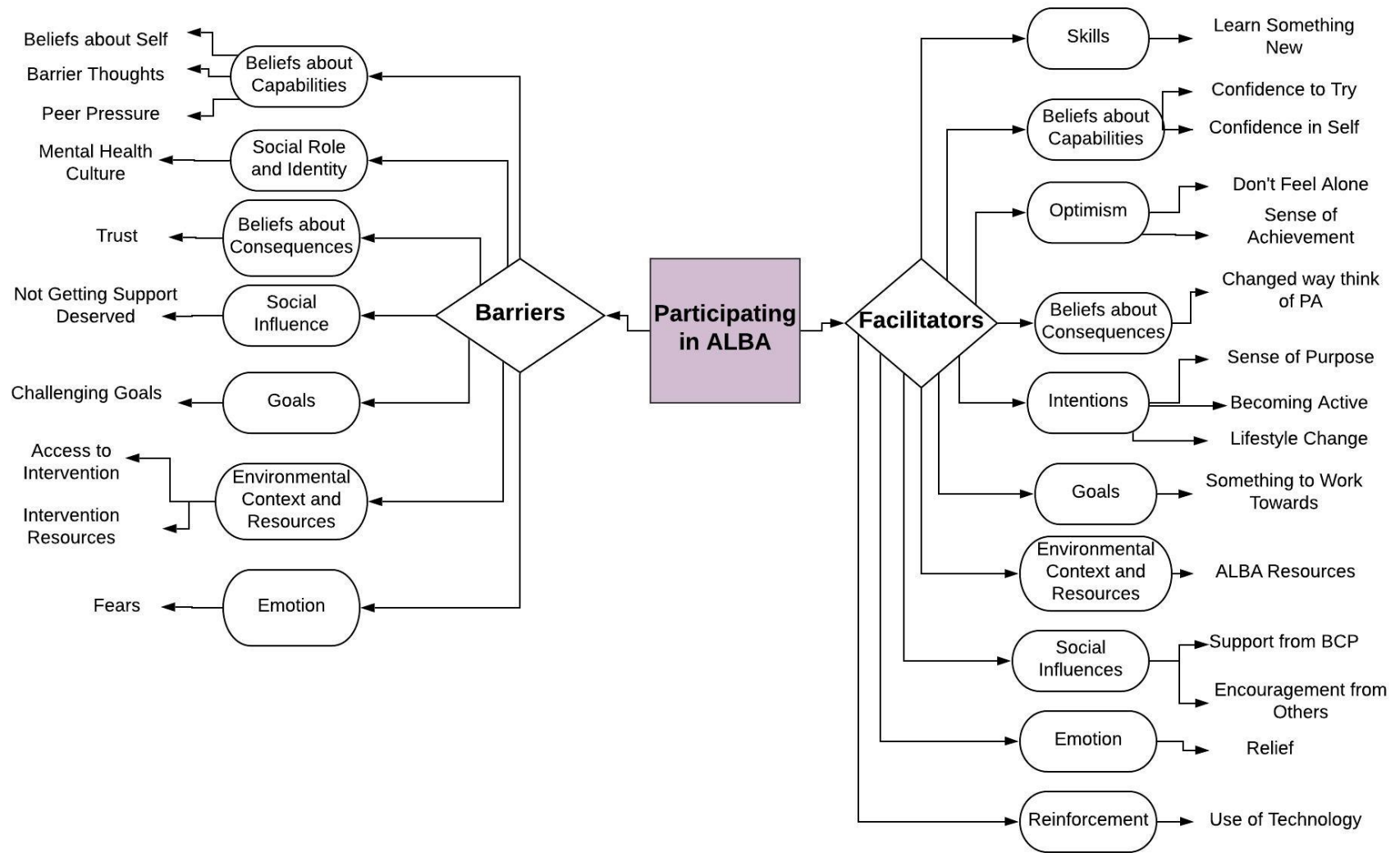


Figure 4.4.1: Thematic Map of Barriers and Facilitators

#### 4.4.3 Facilitators

Table 4.4.2 Facilitators Themes and Subthemes

| <b>Domain</b>                     | <b>Themes</b>           | <b>Subthemes</b>               | <b>Specific Codes</b>   |
|-----------------------------------|-------------------------|--------------------------------|---|
| <b>Skills</b>                     | Learning something new  | <i>Learning from an expert</i> | <ul style="list-style-type: none"> <li>• Being taught new exercises</li> <li>• Having someone who knew what they were doing</li> </ul>  |
|                                   |                         | <i>New opportunities</i>       | <ul style="list-style-type: none"> <li>• Trying new things</li> <li>• Started swimming</li> <li>• New opportunities</li> <li>• Going to College</li> </ul>  |
| <b>Beliefs About Capabilities</b> | Confidence to try       | <i>Positive outlook</i>        | <ul style="list-style-type: none"> <li>• What you can achieve not what you can't</li> <li>• Stopped saying can't</li> <li>• I can do it if I put my mind to it</li> <li>• Focusing on what you can do not what you can't</li> <li>• Just got to try</li> <li>• You'll get there</li> <li>• Something better than nothing</li> <li>• Telling nagging doubt to go away</li> <li>• If I don't help myself nobody will</li> </ul> |
|                                   |                         | <i>Pacing</i>                  | <ul style="list-style-type: none"> <li>• Taking it slow</li> <li>• Small steps</li> <li>• It's the journey</li> <li>• Doing things at my own pace</li> <li>• Breaking into chunks</li> <li>• Action planning</li> </ul>   |
|                                   | Confidence in self      | <i>Positive Self belief</i>    | <ul style="list-style-type: none"> <li>• Feel better about self</li> <li>• Believe in self</li> <li>• Giving confidence</li> <li>• This is me, if folk don't like it too bad</li> <li>• Doing it for self</li> <li>• Kind to self</li> <li>• Not beating self-up</li> <li>• Not comparing</li> <li>• Could get self out of a slump</li> </ul>   |
| <b>Optimism</b>                   | Don't feel alone        |                                | <ul style="list-style-type: none"> <li>• Not the only one feeling this way</li> <li>• I'm not the only one</li> <li>• Hearing other's stories</li> <li>• Shared experiences</li> <li>• Sharing experiences</li> </ul>   |
|                                   | Sense of achievement    |                                | <ul style="list-style-type: none"> <li>• Can look back on how far you've come</li> <li>• Thank myself for doing it</li> <li>• Surprised self</li> <li>• Proving people wrong</li> <li>• Doing it for self</li> <li>• Making time for self</li> </ul>  |
| <b>Beliefs About Consequences</b> | Changed way think of PA |                                | <ul style="list-style-type: none"> <li>• Changed way think of PA</li> <li>• How many steps you take at the shops</li> <li>• Not your typical fit person</li> <li>• Wanting to find something they enjoy</li> </ul>  |

| <b>Domain</b>                              | <b>Themes</b>             | <b>Subthemes</b>  | <b>Specific Codes</b>   |
|--|---------------------------|---|---|
| <b>Intentions</b>                          | Sense of purpose          | <i>Reason to get up in the morning</i>                    | <ul style="list-style-type: none"> <li>• Getting out the house</li> <li>• Gives you motivation to get out the house</li> <li>• Reason to get up in the morning</li> </ul>   |
|  |                           | <i>Developing a routine</i>                               | <ul style="list-style-type: none"> <li>• Getting into routine</li> <li>• Given structure</li> </ul>   |
|  | Becoming active           |   | <ul style="list-style-type: none"> <li>• Think about being active daily</li> <li>• Became more active</li> <li>• Changed way think of PA</li> <li>• Find ways to exercise that suit</li> <li>• Makes you feel good</li> </ul>   |
|  | Lifestyle Change          |   | <ul style="list-style-type: none"> <li>• Changed way they eat</li> <li>• Became more active</li> <li>• Changed way think of PA</li> <li>• Change in relationships</li> <li>• Doing housework</li> <li>• Lose weight</li> <li>• Getting out of bad habits</li> <li>• Helped with anger</li> <li>• Healthy</li> <li>• Saw improvement</li> <li>• Identifying negative thoughts</li> <li>• Think about being active daily</li> <li>• Biggest step is going to gym</li> </ul> |
| <b>Goals</b>                               | Something to work towards |   | <ul style="list-style-type: none"> <li>• Important to have a goal</li> <li>• Setting Goals</li> <li>• Personal goal</li> <li>• Something to work towards</li> <li>• Hitting Target</li> <li>• Trying to meet goals</li> <li>• Seeing a high step count</li> </ul>   |
| <b>Environmental Context and Resources</b> | ALBA Resources            | <i>Positive resource</i>                                  | <ul style="list-style-type: none"> <li>• Easy to understand</li> <li>• Books are simple</li> <li>• Got more out of books second time</li> <li>• Can revisit books</li> <li>• The books</li> <li>• The bathroom mirror</li> <li>• Needed the books to be simple</li> <li>• Can share with partner</li> <li>• Have done them before</li> </ul>  |
|  |                           | <i>Expert support</i>                                     | <ul style="list-style-type: none"> <li>• Being taught new exercises</li> <li>• Having someone who knew what they were doing</li> <li>• Became more familiar with leisure centre</li> <li>• Gym induction</li> </ul>   |
| <b>Social Influences</b>                   | Encouragement from others | <i>Social Support</i>                                     | <ul style="list-style-type: none"> <li>• Support from family</li> <li>• Family as motivation</li> <li>• Support from friends</li> </ul>   |
|  |                           | <i>Made me feel like I wanted to be part of community</i> | <ul style="list-style-type: none"> <li>• Made me feel like I wanted to be part of community</li> <li>• Stopped isolation</li> <li>• Got me willing to speak to people</li> <li>• Want people to see real you</li> <li>• Meet more people</li> </ul>   |

| <b>Domain</b>        | <b>Themes</b>     | <b>Subthemes</b>                   | <b>Specific Codes</b>  |
|----------------------|-------------------|------------------------------------|--|
|                      |                   | <i>Peer support</i>                | <ul style="list-style-type: none"> <li>• Buddy gives incentive</li> <li>• Encouraging someone else</li> <li>• Having walking buddy</li> <li>• Meet more people</li> <li>• Want a peer supporter to help confidence</li> <li>• Motivation from other</li> </ul>   |
|                      |                   | <i>Supporting sustained change</i> | <ul style="list-style-type: none"> <li>• Doing long term study</li> <li>• Can be supported beyond 16 weeks</li> <li>• Longer period gives more chance to habit form</li> </ul>   |
|                      | Support from BCP  | <i>Relationship with BCP</i>       | <ul style="list-style-type: none"> <li>• Being greeted with a smile</li> <li>• BCP Checking in</li> <li>• Look forward to meeting BCP</li> <li>• Support from BCP</li> <li>• Talking therapy best thing about it</li> <li>• Having someone believe in you</li> <li>• Support from SAMH</li> <li>• No other service like it in area</li> <li>• ALBA gave me motivation</li> <li>• Makes you feel important</li> </ul> |
|                      |                   | <i>Talking and sharing</i>         | <ul style="list-style-type: none"> <li>• Being listened to</li> <li>• Good listener</li> <li>• Somebody to speak to</li> <li>• Someone to speak to that's not family</li> <li>• Opportunity to offload</li> <li>• A weight off your back</li> </ul>  |
|                      |                   | <i>Opening up about MH</i>         | <ul style="list-style-type: none"> <li>• Opening up about mental health</li> <li>• Don't hide it anymore</li> <li>• Trying to clear away black clouds of depression</li> <li>• Mental health is individual</li> <li>• Shared experiences</li> <li>• Sharing experiences</li> </ul>   |
| <b>Emotion</b>       | Relief            | <i>Got my life back</i>            | <ul style="list-style-type: none"> <li>• Got my life back</li> <li>• Getting back to myself</li> <li>• Got myself into a good place</li> <li>• In a better place</li> <li>• More motivated</li> <li>• Gives hope</li> <li>• Optimism for future</li> </ul>   |
|                      |                   | <i>Reflection on regrets</i>       | <ul style="list-style-type: none"> <li>• Wish I'd done it sooner</li> <li>• What I was doing was absolutely no help</li> <li>• Facing Fears</li> <li>• There was nothing to worry about</li> <li>• Facing the excuses</li> </ul>   |
| <b>Reinforcement</b> | Use of Technology | <i>Tracker positives</i>           | <ul style="list-style-type: none"> <li>• Tracker was motivating</li> <li>• Trackers help you see good and bad days</li> <li>• Make sure to check tracker</li> <li>• Made more interested in gadgets</li> <li>• Check tracker all the time</li> <li>• Gave me a boost</li> <li>• Comparing steps with colleagues</li> <li>• How many steps you take at shops</li> </ul>   |



## **Learning Something New**

Participants spoke about becoming active through the lenses of skill development, as becoming active was new to a lot of the participants, they particularly valued the support they received from leisure trust staff in the gyms, and that they felt they were being taught by someone who knew what they were doing.

*I think the exercises he taught me to do, because obviously I've got difficulty walking...so it was difficult to think about what kind of exercises you could do to get exercise. - P6*

*And the fact that they are prepared to get you to try different things, things you'd never have thought of, boosts your confidence a wee bit more and it makes you feel better about yourself – P13*

Participants also spoke about how taking part in ALBA had opened them up to new opportunities, with many participants discussing how it had led them to taking up new activities.

*Aye it's been good for me, as it's given me options, more than I thought I'd do, what I have, like I didn't think I would ever volunteer with people back three, four, five years ago, I never dreamed of being in this kind of environment back then – P2*

*I think being at college has helped me as well, if it wasn't for ALBA, I wouldn't have applied for college I'm doing now – P5*

## **Confidence to Try**

Participants discussed the effect of taking part in ALBA had on their beliefs about their capabilities, with participants reporting that they had a new sense of confidence in themselves, and their abilities which had encouraged them to engage with the intervention.

*It makes you focus more on what you can do rather than what you can't do, and there's no such word as can't, you can try and if it doesn't work then you just try something else...why should I stay in my living room with my telly on when there's a whole wide world out there that's ready to face, before you would have "oh I can't do that", but now, aye I can do it and I'm going to do it! – P13*

A recurring theme was the importance of pacing yourself, with participants frequently talking about the importance of going at their own pace, and how breaking down goals made them more achievable.

*Just small achievable goals, just smaller, just it doesn't need to be, it's just when you achieve your goal it gives you a lift, it makes you feel like ooh I can do this, even if it's just, I mean I started by going up and down the stairs, em just things just keeping it real and small, it doesn't need to be running a marathon, it can be something small – P11*

### **Confidence in Self**

Participants reported that they felt they had learnt to be kinder to themselves after taking part in ALBA.

*I'd be like nah that's rubbish cause I couldn't achieve what I used to be able to do, but like [BCP] helped me change my mindset, to be like what you can achieve not what you can't. – P2*

Participant's also reported that they felt the intervention had equipped them with the life skills. Participants often discussed the “vicious cycle” and how they felt they were more capable of recognising this and helping themselves overcome any mental health challenges that they may face in the future.

*I think I've got the tools now like to, if I get into like a slump, to like get myself out of it and take the little steps and get myself better and active again – P8*

### **Don't Feel Alone**

ALBA helped to foster a sense of optimism, as participants reported that it helped them to feel less alone, as they felt they were more able to talk about their mental health and as result they found that people were open about their own mental health.

*I think that getting our stories out there is the best thing we can do, it's amazing how many folk actually open up once someone starts talking about theirs – P5*

*It opens your mind up to different things, and you're not the only one to feel that way – P14*

## **Sense of Achievement**

The ALBA intervention also helped to foster a sense of optimism for the future, as well as helping participants to feel proud of themselves. Participants felt that through participating in ALBA they could see how far they had come.

*When I'm down here, I've done my gym, done all my gym exercises, I sort of thank myself for doing it – P10*

*I think when I look back to where I was to where I am now, it's far better – P2*

*I felt as if there was a big sack on my back and every time you tried to something, somebody put another rock in to keep you hunched and all that, or you were in a cave and you could see daylight and you had to dig yourself out, and it was like digging with a teaspoon to with and then you kinda moved up to a shovel, cause you can see the light now, which it just makes an awful difference, it's like nobody will keep me down, nobody will put baby in the corner! – P13*

## **Changed the Way They Think of PA**

Participants expressed that the ALBA intervention had helped them to change the way they thought of PA, some participants reported that they didn't think of themselves as being an active person, but through ALBA they realised that being active did not just mean participating in sport or being "fit" but encompassed all aspects of activity.

*Cause you can still exercise in the house even if you can't get out, it doesn't need to be walking – P6*

## **Sense of Purpose**

The ALBA intervention helped to change intentions, with participants reporting that it had given them a new sense of purpose, as they felt attending intervention appointments and engaging in PA helped to give them some structure in their lives. Participants spoke about how the appointments with BCP helped them to feel motivated to get out the house.

*I didn't do anything until I kinda met [BCP], and then every week gave me that kinda, as you say motivation to get out the house and do it, otherwise I had, if I didn't help myself nobody would - that's the mentality I thought I had to take – P2*

*It's having that, because you know no matter what you know you've got that person you've got to go and see, you can kick yourself out the house, you do, sometimes it takes you saying that to yourself, I will kick my backside to go out this house – P5*

### **Becoming Active**

Participants discussed how ALBA had helped them to become more motivated to be active, with participants reporting that they now felt like they made more effort to be active and that they thought about their activity more than they ever had before.

*I've never done as much walking as I've done since I got mine [tracker] – P8*

*I think it's the consideration that I make daily, whether I'm able to do it or not, it is in my mind, it is something that I should be doing, whether I manage or not, it's not something I forget about – P1*

### **Lifestyle Change**

A common theme throughout the group discussions was change, with participants discussing how they had noticed changes in themselves and how taking part in ALBA had an impact on other aspects of their life and their behaviour.

*Because now I look at, before with the eating I have got like a food plan every week and it's kind of broken up into your like fats, your carbs, your proteins and everything else, and it was very clear that in the beginning, I don't eat meat but I wasn't eating any protein at all, in fact all I ate was cereal and toast and fruit and that was kind of what I ate because I felt, it was like a comfort eating, yeah so to go do exercise, I had to look at what I was putting into me, so yeah it's been quite a- change in lifestyle – P12*

Participants also commented on how they felt that taking part in ALBA had helped them manage their anger and had helped them to improve relationships with people around them.

*Yeah, because that's been something that's kinda like affected me quite a bit, as far as sort of relationships have been concerned with like friends and stuff, so some of, the sort of like noticing some of my like trigger points and you know when to like, how to ground yourself and take a step back from like what you think is reality but really it isn't you know, that was really good, and really, really thought provoking you know? – P10*

## **Something to Work Towards**

Participants frequently discussed how the ALBA intervention had encouraged them to set goals, and the positive benefit that this had on their mental wellbeing. For the most part, goal setting was discussed as a positive, that made them feel like they had something they were working to achieve, be it a step goal or taking up a new hobby.

*Not for anybody else, I don't care what anybody else thinks is right for me, so it's, that's my goal, to find something that I enjoy – P12*

## **ALBA Resources**

The participants spoke a lot about the workbooks that the BCPs work through with them. The general response was very positive, as participants found them really simple to understand this was mostly seen as a good thing as participants mentioned how when their mental health is bad, they have poor concentration.

*It was the first time I actually like kinda got help from anyone, rather than it just being like psychologists being like right read this chapter, cause I knew I wouldn't do it, so it was good having somebody there going through it with you, and cause they're simple, you kinda remember rather than big long Freudian paragraphs – P2*

*For me, I'm in a relatively positive place right now, so I find them, I do find them fairly simplistic, but when I'm in a dark place I can't concentrate to the end of the page – P7*

Participants also reflected that the workbooks were good to have as they could go back and look over them when they are having bad times, so there was that extra benefit of having something they could do on their own.

*Even just the likes of having those books, because you can go back to them and read them over and it can just sort of lift you, you know?  
– P11*

## **Encouragement from Others**

Social support received from family and friends was also perceived as a facilitator to the ALBA intervention. Participants discussed how other people in their life had reacted

to their participation in the ALBA intervention: for the most part, participants reported that their family and friends had been supportive and could see a difference in them.

*Well my daughter, the minute I said I was going to the gym, she's like go mother go for it! But she's quite fitness- she does a lot of running and marathons and keep fit, I think it was karate, she's quite a fitness freak...so she was really like go for it, that's what you are needing, I'm like alright ok – P9*

Participants also spoke about the benefits of the peer support element: they particularly focused on the benefits of having shared experiences which they found comforting.

*But the thing is, it wasn't the most uplifting conversation but it's bizarre though how, well I certainly feel anyway that being able to talk about these negative things with somebody who actually gets it isn't a negative at all, it's reassuring – P3*

Participants also discussed how becoming engaged with the intervention had made them feel more socially connected.

*Yeah, it's made me feel that I want to be part of the community, you know as much as just, you know even if being part of the community is just walking up the high street in Dunfermline, listening to your, with your headphones – P3*

### **Support from BCP**

The participants put a lot of emphasis on the importance of the interpersonal factors involved in the intervention, specifically having the opportunity to meet up for the 1:1 behaviour change session. The participants reported finding the relationship that formed with their BCP to be very supportive and encouraging, with some participants conveying that they enjoyed the sessions, as it gave them something to look forward to.

*I actually found it quite encouraging and I find it quite motivating, just I had a lot of stuff going on at the time and I just found it that she was very good at listening and understanding, and encouraging, and I would talk quite a lot and she would wait until I would be finished and then she would you know just try and motivate me – P9*

*I look forward to meeting up with [BCP], just to like I don't know, speak to her about what I've done and like her to say well done or whatever – P8*

Participants really valued having somebody who was “there for them”, who they could speak to, who listened to what they were saying, no matter if it was good or bad.

*Even just being greeted with a big smile, just something simple as that, hi how are you doing, you know – P11*

*I think the fact the somebody is actually sitting listening to what you are saying and taking note of how the individual's feeling, that makes a difference – P13*

Through the experience of taking part in ALBA, participants felt more able to open up about their mental health.

*Yeah, it's helped me more, than talking about it, like I can talk about it now but getting that out walking to start off with got me willing to speak to people – P2*

### **Relief**

Participants expressed relief that they felt they had found something that was helping to improve their mental wellbeing. Participants spoke about how they felt they had got their life back.

*I've got a life now and I don't know what to do with it, I don't know where to go or what to do it's as though I've come out a cave and there's daylight and you're like oh where do I go, what do I do em but we'll get there, we will we'll get there – P13*

Participants also reflected that they had wished they had been able to do something like ALBA sooner, as they realised that they were able to change the “vicious cycle”.

*I think that belief that you can actually do something and telling that nagging doubt to go away – P5*

### **Use of Technology**

The discussion of the activity trackers suggested that the participants found them motivating, as they could see when they were achieving their goal. Participants reported that they enjoyed using them, as they enjoyed seeing high step counts, and found it encouraging when they saw they how much activity they had done just going about their day.

*I think it's great, it's quite, you get a shock, I was up at the- my partner was in hospital so I was up and down at that hospital...and em I had the step thing on and I'd done about six and a half em six thousand five hundred steps and I really shocked myself, I was like wow you know – P9*

Participants also reported that the use of the trackers helped them to monitor their mood as well as their behaviour, as they could look back on how far they had come.

*I think it's good to see over the week, it also, when you're not having such good days you can't remember which days like I would meet with [BCP] and we'd talk and I'd say look I've been rough but when you start looking at the steps it was quite clear, you know, that it was happening and then the pinks<sup>1</sup> become less and less which is good – P12*

#### 4.4.4 Barriers

The following table present the barrier themes and the subthemes mapped onto the TDF domains.

Table 4.4.2 Barrier Themes and Subthemes

| <b>Domain</b>                                | <b>Themes</b>         | <b>Subthemes</b>            | <b>Specific Codes</b>  |
|--|-----------------------|-----------------------------|--|
| <b>Social Professional Role and Identity</b> | Mental health culture | <i>Mental Health Stigma</i> | <ul style="list-style-type: none"> <li>• Mental Health stigma</li> <li>• Mental Health is a second-class illness</li> <li>• Older generations don't talk about MH</li> <li>• Struggle talking about MH</li> <li>• Fear of being labelled</li> <li>• Invisible illness</li> <li>• Don't have words to describe MH</li> <li>• Lack of awareness</li> <li>• People thinking you are lazy</li> <li>• Embarrassment</li> <li>• Feel ashamed</li> <li>• Is it a disability?</li> </ul> |
|  |                       | <i>Need for MH services</i> | <ul style="list-style-type: none"> <li>• Getting access to support</li> <li>• Need for mental health services</li> <li>• Issue with Benefits</li> </ul>  |
| <b>Beliefs About Capabilities</b>            | Beliefs about self    | <i>Negative beliefs</i>     | <ul style="list-style-type: none"> <li>• Told often enough you start to believe it</li> <li>• Couldn't accept it</li> <li>• Didn't have any self-worth</li> <li>• Feel so uncomfortable in self</li> <li>• Self-conscious in front of friends</li> </ul>   |
|  |                       | <i>Guilt</i>                | <ul style="list-style-type: none"> <li>• Feel guilty</li> <li>• Feel guilty putting self-first</li> </ul>  |

<sup>1</sup> Days where participants had not met their step count were shown in pink/red on the "Get Active" app, whereas days where participants had met their goal were shown in green



| <b>Domain</b>                              | <b>Themes</b>          | <b>Subthemes</b>              | <b>Specific Codes</b>  |
|--|------------------------|-------------------------------|--|
|  | Barrier Thoughts       | <i>Reason not to get up</i>   | <ul style="list-style-type: none"> <li>• Wasn't getting out of bed</li> <li>• Wanting to hide away</li> <li>• Sitting about the house</li> <li>• Struggle to get out of bed</li> <li>• Wouldn't go out</li> <li>• Scared of going out</li> </ul>   |
|  |                        | <i>Inner conflict</i>         | <ul style="list-style-type: none"> <li>• It's a mental battle</li> <li>• Battle you have with yourself</li> <li>• Lacked motivation</li> <li>• Nothing stopping me, mental block</li> <li>• Nagging doubts</li> <li>• Caught out by downward spiral</li> <li>• Feel bad time coming</li> </ul> |
|  | Peer pressure          |                               | <ul style="list-style-type: none"> <li>• Worry about letting someone down</li> <li>• The pressure of being a peer supporter</li> </ul>   |
| <b>Beliefs About Consequences</b>          | Trust                  | <i>Opening up</i>             | <ul style="list-style-type: none"> <li>• Fear of being let down</li> <li>• Uncertainty about what intervention involved</li> </ul>   |
|  |                        | <i>Doubt</i>                  | <ul style="list-style-type: none"> <li>• Didn't see how exercise would help</li> <li>• Didn't feel ready</li> <li>• Doesn't know what makes you feel better</li> </ul>   |
| <b>Goals</b>                               | Challenging Goals      |                               | <ul style="list-style-type: none"> <li>• Unrealistic goals</li> <li>• Feel bad not hitting target</li> </ul>   |
| <b>Environmental Context and Resources</b> | Access                 | <i>Access to intervention</i> | <ul style="list-style-type: none"> <li>• People don't know about ALBA</li> <li>• Wasn't referred by doctor</li> <li>• Getting access to support</li> <li>• Need for mental health services</li> <li>• More people should come along</li> <li>• Advertise it more</li> </ul>                    |
|  |                        | <i>Practicality</i>           | <ul style="list-style-type: none"> <li>• Meeting in different places</li> <li>• Needing to drive</li> <li>• Meeting in suitable place</li> <li>• Managing to get to appointments</li> <li>• Length of intervention</li> <li>• Missed appointments due to bad spells</li> </ul>                 |
|  | Intervention Resources | <i>Negative resource</i>      | <ul style="list-style-type: none"> <li>• Found books challenging</li> <li>• Patronising</li> <li>• Reading and writing</li> <li>• More depth</li> <li>• Suitable for people with disabilities</li> </ul>   |

| <b>Domain</b>            | <b>Themes</b>                | <b>Subthemes</b>         | <b>Specific Codes</b>  |
|--------------------------|------------------------------|--------------------------|--|
|                          |                              | <i>Tracker negatives</i> | <ul style="list-style-type: none"> <li>• Didn't like look of tracker</li> <li>• Being tracked by someone</li> <li>• Difficulty pairing tracker with phone</li> <li>• Forget to wear tracker</li> <li>• Lost tracker</li> <li>• Think tracker counting arm movement as steps</li> <li>• Tracker count delayed</li> <li>• Tracker gave rash</li> <li>• Tracker loses time</li> <li>• Tracker not bang on</li> <li>• Tracker not picking up steps</li> <li>• Tracker not waterproof</li> <li>• More compatibility with gym equipment</li> </ul> |
|                          |                              | <i>Expert</i>            | <ul style="list-style-type: none"> <li>• LT staff too busy</li> <li>• Losing gym support</li> <li>• Bad experience at LT</li> <li>• Miscommunication with staff</li> </ul>   |
|                          |                              | <i>Overwhelming</i>      | <ul style="list-style-type: none"> <li>• Found questionnaires overwhelming</li> <li>• Overwhelming</li> <li>• Overwhelmed by information</li> </ul>  |
| <b>Social Influences</b> | Not getting support deserved |                          | <ul style="list-style-type: none"> <li>• Impact of family</li> <li>• Hard to speak to family</li> <li>• Lack of support from family</li> </ul>   |
| <b>Emotion</b>           | Fears                        | <i>Fear of exercise</i>  | <ul style="list-style-type: none"> <li>• Fear of going back to gym</li> <li>• Fear of being laughed at</li> <li>• Scared of exercise</li> <li>• Hate the gym</li> <li>• Going to gym for first time</li> </ul>   |
|                          |                              | <i>Fear of failure</i>   | <ul style="list-style-type: none"> <li>• Worry about relapse</li> <li>• Fear of not sustaining</li> <li>• Making excuses</li> </ul>  |

## **Mental Health Culture**

Participants spoke a lot about the stigma they felt existed around mental health issues which had prevented them speaking about their mental health before. Some participant felt that there was a lack of awareness at the Leisure Centers about mental health, which put them off attending.

*I think people just see my label, so I find that really difficult and I think that's what stops me because you do feel like you've got, people don't get what mental health is, they don't, it's how mental is she –  
P12*

Conversely, some participants discussed how they felt they had an invisible illness.

They perceived their mental health as not being recognized, and as a result they felt

they struggled to get access to support and services that they needed. Some participants touched on this in relation to benefits they had received.

*It's it's like all hidden illnesses, if you don't see them, they don't think they exist – P5*

*That's kind of one of the things I feel about mental health is that unless, well my brother for example, I've been every bit as bad as my brother, but my brother managed to get access to much more help than me because he got hospitalized – P3*

### **Beliefs about self**

Negative self-beliefs were frequently discussed as being barriers for both engaging with the intervention and in PA. Participants spoke about how low mood and negative thoughts about themselves had made them feel so uncomfortable in themselves that they did not want to engage with others.

*If you get told often enough that your useless and your waste of space, then you start to believe it, and your self-confidence gets knocked – P13*

*That's what, I didn't really have that I had self-worth, I didn't feel human in that kinda sense I didn't feel – P2*

*There is that shame, you feel you ought to be able to get on with things, when you find that you can't you start to wonder is there what is there something really wrong with me? Am I so different? Am I so I dunno less than everybody else? And it's hard – P3*

Participants also spoke a lot about a sense of guilt they felt for putting themselves first and how this had stopped them from taking action or seeking help.

*But I feel guilty when I do, cause my mum was the one that was there for us when we were all growing up, and that's my biggest fight, that guilt – P5*

### **Barrier Thoughts**

Participants spoke about the inner struggles they felt they experienced on a day to day basis. This reflects the internal struggle that participants felt they experienced with their mental health.

*It's really a fight with me, you know I mean I fully understand that even every day when I get up, it's a real kind of mental battle just to you know put the shoes on and head out you know – P3*

Participants frequently discussed how prior to taking part in the ALBA intervention they felt that they were hiding away from the world, with participants talking about how they felt scared of going out into the world, and that they felt they were letting the world pass them by.

*Before I was like with my days off, I was getting up getting washed, coming down the stairs, putting my feet up on the couch, watching the telly, quite happy, wouldn't go out the door em because I had depression and also because I was heavier, I just couldn't handle like walking through the shopping mall because I thought everybody was looking at me...I was quite happy sitting in my own living room with my telly on, if you'd come in and asked me what I was watching I couldn't have told you – P13*

### **Peer pressure**

Whilst participants were positive about the peer support element of the intervention, participants felt they were hesitant to volunteer to become a peer supporter themselves. Participants concerns about taking on this role showed a lack of confidence in themselves, as they worried that they were not in a position yet where they felt they could support someone else.

*I don't really know the ins and outs of how supportive you've got to be, like if you just have to be there, but even then you could have a bad day and then you're letting someone else down, I don't really like the idea, I like the idea of it don't get me wrong, but I feel I could let somebody down – P10*

### **Trust**

A recurring theme in the focus groups was the issue of putting trust into someone, with participants reporting that they were apprehensive about putting their trust in the BCPs. This acted as a barrier to participating in the intervention, as participants felt that they were afraid to open up to someone, due to previous bad experiences.

*It can be difficult to put your trust and faith in somebody else because you're scared of being let down because you have been let down so badly before – P11*

Participants also expressed that they had their doubts about how becoming more active would improve their mental health.

*Well I didn't see that, I didn't see how that was going to be part of you know like, I suppose getting better? I didn't really, it never really dawned on me – P12*

### **Challenging Goals**

Participants discussed that they found aspects of the intervention challenging, and that at times they found that they had set goals that were too difficult to achieve. They acknowledge that if they set a goal that was too hard then this had a negative effect on how they felt about themselves.

*Well when you start off feeling really bad everyday if you set it too high – P1*

Participants also felt at times they found that the intervention material made them face issues and feelings that they did not feel they were prepared to face.

*I found them really challenging, really challenging, to the point where I would maybe open them up and kind of look through them and then maybe just leave them because I wasn't ready – P12*

### **Access**

Participants reported that there were barriers that prevented them from accessing the ALBA intervention. Participants commented on how they had not heard about the intervention before and how they felt that there was a lack of similar support.

*I'd been to my doctors and stuff and that's that's not really the same and there's nothing really in west Lothian that they can offer you as far as like um like a one on one talking therapy – P10*

Issues around access also included the settings in which the intervention was delivered. The intervention was planned to be implemented within the local leisure centres, which was intended to help participants become familiar with the centres, however, in practice this was not always appropriate as there were often limited availability of private rooms and public spaces not always suitable.

*It took a long long long time and it was different places, you know different places all the time so trying to get a room where people weren't coming in or walking through, you know it was incredible – P12*

Participants also discussed the length of the ALBA intervention. For the most part participants felt that the 16 weeks offered more support than other interventions/services they had been offered in the past, however, participants discussed how they felt that life obstacles and their mental health had prevented them from making appointments and they had concerns about running out of time.

*The only problem I found with the sixteen weeks is em for me anyway cause as I said life happens, you know and I had more prolonged bad spells than feeling you know like I could be out and about and it's only really in the last two three weeks where I've got into that mindset that I can get out every day but em I missed an awful lot of appointments – P3*

### **Intervention Resources**

Some participants felt that the intervention materials themselves were off-putting. The workbooks in particular were criticized for their style and language, with some participants feeling that they were too childish or that they did not go into enough depth. This suggests that the resources might need more tailoring to the individual.

*I found them a bit patronising...just the kind of pow and wow, that kind of thing, I think reign it in a bit, I'm not saying completely change the format, perhaps make it a bit more adult – P1*

Some participants also did not initially like the trackers, as they felt they did not like the look of them or the thought that their activity was being monitored. However, the majority of the comments about the trackers related more to technical issues participants had with them.

*The first time I put it on, and it was only about twenty-four hours or so, then I sort of got used to it, but when I dunno maybe it's just the thought someone's going to be monitoring me, there was an immediate ohh I don't know why I've agreed to do this -P7*

Participants also discussed taking part in the evaluation of intervention. Participants frequently reported that they found, particularly at their first appointment that filling in

the questionnaires required for the baseline measurement was very overwhelming and they found them very challenging, as it required both concentration and to think about how their mental health had been.

*I think that the questionnaires, particularly getting the first questionnaire on your very first visit with somebody, I'll just think it's quite sort of um it was just a bit like oh gosh I can't do this, this is just too you know how much exercise I did and how much walking or gardening or how much hoovering I did, and I just found it really really girding, em to take that as an initial step em and [BCP] said that later on she said I can remember that first appointment thinking that woman didn't want to be here em and no I didn't, cause I just I think it's cause where you are at that time when you are initially referred as well, you know you just I just thought oh I can't do this – P6*

### **Not Getting Support Deserved**

Some participants expressed that they had complicated relationships with family and friends. This made them hesitant to share that they were participating in the ALBA intervention with them, as they were concerned about judgement or lack of support. Some participants also expressed that these difficult relationships were a source of anxiety or depression.

*The thing I found hard about the family bit is that em, how their behaviours can impact upon you, and even if they don't mean it, but you have to have that conversation about you know this is how I feel, this is how that affects me, and it's really hard, it's not the most pleasant thing you know because you know, you're really upsetting people by saying you know, you can't do that around me and even though there is no malice meant by it – P3*

### **Fears**

Feelings of fear were discussed as a barrier to PA during the groups, with participants frequently expressing that prior to taking part in the intervention they felt scared of going to the gym and exercising. This was often expressed as a fear that people would laugh or stare at them for going to the gym.

*I was really scared because I didn't know em I just didn't know I was capable of it, em always had this kind of fear inside about em kind of can I do it, going to the gym em are people going to laugh at me? –*

*P11*

Participants also discussed a “fear of failure”, saying they were concerned about starting activity and not being able to keep it up. Participants also discussed how they felt that they had made “excuses” in the past so that they didn’t have to do activity.

*It’s also about slowly addressing the excuses you use to not do things I’m not feeling well, I’ll have a bit, oh I’ll not bother today, I’ll do it tomorrow – P7*

#### **4.5 Discussion**

Whilst the outcome evaluation of the ALBA intervention will offer answers to the question of effectiveness of the intervention, the aim of this process evaluation was to help unpack the “black box” of the intervention and investigate the factors which have influenced the delivery and reception of the intervention. On the whole, the results of the focus group discussions suggest that the facilitators outweighed the barriers in terms the number of codes, and most of the barriers consisted of reflections on life before ALBA, and that the barriers did not apply following participating in the intervention. For example, participants discussed not wanting to go out of the house prior to ALBA, but not now. This highlights that despite the barriers they faced, the ALBA intervention helped them to overcome them.

In relation to the framework, it would appear that individual beliefs about personal capabilities were both a barrier and a facilitator to participating in ALBA, as were beliefs about consequences, social influences, goals, environmental context, resources and emotion. This is consistent with the findings of Glowacki, Duncan, Gainforth, & Faulkner (2017), who reviewed the barriers and facilitators to PA in adults with depression. This review found that the most common barriers to PA were emotion, environmental context and resources, beliefs about capabilities, and intentions. Whilst the most prominent facilitators of PA were social influence, belief about consequences, and environmental context and resources.

Social influence appears to be the most prominent facilitator of engagement in ALBA. Due to the face-to-face nature of the delivery of the ALBA intervention, there is the opportunity to develop a relationship between the participant and the practitioner. This



was central to the discussions in all of the groups, which suggested that the relationship between the participant and the BCP influenced engagement with ALBA and appears to be one of the biggest strengths of the ALBA intervention. This relationship is referred to as the therapeutic alliance, and is described as the collaborative relationship which allows the patient-therapist to work together in the interest of problem solving with three elements: goals, tasks and bonds (Allen et al., 2017). It has been argued in psychotherapy literature that the therapeutic alliance which develops between practitioner and client is more important than any specific technique or approach (Horvath, Re, Flückiger, & Symonds, 2011), with evidence suggesting that the quality of the alliance is a consistent predictor of treatment success, as a stronger alliance improves cooperation, without which participants are unlikely to enact health actions or agree to therapeutic tasks (Wampold & Imel, 2015).

An important element in the relationship with the BCP, was the warmth and empathy that was conveyed by the BCP which helped the participants to feel comfortable opening up about their mental health. Expressing empathy is an integral part of most psychotherapies. According to Rogers (1975), the underlying principle of empathy is attitude of acceptance, and an understanding of the client's emotions. Research from psychotherapy has found that ratings of therapists' empathy is often correlated with a positive outcome (Wampold & Imel, 2015). Participants from the focus group valued having somebody who listened to them without judgement. This 'unconditional positive regard' is a well-known Rogerian principle (Amadi, 2013), and the impact of facilitating people to be able to talk about what is on their mind is a central tenet of expert spiritual care (Snowden et al., 2018).

In ALBA this helpful therapeutic environment had a positive impact on other aspects of the framework, for example, making people feel more capable. Participants discussed how meeting with the BCP helped to provide structure and routine in their lives, which helped to give them a sense of purpose. A sense of purpose is central for mental wellbeing. This 'virtuous circle' of positive reinforcement (Stanislaus, 2016) is the opposite of the 'vicious circle', where low self-esteem reinforces beliefs about poor

performance that reinforce low self-esteem and so on (Baron & Kenny, 1986; Steca et al., 2017; Wäschle, Allgaier, Lachner, Fink, & Nückles, 2014). Positive beliefs about capabilities increased self-efficacy, which facilitated engagement in ALBA and encouraged PA. This is maybe explained by Self-Determination Theory (SDT; Deci & Ryan, 1985), which proposes that steady increases in self-efficacy and self-esteem can be achieved through achieving self-directed goals.

The face-to-face delivery of the ALBA intervention also appears to have had other therapeutic benefits that were unforeseen in the planning of the intervention.

Participants discussed how they felt meeting with the BCP helped to provide structure and routine in their lives, which helped to give them a sense of purpose. When situated within the context of recovery, a sense of meaning and purpose can help someone to reconnect and reduce alienation (Gillard, Turner, & Neffgen, 2015). Patterns of withdrawal, avoidance and inactivity have been associated with exacerbating and maintaining depression (Dobson, Quigley, & Dozois, 2014). ALBA participants reported that having to keep appointments with BCPs and engage in PA gave them something else to think about and helped them to feel more connected to their community.

Engaging in leisure behaviours such as PA have been found to be associated with positive feeling and increased life satisfaction (Pressman et al., 2009), which can also serve to act as a distraction from worries and depressing thoughts: this is referred to as the distraction hypothesis (Craft & Perna, 2004). Whilst this hypothesis has not been rigorously tested, there is evidence to support that engaging in distracting activities, such as PA can be used as a coping strategy for managing depression (Mikkelsen, Stojanovska, Polenakovic, Bosevski, & Apostolopoulos, 2017). Therefore, this suggests that the increased opportunities for interpersonal interaction, alongside the increased intentions to engage in PA that ALBA provided, helped to foster improvements to mental wellbeing.

The focus group discussions highlighted the importance of the interpersonal elements of the intervention. The evidence which supports the value of face-to-face interactions in the promotion of PA is mixed. One review of face to face interventions to promote PA

concluded that they were effective at promoting PA at least at 12 months, however the included studies were not of high quality (Richards, Hillsdon, Thorogood, & Foster, 2013). However further to this, another review conducted by the same team, comparing face to face interventions with web-based PA interventions (Richards, Thorogood, Hillsdon, & Foster, 2013), concluded that due to the lack of evidence, they could not determine if face to face interventions or web interventions were more effective. Nevertheless, the evidence from this study suggests that the interpersonal element of ALBA was a key facilitator.

Social support has been found to be positively associated with adherence to health behaviour change (Middleton, Anton, & Perri, 2013), with research suggesting that those without practical social support are at increased risk of non-adherence. The participants reported that the encouragement they had received from other people in their lives about participating in ALBA had made them feel more motivated, and that through taking part they felt more connected to others and wanted to feel more part of a community. Encouragement from others to engage in PA has been found to provide positive reinforcement, which can in turn promote confidence, self-esteem and self-efficacy of participants (Soundy, Freeman, Stubbs, Probst, & Vancampfort, 2014).

ALBA also provided opportunity for meeting new people and engaging with the community through the peer support element. Social contact has also been identified as playing an important role in mental wellbeing (Saeri, Cruwys, Barlow, Stronge, & Sibley, 2017). Peer supporters can help to foster a sense of acceptance, as individuals can form a “bond” over shared experience and can help people to feel understood. Peer supporters can also serve as a “role model” and help foster belief in a better future (Davidson, Chinman, Sells, & Rowe, 2006). However there are also challenges with peer support in mental health services, as peer volunteers are also vulnerable and could be exposed to stress which might impact on their recovery (Repper & Carter, 2011). The participants raised concerns about becoming a peer supporter as they felt that they were not capable and were worried about letting others down. Peer support in

mental health services needs to be carefully managed, to ensure that the demands of the role do not affect the peer volunteers wellbeing and recovery.

Emotion was a prominent barrier and facilitator to participating in the ALBA intervention, with themes in the data suggesting that negative emotions which reflected the previous negative experiences of the participants, their poor mental health and wellbeing and their fears acted as barriers. Whereas positive emotions which reflected the sense of enjoyment and achievement participants experienced once they began taking part, acted as facilitators. Therefore, emotion is important to consider, as it reflects the experience of the participants. As highlighted by the Glowacki et al. (2017) review, emotion is a particularly salient domain within mental health populations, however it is often neglected in health models and is not largely accounted for within the literature. Previous research into adherence to PA, has often found enjoyment as a key determinant, and “low mood” or fatigue are frequently found to be barriers to PA, particularly in individuals with poor mental health (Firth et al., 2016).

Low self-esteem and lack of self-efficacy also appear to have acted as barriers to the intervention, which in turn impacted on participant beliefs about their capabilities. Participants discussed having had negative self-beliefs which had impacted on their choices of behaviour in the past, as they did not believe that they were good enough or capable of putting themselves first. This aligns SCT (Bandura, 1986), which posits that a person’s confidence in their ability to perform a behaviour, and their perception of the amount of effort that would be required to carry out the behaviour influence their choice of behaviours and activities. People with poor self-efficacy therefore tend to avoid settings and activities which they perceive themselves as not being able to cope with. Self-esteem is a self-evaluative judgement which has also been found to impact on motivation, resilience and persistence in pursuit of goals (Elavsky, 2013). Therefore, by increasing self-esteem and self-efficacy, individuals are more likely to persist in the face of challenges and obstacles to achieve their goals: this is relevant for PA maintenance.

Goal setting is one mechanism which can be used to enhance self-efficacy, as when people attain a goal, their self-efficacy increases, which in turn leads them to setting higher goals (Seo & Ilies, 2009). This was one mechanism which was utilised in the ALBA intervention. The participants reported that this was a facilitator, as they were encouraged by having something to work towards and felt a sense of accomplishment from achieving their goals. However, goals which are too challenging can have a negative impact on self-efficacy (Bandura & Locke, 2003). Participants reported that when they set goals that were too hard, it had a negative effect on how they felt about themselves, and therefore acted as a barrier. Therefore, goal setting needs to be carefully managed in order to ensure that they act as a facilitator.

People with mental health conditions are often confronted with the misunderstandings of society about mental health conditions, which leads to stigma (Rüsch, Angermeyer, & Corrigan, 2005). The experience of this stigma and the associated prejudice causes some people with mental illness to internalise these beliefs, which can lead to people turning on themselves, this is referred to as "self-stigma". Self-stigma has been found to act as a barrier to recovery as it undermines self-esteem and hope (Link, Struening, Neese-Todd, Asmussen, & Phelan, 2001). It was evident from the discussions that mental health stigma was a prominent barrier, which had prevented participants from seeking help previously and had impacted on how they felt perceived. However, participants reported that opening up about their mental health and having someone to talk to had helped them to feel less alone. Hope and optimism about the future are important components of recovery, according to the Leamy et al. (2011) model CHIME (Connectedness, Hope and Optimism, Identity, Meaning and Purpose, and Empowerment). This suggests that through participating in ALBA, they had become more optimistic about their future, as they were feeling less alone and more positive about the possibility to recover.

Themes that fell within the domain of environmental context and resources were also amongst the most prominent barriers to participating in ALBA. This was particularly relevant to accessing the intervention. Participants frequently discussed the length of

intervention as limiting, as they found that if they had a “bad spell” then they were missing out on BCP sessions. This aligns with the literature, as a commonly cited barrier to PA interventions in mental health populations are the side effects and symptoms of illness (Glover et al., 2013; Roberts & Bailey, 2011). This highlights the need for ALBA to increase the flexibility of how the intervention is delivered in order to be more person-centred and appropriate for a mental health population. Identifying the influence of environmental and contextual factors which influenced participant adherence is beneficial as this information can be used to amend the implementation of the intervention. In the literature time and cost are often identified as barriers to PA interventions (Glowacki et al., 2017a), but the use of the TDF and qualitative methods allowed for the identification of unique environmental barriers which related to the ALBA intervention.

How participants felt towards the intervention materials, particularly the trackers and workbooks, was mixed. The majority of the participants reported that they enjoyed using the trackers and found them motivating. This concurs with research on the use of activity trackers, suggesting that they make self-monitoring of behaviour easier (Donnachie, Wyke, Mutrie, & Hunt, 2017), with evidence supporting the acceptability of pedometers in mental health populations (Danner et al., 2017). However, participants also reported that there were negatives, such as problems they had had with them, and disliking the appearance. Considering the negative aspects of ALBA participants’ experience of using the activity trackers is relevant for future implementation of the intervention, as alternate trackers could be trialled to respond to the feedback. Equally, some participants reported that they found that the workbook materials were patronising, whereas other participants were very positive about them. This highlights the importance of tailoring interventions to meet the needs of the individual as in mental health care there is no one-size-fits-all (Dixon, Holoshitz, & Nossel, 2016).

#### *4.5.1 Rigor*

In qualitative research, rigor is considered to be similar to reliability or validity in quantitative research (Thomas & Magilvy, 2011). Within the literature, rigor has been

defined and recognised as encompassing different concepts by different scholars (Smith & McGannon, 2018). Lincoln and Guba's (1985) model of rigor identified four components: credibility, transferability, dependability, and confirmability. However, the criteria for rigor, or trustworthiness, in qualitative research is closely aligned with the underlying paradigm. This research adopted a pragmatic philosophy, which aimed to not only provide an understanding of the experience of participants, but also to provide information which would be useful to stakeholders. Within this paradigm it is important to scrutinize the quality of the research and be transparent about where bias may impact upon the findings.

Credibility, which is similar to the concept of internal validity in quantitative methods, is often ensured by member checking. This is when either the transcripts or the results are checked by a "member" or research participants of the study in order to confirm the accuracy of the data/results. However, member checking has received criticism as a method of ensuring credibility (Smith & McGannon, 2018) due to power balance between researcher and participants and issues regarding epistemology. Another criticism of member checking is that it is difficult to determine if participants have fully engaged with member checking. There is also the more practical issue of time, as a lot of time can pass between data collection and analysis, therefore members may find that their statements no longer align with their experiences or their perceptions may change over time. After considering these criticisms, it was decided that member checking would not be used to ensure credibility in this study.

Transferability, which is similar to the quantitative concept of generalisability or external validity, refers to how the research can be transferred from one setting to another (Smith, 2018). In qualitative research, it is widely accepted that there is no single or "true" interpretation, as subjectivity is central. The findings from this study were mostly positive, suggesting that despite the barriers that participants faced, they were able to overcome them and as a result of participating in the ALBA intervention felt they had gained confidence and had new goals. However, there may also have been participants who did not find that the intervention helped them, thus they would be

more likely to have had a negative experience of the intervention or may have been unable to overcome the barriers they faced. Therefore, the mostly positive results listed above may be biased by the type of participant who would want to participate in a focus group.

Dependability, similar to the concept of reliability, refers to the way in which the research has been conducted which should be consistent over time, researchers and analysis techniques (Morrow, 2005). In order to ensure that the qualitative analysis was of a high-quality, the supervisors of this project acted as “critical friends”, as they provided critical feedback on the authors interpretation and coding (Bird, 2018).

Alternative explanations and interpretations of the data were discussed in supervision meetings. The use of critical friends to ensure rigor in qualitative research in sport and exercise psychology has been recommended by Smith and McGannon (2018) who suggest that unlike inter-rater reliability, the different perspectives of critical friends offer an opportunity to challenge and develop the interpretations of one researcher and help to develop a coherent argument, rather than striving towards agreement and reproducibility.

#### *4.5.2 Limitations*

Participation in the focus groups was low. A frequently cited reason for not wishing to take part in the focus groups was due to anxiety about the group setting. Evidence from the literature suggests that participants in qualitative research often feel uncertainty or anxiety about participating, but often decide to take part for the sake of others who would benefit from the research (Dennis, 2014). Considering the target population of the intervention, it should have been foreseen that some participants may experience anxiety, particularly in regard to social situations. Given the nature of the topic, and the expectation that mental health issues would be discussed, the focus group setting was chosen as it was believed that group discussion would better facilitate the sharing of experiences, and that participants in the group would be able to support each other. Whilst this was evident in the social interaction which took place, it is understandable



that the idea of the group setting was off putting to some, and individual interviews should have been offered to participants who wished to share their experience but were uncomfortable attending a focus group.

In qualitative studies, the concept of “data saturation” refers to the point the point at which no new themes or codes ‘emerge’ from data and is often cited as the point when an appropriate sample size has been recruited (Lincoln & Guba, 1985). Data saturation is the most commonly cited justification for determining sample size in qualitative literature (Braun & Clarke, 2019). As the attendance was low, it could be argued that more themes would have emerged from a larger sample. However, Braun and Clarke (2019) argued that data saturation is a logical fallacy, as there could always be new information. Within a pragmatic paradigm, data must serve a purpose. The purpose here was to determine the participants’ experience of the ALBA intervention. As experience is individual, it would be expected that every participant would have had a different experience. It has also been suggested that when trying to achieve data saturation, there also comes a point where further data collected becomes “counter-productive” as the “new” does not necessarily add anything (Saunders et al., 2018). As it would not have been feasible to interview every participant, and the themes generated from the data collected where shared across the focus groups, it was determined that sufficient data had been collected to determine the barriers and facilitators faced by ALBA participants.

Another limitation of this study was the potential for bias. The participants who attended the focus groups were individuals who had completed the intervention or were still actively taking part. The focus group discussions reflected a mostly positive view of the ALBA intervention as the individuals who had participated had actively engaged with the intervention and had been able to overcome their barriers. Engaging participants who have disengaged can be challenging, due to the community setting and the optional nature of the focus group attendance, so there were no participants recruited who had chosen to disengage from the study. Hence, there is a risk of bias impacting the conclusions that have been drawn here as the people who chose to attend the

groups may not be representative of all of the participants who have taken part in the ALBA intervention, as they represented individuals who felt that taking part had been beneficial.

It is acknowledged in qualitative research that “*knowledge cannot be separated from the knower*” (Steedman, 1991), and that results of qualitative research may be biased by the beliefs, judgement and practices of the researcher during the research process. As the researcher had been engaged in evaluating the ALBA intervention from the beginning of the intervention, they were invested in the intervention being successful. Whilst the research acknowledges this, every effort was made to ensure that the focus group schedule was developed to allow participants to discuss positive and negative experiences of the intervention, and attempts were made to ensure that all aspects were discussed in the same depth during the data collection. An attempt to minimize any bias of the researcher was also made during the analysis, this was assisted by the use of the analytical framework and the input of “critical friends”.

Attendance at the focus group that was run in Fife was higher than the attendance at the focus groups run in West Lothian and North Ayrshire (7 attended the Fife group, compared to 3 and 4 respectively). The difference in attendance could be attributed to the number of active and completed participants in the areas. As the intervention was launched in Fife six months prior to the launch in West Lothian and North Ayrshire, therefore there were considerably more active and completed clients in this area compared to the other two areas. However, the attendance may also have been affected by the time of year, as the Fife focus group was held in early spring, and the West Lothian and North Ayrshire groups were held in summer. The choice to hold the West Lothian and North Ayrshire groups in the summer was to ensure that participants could be recruited from 3 cohorts. However, seasonal variations may have impacted on attendance, for example school holidays may have impacted on some participants ability to attend due to childcare commitments.

## 4.6 Chapter Summary

The purpose of this chapter was to present the qualitative process evaluation which explored the experience of participants taking part in ALBA. The findings from this chapter suggest that the facilitators outweighed the barriers, with most of the barriers discussed consisting of reflections on how participants had felt prior to participating in ALBA. The focus group discussions highlighted the key role that the BCPs and the support they offered played as a facilitator for participating in ALBA, as the social support offered by the BCPs in turn influenced participants beliefs about their capabilities and their intentions. The key barriers to intervention were emotion, environmental context and resources and beliefs about capabilities. This finding suggests that the relationship that formed between the BCP and the participants was therapeutic, as it allowed participants to open up about their mental health and develop a cooperative relationship which allowed them to problem solve and set goals. This in turn led to other therapeutic benefits, as participants started to regain a sense of purpose and routine which is beneficial for mental wellbeing.

The chapter then went on to discuss the methodological rigor and the limitations of this study. It was recognised that whilst the results of this qualitative study were mostly favourable, they may be subject to bias, as participants who were willing to participate in the focus groups were more likely to have had a positive experience.

## **Chapter 5 Behaviour Change Practitioners Focus Group**

### **5.1 Purpose of Chapter**

Following on from the previous chapter, the purpose of this chapter is to present the second part of the qualitative process evaluation of ALBA. This chapter aims to further explore how the ALBA intervention was implemented, and the experience of the BCPs who delivered the intervention. This will be done through the analysis of the focus group data, using the Theoretical Domains Framework.

### **5.2 Background**

The Medical Research Council (MRC) guidance about process evaluation of complex interventions highlights the importance of investigating how interventions are delivered and how participants engage with them as a means of understanding the implementation and function in practice (Craig et al., 2008). The key functions of process evaluations in complex interventions are to assess fidelity and the quality of the delivery, and the extent to which the intervention was delivered to its target audience. In cases where there is no control group, process evaluations are even more valuable as they provide information which can contribute to understanding of the program and the changes achieved. Interventions are often undermined by problems of acceptability to the target group, compliance and delivery, so process evaluations can be used to help explain negligible or small effects or identify where things have gone wrong (Bauman & Nutbeam, 2013).

Monitoring fidelity alongside the delivery of an intervention helps to understand if an intervention was delivered as planned (Walton, Spector, Williamson, Tombor, & Michie, 2020). Intervention fidelity in complex interventions is complicated, as in many complex interventions strict standardisation is not possible. However, without understanding whether an intervention is delivered as planned it is difficult to understand if the intervention is effective or not, which can then lead to a Type 1 or Type 2 error (Borrelli, 2011). This is particularly relevant when there is no control or comparison group. In

spite of this, implementation fidelity has been relatively ignored in complex intervention literature (Walton, Spector, Tombor, & Michie, 2017).

Observational measures, such as audio or video recording, are considered to be the gold standard for assessing fidelity (Walton et al., 2020), however, within the scope of this project, using observational methods was considered inappropriate as participants were discussing their mental health and other sensitive topics, and they may feel uncomfortable making personal disclosures whilst being observed either directly or by video camera. Using audio recordings of sessions and assessing a random sample of 20-40% against checklists such as the Motivational Interviewing Treatment Integrity (MITI; Moyers, Rowell, Manuel, Ernst, & Houck, 2016) scale or the Behaviour Change Counselling Index (BECCI; Lane et al., 2005) are often used. This was also deemed out with the scope of this evaluation, as this is very labour intensive, and considering the recruitment target, 20% of sessions, would have detracted focus from the central aims of the project. However, adopting this approach would have added objectivity to the evaluation of the fidelity of the intervention. Consequently, it was decided that using a qualitative approach would be the most pragmatic way of assessing fidelity and would help to identify issues within the delivery pathway.

The quality of delivery can have a moderating effect on the effectiveness of an intervention and the degree to which the intervention is implemented as intended (Moore et al., 2015). The quality of the intervention delivery depends on the practitioners. Interpersonal factors as well as variations in the quality and consistency of the training provided can cause discrepancies in the quality of the delivery. Implementing behaviour change interventions can be challenging, particularly in “real world” settings where it is not possible to control all variables (Quested, Ntoumanis, Thøgersen-Ntoumani, Hagger, & Hancox, 2017). Therefore, evaluating intervention implementation is important, as it makes it possible to attribute why an intervention might not be effective, by determining whether an intervention is ineffective (poor quality) or due to underexposure to the active component of the intervention.

Practitioner's experience of delivering an intervention can give insight into the barriers faced by those implementing an intervention and is valuable for understanding how the implementation can be improved upon. Identifying barriers to implementation allows for issues to be addressed and higher implementation to be achieved. Subsequently, identifying the enablers to intervention allows for the best use of these resources to be made. It also allows for the identification of the "active components" that are central to an intervention's success.

Testing an intervention in a "real world" setting is important for understanding the effectiveness, as in "real world" settings there are more obstacles that cannot be controlled. Contextual factors refer to the set of characteristics and circumstances within which a program or service is implemented (Coles et al., 2017). The MRC guidelines recommend that evaluations consider the contextual factors (Moore et al., 2015), as contextual factors are not merely a backdrop but can impact upon effectiveness and delivery. Therefore, having an understanding of what the barriers faced by those implementing an intervention is valuable for understanding how the implementation can be improved upon.

#### *5.2.1 Role of the Behaviour Change Practitioner*

There has been a call for more explicit use of theory in intervention design in order to identify mechanisms of change, and in what contexts interventions are effective (Atkins et al., 2017a; Davis, Campbell, Hildon, Hobbs, & Michie, 2015). The role of the Behaviour Change Practitioners (BCP) was to deliver the ALBA intervention. The ALBA intervention was designed to be based on the COM-B model. The COM-B model proposes that for someone to engage in a behaviour they must be physically and psychologically able (capability), have the social and physical opportunity (opportunity), and the want or need to do the behaviour more than any other competing behaviours at that moment (motivation). The BCPs worked on a one to one basis with their clients to

deliver a person-centred intervention which helped individuals to identify issues that were affecting their ability to become more active and helped them to develop sustainable solutions to help them become active and stay active. The BCPs received training on how to deliver the intervention and use the resources, and additional training to provide them with the skills to support someone with a mental health condition (for full details of training provided, see chapter 2.4.1).

In addition to delivering the ALBA intervention, the BCP job specification stated that the BCPs would provide a mentoring role to other professionals (e.g. Gym staff) and Volunteers to “increase confidence to apply the behaviour change skills as the ALBA intervention is rolled out.” BCPs were also expected to establish positive working relationships with local stakeholders involved in the delivery of ALBA and represent ALBA at local events with key stakeholders and potential referrers. The full job description for the role of the BCP can be found in the appendix.

This chapter aims to assess the implementation of the intervention by using the Theoretical Domains Framework (TDF) to identify the barriers and enablers to the delivery. Identifying barriers and enablers that influence delivery of an intervention is an important component of evaluation, as steps can be taken to minimise the barriers and enhance the enablers to support successful implementation (Czosnek et al., 2020). Recommendations will be made based on the findings on how to overcome the barriers to facilitate improved delivery.

## **5.3 Method**

### *5.3.1 Design*

A focus group discussion was conducted to investigate the BCPs' views and experience of delivering the ALBA intervention. According to the evidence on focus group methodology, groups which yield the richest data are groups which feel equal to each other and feel comfortable expressing their opinion, this is why it is recommended to create a homogenous group (Acocella, 2012). Whilst the BCPs were ostensibly a

homogenous group who had shared the same training and had the same role in the delivery of the intervention, they were also heterogenous from the perspective that they had different levels of experience and were working in different areas with different stakeholders. A group interview was therefore viewed as more likely than individual interviews to reveal the differing experiences of delivering the intervention across three diverse areas of Scotland (Acocella, 2012). Furthermore, as the BCPs were all employed to deliver the ALBA intervention, they perceived themselves as being part of the same social group, whilst it was hoped that this would afford greater insights into the role and that the data would be richer due to the pre-existing dynamic between the participant. However, it is acknowledged that there may be greater risk of group conformity in naturally occurring groups (Leask, Hawe, & Chapman, 2001).

### *5.3.2 Participants and setting*

A purposive sample of all the BCP staff employed by the charity SAMH to deliver the ALBA intervention were invited by email by the PhD researcher (NP) to attend the focus group which was held in the SAMH office in Dunfermline. Of the six BCPs, one could not attend due to a prior commitment, leaving a total of five participants. Information about the participants' demographics and previous work experience was collected at the start of the focus group.

The focus group was facilitated by the PhD researcher, who was assisted by the ALBA project assistant. Both of the group facilitators were female. All participants were familiar with both the group facilitators, having met at previous meetings relating to the implementation of ALBA.

### *5.3.3 Procedure*

The participants took part in a single, 1 hour 55-minute-long focus group in December 2017. Before the start of the focus group, participants completed a consent form and a questionnaire to provide basic demographic information. Participants then verbally provided information about the area they were based in and their previous experience



prior to taking on the role as BCP. An interview guide with questions and prompts was used. The questions used to gather data from the behaviour change practitioners (BCPs) were open-ended and were developed by the researcher (see appendix for focus group schedule). The focus group discussion revolved around the behaviour change practitioner's personal experience of delivering the intervention content, their competency level and how confident they felt delivering the intervention.

The assistant facilitator made notes during the focus group of body language and other observations. The focus group was audio-recorded and transcribed verbatim in QSR International's NVivo 11 qualitative data analysis software. Transcriptions were cross-checked against the audio recordings for accuracy and de-identified. Participants were provided with a copy of the transcript and were asked to check it for accuracy and return with any amendments. Participation in the focus group was voluntary, and any cost incurred in attending were reimbursed by SAMH.

#### *5.3.4 Analytical Framework*

The TDF was used as a framework for the analysis of the data. The TDF developed as an integrated framework of behaviour change theories and has been used widely in implementation research since it was first developed, including studies relating to hand hygiene (Dyson, Lawton, Jackson, & Cheater, 2011), the barriers and facilitators to exercise among adults with depression (Glowacki et al., 2017a), and the influences on antibiotic prescribing (Courtenay et al., 2019). The TDF consisting of 14 domains in which to view cognitive, affective, social and environmental influences on behaviour (Francis, O'Connor, & Curran, 2012). The TDF has opened up a new approach for investigating problems with implementation, as it allows for the identification of specific barriers and enablers.

#### *5.3.5 Procedure for Data Analysis*

Similar to the analytical approach described in 4.3.4, framework analysis (Ritchie & Spencer, 1994) was used to analyse the data. Framework analysis was considered an

appropriate method, as its main concern is to describe and interpret what is happening in a specific setting, in a pre-designed sample and is well suited for applied research (Srivastava & Thomson, 2009). The TDF was used as the “framework”, and followed the methodology described by Atkins et al. (2017).

The stages in the analysis process followed the five-steps described by Srivastava & Thomson (2009). Following the anonymisation of the transcript, a familiarisation process was carried out. Familiarisation refers to the process of becoming familiar with the transcripts of the data collected. An inductive approach was used to code the data. Specific beliefs were identified within the data which were coded into themes. The themes were then mapped onto the domains of the TDF. Coding was conducted by the author and all coding was discussed and agreed upon with the supervisory team.

#### *5.3.6 Trustworthiness*

The trustworthiness of the data analysis was ensured through the process of member checking the raw data and the preliminary findings with the participants to ensure credibility of the analysis. To ensure dependability of the analysis, the authors supervisors acted as “critical friends” who provided feedback on the authors interpretations and in a way audited the research process by reviewing the notes and having discussions about the research process.

#### *5.3.7 Ethics*

This study was approved by the Edinburgh Napier University School of Applied Sciences Ethics committee.

## **5.4 Results**

### *5.4.1 Demographics of Participants*

All participants of the focus group at time of data collection were employed as BCPs by the charity SAMH. The participants demographic information is presented in Table 8, with the names changed to pseudonyms to protect the identities of the participants.

*Table 5.4.1 Participants Demographic Information*

| <b>Name</b>   | <b>Age Group</b> | <b>Gender</b> | <b>Ethnicity</b> | <b>Previous Experience</b>   | <b>Area based in</b> |
|---------------|------------------|---------------|------------------|--|----------------------|
| Participant A | 25-30            | Female        | White - British  | Support worker for people with learning disability or mental health issue. | West Lothian         |
| Participant B | 35-40            | Female        | White - British  | Support worker with mental health charity.                                 | Fife                 |
| Participant C | 18-24            | Female        | White - British  | Support worker with mental health charity.                                 | Fife                 |
| Participant D | 25-30            | Female        | White - British  | Service development coordinator at a breast cancer charity.                | North Ayrshire       |
| Participant E | 25-30            | Female        | White - British  | Research assistant.  | West Lothian         |

#### *5.4.2 Classification of Themes using the Theoretical Domains Framework*

In total 25 themes were identified in the data. These themes mapped onto 11 of the domains from the TDF. The 3 domains that were not identified included: Behavioural Regulation, Intentions, and Goals. The table below presents the themes mapped onto the domains. Figure 5.4.1 demonstrates how the themes acted as a barrier or an enabler to the delivery of the intervention.

*Table 5.4.2 Themes Mapped onto the TDF*

| <b>Domain</b>    | <b>Themes</b>             | <b>Specific Codes</b>   |
|------------------|---------------------------|---|
| <b>Knowledge</b> | Knowledge of Intervention | <ul style="list-style-type: none"> <li>• Knowledge of resources</li> <li>• Resources can be used in lots of ways</li> </ul> |

| <b>Domain</b>                                   | <b>Themes</b>                 | <b>Specific Codes</b>   |
|---|-------------------------------|---|
|   | Tailoring Intervention        | <ul style="list-style-type: none"> <li>• Different client needs</li> <li>• Every client different</li> <li>• Recognising participant needs</li> <li>• Tailoring intervention</li> <li>• Recognising when ALBA not suitable</li> <li>• Dealing with external factors</li> <li>• mental health stigma</li> <li>• Understanding of mental health</li> </ul>  |
|   | Participant Understanding     | <ul style="list-style-type: none"> <li>• Avoiding Jargon</li> <li>• Keeping it simple</li> <li>• Trying not to overwhelm participants</li> <li>• Explaining to participants</li> </ul>  |
| <b>Skills</b>                                   | Training                      | <ul style="list-style-type: none"> <li>• Expected Cognitive Behavioural training</li> <li>• Not relevant training</li> <li>• Need for in-depth training</li> <li>• Training too brief</li> <li>• Push for more training</li> <li>• Training not right level</li> <li>• Training taking up time</li> <li>• Inconsistency in training</li> <li>• Specific training gave more to work with</li> <li>• Training evolved</li> <li>• Timing of training</li> <li>• Need time to process learning</li> </ul> |
|   | The Relationship              | <ul style="list-style-type: none"> <li>• Building a relationship</li> <li>• Participants opening up</li> <li>• Importance of interpersonal skill</li> <li>• One to One Support</li> </ul>   |
|   | Sharing learning and practice | <ul style="list-style-type: none"> <li>• Sharing practice</li> <li>• Would like more opportunity to learn from each other</li> <li>• Want more opportunity to discuss with other BCP</li> </ul>   |
| <b>Memory, Attention and Decision Processes</b> | Lone Working                  | <ul style="list-style-type: none"> <li>• Lone working</li> <li>• Supporting someone one to one</li> <li>• Need to know what you're talking about</li> <li>• Being flexible</li> <li>• Finding a way to work best</li> </ul>   |
| <b>Social/ Professional Role and Identity</b>   | The Role of BCP               | <ul style="list-style-type: none"> <li>• Didn't feel appropriate to receive same training as Leisure Trust staff</li> <li>• Different role than Leisure Trust staff</li> <li>• Specific need for BCP</li> <li>• Networking</li> </ul>   |

| <b>Domain</b>                     | <b>Themes</b>        | <b>Specific Codes</b>  |
|-----------------------------------|----------------------|--|
|                                   |                      | <ul style="list-style-type: none"> <li>• Not our role</li> </ul>   |
|                                   | Adjusting to role    | <ul style="list-style-type: none"> <li>• Different type of support from previous role</li> <li>• Difference between long- and short-term support</li> </ul>  |
|                                   | Commitment to Role   | <ul style="list-style-type: none"> <li>• Commitment to role</li> <li>• Feels guilt</li> <li>• Responsibility to clients</li> </ul>   |
| <b>Beliefs About Capabilities</b> | Confidence           | <ul style="list-style-type: none"> <li>• Gained experience in the role</li> <li>• Grew in confidence through practice</li> <li>• Professional confidence</li> <li>• Self-confidence</li> </ul>   |
|                                   | Feeling prepared     | <ul style="list-style-type: none"> <li>• Didn't feel prepared for 16 weeks of support</li> <li>• Lack of time to practice skills</li> <li>• Would like to have felt more confident</li> <li>• Nervous about using new materials</li> </ul>   |
| <b>Optimism</b>                   | Future of ALBA       | <ul style="list-style-type: none"> <li>• How intervention could be self-sustaining</li> <li>• Lack of security</li> <li>• Peer support model</li> </ul>  |
| <b>Beliefs About Consequences</b> | Ending Intervention  | <ul style="list-style-type: none"> <li>• Finishing with clients</li> <li>• Positive ending</li> <li>• Relapse prevention</li> </ul>  |
| <b>Reinforcement</b>              | Need for Reassurance | <ul style="list-style-type: none"> <li>• Doing the right thing</li> <li>• Want reassurance that they are helping</li> <li>• Reassured by results</li> <li>• Wondering how much they help</li> <li>• Hope clients get something out of it</li> <li>• Focus on results</li> <li>• Concerned about causing harm</li> <li>• Worried</li> </ul> |
| <b>Emotion</b>                    | BCP Wellbeing        | <ul style="list-style-type: none"> <li>• Challenges of the role</li> <li>• Emotional toll</li> <li>• Stress</li> <li>• Adding to each other's stress</li> <li>• Risk of burnout</li> </ul>   |

| <b>Domain</b>                              | <b>Themes</b>                 | <b>Specific Codes</b>  |
|--|-------------------------------|--|
| <b>Environmental Context and Resources</b> | Using Trackers                | <ul style="list-style-type: none"> <li>• Sensitivity of tracker</li> <li>• Technical issues</li> <li>• Trackers as a source of stress</li> <li>• Worry about losing data</li> <li>• Difficulty dealing with tracker company</li> <li>• Trackers are motivating</li> </ul>  |
|  | Using Resources               | <ul style="list-style-type: none"> <li>• More to intervention than the books</li> <li>• Recognising when a book isn't suitable</li> <li>• Books help identify problems</li> <li>• Reflecting back to participants</li> <li>• Reflecting on goals</li> <li>• Seeing progress</li> <li>• Reviewing progress</li> </ul> |
|  | Referral process              | <ul style="list-style-type: none"> <li>• Issues with referral process</li> <li>• Losing referrals</li> <li>• Slow start</li> </ul>   |
|  | Delivering ALBA               | <ul style="list-style-type: none"> <li>• Lack of cover</li> <li>• Need more flexibility</li> <li>• Planning of ALBA</li> <li>• Run like a service</li> <li>• Difference between areas</li> </ul>   |
|  | Accessibility of intervention | <ul style="list-style-type: none"> <li>• Accessibility of intervention to target population</li> <li>• Issue with reading or writing</li> <li>• COM-B language too academic</li> <li>• Participants understanding of questionnaires</li> </ul>   |
|  | Length of intervention        | <ul style="list-style-type: none"> <li>• Appointment based</li> <li>• Shortage of time</li> <li>• Intervention too long</li> <li>• Intervention too short</li> <li>• Benefit of long-term study</li> </ul>   |
| <b>Social Influences</b>                   | Support from Trainer          | <ul style="list-style-type: none"> <li>• Lack of support</li> <li>• Support from trainer</li> <li>• Lack of uptake of offered support from trainer</li> <li>• Support more beneficial after seeing more clients</li> </ul>   |

| Domain | Themes        | Specific Codes  |
|--------|---------------|---|
|        | Management    | <ul style="list-style-type: none"> <li>• Need for supervision</li> <li>• Support not available when needed</li> <li>• Who to turn to when an incident occurs</li> <li>• Working closely in teams</li> <li>• Experience of managers</li> </ul>       |
|        | Leisure Trust | <ul style="list-style-type: none"> <li>• Closer collaboration with LT</li> <li>• Familiarising with LT</li> <li>• Lack of awareness in LT</li> <li>• Reception from LT</li> <li>• Relationship with LT staff</li> <li>• Separate from LT</li> </ul> |

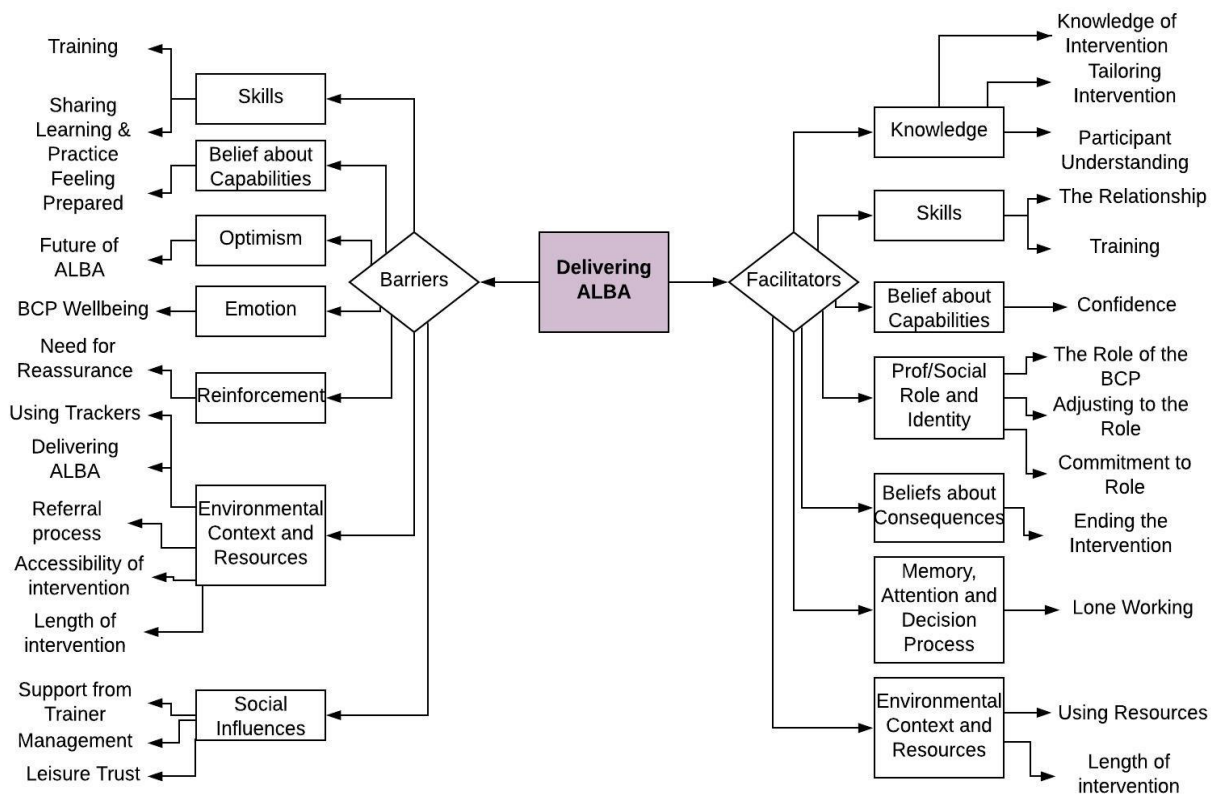


Figure 5.4.1 Barriers and Facilitators to Delivering the ALBA Intervention Mapped onto the TDF Domains

### 5.4.3 Knowledge

The domain “Knowledge” includes “Procedural Knowledge” and “Knowledge about Condition/Scientific Rationale”. Knowledge of the intervention acted as a facilitator of successfully delivering the ALBA intervention. The BCPs demonstrated that they had

developed a lot of procedural knowledge about delivering the intervention. The BCPs discussed how they would assess the needs of their clients and then how they used the resources when delivering the intervention, and how they could be used differently with different clients, to suit the individual needs. This shows similarities to the agenda setting and formulation that a therapist delivering Cognitive Behavioural Therapy (CBT) or Motivational Interviewing (MI) would do with a client.

*Sometimes some of the books aren't really right for the client and like just being aware you don't have to do them all...you don't have to like go through book 1, 2, 3, 4, 5 because I've gotten to the point where I'm like oh well the next book is this book but I really don't think you know she's not yeah its maybe not a problem for them or em we have started going through it and you can tell they are not really getting a lot out of it so it's better to just move on and try something else. – Participant C*

The BCPs explicitly acknowledged that different clients had different needs and they were able to adapt the intervention to suit the individual needs of their clients. This shows that a person-centred approach was taken to delivering the intervention. The BCPs also demonstrated a good understanding of mental health, this was considered important for delivering the intervention to the target population.

*People have definitely got different kind of styles like I've got one client who just, she would rather like take the book away and do the exercises at home and bring it back and then we discuss it and things so she's got time to think about it and then she does it, and she prefers that, and then I've got other ones who'd rather just do it totally with me – Participant E*

The BCPs also recognised that taking part in the intervention could potentially be overwhelming for some participants. The BCPs explained that they tried to keep the language and the way they explained things simple and avoid using jargon.

*I try to explain in quite simple terms to people, em just kind of talk about em how their thoughts will affect what they will do, just try and just kind of simplify it as much as I can at that first initial meeting because I think if we go on too much it puts people off if we go on too much – Participant B*



#### 5.4.4 Skills

The training that the BCPs received to deliver the ALBA intervention was a major theme in the discussion groups. The training programme that the BCPs had undertaken prior to delivering the intervention and the BCPs' expectations of the type of training that they would receive was discussed at length. It was felt by the participants that they had expected a lot more training than they received to prepare them for the role of BCP.

*Well prior to taking on the job role, I did expect cause I had done SAMH's quick version of CBA [Cognitive Behavioural Approach] and em at that it was explained to me that the lady was doing it had been on a full 2 day course and she was just letting us know what it was about and they used the living life to the full sheets free resources so before my interview that was the training I was expecting to get seeing that they were in the job advert it did specify that we'd be doing CBA so I did expect CBA specific training – Participant C*

When the participants were discussing training and skills development, the BCPs reported that they felt that the timing of the training they received was not well planned, as they felt that there was not much time between receiving the training and starting to see clients. BCPs felt that they wanted more time to practice and to familiarise themselves with the materials. The participants also commented that they felt that the training lacked the depth required to prepare them to deliver a 16-week intervention.

*Yeah it could have been a lot more in-depth and a lot earlier, and it could, even of like of these girls who had to wait, we started in January and um we did a good couple of months with no training an' then all of a sudden it was March, we're going to see clients and we still hadn't had hardly any training – Participant C*

*The supporting behaviour change training would not be enough on its own and that was the sort of ALBA specific training that was provided  
- Participant A*

*Yeah, I was definitely I think to go out and deliver 1:1 you need a lot more training, you need to know what you are talking about –  
Participant B*

Some of the training was viewed by the BCPs as more beneficial than others for preparing them for their role. The BCPs discussed what training they felt had prepared them for delivering the ALBA intervention.

*We really needed like CBT specific training, em the Living Life to the Full gave us like more to work with and I think they are looking into getting us motivational interviewing training which would be really good – Participant A*

*I like Living Life to the Full but also like WRAP [Wellness Recovery Action Plan], I thought that was really useful cause some of the stuff that em that was like me and [Participant D] went to a, well it was a 3 and a half hour course in Livingston and that was really good cause the resources we got, we can kind of use for clients but also kind of helps us as well – Participant E*

They felt that there was not enough time to practice their skills before they started seeing clients. The BCPs also reflected, that due to being based in different areas, they felt they didn't have enough opportunities to share their learning with each other.

*I feel like it (the supporting behaviour change training) could have been like a 2 day thing or a day and then a few weeks later got back together, talk about it, you've had a chance to put things into practice and like actually come together and go through the materials again, that would have been more helpful for the ALBA staff – Participant A*

The interpersonal skills and the ability to build a relationship with the clients was considered to be an important facilitator of the intervention implementation. The BCPs recognised that the clients were "getting something" out of the one to one session, and they felt it was important the clients were able to open up to them.

*I think it's the relationship that develops between the BCP and the client as well and that can really that can be really important it can make somebody want to show up again and show up you know I could say a million other factors come into that but I think that's initially that's really important to get them to come back to that second meeting uh huh - Participant B*

#### 5.4.5 Memory, Attention and Decision Processes

BCPs reported that the lone working aspect of the role was challenging, when working on a one to one basis, they felt that it was important to be quick thinking and

responsive to clients who were potentially feeling distressed. The participants did not suggest that they felt in any danger in their role, however they felt that they had to know what they were talking about and be prepared for any situation as they did not have a colleague that they could turn to for extra support.

*Cause you don't have a team to fall back on, you cannae [can't] be sitting with someone at the leisure centre and then walk two minutes and ask a member of staff for a bit of advice, you've got to be quite a confident person – Participant C*

#### 5.4.6 Social/Professional Role and Identity

The participants frequently reflected on their role as a BCP. The BCPs saw their role as being distinct from the role fulfilled by either the Leisure Trust staff or the peer supporters – therefore they felt that they required more training as they needed to be more prepared as they were offering one to one support.

*We did, we were frustrated at points and em I couldn't understand why we had the same training as the leisure staff, but we were expected to [take] this so much further – Participant B*

The BCPs also had a very strong perception of what their role was. They frequently referred to having to do tasks which they perceived as being out with their job role.

*Originally my roles not to go out and network, my roles not to go out and find referrals, my role is to work with referrals, but had me and [Participant B] not travelled to all these organisations put hundreds of time into doing presentations and meeting people, meeting people again, doing all that we wouldn't have had any of the numbers for our cohorts – Participant C*

The BCPs discussed how they had adjusted to the role of BCP, they discussed that delivering ALBA was different from previous roles that they had had, with the participants reflecting that supporting people for a short term was very different from providing ongoing support.

*I was comfortable with the 1:1 role but not in changing someone's behaviour, my one to ones involved setting up gas, electricity, making sure someone had everything they needed to provide them their*

*house, eh so it's like your basic needs, not your emotional –  
Participant C*

The BCPs were very committed to their role and to their clients. This commitment may have enabled high quality service provision, but also had a negative impact on the BCP. They reported that they felt a sense of obligation to the clients they supported and therefore felt guilty if they had to miss a session due to sickness or planned leave, which increased their risk of stress and burnout.

*Everyone feels bad when they're off their work but my main focus is your clients, how am I going to catch up with this, how am I gonnae (going to) and it actually stresses you out more don't it, it probably makes you prolongs your illness a wee bit because your stressing about it – Participant B*

#### *5.4.7 Belief about Capabilities*

The domain of “Beliefs about Capabilities” encompasses self-efficacy and perceived competence. The participants expressed doubts over their capabilities and their confidence in delivering the intervention, particularly in the beginning. The participants reported that at first, they did not feel confident, as they didn't know what to expect and they were concerned about doing the “right” thing. This highlights that there was a need for greater monitoring of fidelity in the implementation of the intervention, as monitoring would have helped to ensure the quality of the delivery and would have helped to identify support and coaching needs to improve the confidence of the BCPs.

*I also worry as well that em we are doing the right thing or saying the right things to clients and we are giving them the right evidence –  
Participant B*

*I was exactly the same at the beginning, the very first week I met clients I was relatively confident because I knew I didn't have to use any of my tools, an like [Participant B] I was really confident in my ability to sit down and chat to someone strike up a relationship get to know a person, quite confident at using the iPad so filling out the survey stuff, great, week two was horrible, it was gut wrenching cause it was like what am I meant to do who says I'm even good at this? – Participant C*

However, the BCPs reflected that their confidence in delivering the intervention had grown with practice. BCPs reported that they began to feel reassured once they started to see positive results.

*But the more you go on, obviously the more confident you become but the first group of clients I was, but I knew we'd you know get good results from them, so you know we much have been doing something right – Participant C*

#### 5.4.8 Optimism

The participants expressed doubts over the sustainability of the project and were quite pessimistic about the lasting impact of their work, as the participants felt there was no way the ALBA intervention would be able to be self-sustaining without the role of BCP. The BCPs touched on the topic of funding for the future and were very conscious of the end of their contracts.

*It's supposed to be a short term project, but we are running a service that has an end point which is quite like, it's sad cause I know that's how a lot of stuff works in the third sector, because you have like limited funding and it happens all the time like you set up a service and then it just comes to an end – Participant A*

The BCPs also discussed the role they felt the peer support model played in sustaining the ALBA intervention. However, they were quick to identify issues which would prevent peer supporters from fulfilling the role of a BCP.

*I like to think that we are identifying the correct people to become peer volunteers, however I've already had one saying they want to drop out so I think, I don't think we can rely on them at all – Participant B*

*The clients we have coming through are clients with experience they don't understand boundaries for a start, they don't, they're not aware of you know the relationship they should have with someone, and a relationship which would be unhelpful – Participant C*

#### 5.4.9 Beliefs about Consequences

The BCPs reflected on their experience of ending the intervention with clients. Some of the BCPs felt it was quite difficult to finish with clients as they were concerned that their

clients would not be able to maintain the changes in their behaviour and improvements in their mental health.

*I can see like bringing it to a positive end, I can see that especially if the person doesn't want to become a volunteer or they don't want to be part of the long-term study or how do you keep that motivation going or set them up for long term adherence – Participant D*

*I feel that just with a few clients, I've felt the ending's been quite abrupt, although we've been setting them up for it and they know it's coming and, but if they don't want to get involved with peer support or if they don't want to get involved in the long term study, I do I feel it's quite an abrupt ending – Participant B*

#### 5.4.10 Reinforcement

There was a recurring theme of the BCPs wanting more reassurance that they were delivering the intervention well and that they were doing the “right” thing. This was reflected in the BCPs suggesting that they could get more formal supervision and support from their trainers, who they perceived as a credible source of knowledge on how to deliver a cognitive-behavioural intervention. This also highlights the support issues that the BCPs faced and the benefit monitoring of fidelity would have had to ensure the competence of the practitioners.

*It would be good to have at this point cause we are coming up to a year for the lady who done our living life to the full training come back and clarify aye lassies great you are totally doing the right thing or naw (no) you're maybe needing to just approach it this way because you are totally working on your own and for all I know I'm making stuff worse like I would like to think I'm not because I'm seeing good results but it would be good to have that clarification I am doing my job right – Participant C*

*It would be good to kind of have some kind of follow up to it to see that to make sure we are actually doing it properly if that makes sense cause like even though the kind of resources are kind of like self-explanatory, it's still em like some of the different things you do like just being able to kind of like get more of an insight into making sure we are doing it properly and getting the most out of it – Participant E*

BCPs were very focused on helping people, and they wanted reassurance that what they were doing was “working”. This need for reassurance highlights that the BCPs

were lacking in confidence, however it also highlights the compassion they felt towards their clients.

*It's just not knowing if what I'm doing is working for the person and I'm just trying to sort of reassure myself by the fact that they keep coming back to appointments and so you know it's totally voluntary and it's up to them whether they come along and whether they engage and they are choosing to come back week after week –  
Participant A*

#### 5.4.11 Emotion

The participants discussed the emotional consequences of the role of a BCP. They discussed how supporting people who were dealing with mental health conditions and difficult personal situations had an impact on their wellbeing.

*There's very little time to reflect on what people are saying, and like I've had days where I've had like 5 back to back appointments with people who all have quite serious issues going on in their lives and there isn't anyone to debrief on – Participant B*

The BCPs were reliant on their colleagues for support. This functioned as a barrier, as BCPs discussed how they were aware of each other's caseloads and that they often felt that they didn't want to "add to their stress" by debriefing to each other about difficult sessions.

*We will phone each other constant if we do need to chat but I feel like we just add to each other's stress – Participant C*

#### 5.4.12 Environmental Context and Resources

The BCPs discussed the resources they used when delivering the intervention, in particular how they found using the activity trackers. The participants reflected on both how they felt their clients reacted to the trackers and how they felt about using them. The BCPs felt that the trackers caused them stress as they worried about losing data due to their clients either not wearing the trackers or not meeting with them frequently enough to sync their data.

*I've found that its quite good for just like motivating clients to em, but there has been problems where like not recording steps and stuff so then they just take it off and they don't tell you until they next see you and it's just like ohh ok and you have then have to wait and get them another one the next time so it's quite hard, kind of panic about that – Participant E*

*It's a source of stress for me as BCP, the trackers for, with some people, you know like for participants who get to the point where they like forget to wear it and stuff like that...but it's a source of stress for me cause I know you need the data for the study and they've signed a consent form saying they are going to wear it, but when they don't, what can you do? – Participant A*

The BCPs also felt that there had been issues with the sensitivity of the trackers and had found that the company that supplied the trackers had not been responsive when they had raised issues with them.

*I just feel that I'm disappointed by the company because I feel like we raise so many issues and nothing gets done so I get to the point, I resent the trackers cause I'm like why am I going out my way to make sure everything's alright to give all this you know data when Storm can't even answer a question for me, they can't fix an issue, and it's really disappointing. – Participant C*

The BCPs were very positive about using the Living Life to the Full workbooks, however they also reflected that they felt there was more to the intervention than just the resources they used.

*I think sometimes the books sort of take a back seat and it's more kind of sort of just maybe like a chat with them and a catch up and do sort of more sort of planning em cause I find that's good and just seeing, doing sort of the review sheet, it's like ok how's it going, and we go over that, one of my clients like really enjoys doing that cause she says it makes her feel quite good cause it kind of then she knows she's on track – Participant E*

The BCPs identified the referral process through which participants for the ALBA intervention were recruited as being a barrier to the implementation, as they found that they did not receive the number of referrals that had been expected through this pathway, which had resulted in the BCPs having to establish connections with other organisations in order to meet their cohort targets.



*God yeah referrals have been like the biggest stress, I think when I first started I didn't expect I'd have to do quite as much leg work in terms of like the foundations, like actually telling people about the service, even though we had the behaviour change training in North Ayrshire, and the whole ser- all the relevant staff were present [but] there were no like introductions there was no time to network and use that as an opportunity to introduce us as a team and put a face to a name – Participant D*

*We've been chasing referrals something silly, haven't we? We've actually had to go out and find our own referrals, which we are doing, we are getting there but its took a lot of work – Participant B*

The BCPs also felt that the referral pathway was not straightforward enough, which they felt made them miss out on potential clients.

*Cause we are not able to take referrals really, that's the way the pathway works, we just can't take referrals so it's you know when you are out networking and you're telling people about your service and they are like oh yeah that sounds great I'd have someone who'd be great for you and I like you can't, we can take their contact details and phone the person up but then we have to explain they need to go, it's a barrier – Participant A*

The BCPs also recognised organisational issues that impacted the delivery of ALBA.

The BCPs discussed how there was nobody to cover for them if they had to be off, this was not just due to the small teams as the BCPs also recognised the importance of the relationship between clients and BCP.

*I'm not caring what anybody says another BCP can't fill in for another BCP cause they'd need to start the intervention again; you need to start that relationship – Participant C*

The BCPs felt that the way in which ALBA was delivered was like a service rather than a project, and they felt that it had not been planned in a way which would leave a legacy in the Leisure Trusts. They felt that as they had all been employed full time to deliver the intervention, it would not be possible for the service to be run by volunteers alone. The BCPs suggested that if ALBA was to be rolled out again, then a closer connection to the Leisure Trusts would be beneficial.

*Obviously, we are employed full time but perhaps if we had a BCP based in a leisure centre em who could obviously clients would have to go there for appointments but that's the only kind of way I could see this working – Participant A*

The BCPs discussed how accessible they felt the intervention was to the target population, they noted that there was a lot of reading and writing required. They found that they were able to adapt the intervention, if that was an issue for participant. However, they noted that some of the language used on the intervention materials was too academic.

*[Participant E] and I both had one client so far who struggled with writing because of arthritis in the hands or something like that so yeah, we've had to sort of think outside the box a wee bit – Participant A*

*I found the wording on the forms, I found is really too academic – Participant D*

*It's too academic, I've kind of recreated them and used like kind of like more human friendly language to help – Participant A*

The length of the intervention was discussed, with the BCPs finding that sometimes the 16 weeks was too short for some clients and too long for others. They reflected that if the intervention was offered as a certain number of appointments rather than over a set time period it would be more flexible for the target population, who often missed appointments due to their mental health or other personal circumstances.

*I've had a few clients who within the 16 weeks intervention a lot has happened in their life and its totally external thing, neither of the two of us could even of seen it coming but it puts the intervention at a pause, but you're still expected to finish in 16 weeks – Participant B*

#### **5.4.13 Social Influence**

The BCPs discussed the social support they received in their role. The BCPs discussed how they felt the support they received from their trainers was good, however they didn't feel that it came at the right time, as they felt it would have been more beneficial once they had seen more clients.

*Same with the phone call, I enjoyed the phone call and I learned, but it come to soon, so my phone call was still too, I think it was only a week or so after the training and at that time, we didn't have a huge amount of clients so I'd only seen one client, I think in between doing the training and kind of having my phone call – Participant C*

There was evidence that the participants felt that there was a lack of support from their organisation, as the participants discussed how they felt there was a need for more supervision.

*I've been told you get supervision and that's enough and for me, it's no enough, I feel we are taking a lot on board, no with every client but with certain clients we are and then you are expected half an hour later you're going to see another client, and you've no offloaded, no been debriefed – Participant B*

*We don't have direct support. There is no one we could phone in an instant that would pick up because the manager is so busy, its constant meetings so you're looking at some time like you can go 2, 3 hours after an issue has happened and you're still waiting on support – Participant C*

The relationship with the BCPs and the Leisure Trusts and the organisational structures in each area could operate as either a barrier or a facilitator to the BCPs being able to deliver the ALBA intervention. When the BCPs had a good relationship with the Leisure trusts and the exercise referral teams, then this acted as a facilitator, the teams who reported having a very good relationship found that meeting their target numbers and receiving referrals was easier. Whereas, the teams that reported having a less good relationship with the leisure trusts found that they were struggling to meet their recruitment targets, and therefore the relationship, or lack thereof, acted as a barrier. BCPs reported that despite their best efforts to raise awareness about the ALBA intervention, there was a general lack of recognition of the ALBA intervention and the staff at the Leisure Trusts continued to be unaware of their presence.

*I worry as well about like the ALBA presence, just in Fife like I just don't feel as if we are making enough impact in the Leisure centres, and I feel like the staff should know us by now, they should, you go into the leisure centre and say I'm from ALBA we're looking for a room to sit in or and nobodies got a clue who we are and we've done so many leaflet drops, we've had so many meetings – Participant B*

*We are kind of lucky that Broxburn are kind of getting used to us now, but I think they're still not sure who I am cause they just see our faces they are nice, uh huh but em like Craigswoods, just like I go in and they just look at me like who is she, why is she sitting there –*  
Participant E

## **5.5 Discussion**

The aim of the process evaluation was to identify the barriers and facilitators of the delivery of the ALBA intervention, which in turn helps to generate a greater understanding of how the implementation of the ALBA intervention translated into practice. By recognising the barriers faced by the BCPs when delivering the ALBA intervention, areas where the interventions implementation could be improved are identified. Equally, by understanding what helped to facilitate the interventions delivery, we can identify the factors which are central to successful implementation and what needs to be maintained in any future dissemination or scale up of the intervention.

On the whole, the focus group data suggested that the BCPs were quite frustrated and the overall tone felt quite negative. As a result of this, key barriers which have inhibited the delivery of ALBA have been identified. However, enablers to the intervention's delivery were also recognised, including the skills and the commitment of the BCPs who have managed to overcome the barriers to successfully deliver the intervention. A significant observation from this study was how similar the group of participants appeared to be in their experience of delivering the ALBA intervention, despite working in different areas under differing conditions. This uniformity was not anticipated by the author who assumed the participants would have very different experiences due to working with different stakeholders and client bases. This suggests that despite the different contexts, the obstacles faced by the BCPs were comparable.

The procedural and theoretical knowledge of the intervention displayed by the BCPs was a key facilitator for improving the quality of the intervention delivery. The way in which the BCPs discussed using the workbooks with their clients and tailoring the intervention to the individual needs of participants, highlights the similar approach taken by a therapist delivering Cognitive Behavioural Therapy (CBT), as the first

session is used for formulation and agenda setting, and then subsequent sessions for addressing the individuals specific needs and goals. This suggests that despite receiving a fraction of the training a CBT therapist or clinical psychologist would, the BCP's were able to skilfully deliver a cognitive behavioural intervention.

The resources used were a key component of the intervention. The BCPs acknowledged the positives of using LLTF workbooks, as they reflected that they could be used to tailor to the individual needs of their clients. The LLTF resources are based on the principles of CBT and aim to communicate these principles in a highly accessible way (Williams, 2015). The LLTF materials have previously been used in a community setting and have been found to be effective at reducing anxiety and depression (Williams et al., 2018). The findings here support Williams et al. (2018), as the BCPs found the materials easy to work with and effective, therefore they were a key enabler of the intervention.

The BCPs also acknowledged the importance of the relationship which developed between them and their clients. As the BCPs were able to demonstrate empathy through understanding the feelings of participants; responding to what has been said in a way that reflects the participants mood; and being able to convey the ability to share the participants feelings (Miller & Rollnick, 2012) they were able to develop rapport with their clients. The BCPs reported that they felt that the clients were "getting something" out of the relationship, which aligns with evidence that suggests that face-to-face interventions are more effective at building social support and helping to develop self-efficacy (McAuley, Courneya, Rudolph, & Lox, 1994; Reblin & Uchino, 2008). This also aligns with the literature on therapeutic alliance. The therapeutic alliance is the relationship which develops between a client and the therapist, and it is considered essential for working collaboratively with clients and successfully using therapeutic techniques (Zilcha-Mano, 2017). The therapeutic alliance has been consistently identified as being key to positive therapeutic outcomes, regardless of theoretical approach (Ardito & Rabellino, 2011), with some suggesting that the alliance itself as

being therapeutic (Zilcha-Mano, 2017). The ability of the BCPs to quickly build and maintain this alliance was an enabler of successful implementation of the ALBA intervention. This is a significant finding, as it highlights the importance of BCPs possessing the interpersonal skills to achieve this.

Training was identified as both a barrier and a facilitator to the delivery of the ALBA intervention, as the BCPs recognised that the training equipped them with the skills to deliver the intervention, however the training did not always meet their expectations. It is recommended that in evaluation, the training of providers is monitored and maintained to ensure that decay or change in provider skill is minimized (Bellg et al., 2004). The timing of, quantity and quality of the training that the BCPs had received for the role was a key theme, with the BCPs feeling that they did not have adequate amount of time between receiving training and seeing clients. The commitment of SAMH to making sure that the BCP's received an extensive training program does indicate their dedication to ensuring the quality of the delivery of the intervention was maintained. The BCPs were subject to ongoing training in their role, with SAMH regularly sending them on "booster" training courses. However, this finding suggests that there was an underestimation of how much training and support would be required to deliver an intervention like ALBA. The feedback on training received from the BCPs will be feedback to SAMH in order to ensure that all staff are able to receive all training prior to seeing clients.

The BCPs identified several barriers that were associated with the environmental context within which the ALBA intervention was delivered. Contextual factors can influence how an intervention is delivered as well as impacting on the mechanisms of change and the outcomes of the intervention (Moore et al., 2015). There has been growing recognition of the importance of context and its influence on implementation, particularly in health care interventions (Coles et al., 2017). Recognising the role that environmental context played as a barrier for the implementation of ALBA is key for understanding how delivery can be improved. Understanding of local context is

essential for successful implementation. The ALBA intervention was delivered in three different areas across Scotland, which all differed in terms of geographical and social economic context and operated different ERS pathways. Despite the difference, the BCPs consistently reported that the relationship with the Leisure Trust (LT) staff impacted upon the implementation of ALBA. Some participants reported that there was a lack of awareness of the ALBA intervention by the LT staff, and this was partly attributed to a lack of awareness of the exercise referral teams. This highlights the importance of engaging stakeholders across multiple levels, as communication and building a collaborative relationship are crucial in order to work together to facilitate delivery.

The participants also discussed the efforts that they had gone to, to ensure that they received referrals. The referral pathway as described in the ALBA proposal relied on the LT assessing and referring suitable participants to the BCPs (see Figure 8 in Chapter 2.6). However, the BCP's found that they were not receiving the number of referrals expected. This highlights that planned implementation does not always reflect the reality of how implementation works in practice. The benefit of conducting a process evaluation is that it can identify how intervention delivery is actually achieved, from this finding it is obvious that the planned process of referrals was inefficient for recruiting the desired number of participants, which led to the BCPs connecting with GPs and other outside referrers. This also highlights that the ALBA intervention would benefit from being able to take on direct or self-referrals, as at times the LT acted as a gatekeeper, preventing or delaying the BCPs from being able to start working with new clients.

The BCPs felt that they lacked formal supervision. Supervision is an essential part of training and continued professional development for people working in mental health (Townend, Iannetta, & Freeston, 2002). In clinical psychology or counselling training, supervision serves three main purposes (O'Donovan, Halford, & Walters, 2011). The first is to ensure that the trainee is supported, the second is to monitor competency and

the third is to enhance knowledge and skills. By ensuring that the BCPs receive consistent formal supervision, the quality of the delivery of the ALBA intervention would be improved, as the BCPs' self-efficacy would be enhanced as would their professional wellbeing. The BCPs frequently referred to a lack of supervision time and felt that they wanted reassurance that they were delivering the intervention well or doing the "right" thing. They also commented that they felt the role had taken an emotional toll on them and at times impacted on their wellbeing. A supportive supervisor-supervisee relationship helps to reduce anxiety and enhances confidence in skills and abilities (Bambling, King, Raue, Schweitzer, & Lambert, 2006). It is therefore recommended that if the ALBA intervention is scaled up, that adequate supervision time should be built in, to instil confidence in their ability to deliver the intervention and to ensure that the BCPs are fit to practice.

A theme that was picked up on in the data was "the future of ALBA". The BCPs seemed particularly focused on what would happen to the ALBA intervention going forward, and how the intervention could be sustainable without the BCPs to deliver the intervention. The participants' interest in this topic could be attributed to the lack of secured funding for the extension of the intervention and the insecure job prospect which impacted on the BCPs. Short-term funding is a problem in the delivery of services in the third sector and health promotion, which can often lead to the development of interventions and services without necessarily developing the means to sustain them long-term (Casey, Payne, Eime, & Brown, 2009). Therefore, building sustainability into plans is beneficial for translating research into practice.

The BCPs were very sceptical about the role that peer volunteers could play in the sustainability of ALBA. The BCPs indicated that they felt ALBA could not be sustainable without a dedicated team, as volunteers or LT staff would not be able to fulfil their role. This sentiment might have been rooted in the BCPs feeling that their role or identity as a BCP was threatened or undermined by the peer volunteers. The role of peer support volunteers has been successfully implemented in mental health



services (Repper & Carter, 2011). A review conducted by Repper & Carter (2011) found that peer supporters in mental health services were beneficial to both the peer volunteer and the consumer, with evidence suggesting they reduced admission rates, helped reduce social isolation and reduce stigma. However, they also noted that there were significant challenges, such as the power issues between the peer supporter and the service user, the stress of the role on the peer supporter and issues around appropriate boundaries. The BCPs from ALBA touched on some of these issues as being their concerns about peer supporters taking on a larger role in the sustainability of ALBA. This suggests that the sustainability planning of the ALBA intervention was not realistic in practice, and that without careful management and appropriate staff to deliver the intervention, ALBA would not be feasible.

The MRC guidelines (Moore et al., 2015) emphasize that conducting a process evaluation helps with the scale-up of interventions by understanding the interaction implementation processes with contextual circumstances and how to transfer evaluations finding into new contexts. The results from this process evaluation suggest that for successful implementation and scale up of the ALBA intervention recruiting the right type of people for the role of BCP is essential as the key facilitators identified were related to the personal qualities of the BCPs, in particular their skills and commitment to fulfilling their role. Identifying and recruiting people who would be suitable in this role may be challenging, however it is evident that a role like a BCP also offers valuable experience to the people who take it on. The BCPs who delivered ALBA have progressed in their careers and moved on to new roles, including clinical psychology training and as community link worker, which suggests that the role offers valuable experience for individuals who are looking for a career in health and social care.

#### *5.5.1 Rigor*

Member checking is a method of ensuring rigor in qualitative research which involves participants of the project assessing the validity of the qualitative data (Smith & McGannon, 2018). Member checking of the transcript was attempted to ensure the

credibility, however there was not good engagement with this. This corresponds with the criticism made by Smith and McGannon (2018) that there is no way to ensure that the participants have engaged and that when confronted with large amounts of data, participants may be put off or wish to appease the researcher, with Smith et al. (2018) pointing to the fact they found no examples of disagreement as evidence of this.

In qualitative inquiry, it is important to critically appraise the role of the researchers and the potential to introduce bias (Galdas, 2017). The use of coding frameworks, such as the TDF, introduces a more systematic approach to qualitative research, which has been argued increases potential for inter-rater reliability, therefore reducing bias (De Wet & Erasmus, 2005). The TDF was specially designed for implementation research and for identifying influences on healthcare professionals' behaviour (Atkins et al., 2017a), thus making it a suitable coding framework. The results found here generally mapped easily onto the TDF. There was, however, a risk that this could be the result of the "pink elephant" bias, where the researcher sees what they are expecting to see (Morse, 2015). The use of the TDF as a framework may also have introduced coding bias, as attempts to map themes onto the TDF may have distorted the results. There were some themes which did not fit as easily into the TDF and some of the domains of the TDF were not represented at all, however this might have been as they were not relevant to the target behaviour. Atkins et al. (2017) recommended that when responses do not clearly fit any of the domains, it is important to note these occurrences as that helps to test the capacity of the TDF. Having said this, overall the TDF model proved very useful in explaining the findings here and provided good coverage to identify implementation problems.

### *5.5.2 Limitations*

As the researcher was previously known to the participants, there had been concerns about how this would influence the focus group. During the data collection, the interviewer aims to create an atmosphere that is welcoming and nonthreatening so that the interviewees feel comfortable sharing (Karnieli-Miller, Strier, & Pessach, 2009). As

the researcher had worked closely with the ALBA Project Co-ordinator in setting up the procedure for data collection and had previously met with the BCPs in order to discuss how data should be collected from participants, there were concerns that the BCPs would not feel comfortable sharing negative aspects of the role with the researcher, or the social desirability bias might have affected how they represented themselves. However, the way the BCPs spoke in the focus groups suggests that there was a high degree of candour and openness in their responses. This may be due to the fact that the researcher was perceived to be an equal to them in their role in the wider ALBA project.

It should be noted that data for this chapter was collected whilst the project was running, meaning that the data was not collected at the conclusion of the study. This is an important consideration, as a recurring theme from the data was that the participants wanted reassurance that they were doing their job well. The BCPs also stated that they felt their confidence in their ability to deliver the intervention grew over time and they felt encouraged by the results they saw. However, at the time of the focus group, they were not very experienced. This could be considered a limitation of this evaluation, as had the focus group been conducted during the delivery of cohorts 3 and 4, the BCPs may have felt differently about their ability. It has been considered by the author that another focus group should have been held with the BCPs at a later date. However, as the continuation of the intervention was dependent on the status of funding, times of uncertainty led to the loss of staff, and as a result most of the BCPs had moved on to other roles before the end of the intervention, therefore holding follow up interviews or a second focus group did not seem appropriate.

This work provides evidence of the barriers and facilitators to the delivery of the ALBA intervention, therefore has been able to identify the obstacles faced by the BCPs and has identified areas where improvements could be made. However, it could be argued that this methodology was not a true way of assessing fidelity to the intervention. Since this work was carried out, a guide has been published on how to develop

measurements of fidelity in complex interventions (Walton et al., 2020), which may have assisted the development of an ALBA specific fidelity measure. Specific measures of fidelity enable researchers to measure the exact content of an intervention, which is relevant when an intervention is novel. As ALBA is a complex intervention with multiple components, it would be recommended to use multiple measure to ensure fidelity and engagement in each of the intervention components. If the ALBA intervention is rolled out in the future, an intervention protocol or checklist could be produced in collaboration with the experienced BCPs, which the delivery could be assessed against to ensure fidelity. To date, an ALBA manual has been developed, this could be used as the basis of a fidelity measure for assessing adherence to protocol in the face-to-face sessions.

## **5.6 Chapter Summary**

In evaluation research, there is a greater focus on efficacy trials rather than implementation focus research. The aim of this chapter was to shed light upon the implementation of the ALBA intervention by using qualitative methods to identify the barriers and facilitators of the delivery of the intervention. This chapter presents the results of the focus group conducting with the behaviour change practitioners (BCPs) who delivered the ALBA intervention.

The findings from this qualitative analysis suggest that the key facilitators to the intervention were the skills and commitment of the BCP to delivering a high-quality intervention and the resources that the BCPs used. The analysis also revealed that major barriers to the delivery of ALBA included a lack of formal supervision, relationship with the LT and issues with receiving referrals. Training was identified as both a barrier and a facilitator, as participants felt that the training was not received when needed, however they were equipped with the skills to deliver the intervention.

Recommendations made for future implementation of ALBA included ensuring that BCPs received adequate supervision so as to increase their confidence in their abilities and ensure that their wellbeing is looked after. The findings also emphasised how the

delivery differed in practice from the planned implementation, highlighting that there were issues with the referral process. This information should be used to streamline the process for future dissemination. In addition, it has been suggested that for any future implementation of ALBA, an intervention protocol should be developed which could be used for ongoing monitoring of fidelity.

## **Part III**

### **Chapter 6 Quantitative Outcome Evaluation**

#### **6.1 Purpose of this Chapter**

The purpose of this chapter is to present the results of the outcome evaluation of the ALBA intervention. Outcome evaluation relates to stage 3 of Bauman and Nutbeam's (2013) evaluation framework, as this stage focuses on innovation testing of the intervention. The chapter will first discuss which outcomes were selected to evaluate ALBA and then will go on to discuss the methodology that was used. The chapter will then present a quantitative analysis of the effectiveness of the ALBA intervention, using the pre and post intervention outcome measures data collected from ALBA participants.

#### **6.2 Outcome Evaluation**

Complex interventions are interventions which consist of multiple interacting components. The Medical Research Council (MRC) guidance advocates for the evaluation of complex interventions (Skivington et al., 2018a). Outcome evaluations are considered to be central to the evaluation of complex interventions as they focus on appraising the effectiveness of the intervention for the target population. However, the MRC guidelines have been criticised for focusing on RCT evaluation design, whereas other designs allow for the examination of implementation, mechanism of impact and interactions with contextual factors (Minary et al., 2019). Therefore, there is no "ideal" method for evaluating a complex intervention, as various methods can be applied to outcome evaluation. Regardless of design, a key stage in designing an outcome evaluation is the identification of the outcomes which are the most important to measure and what is the most appropriate way to do so. The rationale for the outcome measures used to evaluate ALBA are discussed below.

### 6.2.1 Adherence

As previously discussed in Chapter 3, adherence is a complex and multidimensional concept. The word adherence comes from the Latin word “adhaerere”, which means “to cling to, keep close, or remain constant” (Aronson, 2007). Although adherence is a rather ambiguous term within the literature, it is generally used to denote the level of engagement of participants, or the percentage of participants completing a particular programme or treatment. Within the literature, a variety of terms (compliance, adherence, attrition, concordance, maintenance etc.) have been used by authors to describe adherence, which causes confusion as there is a lack of standardisation in definition (Aronson, 2007). As there is no gold standard way of defining or measuring adherence, it has been argued that adherence should be defined depending on the purpose of the measurement (Hawley-Hague, Horne, Skelton, & Todd, 2016).

The ALBA intervention was a complex intervention with multiple components which was delivered within a community setting. This made defining and operationalising adherence complex, as the focus was not just on adherence to PA, but also to the intervention as a whole. However, as the aim of the intervention was to increase PA and improve mental wellbeing outcomes, the approach to measuring adherence followed the Hawley-Hague et al. (2016) recommendations for measuring adherence. Hawley-Hague et al. (2016) proposed that if adherence is being measured to understand the health benefits gained from participating, then adherence needs to focus on a number of measurements, namely completion, attendance, duration and intensity, to understand if an adequate dose has been received to have a positive effect. By adopting their definitions and measurements of adherence, it is hoped that this work can contribute to increasing consensus in the field.

Within this thesis, adherence has been operationalised as both the amount of sessions attended (attendance), the number of participants who completed the 16 weeks (completion) and the percentage of participants who met the PA guidelines (duration

and intensity). This approach to adherence has been adopted for three reasons, one being that it was possible to quantify, which was a pragmatic decision as due to the fact that the intervention was delivered in a community setting, other elements would be hard to measure. Secondly, it has been recommended to use more than one measure of adherence when one measure is not considered fully adequate (Vitolins, Rand, Rapp, Ribisl, & Sevick, 2000). As ALBA is a complex intervention with multiple components fully capturing adherence to the intervention was methodologically challenging, therefore this approach was considered to be the most pragmatic strategy for mitigating this challenge. Thus, adherence to ALBA was considered as two-fold – the adherence to PA and the adherence to the ALBA sessions (as measured by attendance and completion).

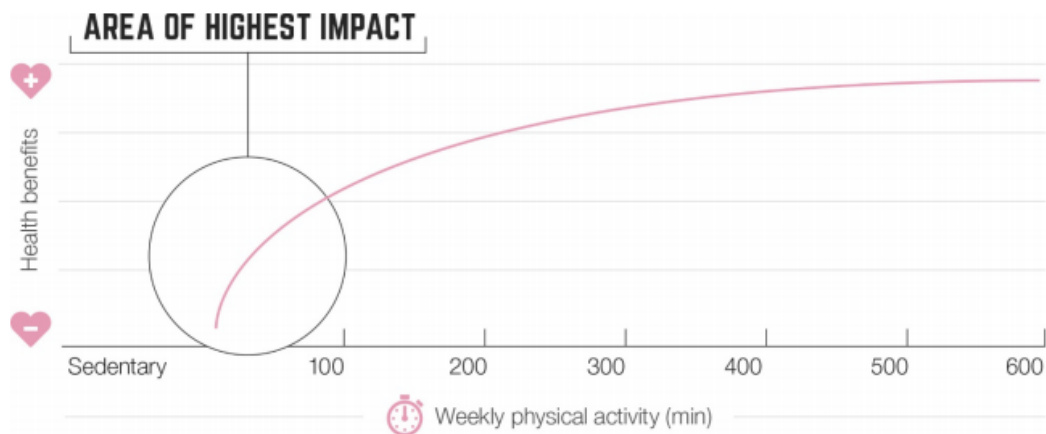
Evidence suggests that individual level (one to one or group based) behavioural interventions are the key to increasing PA in mental health population (Allen & Morey, 2010). Recommendations made by Knapen, Vancampfort, Moriën, & Marchal (2015) proposed using strategies based on Motivational Interviewing to increase motivation and adherence to PA interventions. It has been suggested that using multiple cognitive and behavioural strategies are more effective for increasing adherence than using a single strategy (Aronson, 2007). Further evidence from the systematic review conducted in Chapter 3 concluded that the use of cognitive behavioural techniques in PA interventions enhanced adherence to the intervention, with evidence suggesting that interventions which provide feedback, praise and use goal-setting are associated with enhancing adherence (McAuley et al., 1994). Therefore, it was hypothesised that the ALBA intervention would encourage adherence to PA, as the ALBA intervention utilised cognitive behavioural strategies, alongside social support and provided opportunity through access to the ERS.



### 6.2.2 Physical Activity

It has already been established that PA is beneficial for both physical and mental health. The UK physical activity guidelines advise that adults aim to be active every day by reducing or breaking up sedentary periods with at least light activity, with adults recommended to accumulate at least 150 minutes of moderate intensity activity or 75 minutes of vigorous intensity activity per week (*UK Chief Medical Officers' Guidelines on Physical Activity.*, 2019). In Scotland, it is currently estimated that two thirds of the population are meeting these guidelines (The Scottish Government, 2019).

Meeting the PA guidelines has been found to be positively associated with mental wellbeing (Kim et al., 2012), however, evidence has also shown that mental health benefits can occur below this threshold (Teychenne et al., 2020a). A dose-response effect has been found which suggests that there are greater health benefits for those who go from inactive to somewhat active than there are for those who already meet the PA guidelines and who increase to being very active (Powell, Paluch, & Blair, 2011). A depiction of what this curve looks like is presented in figure 6.2.1. This evidence supports the public health message that “some activity is better than none”, as research has shown that people with a mental health diagnosis are typically less active than the general population (Hiles, Lamers, Milaneschi, & Penninx, 2017; Petzold et al., 2017; Vancampfort et al., 2017) and therefore are more likely to gain health benefits from small changes to activity levels.



*Figure 6.2.1 Dose response curve of physical activity and health benefits, taken from the UK Chief Medical Officer Physical Activity Guidelines (2019)*

The ALBA intervention aims to increase PA by encouraging participants to build capacity and confidence to engage in PA. The ALBA intervention was not prescriptive about the type or quantity of PA, but as it was integrated into the exercise referral scheme (ERS), it was hoped that participants would engage with these services and meet the PA guidelines.

### 6.2.3 Mental Wellbeing

The term mental wellbeing is often used synonymously with mental health; however, the term mental health can often be interpreted as referring to mental health conditions (Westerhof & Keyes, 2010). Mental wellbeing is more than just the absence of mental illness (WHO, 2015), it is a complex construct which encompasses emotional, psychological and social wellbeing. Emotional wellbeing focuses on feelings of happiness and life satisfaction, whilst the psychological and social aspects of wellbeing focus on an individual's ability to function in life and in society, such as a sense of control, having a purpose in life, a sense of belonging and personal support (Slade, 2010).

There is a strong link between mental wellbeing and PA, however, the relationship is complex and the mechanisms of how this relationship operates are not well understood and are not always fully supported (Kandola et al., 2019). Multiple plausible

explanations have been put forward to explain the link between mental wellbeing and PA. It has been proposed that the mechanism is biochemical or physiological (Dishman et al., 2006). Others have hypothesised that mental wellbeing is improved through PA as PA acts as a distraction from other stresses or that PA increases feelings of self-worth and personal control (Craft, 2005). A review by Lubans et al. (2016) concluded that the strongest evidence for the potential mechanism was that improvements in physical self-perceptions enhanced self-esteem in young people. Another hypothesis is that PA provides opportunities for social interaction which helps to give individuals a sense of belonging. Whilst it remains unclear what the underlying causal mechanism is that makes PA beneficial (Biddle, 2016), it is likely that a combination of these factors are at work. Extensive evidence has been found which supports the beneficial impact of PA on mental wellbeing (Biddle, Fox, & Boutcher, 2003; Fox, 1999; Mammen & Faulkner, 2013). Therefore, it is expected that through participating in the ALBA intervention, mental wellbeing shall improve as participants increase their level of PA.

#### *6.2.4 Self Esteem*

Self-esteem can be described as a person's overall judgement about themselves, and it covers to what degree an individual feels that they are a "good" person (Fox, 2014). Self-esteem is often considered to be hierarchal and multidimensional, with "global" self-esteem being conceptualised as being related to the self-concept and reflects overall judgement of the self, whereas domain specific self-esteem describes self-satisfaction in a specific area (Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995; Sonstroem & Morgan, 1989), examples of domains of self-esteem are academic, appearance, social and physical. Self-esteem is an important indicator of social and emotional adjustment, with self-esteem being found to be highly correlated with subjective wellbeing (Zimmerman, 1999). Accordingly, high self-esteem is seen to be a protective factor which promotes better health, social relationships and life satisfaction. Whilst low self-esteem, on the other hand, has been found to be closely related to poor mental health, as it is frequently associated with depression, trait anxiety, suicidal

ideation, hopelessness and low perceived personal control (Fox, 2014; Mann, Hosman, Schaalma, & de Vries, 2004).

The evidence for the relationship between PA and self-esteem is somewhat equivocal. One model to explain the relationship between PA and self-esteem is the Exercise and Self Esteem Model (EXSEM; Sonstroem & Morgan, 1989) which proposed that improvements in performance in specific activities, such as running, increase confidence in one's ability to complete that activity, which in turn increases perceived ability, which increases the individual's perception of their physical domain of self-esteem, which impacts on global self-esteem. Another theory suggests that self-esteem can be enhanced by our perception of how others see us. PA can provide opportunities for social interaction, participating in team sports for example, can help people to feel part of something, and make meaningful connections with others, therefore increasing feelings of relatedness, and thus providing opportunities to enhance self-esteem (Fox, 2014). Regardless of the mechanism in which PA enhances self-esteem, the evidence supports that PA is beneficial, with a meta-analysis suggesting the PA interventions have a small but significant impact on self-esteem (Spence, McGannon, & Poon, 2005).

As global self-esteem is associated with psychological wellbeing (Rosenberg et al., 1995), it is hypothesised that the ALBA intervention will have a positive effect on self-esteem: as participants' wellbeing improves, participants will begin to feel more positively about themselves which will improve their self-esteem.

#### *6.2.5 Self Efficacy*

Self-efficacy describes a person's confidence in their ability to perform a specific behaviour (Bandura, 1997), and their perception of the amount of effort that would be required to carry out the behaviour and outcome expectancies, therefore it directly influences perception of barriers and benefits of performing a behaviour (Bandura, 1986). Bandura proposes that self-efficacy determines people's behavioural choices,

as people tend to avoid behaviours that they believe will exceed their coping abilities (Bandura, 1977). Therefore, efficacy beliefs not only influence choice of behaviour and activities, but they also determine how much effort and persistence a person will expend when faced with obstacles and aversive experience. People with higher self-efficacy will set more challenging goals, will persist for longer when faced with challenges and will exert greater efforts in pursuit of those goals. Whereas people with low self-efficacy will yield when confronted with obstacles (Beauchamp et al., 2018). Low self-efficacy has been found to be related to reported mental ill-health (Andersson, Moore, Hensing, Krantz, & Staland-Nyman, 2014), which can impact on an individual's confidence and ability to engage in a range of behaviours, including PA.

Self-efficacy can be enhanced through the mastery of an activity. One example of an activity which can enhance self-efficacy is PA. Past experiences of successful engagement helps to build self-efficacy as individuals feel more confident about being able to do it in the future. Therefore, participating in PA and overcoming barriers should enhance an individual's self-efficacy. Self-efficacy can also be enhanced through vicarious experiences of others, support and encouragement (Maddux, 2002). Goal setting has also been associated with enhancing self-efficacy. A study conducted by Craft (2005) found that having an exercise goal as well as utilising social support, increased self-efficacy and contributed to the recovery from depression.

Therefore, it is hypothesised that the ALBA intervention will help to increase self-efficacy through the participants' experience of taking part in PA, and through the support and encouragement they receive from the BCP. In addition, it is expected that the self-efficacy of participants who receive support from a peer volunteer will increase due to the vicarious experience of the peer volunteer sharing their story and experience of ALBA.

### 6.2.6 Patient Activation

Patient activation is a behavioural concept which is defined as an individual's ability to engage with their health care, and it is associated with a range of important health-related practices, including self-management, disease prevention and help-seeking behaviour (Hibbard, Mahoney, Stockard, & Tusler, 2005; Moljord et al., 2015). People with low levels of activation are less likely to have an active role in maintaining their own health and wellbeing, are more likely to feel overwhelmed and lack confidence in their ability to have a positive impact on their own health. Whereas, people with high levels of activation are more likely to be more engaged and have an active role in maintaining their health. Patient activation relates to PA, as it links engaging in healthy lifestyle behaviours, such as PA, with self-management of mental health.

Studies which have looked at patient activation and depression, found that people with depression scored lower on patient activation (Chen, Mortensen, & Bloodworth, 2014), and high patient activation scores were associated with fewer mental health symptoms (Green et al., 2010). Patient activation is therefore very relevant in mental health populations, as symptoms associated with depression and anxiety such as fatigue, low self-esteem and poor concentration can undermine an individual's confidence in their ability to actively engage in their healthcare.

Patient activation is changeable over time. Evidence suggests that improvements in patient activation is associated with greater improvements in depressive symptoms, greater recovery and better medication adherence (Green et al., 2010; Sacks, Greene, Hibbard, & Overton, 2014). Therefore, it has been suggested that interventions which aim to increase activation can improve adherence to treatment and mental health in individuals with depression. Interventions which are effective at increasing activation often focus on the development of new skills, encourage a sense of ownership over one's own health and build confidence (Hibbard & Gilbert, 2014). An association between communication and PAM has also been found (Allen et al., 2017), which

suggests that a stronger therapeutic alliance between patient and practitioner can have a positive impact on increasing PAM scores. Motivational interviewing techniques have been found to be successful at increasing patient activation (Greene, Hibbard, Alvarez, & Overton, 2016), as have interventions which have been tailored to an individual’s level of activation (Hibbard, Greene, & Tusler, 2009). As the ALBA intervention is an individually tailored intervention which uses motivational interviewing techniques, it was hypothesised that the intervention would have a significant effect on ALBA participants levels of patient activation, as measured by the PAM.

### **6.3 Methods**

#### *6.3.1 Design*

This outcome evaluation had a “before-after” group design. Participants were asked to complete measures at baseline and post intervention, and at two follow up post intervention timepoints to assess the long-term effects of the intervention.

#### *6.3.2 Participants*

Assessment of suitability for the ALBA intervention was conducted at point of referral by the Health and Wellbeing Teams at the respective Leisure Trusts (LT) who handle the ERS. The below table demonstrates in the inclusion/exclusion criteria used by the LT.

The decision to use a broad inclusion criterion was so as to not exclude any individual who may have benefitted from participating in the ALBA intervention, even if their symptoms were subclinical or undiagnosed. Previous research has shown that there are high instances of co-morbid mental health problems alongside long-term physical health conditions, which if left untreated can exacerbate physical illness (Naylor et al., 2016).

*Table 6.3.1: Inclusion/Exclusion Criteria*

| <b>Inclusion criteria</b> | <b>Exclusion criteria</b> |
|---------------------------|---------------------------|
|---------------------------|---------------------------|

|  |  |
|--|--|
| <p>Aged 18 and over</p> <p>Inactive and have been referred either by their GP or health professional into an exercise referral scheme due to either a long-term health condition or a mental health condition.</p> | <p>High risk due to health reasons (unstable angina, uncontrolled resting BP &gt; 180/100 mmhg, significant drop in BP during exercise, tachycardia &gt;100bpm, unstable or acute heart failure, uncontrolled acute systemic illness, unable to maintain seated upright position, place others and themselves at risk) or if their mental health condition is classified as severe and enduring.</p> |
|--|--|

### 6.3.3 Measures

#### 6.3.3.1 Primary Outcome

Adherence was monitored by the Behaviour Change Practitioners (BCPs). Records were kept on how many appointments an individual attended. Individuals who attended 8 or more appointments were considered as adhering, as it was expected that individuals would meet the BCPs at least fortnightly during the 16 weeks, therefore this signified 50% attendance. This was also informed by the literature, which suggests the greater the adherence the more effective the intervention.

#### 6.3.3.2 Secondary Outcomes

##### *Physical Activity*

PA is a multifaceted behaviour, which is unique as it incorporates behavioural, physiological and biomechanical principles. Some have even gone as far as to argue that PA cannot be treated as a single outcome (Thompson, Peacock, Western, & Batterham, 2015), as there are no measures which can assess all facets of PA (Sylvia, Bernstein, Hubbard, Keating, & Anderson, 2014). Therefore, it is recommended, when evaluating changes in PA to use both self-report and objective measures of PA in order to get the most complete picture of total PA (Skender et al., 2016).



PA was measured using the Scottish Physical Activity Questionnaire (SPAQ)(Lowther et al., 1999). SPAQ is a self-report questionnaire assessing seven-day recall of moderate and vigorous activity in minutes and incorporating a Stage of Exercise Behaviour Change instrument. The SPAQ ask items such as “In the past week how many minutes did you spend each day walking out with work?” and requires participants to recall the amount of minutes they spent in each activity over the past 7 days.

It was developed and validated in a Scottish community sample for the investigation of changes in the activity of groups and has good reliability (Cronbach’s alpha = 0.998). The SPAQ requires participants to estimate the amount of time in minutes spent engaging in physical activity over the previous week, there is a measure of leisure time activity and work time activity. Participants are asked only to include activities that are at least of moderate intensity or above (they are given a list of activities that may or may not be included).

Activity Trackers (Storm ID LTD; 2016) which serve as an objective measure of physical activity. The tracker devices can be worn on either the wrist or the hip. Activity is captured in the form of step count. To log data, participants were set up with a username and password on the “Get Active” app (Version 1.0.27.2) which then allowed data from the tracker to be synchronised by smart phone or tablet with the account. Participants were able to login to their account themselves to synchronise data, view graphs and charts of their daily and weekly step count. The trackers needed to be synced with the account once every thirty days, or the data for that time period would be lost. Data will be collected for 16 weeks; participants will then opt in to being monitored for up to 18 months. The sensitivity of the activity trackers was tested against Omron pedometers, in a real person walking test. The results found that the Storm activity trackers had an error rate of 2.8% per 1000 steps when worn on the wrist compared against the Omron 2.6% error rate for the same distance. However, the trackers were not tested against the gold standard Actigraph, a reliable and valid tool

for measuring PA in free living populations, or observer counting from video camera in a laboratory.

Following the Tudor-Locke, Bassett, Shipe, & McClain (2011) methodological paper for pedometer data, the activity tracker data are reported as “steps”, as this best described what is measured. The number of steps taken per minute is linked to the speed and intensity of the activity. The trackers did not record intensity, yet it is generally accepted that 3000 steps is equivalent to 30 minutes of moderate activity, based on the cadence of 100 steps/per minute (Marshall et al., 2009; Tudor-Locke et al., 2018). Total daily steps will be summed for each week the participant wore the tracker for, to produce a weekly total.

### *Mental Wellbeing*

The Warwick-Edinburgh Mental Well Being Scale (WEMWBS) (Tennant et al., 2007) is a self-reported measure of mental well-being. It is a 14-item scale with 5 response categories, summed to provide a single score ranging from 14-70. The items are all worded positively and cover both feeling and functioning aspects of mental wellbeing, for example: “I’ve been feeling optimistic about the future”, “I’ve been thinking clearly” and “I’ve been interested in new things”. WEMWBS has been validated in people ages 14-74, has good content validity, and high internal consistency (Cronbach’s  $\alpha=0.91$ ).

### *Self Esteem*

Rosenberg Self-Esteem Scale (Rosenberg, 1965) is a tool for measuring global self-esteem. The scale is a ten item Likert scale with items answered on a four-point scale - from strongly agree to strongly disagree. Examples of question items from the RSE are: “On the whole, I am satisfied with myself”, “At times, I think I am no good at all” and “I feel that I have a number of good qualities”. The scale ranges from 0-30. Scores between 15 and 25 are within normal range; scores below 15 suggest low self-esteem. The RSE is one of the most widely used measures of self-esteem. It has demonstrated

excellent internal consistency (range from 0.77 to 0.88). Test-retest reliability for the RSE range from 0.82 to 0.85.

### *Patient Activation*

Patient Activation Measure - Mental Health (PAM-MH) (Green et al., 2010) is a self-report measure of patient activation and can be used to assess an individual's ability to engage in their health care, which in turn can be a reliable indicator of a number of health outcomes. Patient activation is a concept which specifies the level of patients' engagement, self-reported knowledge, skills, behaviours and confidence for self-management of health and chronic diseases. There are 13 items, which have four possible response options ranging from (1) strongly disagree to (4) strongly agree, and an additional "not applicable" option. Examples of questions from PAM-MH are: "I am confident I can help prevent or reduce problems associated with my mental health", "I have been able to maintain (keep up with) lifestyle changes, like eating right or exercising" and "I am confident that I can maintain lifestyle changes, like eating right and exercising, even during times of stress."

To calculate the PAM score, the raw score is transformed to a scale with a theoretical range 0–100, based on calibration tables, with higher PAM scores indicating higher patient activation. The raw scores can be converted into four activation levels: 1 ( $\leq 47.0$ ) not believing activation important, 2 (47.1–55.1) a lack of knowledge and confidence to take action, 3 (55.2–67.0) beginning to take action and 4 ( $\geq 67.1$ ) taking action. The measure was validated in an out-patient population waiting for mental health treatment by Moljord et al. (2015). The test-retest reliability (Pearson's  $r = .74$ ) and concurrent validity were good, and the PAM-MH showed sensitivity to change.

### *Self-Efficacy*

Self-Efficacy for Exercise Scale (SEE) (Resnick & Jenkins, 2000) is a 9-item questionnaire that focuses on the self-efficacy expectations for exercise. Self-efficacy,

one of the most consistent predictors of exercise adherence, is related to stage of change (Prochaska & Velicer, 1997). The measure asks participants to report their confidence level, on a scale from 0 (not confident) to 10 (very confident), on how confident they would be about being able to exercise 3 times per week for 20 minutes during each of the nine situations, an example of the type of situation would be “if it were raining”, “You were bored by the program or activity” and “you felt tired” . The scale has a range of total scores from 0-90. A higher score indicates higher self-efficacy for exercise. Total score for SEE is calculated by taking the numerical ratings for each statement and dividing by number of responses. The SEE was originally tested for validity and reliability in an older adult population (Resnick & Jenkins, 2000) where it was found to have high internal consistency (Cronbach alpha = 0.92) and it was validated against the 12-item Short Form Health Survey (SF-12).

*Demographic Information* such as age, gender, ethnicity and race was collected from participants during the first questionnaire. A measure of socioeconomic status was calculated from the answer to a proxy measure question about level of education and postcode, using the Scottish Index of Multiple Deprivation (SIMD16; <http://simd.scot>).

#### *6.3.4 Procedure*

Recruitment of participants occurred between March 2017 and December 2018.

Participants who consented to taking part in the study were set up with an activity tracker by the behaviour change practitioner (BCP) at the initial meeting, which was then used to collect physical activity data throughout the 16-week intervention period.

At the first appointment with the BCP, the participants completed the baseline measures of the SPAQ, WEMWBS, PAM, SEE and Rosenberg. Each of the individual questionnaires were built in the online survey platform “NOVI Survey” (Version 8.0, Novi Survey, Waltham, MA, USA). The decision to have the measures online was a pragmatic one, as it was decided that because the BCPs would fulfil the role of collecting the data, an online platform would be the most efficient way of collecting this

data, as filled out paper responses would not need to be sent between the BCPs and the Research Student, therefore saving time by removing the need for data to be input (Evans & Mathur, 2005) . In addition to being the most convenient method, it was also considered to be the most secure way of obtaining the data as paper copies could have been lost or misplaced. The measures were completed on an iPad by the participants in the presence of the BCPs. Participants generated a user ID which was used to match their baseline data with their tracker and post intervention data. This ID was generated using an area and cohort code i.e. Fife cohort 1 = F1, West Lothian cohort 1 = WL1 etc and their initials and a date of birth. It was decided this would be the code format so it would be easy for the participant to generate at subsequent measurement time points.

Participants received a minimum of 2 weeks of 1:1 behaviour change session, 1 session per week, prior to starting an exercise program, then during the 12 weeks of PA they received fortnightly meetings with the behaviour change practitioner. In these fortnightly meetings the participants were also supported to sync their trackers. At the end of the 16-week intervention period, participants had their final meeting with the BCP where they completed the post-intervention set of questionnaires. Participants who chose not to continue into the long term follow up returned their activity trackers and received a debrief from the BCP.

#### *6.3.5 Long Term Follow Up*

Participants were given the option to consent to long term follow up. Participants who opted in were asked to continue to use their tracker. The BCP also offered check in appointments with the long-term participants every three weeks. These meetings would not be longer than 30 minutes and were offered in person or on the phone; they did not involve delivering any new intervention content. At the 6- and 12-months post intervention points, long term participants were asked to complete the questionnaire measures. These could be filled out with the BCP or could sent to the participant by

post or email (whichever was preferred by participant). Measures completed on paper were returned to the BCP who input the data online.

### *6.3.6 Sample Size*

Previous studies that have conducted evaluations of cognitive behavioural interventions have found effect sizes 0.42 for change of score on depression (Cuijpers, Smit, Bohlmeijer, Hollon, & Andersson, 2010) which would be considered a medium effect size using Cohen's (1988) criteria. Similarly, studies that have evaluated the use of behavioural support have found medium effect sizes of 0.43 (Bean et al., 2015). Therefore, following this convention, the effect size 0.43 was projected for this study. An a priori power analysis was conducted on G\*Power 3.0 (Faul, Erdfelder, Lang, & Buchner, 2007) running a mean difference between two independent means with the following assumptions: one tailed hypothesis,  $d=0.43$ , alpha error .05, power 80%. This returned a projected sample size of 136 to achieve this effect size for a within group comparison.

The proposed sample size of 336 was agreed between the Scottish Government and the charity SAMH. This sample was based on the target of recruiting 112 participants per area. Taking into consideration the number of referrals received by each of the Leisure Trusts per annum, this was considered feasible over the recruitment period.

### *6.3.7 Analysis*

Demographic information about the participant sample was reported. Adherence was analysed by calculating the number of participants as a percentage that achieved the threshold criteria level of adherence in each area. Reasons for drop out or excluding participants will be categorised. A logistic regression was performed to ascertain the effects of age, sex, disability, ethnicity, deprivation and education on the likelihood that participants completed the intervention.

Data was imported into SPSS 20 (IBM) and checked for outliers and homogeneity of variance. Extreme case outliers were removed. A MANOVA was conducted to measure the effectiveness of the intervention on mental wellbeing, PA level, self-esteem, self-efficacy and patient activation. Time point was used as the independent variable and the measures SPAQ, SEE, PAM, WEMWBS and ROSENBERG, alongside the tracker data, were used as the dependent variables. MANOVA was selected as it is an appropriate analysis for repeated measure data (O'Brien & Kaiser, 1985). Post hoc ANOVAs were performed as a follow up analysis. An intention to treat approach (Gupta, 2011) was taken to the analysis with the last observed score carried forward (LOSCF; Salkind, 2010). The strengths of adopting this approach are that it helps to preserve sample size to ensure sufficient power, and can also eliminate bias, as drop out or non-compliance is often associated with the intervention, hence the exclusion of participants that did not complete the intervention may make the treatment or intervention look better than it is (Ranganathan, Pramesh, & Aggarwal, 2016). However, ITT analysis has been criticised for being too conservative and susceptible to type II error, as estimates of treatment effects can be diluted due to noncompliance (Gupta, 2011). For this reason, the LOSCF approach was adopted. LOSCF assumes that an individual's condition has been stable after drop out, rather than declining or improving any more, however this approach has also received criticism, as it assumes that missing values are totally random and therefore unrelated to the treatment or intervention, therefore if the missing data is not random, this approach may introduce bias (Lachin, 2016).

#### *6.3.8 Ethics*

A favourable ethical approval was granted by the NRES Committee for West of Scotland on 09 January 2017 (REC ref 16/WS/0246) and from Edinburgh Napier School of Applied Sciences Ethics committee.

## 6.4 Results

### 6.4.1 Demographics

In total, 318 participants were recruited to take part in the ALBA intervention, across all three areas. Overall, ALBA participants were 68% female, 90.3% White – British, 20.8% came from the most deprived SIMD Decile, average age was 41.2 (min 18, max 80, SD = 13.10), and 45.5% considered themselves to have a disability.

The below table breaks down the demographic information by area.

*Table 6.4.1 Demographics of ALBA Participants*

|                     | Fife<br>(n = 107)   | West Lothian<br>(n = 126)  | North Ayrshire<br>(n = 85)                                    |
|---------------------|---|--|---|
| Sex                 | 66% Female<br><br>33% Male<br><br>1% Prefer not to say                              | 64.8% Female<br><br>35.2% Male   | 74.7% Female<br><br>24.1% Male<br><br>1.2% Prefer not to say  |
| Age (mean)          | 43.4 (SD = 12.58)   | 38.7 (SD = 12.83)  | 41.8 (SD = 13.69)   |
|                     | Min: 20   | Min: 18  | Min: 20   |
|                     | Max: 69   | Max: 70  | Max: 80   |
| Ethnicity           | 96% White British<br><br>1.6% Other<br><br>1.6% Asian or Asian<br>British – Chinese | 89.6% White<br>British<br><br>8% White Other<br><br>0.8% Asian or<br>Asian British - Any<br>other Asian<br>background<br><br>0.8% Mixed - White<br>& Black African | 88.4% White British<br><br>4.7% White Other<br><br>1.2% Other |
| Disability (yes/no) | 54.8% Yes<br><br>45.2% No   | 34.4% Yes<br><br>65.6% No  | 49.4% Yes<br><br>50.6% No                                     |



|                 |   |  |   |
|-----------------|---|--|---|
| Education Level | 11.8% University (less than 4-year Bachelors) | 9.8% University (less than 4-year Bachelors) | 16.9% University (less than 4-year Bachelors) |
|                 | 44% College (HND or HNC)                      | 30.3% College (HND or HNC)                   | 25.3% College (HND or HNC)                    |
|                 | 8.8% High school (6 years)                    | 10.7% High school (6 years)                  | 8.4% High school (6 years)                    |
|                 | 12.7% High school (5 years)                   | 17.2% High school (5 years)                  | 15.7% High school (5 years)                   |
|                 | 15.7% High school (4 years)                   | 27.9% High school (4 years)                  | 28.9% High school (4 years)                   |
| SIMD Decile     | Most Deprived decile 1: 17.4%                 | Most Deprived decile 1: 16.9%                | Most Deprived decile 1: 30.8%                 |
|                 | Least Deprived Decile 10: 5.8%                | Least Deprived Decile 9: 1.4%                | Least Deprived Decile 9: 5.8%                 |

#### 6.4.2 Adherence

In total 318 participants were recruited across all three areas. Of these 318, 171 participants completed the intervention, giving a completion rate of 53%. Of the 171 participants who completed the intervention, 129 (40.6%) were classified as adhering as they attended 8 or more sessions with BCP. Twenty-seven percent were still adhering after 6 months, and 10% after 12 months. Figure 6.4.1 presents the flow diagram of participants through the intervention.

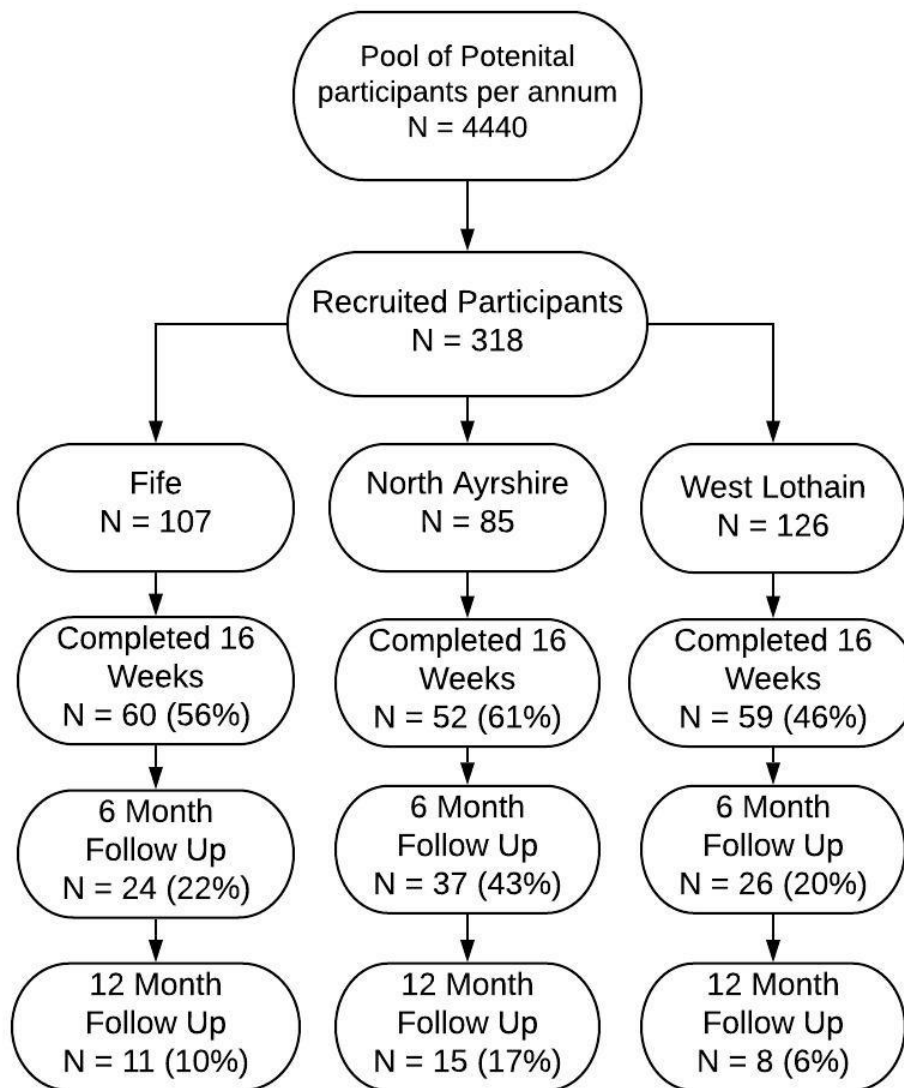


Figure 6.4.1 Flow Chart of Adherence to ALBA Across Time Point

Reasons for drop out were recorded when possible (see Table 6.4.2). The majority of participants who dropped out, provided no reason and contact was lost.

Table 6.4.2 Reasons for Dropping out of ALBA

| Reason for Drop Out                                      | N  | %   |
|--|----|-----|
| <b>No Reason</b>   | 64 | 52% |
| <b>Health Complications</b>                              | 14 | 11% |
| <b>Decided not for them</b>                              | 8  | 6%  |
| <b>Too Busy</b>  | 8  | 6%  |
| <b>Started full time employment</b>                      | 4  | 5%  |
| <b>Complete intervention but didn't want to do study</b> | 3  | 4%  |
| <b>Bereavement</b>                                       | 2  | 2%  |
| <b>Change of staff</b>                                   | 2  | 2%  |
| <b>Didn't think suitable</b>                             | 2  | 2%  |

|   |   |    |
|---|---|----|
| <b>Family circumstances</b>               | 2 | 2% |
| <b>Moved</b>                              | 2 | 2% |
| <b>Difficulty getting to appointments</b> | 1 | 1% |
| <b>Health - GP decided not suitable</b>   | 1 | 1% |
| <b>Lack of Childcare</b>                  | 1 | 1% |
| <b>Started volunteering</b>               | 1 | 1% |

The activity tracker data is presented below. Data from each participant was organised by date, and weekly totals were calculated. Adherence to the CMO guidelines was calculated based on the assumption that 3000 steps is equivalent to 30 minutes of moderate activity, based on the cadence of 100 steps/per minute (Marshall et al., 2009; Tudor-Locke et al., 2018). Therefore, to meet recommended PA guidelines, an individual would have to complete an additional of 3,000 steps, over and above the <5,000 sedentary level, meaning a daily step count of >8,000 on five or more days would equate to meeting the PA recommendations. The UK CMO guidelines published in 2019 advocate for accumulating 150 minutes of moderate to vigorous PA in a week, a translation of this into steps would equate to a weekly total of >50,000 steps/week (baseline of 5,000 a day for 7 days with an additional 15,000). The percentage of participants who met this criteria was calculated. The mean weekly total step count was calculated across all participants.

*Table 6.4.3 Number of steps as measured by Storm Activity Trackers*

|                 | <b>N</b> | <b>Mean Weekly Total Steps</b> | <b>95% CI</b> |             | <b>% meeting CMO Guidelines</b> |
|-----------------|----------|--------------------------------|---------------|-------------|---------------------------------|
|                 |          |                                | Lower Bound   | Upper Bound |                                 |
| <b>Baseline</b> | 277      | 34195.93                       | 31147.09      | 37244.77    | 22%                             |
| <b>Week 2</b>   | 269      | 32018.19                       | 28861.01      | 35175.37    | 20%                             |
| <b>Week 3</b>   | 251      | 31043.91                       | 27810.75      | 34277.07    | 17%                             |
| <b>Week 4</b>   | 225      | 33911.82                       | 29987.27      | 37836.37    | 17%                             |
| <b>Week 5</b>   | 213      | 34494                          | 30374.03      | 38613.97    | 18%                             |
| <b>Week 6</b>   | 206      | 34609.98                       | 30560.29      | 38659.68    | 17%                             |
| <b>Week 7</b>   | 190      | 34320.01                       | 30180.90      | 38459.12    | 14%                             |
| <b>Week 8</b>   | 189      | 32079.86                       | 28082.44      | 36077.29    | 14%                             |
| <b>Week 9</b>   | 179      | 31795.17                       | 27652.15      | 35938.20    | 12%                             |
| <b>Week 10</b>  | 168      | 34419.11                       | 30033.57      | 38804.65    | 14%                             |
| <b>Week 11</b>  | 163      | 36397.51                       | 31716         | 41079.02    | 15%                             |

|                |     |          |          |          |     |
|----------------|-----|----------|----------|----------|-----|
| <b>Week 12</b> | 156 | 31823.28 | 27557.06 | 36089.49 | 14% |
| <b>Week 13</b> | 146 | 36564.36 | 31553.95 | 41574.76 | 13% |
| <b>Week 14</b> | 138 | 36766.8  | 32049.13 | 41484.48 | 14% |
| <b>Week 15</b> | 140 | 32545.21 | 28190.46 | 36899.95 | 11% |
| <b>Week 16</b> | 133 | 31560.66 | 27019.22 | 36102.10 | 10% |

#### 6.4.3 Factors which influence adherence

A binary logistic regression was performed to ascertain the effects of age, gender, disability, education, ethnicity and social economic status on the likelihood that participants completed the ALBA intervention. A test of the full model (using the enter method) against a constant only model was significant ( $X^2(20) = 32.71, p = .04$ ). The model explained 17.2% (Nagelkerke  $R^2$ ) of the variance in adherence and correctly classified 66.1% of cases.

A binary logistic regression was also performed to assess if baseline scores on the psychological outcome measures influenced the likelihood of participants completing the ALBA intervention. A test of the full model (using the enter method) against a constant only model was non-significant ( $X^2(6) = 4.44, p = .62$ ). The model explained 8% (Nagelkerke  $R^2$ ) of the variance in adherence and correctly classified 69.9% of cases. However, none of the individual predictors were significant; table 6.4.4 for more information.

Table 6.4.4 Logistic Regression Predicting Likelihood of Adhering to ALBA

| Characteristic    | B    | SE  | Wald | df | p   | Odds Ratio | 95% Confidence Interval for Odds Ratio |       |
|-------------------|------|-----|------|----|-----|------------|--|-------|
|                   |      |     |      |    |     |            | Lower                                  | Upper |
| <b>Sex</b>        | .36  | .31 | 1.32 | 1  | .25 | 1.43       | .78                                    | 2.65  |
| <b>Age</b>        | -.00 | .01 | .11  | 1  | .75 | 1.00       | .97                                    | 1.02  |
| <b>Disability</b> | -.44 | .31 | 2.03 | 1  | .15 | .64        | .35                                    | 1.18  |
| <b>SIMD 1</b>     | .76  | .95 | .64  | 1  | .43 | 2.13       | .33                                    | 13.57 |

|                              |        |          |      |   |      |               |      |       |
|------------------------------|--------|----------|------|---|------|---------------|------|-------|
| <b>SIMD 2</b>                | .82    | .96      | .47  | 1 | .39  | 2.28          | .35  | 14.95 |
| <b>SIMD 3</b>                | .17    | .97      | .03  | 1 | .86  | 1.18          | .18  | 7.82  |
| <b>SIMD 4</b>                | 1.39   | . 1.01   | 1.88 | 1 | .17  | 4.01          | .55  | 29.15 |
| <b>SIMD 5</b>                | 1.45   | .98      | 2.19 | 1 | .14  | .4.25         | .63  | 28.86 |
| <b>SIMD 6</b>                | .61    | 1.05     | .34  | 1 | .56  | 1.85          | .23  | 14.59 |
| <b>SIMD 7</b>                | .87    | 1.03     | .70  | 1 | .40  | 2.38          | .31  | 17.99 |
| <b>SIMD 8</b>                | -.31   | 1.47     | .04  | 1 | .83  | .74           | .04  | 13.00 |
| <b>SIMD 9</b>                | 1.38   | 1.12     | 1.52 | 1 | .22  | 3.95          | .44  | 35.22 |
| <b>White British</b>         | -21.02 | 40192.94 | .00  | 1 | 1.00 | .00           | .00  |       |
| <b>White Other</b>           | -20.61 | 40192.94 | .00  | 1 | 1.00 | .00           | .00  |       |
| <b>Primary School</b>        | 21.60  | 19292.87 | .00  | 1 | 1.00 | 2.39E+9       | .00  |       |
| <b>High School (4 years)</b> | 21.30  | 19292.87 | .00  | 1 | 1.00 | 1.78E+9       | .00  |       |
| <b>High School (5 years)</b> | 21.24  | 19292.87 | .00  | 1 | 1.00 | 1.67E+9       | .00  |       |
| <b>High School (6 years)</b> | 21.51  | 19292.87 | .00  | 1 | 1.00 | 2.19E+9       | .00  |       |
| <b>College</b>               | 20.56  | 19292.87 | .00  | 1 | 1.00 | 85273560<br>1 | .00  |       |
| <b>University (4 years)</b>  | 19.69  | 19292.87 | .00  | 1 | 1.00 | 35546814<br>4 | .00  |       |
| <b>PA</b>                    | .00    | .00      | 1.98 | 1 | .16  | 1.00          | 1.00 | 1.00  |
| <b>SPAQ</b>                  | .00    | .00      | .87  | 1 | .35  | 1.00          | .99  | 1.00  |
| <b>SEE</b>                   | .01    | .02      | .30  | 1 | .59  | 1.00          | .97  | 1.04  |
| <b>PAM</b>                   | -.01   | .02      | .32  | 1 | .57  | .99           | .94  | 1.03  |
| <b>WEMWBS</b>                | .01    | .04      | .09  | 1 | .77  | 1.01          | .93  | 1.09  |
| <b>RSE</b>                   | -.05   | .07      | .70  | 1 | .40  | .95           | .83  | 1.08  |

\*Responses of "Prefer not to say" were excluded as missing data.

#### 6.4.4 Secondary Outcomes

The table below presents the means and standard deviation on each measure across the four timepoints.

Table 6.4.5 Descriptive Statistics

| Variable                  | Baseline               | 16 Weeks               | 6 Months               | 12 Months              |
|---------------------------|------------------------|------------------------|------------------------|------------------------|
|                           | Mean (SD)              | Mean (SD)              | Mean (SD)              | Mean (SD)              |
| Objective PA (STEPS)      | 33676.80<br>(25746.11) | 21514.80<br>(21563.71) | 21011.27<br>(21755.51) | 18079.34<br>(18628.72) |
| SPAQ (mins)               | 675.85 (611.40)        | 969.83 (982.42)        | 964.00 (881.84)        | 935.61 (843.80)        |
| Self-Efficacy (SEE)       | 34.61 (20.42)          | 39.49 (20.52)          | 39.63 (20.83)          | 39.86 (20.56)          |
| Patient Activation (PAM)  | 37.67 (6.06)           | 40.04 (6.78)           | 40.03 (6.51)           | 39.99 (6.46)           |
| Mental Wellbeing (WEMWBS) | 34.64 (9.33)           | 39.89 (10.71)          | 40.10 (10.89)          | 40.13 (10.97)          |
| Self Esteem (ROSENBERG)   | 13.83 (6.99)           | 14.58 (5.90)           | 14.64 (5.97)           | 14.59 (6.00)           |

Before a Multivariate analysis of variance (MANOVA) could be conducted, the data was tested against the assumptions of said test. First, the Box's test of equality of covariance matrices was significant (.000), meaning that covariance matrices for the dependent variables were not equal across groups. Second, the Shapiro-Wilk test of normality was used to investigate the assumption of normality. The results of the Shapiro-Wilk test revealed that the assumption of normality was violated for SPAQ and objectively measured PA. Furthermore, the Pillai's trace statistic was reported, as said statistic is the most robust, especially when there are violations of assumptions.

There was a statistically significant difference from pre and post intervention,  $F(18, 3087) = 8.700, p < .001$ ; Pillai's trace = .145, partial  $\eta^2 = .048$ . Separate univariate ANOVAs on the outcome variables revealed that there was a statistically significant effect on Steps as measured by activity tracker ( $F(3, 1032) = 25.122; p < .001$ , partial  $\eta^2 = .068$ ), SPAQ ( $F(3, 1032) = 7.180; p < .001$ , partial  $\eta^2 = .020$ ), SEE ( $F(3, 1032) = 3.854; p < .05$ , partial  $\eta^2 = .011$ ), WEMWBS ( $F(3, 1032) = 16.906; p < .001$ , partial  $\eta^2 = .047$ ) and PAM ( $F(3, 1032) = 6.411; p < .001$ , partial  $\eta^2 = .018$ ). There was no significant effect of time on Rosenberg ( $F(3, 1032) = 1.000; p = .392$ ; partial  $\eta^2 = .003$ ).

Post hoc tests using the Bonferroni correction revealed that there was a significant positive change between baseline and post intervention, 6 months and 12 months for SPAQ ( $m = -159.48$ ,  $p < .001$ , 95% CI -232.85, -86.12;  $m = -193.57$ ,  $p < .001$ , 95% CI -276.89, -110.25;  $m = -188.59$ ,  $p < .001$ , 95% CI -267.74, -109.43, respectively) but was not significant between post intervention and 6 month follow up or 12 month follow up. The same pattern was seen for SEE ( $m = -4.03$ ,  $p < .001$ , 95% CI -6.52, -1.53;  $m = -4.85$ ,  $p < .001$ , 95% CI -7.44, -2.27,  $m = -4.87$ ,  $p < .001$ , 95% CI -7.45, -2.30); PAM ( $m = -2.23$ ,  $p < .001$ , 95% CI -2.99, -1.46;  $m = -2.22$ ,  $p < .001$ , 95% CI -3.01, -1.43;  $m = -2.11$ ,  $p < .001$ , 95% CI -2.90, -1.31) and WEMWBS ( $m = -4.63$ ,  $p < .001$ , 95% CI -5.89, -3.37;  $m = -4.83$ ,  $p < .001$ , 95% CI -6.16, -3.50;  $m = -4.94$ ,  $p < .001$ , 95% CI -6.33, -3.56). Therefore, we can conclude that the ALBA intervention has a significant effect on self-reported PA, self-efficacy for exercise, patient activation and mental wellbeing, which is sustained over the follow up period of 6 and 12 months. The post hoc analysis also revealed that there was a significant decrease in steps as measured by the activity trackers from baseline ( $m = 34308.78$ ) to post intervention ( $m = 11690.58$ ,  $p < .001$ , 95% CI 4338.66, 19042.50), 6 months ( $m = 12858.46$ ,  $p < .001$ , 95% CI 4887.70, 20829.21) and 12 months follow up ( $m = 14275.96$ ,  $p < .001$ , 95% CI 5911.14, 22640.78).

Additionally, a Spearman's correlation was run to determine the relationship between the activity tracker data and the self-reported PA as measured by the SPAQ. There was a non-significant and weak correlation between the activity tracker and self-report measures of PA at baseline ( $r = .17$ ,  $n = 76$ ,  $p = .14$ ) and a significant but weak correlation post intervention ( $r = .31$ ,  $n = 78$ ,  $p = .005$ ).

## **6.5 Discussion**

### *6.5.1 Summary of Findings*

The aim of this outcome evaluation was to evaluate the effectiveness of the ALBA intervention. The results have found that the intervention appears to have moderate

adherence, when taking into account the target population and the length of the programme. When assessing who was most likely to adhere, the results indicated that no demographic variables were associated with increased likelihood to complete the intervention. The results also indicated that the intervention was effective at increasing mental wellbeing, self-efficacy and patient activation, and the positive effects were maintained over the long-term follow up period. However, the results suggest that there was no significant effect on self-esteem.

### *6.5.2 Adherence*

It was hypothesised that as the ALBA intervention used a combination of cognitive and behavioural strategies, it would enhance adherence to PA. Despite the aim to increase adherence to PA in mental health populations, the evidence from the ALBA intervention suggests that the intervention was only moderately successful in this, as only 10% of participants were meeting the PA guidelines at the end of the 16 weeks. Yet 53% of participants completed the intervention, with 41% attending 8 or more sessions with the BCP, suggesting that the intervention was acceptable to more than half of participants.

In the literature, age and gender are often found to be associated with adherence to PA, with evidence suggesting that males and older people are more likely to adhere, particularly in ERS (Pavey et al., 2012). It has also previously been found that deprivation is associated with reduced likelihood of adhering to ERS (Gidlow et al., 2007). The findings from the ALBA intervention trial found that whilst the model was significant, there were no significant associations between adherence and any particular demographic variables. However, this result may have been affected by unequal groups. This could be interpreted to suggest that multiple factors influenced adherence to the intervention, and that no particular demographic group were more suited to the intervention. It is noted, however, that a large percentage of ALBA participants came from the most deprived deciles. This suggests that ALBA was able to attract participants from a group that usually does not engage in ERS programmes, this



is significant as it suggests the additional support offered by ALBA encourages engagement with a hard to reach population.

Adherence to ERS in mental health referrals has consistently been found to be lower than individuals who are referred from physical health conditions (Crone, Johnston, Gidlow, Henley, & James, 2008), with evidence suggesting that severity of mental health condition is associated with increased risk of drop out (Krogh, Lorentzen, Subhi, & Nordentoft, 2014). However, the evidence from the ALBA trial did not find any evidence to suggest that lower baseline mental wellbeing, self-esteem or self-efficacy for exercise influenced adherence rate. Social cognition models posit that the greatest predictor for future behaviour is past behaviour (Rhodes & Plotnikoff, 2005), however, again, neither baseline self-reported nor objectively measured PA was associated with adherence. Therefore, it must be concluded that adherence to ALBA must be influenced by external factors which were not captured in this outcome evaluation. However, evidence from the qualitative process evaluation might suggest that adherence was maybe more related to the face-to-face interaction between the BCP and the participant. Psychotherapeutic literature points to the therapeutic alliance being more important than any specific technique (Ardito & Rabellino, 2011), which may be the case here.

Adherence rates of the ALBA intervention were relatively low (53%) when compared to previous trials of cognitive behavioural interventions for mental health populations (39%-80.56%; Peddie, Snowden, & Westbury, 2019), and compared to trials of exercise interventions for depression (39.3% completors; Krogh, Videbech, Thomsen, Gluud, & Nordentoft, 2013) and psychotherapy interventions (14.6% drop out rate; Rethorst et al., 2009). However, due to heterogeneity in methods used to measure adherence, making meaningful comparisons of adherence rates across different trials is challenging. Nevertheless, previous studies have found that better adherence to interventions is associated with greater effectiveness. The level of adherence found in the ALBA trial may have impacted on the efficacy of the intervention at increasing PA,

as the results show that as the intervention went on the number of participants who met the CMO guidelines decreased, suggesting adherence to PA decreased over the intervention period.

The level of adherence seen in the ALBA trial is more comparable to evidence from evaluations of ERS, which suggest that adherence ranges from 12%-93% (Pavey et al., 2012). This highlights that there is large amounts of discrepancy in adherence in different trials and interventions which have been delivered in real life settings. This is also attributed to varying definitions of adherence across studies, as there is no gold standard definition. Adherence is often measured as attendance or as attrition.

However, these measures do not capture how much an individual has actually engaged. Hence why it was chosen to use the objective measure of PA to assess adherence to PA guidelines. It was hoped that using an objective measure would increase the content validity, as it would be able to capture all activity that participants engaged in, not just activity participated in during attendance at the ERS. However, this choice of measurement may have presented its own methodological issues, which will be discussed below.

Adherence needs to be defined situationally within the parameters of what constitutes “satisfactory” adherence (Vitolins et al., 2000), in this instance, satisfactory adherence was defined as attendance at 8 or more BCP sessions and as meeting the PA guidelines. The decision to use these measures of adherence was pragmatic, as they were measurable, and would satisfy the needs of the funders, who wanted to be able to evidence that participants were increasing PA. Nevertheless, as the results suggested that the intervention had a positive effect on the secondary outcome measures, it is possible that this definition of what constituted satisfactory adherence was too conservative, especially given the target population, who were likely to be more sedentary and less motivated to engage in PA (Firth et al., 2016; Vancampfort et al., 2017). Presenting adherence as a continuum to the extent the individual engaged

might have better reflect the nature of adherence, rather than using distinct cut off points of what constituted satisfactory adherence.

As previously mentioned, the reliability of the activity trackers was untested against the gold standard, which as a result meant there was a lack of conclusive evidence for their reliability as an objective measure. As a result of this, some participants may have been meeting the guidelines but not being classified as an adherer, or vice versa. Participant might also have not been wearing their trackers as often as they were supposed to or not syncing their data, which could have influenced these results. Therefore, as a measure of adherence the use of the objective data may not have been the best tool. Monitoring of how often participants wore their activity tracker through self-report diaries would have offered one solution to this. The use of self-report diaries in general may also have provided a better measure of engagement than attendance; self-report diaries offer individuals the opportunity to self-monitor their behaviour and encourages self-regulation and the identification of barriers (Voth, Oelke, & Jung, 2016), therefore they could have additional benefits if this method was of monitoring adherence was introduced to the ALBA intervention in future implementation.

Monitoring adherence is essential for understanding the effectiveness of the intervention; however, the benefit of using adherence as an outcome measure is questionable, and calls to mind Goodhart's law that "*When a measure becomes a target, it ceases to be a good measure*" (Strathern, 1997). Whilst aiming to optimise adherence is positively associated with better outcomes and can help to determine if the treatment is effective and can have economic benefits (World Health Organisation, 2003). Adherence as an outcome does not take into account process of change which health models focus on. Therefore, by focusing on measuring adherence we are not furthering our understanding of what changes are taking place in the individual which are helping them to change their behaviour. This is a weakness of using adherence as an outcome measure.

Measuring adherence in individually tailored interventions adds complexity, as participants may have elected not to participate in some components, or their goals may be classified as being lower than the “satisfactory” amount. For example, a sedentary individual might have increased their PA, and be incurring health benefits; however, they might still be below the CMO guidelines and therefore would be classed as non-adhering. As there is evidence to support that there are health benefits for engaging in PA below the recommended amount for inactive individuals (Ekelund et al., 2019; Teychenne et al., 2020), it stands to reason that participants could be considered adherers as long as they were adhering to their goals. Focusing on identifying barriers which cause non-adherence and ensuring that programme delivery is properly facilitated therefore may be more beneficial than focusing attention on the number of adherers.

### *6.5.3 Physical Activity*

The results in this study found that self-reported PA as measured by the SPAQ significantly increased during the intervention period and then was maintained over time. However, this did not correspond with the objectively measured PA, which indicated that PA decreased over time. Therefore, the results of the objective and subjective measures contradict each other and will be considered inconclusive.

Despite the lack of consistent evidence to support that ALBA participants increased PA, there is evidence to support the improvements in mental wellbeing. There is evidence to suggest that engaging in less than 150 minutes is still associated with a positive effect on mental wellbeing (Mammen & Faulkner, 2013). A study conducted by Jonsdottir, Rödger, Hadzibajramovic, Börjesson, & Ahlborg (2010) found that people who engaged in 120 minutes of PA per week were at a 63% reduced risk of developing depression compared to those who engaged in less PA. Further to this, a study by Morres, Hinton-Bayre, Motakis, Carter, & Callaghan (2019) found evidence to support that exercising at a preferred intensity was associated with improvements in mental health in women with depression. This study concluded that this association may be

linked to a positive experience of exercise, due to enjoyment which in turn helped to facilitate recovery from depression. The ALBA intervention was not prescriptive about the amount or type of activity that participants should engage in; it focused on encouraging engagement in PA and finding ways of increasing and maintaining PA levels in a way which would help individuals meet their own personal goals. Therefore, the aims of ALBA aligned with the public health message that “some activity is better than none”, especially for adults who have been previously inactive. Research has found that exercise at any intensity has been associated with lower risk of mortality (Ekelund et al., 2019), with evidence suggesting that an increase of just 2000 steps/day can have positive health benefits (Tudor-Locke, Craig, et al., 2011).

There are numerous reasons why the self-report and objectively measured PA may not correspond. For one, the activity trackers could not pick up on activities such as cycling and swimming, which could be reported in the self-report measure. It is commonplace in studies which use activity trackers and accelerometers that participants wear them for short periods of time (Skender et al., 2016). In this study, participants were expected to wear their tracker for the duration of the 16-week intervention period. The number of days assessed increases the within-subject variability. In a free-living PA population sample, this variability can be explained by day to day fluctuations in number of steps, as this reflects real-life changes in behaviour (Tudor-Locke, Craig, et al., 2011). Along the same lines, pedometer measured PA often fluctuates seasonally (Tudor-Locke et al., 2004), with evidence suggesting that people are more active in the spring/summer than in the winter. Wearing an activity tracker daily for 16 weeks is a considerable burden on the individual, as they have to remember to wear them, and it stands to reason that participants are more likely to forget to wear the trackers or get bored of wearing them over longer periods of time, thus decreasing within-subject reliability.

Objective measurement of PA does not take into account strength and balance exercise. The importance of taking part in strength and balance activities has been

emphasised in the new PA guidelines (*UK Chief Medical Officers' Guidelines on Physical Activity.*, 2019). This guideline has been somewhat forgotten, with most evidence focussing on the positive benefits of aerobic exercise. However the evidence suggests that both aerobic and muscle-strengthening activities have positive impacts for physical and mental health (Teychenne et al., 2020), with further evidence suggesting that adults who meet both the aerobic and muscle-strengthening guidelines have a lower likelihood of developing depression than those who only meet one of the guidelines (Bennie, Teychenne, De Cocker, & Biddle, 2019).

Subjective measures of PA also have their short comings, with evidence suggesting that they are subject to reporting bias (Petee Gabriel, Morrow, & Woolsey, 2012). It is possible that participants overreported the amount of PA due to either the social desirability or recall bias. Social desirability bias is a bias where individuals distort their self-reported behaviour in a favourable direction (Paulhus, Robinson, Shaver, & Wrightsman, 1991). Individuals in the ALBA intervention may have felt pressure to report increasing PA and may have wanted to gain the approval of the BCP that they had been working with, which may have led them to overreport the amount of PA they engaged in by the end of the intervention period.

Participants may also have been affected by recall bias, such as recalling incorrectly the amount of time spent in an activity. Individuals often overreport the amount of time and intensity spent in PA (Rzewnicki, Auweele, & Bourdeaudhuij, 2003). This may be because recalling PA is a complex cognitive task (Baranowski, 1988), which requires an individual to be able to understand ambiguous terms such as "physical activity" and "moderate to vigorous intensity" which may be misinterpreted. Whilst the SPAQ does provide examples for the type of activity to count, individuals might still be reporting low intensity activities as moderate to vigorous, or overestimating the amount of time spent doing activities, such as walking or housework. However, the results from the self-report measure and the activity trackers post intervention were significantly and weakly correlated, this indicates that participants perception of their PA might have become

more accurate as they had become more consciously aware of the amount of PA that they engaged in.

It was observed from the activity tracker data that the highest percentage of individuals meeting the activity guidelines was in the baseline week, before any intervention activities had taken place. This was an unexpected result; however, it might be attributed to the introduction of the activity trackers. The activity trackers provided the participants with immediate feedback on their behaviour, which increased their awareness and may have resulted in immediate behaviour change (Tudor-Locke & Lutes, 2009). Whilst this is a positive change and highlights how activity trackers can be used to motivated behaviour change, this complicates the analysis as there is no “true” baseline measure of participants PA prior to taking part in ALBA.

The activity trackers were selected as the objective measure in the ALBA intervention, as they were inexpensive, easy to use, and they measured activity in steps, which is an easily interpretable measurement. They were also selected due to their online platform, as the app was considered to be attractive for getting participant buy in and could be used as a self-monitoring tool during the intervention. However, the tracker was not validated as a reliable measure against the gold standard, therefore the data cannot be considered to be a reliable objective measure. Hence, the benefits of the activity trackers as a component of the intervention were that participants were able to use them as a self-monitoring tool and that they encouraged initial engagement in the intervention.

#### *6.5.4 Mental Wellbeing*

Despite the negative findings for PA, the evidence supported the effectiveness of the intervention for improving mental wellbeing. The results show that the ALBA intervention has a positive impact on mental wellbeing, with the average WEMWBS score increasing from 34.7 to 39.9. The improvements are maintained through the 6 and 12 months follow up, suggesting that the ALBA intervention promotes long-term

improvements in mental wellbeing. Data collected in the Scottish Health Survey suggests that the national mean WEMWBS score is 49.4 (The Scottish Government, 2019). Whilst the scores from the ALBA intervention falls below the national average, it does evidence a significant increase in wellbeing which would be meaningful to the individual (Maheswaran, Weich, Powell, & Stewart-Brown, 2012).

The improvements in mental wellbeing despite the lack of a significant increase in PA in ALBA participants could be interpreted to mean that the changes in participants' PA, although potentially minimal, were enough to improve their mental wellbeing. The optimal dose of PA to improve or sustain mental health is unknown (Kim et al., 2012), and it is well accepted that a dose-response relationship exists between PA levels and health outcomes. Evidence suggests that meeting the PA guidelines is associated with a 22% decreased likelihood of developing depression (Schuch et al., 2018), however it is important to acknowledge that lighter doses of PA can also have mental health benefits, particularly as those who are at the greatest risk of poor mental health are more likely to be inactive (Teychenne et al., 2020).

It has been suggested that autonomy supportive PA interventions may be more likely to improve mood and have a positive effect than interventions where the individual has little or no choice in the activities (Doose et al., 2015; Morres et al., 2019; White et al., 2018). Meaningful activity and the ability to choose has implications for improving wellbeing, as a sense of autonomy and purpose are key aspects of mental wellbeing. The ALBA intervention was tailored to the individual, which also meant that the individuals were able to choose what type and what intensity of activity they wanted to engage in. Therefore, it was more likely that the activities they engaged in were enjoyable and meaningful to them. This aligns with Self-Determination Theory (SDT; Deci & Ryan, 1985) which posits that autonomously motivated behaviours have greater benefits for mental wellbeing, as behaviours which are autonomously motivated help to satisfy our basic psychological need for autonomy, competence and relatedness.



Engaging in recreational activities is beneficial for wellbeing as they contribute to better mood and reduce symptoms of depression, furthermore engaging in recreational activities provides time structure, which has been found to be associated with better physical and mental health outcomes (Goodman, Geiger, & Wolf, 2017; Pressman et al., 2009). Increased perception of structure and purpose have been found to be associated with mental wellbeing benefits (Kelly, 2003), therefore it has been suggested that spending time in enjoyable activities serves as a distraction from negative thoughts. It is posited that ALBA contributed to improving wellbeing as it offered participants structure and a distraction, as participants were required to meet regularly with the BCPs and engage in activity which gave them something to focus on and a sense of structure in a day. This was particularly relevant to participants who were on a leave of absence or unemployed, who lacked this kind of regular structure.

The positive impact of ALBA on mental wellbeing may also suggest that the improvements in participants' wellbeing is due to the benefits of participating in the intervention as a whole. The ALBA intervention had multiple components, and a major factor in the intervention was the social support offered by the BCPs who delivered the intervention, and the peer volunteers. It could be that the combination of all the components, or the intervention experience as a whole were more beneficial for improving mental wellbeing than PA itself, as participants could gain enjoyment, a feeling of mastery of skills or goals, a sense of purpose, and increased opportunities for social interaction or a sense of belonging out of participating (White et al., 2018).

This result from the ALBA intervention raises questions about the contribution of PA to the wider context of mental health recovery. In mental health care, recovery is defined as "a personal process of learning how to live and how to live well with or without enduring symptoms or vulnerabilities" (Roberts & Boardman, 2013). A common feature in recovery narratives is that individuals are able to engage or re-engage in their life and activities which help them to achieve their goals, and find meaning and purpose through reclaiming their values, identity and social roles (Slade, 2010). It is important to

consider that this process is non-linear and rather an active process of maintaining wellbeing (Piat, Seida, & Sabetti, 2017). The ALBA intervention offered participants the opportunity to set their own goals and engage in activities which were meaningful to them and receive support and feedback on their progress. It could therefore be argued that PA was used as a tool or something to focus the conversation around that helps people to open up about their mental health.

When situating PA within a mental health context, an important consideration is that recovery is an individual process, therefore there is no “one size fits all” route. This is important to consider within the scope of this study, as the evidence suggests that ALBA was beneficial to mental wellbeing, however the components which were the most beneficial to some may not have been the parts that worked well for another. Hence the importance of a multidimensional approach is clear.

#### *6.5.5 Self-Efficacy*

The results indicate that the ALBA intervention had a significant effect on self-efficacy for exercise, suggesting that participants’ experience of taking part in the intervention had helped them to feel more confident about being able to engage in PA in the future. Self-efficacy has consistently been identified as predictive of PA behaviour (Rhodes & Quinlan, 2015; Stutts, 2002), yet the evidence from the ALBA trial suggests that the increase in self-efficacy did not translate into actual behaviour change. This change in self-efficacy must therefore be interpreted as increased confidence and sense of mastery towards PA.

Part of the role of the BCP was to validate and affirm increases in PA and encourage goal setting. The evidence from this quantitative finding links with the findings from the qualitative study, which suggests the encouragement and support that participants received from the BCPs might have influenced the increase in self-efficacy. Evidence suggests that positive feedback on attempts at achieving behavioural goals is associated with significantly higher self-efficacy (Williams & French, 2011), which is

also supported by Bandura's theory that personal performance success enhances perceived self-efficacy (Bandura, 1997). In other words, participants were encouraged by the support they received from the BCP, which increased their confidence that they would be able to successfully overcome challenges in the future in order to engage in PA.

Poor self-efficacy can contribute to a vicious cycle, whereby a person does not pursue achievable goals or tasks (Bandura, 1997), leading to feelings of frustration which can then impact on an individual's mental health and wellbeing, particularly when these goals are important to them. The evidence from the ALBA intervention suggests that as self-efficacy increased, participants were able to break this cycle, as they gained experience of setting and achieving manageable goals. However, this increase in self-efficacy might not have translated into significant changes in PA or resulted in participants meeting the PA guidelines because of the goals they set themselves. Participants' goals may have been small step goals or might have been related to incorporating PA into achieving other daily life tasks i.e. getting the bus, tidying the house, which were meaningful to them and contributed to improving their mental wellbeing through increased sense of purpose.

#### *6.5.6 Patient Activation*

Increases in activation have been found to be related to: higher levels of recovery, better physical and mental health (Sacks et al., 2014), and fewer mental health symptoms (Green et al., 2010). Patient activation is also positively associated with greater self-management of health and adherence to health related behaviours, such as increased PA (Hibbard, Mahoney, Stock, & Tusler, 2007). Therefore, the increases in activation as displayed in this study suggests that the tailored approach adopted in the ALBA intervention was effective at increasing participants' engagement in their mental health care.

The results showed a significant effect on patient activation, with participants mean scores suggesting that the intervention helped participants to move from activation level 2 to level 3. This suggests that at baseline, most participants were at level 2 of activation, which represents a lack of knowledge and confidence about how to manage their health (Hibbard et al., 2005), and that the intervention helped participants to increase to level 3, which represents individuals taking action, but still lacking in confidence and need of support for their change in behaviour. This is a promising finding, as it suggests that the ALBA intervention has helped participants to gain knowledge and confidence in their ability to manage their mental health.

The positive change in patient activation seen in the ALBA participants might be attributed to the techniques used by the BCP. A study conducted by Greene et al. (2016) found that the following strategies were associated with high patient activation and supporting behaviour change: emphasizing patient ownership of their health behaviour, partnering with patients, identifying small steps toward change, scheduling frequent follow-up visits to commend patients efforts or help problem solve, and showing personal care for patients. The BCPs used a number of these strategies in the 1:1 sessions, including identifying small steps to change, and they met frequently with the participants and helped problem solve. However, with a lack of objective measurement of the fidelity to approach of the BCPs' it difficult to draw conclusions about which techniques were effectively utilised.

Therapeutic alliance and communication can impact on PAM scores (Allen et al., 2017). In the qualitative process evaluation, the therapeutic alliance between participants and BCPs was discussed, with both ALBA participants and BCPs reporting the importance of developing a relationship. A study by Allen et al. (2017) found that greater therapeutic alliance on the goal of therapy predicted greater activation in patients from a community mental health setting. In this paper, they put forward that in mental health care, patients do not achieve change in activation alone but achieve it from a dyadic relationship with their provider. The implications of this finding were that

the collaborative approach adopted in the ALBA intervention had an impact on patient activation, and that BCPs were successful in developing this alliance with ALBA participants.

#### *6.5.7 Self Esteem*

Considering the effect that the ALBA intervention had on mental wellbeing it was anticipated that there would also be a positive impact on self-esteem. However, the results of the outcome evaluation show no significant change in self-esteem. The findings from this trial do support the theoretical notion that self-esteem is a relatively stable construct, and that it is not easily changed (Fox, 2003).

Previous reviews of the impact of PA on self-esteem have concluded that there is an inconsistent and weak relationship between PA and self-esteem. This is often attributed to conceptual and methodological issue. The Rosenberg Self Esteem Scale (1989) is one of the most widely used self-esteem measures, however, there has been some criticism of the design of this measure, particularly the negative wording of the questions, which has called into question the construct validity (Wongpakaran et al., 2012).

Another issue with the Rosenberg Self-Esteem scale is that it is a global self-esteem measure. Evidence suggests that global self-esteem is relatively stable, whereas domain specific self-esteem is more changeable. Therefore when examining the effect of PA on self-esteem it has been recommended to use a physical self-esteem measure rather than a global one (McAuley et al., 2005). If a domain specific measure had been selected, then perhaps the results would have been different.

#### *6.5.8 Limitations*

One major limitation of the ALBA intervention is the evaluation design. In community intervention trials, such as the ALBA trial, there is often a trade-off between scientific design and public health pragmatism. A “before-after” design is generally considered to

be a relatively weak evaluation design as there is a lack of control or comparison group. Without a control or comparison group, it is harder to attribute the observed effects to the ALBA intervention or occurred due to other factors or outside influence. It was decided that adopting an RCT design was not feasible as randomisation at an individual level would be too challenging. There were also issues regarding a control group, as the intervention was opt-in, it was decided that it would be unfair not to offer them the intervention and it was deemed unethical to use data from individuals who did not chose to participate as a comparison group. A number of other quasi-experimental designs were considered, including adopting a stepped-wedge approach. However due to the planned recruitment strategy it was not deemed feasible and funders were concerned that adopting such an approach would increase drop out. Therefore, the “before-after” design was considered the “best possible” under the circumstances in which the ALBA intervention was implemented.

As the ALBA intervention was trialled in a “real-world” community setting, there was no way to control for outside influences which would impact upon individuals lives and may have positive or negative knock on effects to their mental health. The use of a comparison or control group would have been beneficial for clarifying what changes in mental health and PA were attributed to the intervention and were not a result of general changes in participants lives and personal circumstances.

Another limitation of the evaluation was that information on the diagnosis or health conditions of participants was not collected. During the initial planning and designing of the evaluation it was decided to not to collect this information in the baseline measure, as the BCPs would receive this information from the participants and from the referral information from the Leisure Trusts. However, it is now considered an oversight to not have included this information for the evaluation, as it would have been beneficial to know what kind of referrals were being made and which participants were benefiting from the intervention. It was decided to accept referrals of participants with a range of diagnoses because of association between physical health conditions and mental

health (Stein et al., 2019), and also because some people may not have had a diagnosis or be at a sub clinical level, but still be experiencing symptoms of anxiety or depression. Data on diagnosis or severity of condition may have been relevant to the evaluation, as previous studies have found evidence which suggests that severity of mental health condition is associated with decreased adherence to PA interventions (Krogh, Lorentzen, Subhi, & Nordentoft, 2014). It is recommended that for any future evaluation of ALBA, that participant diagnosis data is collected.

It was also decided to not include a health-related quality of life measure in the evaluation of ALBA. This decision was made as it was decided that it was important to limit the number of outcome measures to the most relevant in order to limit the number of measures that participants had to complete, and a QoL measure was not a priority to the funders. However, this is now considered a limitation of the evaluation as there is a lack of information about the impact taking part in the intervention has had on wider health outcomes. This information would not only have been beneficial for assessing if participants' physical health improved but would also have been beneficial to funders for evidencing the economic value of the intervention. Including a measure of health-related quality of life (HRQoL) such as the Short-Form Health Survey 36 (SF-36) or the WHO Quality of Life WHOQoL-BREF would have provided information about the physical, social and mental functioning benefits gained, as perceived by the participants.

## **6.7 Chapter Summary**

The aim of this chapter was to present the results of the quantitative outcome evaluation. Adherence to ALBA was moderate, as 53% of participants completed the intervention, with 41% demonstrating good attendance. However, only 10% were meeting the PA guidelines at the end of the 16 weeks. The results suggest that the ALBA intervention had a significant effect on mental wellbeing which was maintained over follow up, despite inconclusive results about PA level. The results also indicate a significant improvement in self-efficacy for exercise and patient activation which is

maintained over follow up. However, the results suggest there was no significant effect on self-esteem.

The findings suggest that the ALBA intervention had a long lasting and beneficial effect on mental wellbeing. This finding suggests that despite the lack of evidence to support a significant change in PA, the intervention had a beneficial effect on the participants. This suggests that, although potentially minimal, the changes in PA behaviour were enough to improve their mental wellbeing. The optimal dose of PA to improve or sustain mental health is unknown, and there is evidence to support a dose-response relationship between PA and mental wellbeing. The alternative explanation is that the intervention had a beneficial effect on mental health due to the impact of participating in the intervention as a whole. Through the ALBA intervention, participants were encouraged to and support in engaging in purposeful activity, setting and achieving goals and make use of increased opportunities for social interaction. Therefore, these findings suggest that participating in ALBA helped to facilitate mental health recovery, as PA was used as a tool which helped the participants to re-engage in meaningful activities.

The limitations of this evaluation were discussed, including the methodological weakness of the before-after design and the lack of a control or comparison group. Data was also not collected to measure the impact of the intervention on quality of life. Collecting this data would have furthered the understanding of the wider impacts of participating in ALBA, and benefits to physical health that was not captured in the other outcome measures. These methodological weaknesses should be considered when interpreting the results from the ALBA intervention.



## Chapter 7: Conclusions and Future Recommendations

### 7.1 Purpose of Chapter

The purpose of this chapter is to discuss the overall findings and conclusions from the evaluation of ALBA. This chapter will first summarise the findings and will then go on to discuss the significance of the results. A methodological critique of the evaluation will be presented, highlighting the strengths and weaknesses of the research. Finally, recommendations will be made for any future implementation or scale up of the ALBA intervention.

### 7.2 Summary of Results

An overall summary of the results from this evaluation can be found in the table below.

*Table 6.1 Summary of Findings*

| Stage of Evaluation  | Design   | Findings  |
|----------------------|--|---|
| Formative Evaluation | Systematic Review                              | <ul style="list-style-type: none"><li>• There is a lack of consensus on how to measure or define PA adherence.</li><li>• Interventions which adopt a cognitive-behavioural approach have better than average adherence, but methodological weaknesses limit the evidence base.</li></ul>  |
| Process Evaluation   | Qualitative Focus Group with ALBA participants | <ul style="list-style-type: none"><li>• The BCP play a key role in facilitating behaviour change, as offered support and encouragement to participants.</li><li>• The therapeutic alliance developed between participant and BCP helped participants to set goals and problem solve, which helped participants to regain a sense of purpose.</li><li>• Key barriers include emotion relating to fears about exercising, beliefs about their capabilities, including negative self-beliefs and lack of motivation, and issues with the</li></ul> |

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|                    |  |  |
|--------------------|--|--|
|                    |  | environmental context and intervention resources.  |
|                    | Qualitative Focus Group with ALBA practitioners  | <ul style="list-style-type: none"> <li>• The skills and commitment of the BCPs were key facilitators for delivering the intervention, as they enabled the BCPs to develop relationships with the participants.</li> <li>• Training was identified as both a barrier and facilitator, as participants felt they did not receive enough training, yet the training equipped them with the skills needed to deliver the intervention.</li> <li>• The lack of formal supervision was identified as a major barrier to the delivery of the intervention. Supervision is crucial for maintaining quality of delivery and ensuring BCPs are fit-to-practice.</li> </ul> |
| Outcome Evaluation | Quantitative evaluation with pre-and-post design | <ul style="list-style-type: none"> <li>• Adherence to ALBA was moderate, with little evidence to suggest that participants levels of PA significantly improved.</li> <li>• ALBA improved self-efficacy for exercise and patient activation suggests that ALBA helped to improve participants confidence and ability to self-regulate.</li> <li>• Results suggest that ALBA had a significant effect on mental wellbeing – this suggests that key element of intervention was the support offered from participating in the intervention as a whole.</li> </ul>   |

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The results from the systematic review found only moderate evidence to support the use of cognitive behavioural strategies at increasing PA in mental health populations.

The studies included in this review varied considerably in terms of their design, delivery, and content. This heterogeneity made drawing conclusions about the

effectiveness of cognitive behavioural interventions difficult. Therefore, this review found limited evidence to support that the approach adopted by ALBA would be effective for increasing adherence to PA in the target population. However, this review highlighted the challenges faced when trying to a) increase PA in mental health populations; and b) compare adherence rate across studies.

The findings from the qualitative process evaluation indicated that the ALBA intervention had been well received by the target population, with participants reporting that ALBA had helped them to overcome barriers and had positively impacted on their mental wellbeing. The data suggested that the relationship between the BCP and the participants played a key role in facilitating engagement and helping participants to overcome the barriers they faced, as it allowed participants to open up about their mental health and develop a cooperative relationship which allowed them to problem solve and set goals. This in turn led to other therapeutic benefits, as it helped to influence participants' beliefs about their capabilities and their intentions. The warm empathetic relationship between the participant-practitioner allowed participants to feel listened to and understood, which acted as a platform for participants to feel reconnected to others. Thus, the ALBA intervention helped to foster a sense of connectedness, and a sense of purpose and autonomy, which may have contributed to the improvements in mental wellbeing.

The findings from BCP focus group analysis also provided evidence that suggested the key facilitators to the implementation of ALBA were the skills and the commitment of the BCPs to delivering a high-quality intervention and the resources that the BCPs used. The identification of the practitioners as being a central component of the interventions effectiveness and the importance of developing a therapeutic alliance between the participant and the BCP aligns with the psychotherapy literature which suggests that the therapeutic alliance is consistently predictive of positive therapeutic outcomes (Zilcha-Mano, 2017). The stronger the alliance is between the client-therapist, the better the therapeutic outcomes, as clients feel comfortable to disclose

personal information and actively engage with their therapist in CBT techniques (Zilcha-Mano, Lipsitz, & Errázuriz, 2018). This is also supported by motivational interviewing (MI) literature, which posits that the relationship between the client and the practitioner is central to improvements and facilitating behaviour change, as through this relationship clients are able to engage in the process necessary for increasing motivation to change (Moyers, 2014). Therefore, it stands to reason that participants who had a strong alliance with a BCP would have better outcomes at the end of the 16 weeks.

The identification of the BCPs as being central to the implementation of the intervention highlights the importance of ensuring that the BCPs received adequate training and support to fulfil their role. Bellg et al. (2004) recommended that to enhance intervention fidelity, provider training is monitored and maintained as the study progresses. The BCPs underwent a rigorous training programme to prepare for the role. However, the qualitative findings indicated that they did not feel supported in their role. Adequate supervision is an essential part of training and continued professional development in people working in mental health (Townend et al., 2002), as it helps to reduce practitioners' anxiety and enhances confidence in their abilities, as well as ensuring that they are fit to practice (Bambling et al., 2006). Variations in intervention fidelity can have a major outcome on intervention effectiveness (O'Halloran et al., 2014), if fidelity of an intervention is not rigorously evaluated then concerns might be raised over whether the intervention content is being received by the participants. Whilst this evaluation identified weaknesses in the training and support the BCPs' received, there was a lack of objective fidelity assessment which is a limitation of this evaluation.

The quantitative results from the ALBA intervention study suggest that participants mental wellbeing significantly improved, and the positive changes were maintained over follow-up. The same goes for self-efficacy and patient activation, suggesting that the intervention positively impacted upon participants perception of their abilities, their confidence in engaging in PA, and their level of engagement in their mental health

care. Yet, the results from the self-report PA measure and the objective measure were mixed, which may be a result of methodological weaknesses of the outcome measure, conversely, it could be interpreted to suggest that participants' perceptions of their behaviour had changed more than their actual behaviour.

The findings from this evaluation suggest that the ALBA intervention did not enhance adherence to PA, with the adherence rate being found to be relatively low when compared to other trials of cognitive behavioural interventions aimed at people with mental health conditions. Evidence suggests that non-adherence to behaviour change interventions can diminish the effectiveness of the interventions, and as a result participants do not receive the full extent of the health benefits (Middleton et al., 2013). However, in the case of the ALBA intervention, the evidence suggests that the intervention had a significant positive impact on mental wellbeing and other psychological outcome measures.

### **7.3 Role of Theory**

Considering the findings of the ALBA evaluation in terms of the COM-B model (Michie et al., 2014) raises some questions. COM-B postulates that for a behaviour to take place, the individual needs to have the capability, opportunity and motivation to carry out the behaviour, and that the interaction between these components leads to behaviour change. The ALBA intervention was specifically designed with the COM-B model in mind, and therefore the components of the intervention were designed to target capability, opportunity and motivation. The increases in patient activation and self-efficacy suggests that participants' psychological capability and reflective motivation would have increased, which in turn might have influenced behaviour, however, the findings from ALBA suggest that this did not translate into behavioural change. This discrepancy between changes in self-efficacy and patient activation points to a "intention-behaviour gap" between the participants beliefs and their PA behaviour. These findings could be explained in line with the Transtheoretical model

(TTM), which posits that individuals move through stages when they are in the process of taking up and maintaining a new behaviour (Prochaska & Velicer, 1997).

Within the TTM, health behaviour adoption and maintenance is described as a cyclic process whereby an individual passes through a series of stages of motivational readiness: the first three stages of pre-contemplation, contemplation and preparation are cognitive stages, characterised by changes in cognitive and psychodynamic variables (Buchan et al., 2012), with the latter stages of action and maintenance being behavioural. The evidence from the ALBA intervention indicated that the participants had significant changes in patient activation, which supports the notion that individuals move through stages of motivational readiness when adopting a behavioural change. ALBA participants moved from level 2 activation, which represents a lack of knowledge and confidence about how to manage their health (Hibbard et al., 2005), to level 3, which represents individuals taking action, but still lacking in confidence and in need of support for their change in behaviour. Both the TTM and patient activation are based on the assumptions that a psychological change has to take place as a prerequisite for behaviour change. PA is a complex behaviour which might take several attempts to change. Therefore, it could be argued that an intervention like ALBA, which offered ongoing or longer-term support for these individuals could help facilitate moving further along towards action.

#### **7.4 Role of PA in improve Mental Wellbeing in ALBA Participants**

The improvements in mental wellbeing, despite the lack of a significant increase in PA in ALBA participants, could be interpreted to mean that the changes in participants' PA, although potentially minimal were enough to improve their mental wellbeing. This supports the public health message "some physical activity is better than none" as there is a dose-response between PA and health benefits, with evidence suggesting that exercise at any intensity has been associated with health benefits (Ekelund et al., 2019). Lighter doses of PA can have mental health benefits, particularly as those who are at the greatest risk of poor mental health are more likely to be inactive (Teychenne

et al., 2020). With this in mind, it has been argued that the current PA guidelines may need to be re-examined when it comes to the benefits for mental health. The individual tailoring of PA interventions is particularly important in a mental health context, as evidence has been found that suggests that exercising at a preferred intensity (Morres et al., 2019) and during leisure or transport purposes (Teychenne, Abbott, Lamb, Rosenbaum, & Ball, 2017) are more beneficial for mental wellbeing, as individuals are more likely to have a positive experience of PA if they are engaging in an activity which is enjoyable and meaningful.

The findings from ALBA intervention raises questions about the contribution of PA to wider context of mental health recovery, such as is the amount of PA the beneficial component. In mental health care, recovery is defined as “a personal process of learning how to live and how to live well with or without enduring symptoms or vulnerabilities” (Roberts & Boardman, 2013). Leamy et al. (2011) proposed the CHIME framework of which identified five processes most relevant to personal recovery in mental health: connectedness; hope and optimism for the future; identity; meaning in life and empowerment (CHIME). This model helps to explain how the ALBA intervention helped to support improvements in mental wellbeing, as it was supportive of connectedness as participants were able to develop relationships with the BCPs and peer supporters and were able to find meaning in life and empowerment through being able to set their own goals and receive support to achieve them.

## **7.5 Challenges with measuring Adherence**

The definition of adherence when it comes to PA and exercise has been a contentious issue, with different trials operationalising it in different ways and using different measurements. As previously stated, Hawley-Hague et al. (2016) concluded that adherence should be clearly defined by the purpose of the measurement. They proposed a set of definitions dependent on type of measurement, suggesting that when measuring adherence for health outcome adherence should be defined as completion, attendance, duration and intensity. However, Hawley-Hague et al. (2016) also

highlighted the inconsistency of the definition and measurement of adherence, and subsequently the issues surrounding comparisons from different trials. In the years since this paper was published there has been little progress in developing a more coherent approach to measuring adherence. It could be argued that in attempts to define and measure adherence, the end result is that we are trying to over-simplify a complex process. This consequently raises questions surrounding the suitability of adherence as an outcome measure when situated in the context of PA.

The monitoring of adherence within the context of a process evaluation is essential, as without ongoing monitoring of how much of an intervention is received it would be impossible to draw conclusions on the effectiveness of the intervention. Monitoring of adherence also helps to determine whether an intervention is ineffective, or it has not been delivered sufficiently, and if the intervention is acceptable to the target group. However, as an outcome measure, adherence may not be suitable. Whilst aiming to optimise adherence is positively associated with better outcomes, using adherence as an outcome measure does not take into account the process of change. Presenting adherence as a process, with the extent that an individual meets the recommended dose may be a more pragmatic way of understanding and measuring adherence rather than using defined cut off points and would more accurately reflect how adherence works in practice. Therefore, it is important to consider what the characteristics of “good adherence” are. In the case of PA, it could be argued that good adherence is the ability to overcome challenges and obstacles and return to the activity.

## **7.6 Strengths of the ALBA Intervention**

The ALBA intervention has several advantages that makes it unique from other PA interventions which are currently on offer in Scotland. Firstly, it offers a person-centred approach that can be tailored to the individual, and can be flexible in terms of PA type, frequency and intensity. Therefore, despite the incorporation into the Exercise Referral pathway, individuals who take part in ALBA are not tied into completing any specific activity program. This has its benefits, particularly for individuals who have experience



poor mental health and who may feel uncomfortable in a gym setting, as the intervention allows them to choose their own type of activity and encourages them to gain confidence. This is also a benefit as participants can engage in activities which have no associated costs, such as walking or running, and can be implemented in both rural and urban settings, therefore not reducing access.

Secondly, the ALBA intervention has been designed based on theory. MRC guidelines advocate that intervention design should be informed by the best available evidence and appropriate theory (Skivington, Matthews, Craig, Simpson, & Moore, 2018b). Evidence suggests that interventions which are theoretically informed are more effective. The design of ALBA was influenced by the COM-B model (Michie et al., 2014), and utilised behaviour change techniques to encourage sustained PA behaviour change (Abraham & Michie, 2008). The ALBA evaluation also utilised the Theoretical Domains Framework (TDF), which has been used widely in implementation research to identify potential causal mechanism of behaviour change. The use of the TDF was particularly valuable in the process evaluation as it was able to identify individual, social and environmental factors which influenced the effectiveness of ALBA.

Thirdly, the intervention can be delivered by a BCP with the right set of interpersonal skills and training. SAMH has developed a rigorous training program to ensure that the individuals delivering the ALBA intervention were qualified to work with vulnerable individuals. The findings from the qualitative evaluation highlighted the importance of the BCPs in the effectiveness of the intervention: it could be argued that the BCPs were a crucial element as their support was highly valued by the participants. It has previously been suggested that to encourage the incorporation of PA into mental health care, exercise professionals should be integrated into multidisciplinary mental health teams, and should receive training in mental health literacy (Rosenbaum et al., 2018). The approach adopted in the ALBA intervention is slightly different, as the BCPs work alongside the exercise professionals in the community to ensure long term behaviour change. Although this may be more costly; it is arguably more advantageous to train

individuals in a specialised role, rather than to increase the workload of exercise professionals. There is also a high demand for appropriate opportunities to gain experience of working in therapeutic settings. With more than 4054 individuals applying through clearing house for a space on a clinical psychology training course, with only a 15% success rate (Clearing House, 2019), and an increasingly competitive job market for graduate jobs in psychology, such as assistant psychologist posts, recruiting individuals to take on the role of the BCP would not be challenging.

## **7.7 Methodological Critique**

As discussed in chapter 6, the outcome evaluation had a before-after design. It is acknowledged that this is a weaker methodology, which makes it difficult to conclusively attribute the effects to the intervention. It would have been preferable if there had been a comparison group. However, this wasn't feasible within the design of this study. In the future a comparison group would be necessary in some capacity to determine if the ALBA intervention is effective or if the positive findings found in this evaluation could be attributed to natural changes over time or other outside variables.

In implementation science, there has been a move towards the use of mixed methods design, as using both approaches in combination provides a better understanding of the research question than either approach alone (Palinkas et al., 2011). It is considered that the use of a mixed method approach to the evaluation of ALBA, adds strength allowing for the triangulation of data: the data generated from the qualitative inquiry helped to support and explain the findings from the quantitative study, and gain better understanding of the implementation, causal mechanisms and contextual factors which influenced the interventions delivery. The decision to take this approach was also supported by the pragmatic paradigm within which this research was conducted, as the strengths of both qualitative and quantitative methods were utilised and integrated in order to develop a deeper understanding of the effectiveness of the intervention (Morgan, 2014).

A methodological weakness of this thesis was that some of the methodological choices had been prescribed by the sponsor, SAMH, in the brief prior to the project beginning. This put constraints upon the researcher, as they did not have complete control over selecting outcome measures. It has been acknowledged by the MRC that evaluations can take place in a wide variety of settings which can put constraints on the researchers choice of methods, and that the source of the intervention can have a significant impact on the amount of influence the researcher will have on implementation and evaluation design (Craig et al., 2013). Nevertheless, despite the constraints the researcher aimed to use the best available methods in order to yield results.

In evaluation research, it is also important to satisfy both the needs of the stakeholders and ensure the integrity of the research, as the research needs to be fit for purpose. Building and managing a positive working relationship between the intervention deliverers whilst remaining sufficiently independent to ensure that the evidence remains credible is an important aspect of conducting an evaluation (Moore et al., 2015). Reflecting upon the relationship that developed between the researcher and stakeholders, there were clearly defined parameters from the outset and good communication, for example, regular meetings were held between the researcher and the funders to ensure updates of the evaluation and progress of the implementation were communicated to all, and the role of the evaluation was made clear to all members of the team. Therefore, despite the methodological constraints, the researcher was able to develop a good working partnership which allowed room for advice to be taken on board, and the needs of the evaluation to be met by the deliverers.

## **7.8 The Utility of the STORM Activity Trackers**

One example of the choices made by SAMH which the author did not have input into was the selection of the Storm Activity Trackers. Sensitivity testing of these trackers had been carried out; however, they had not been tested against the gold standard,

therefore they could not be considered a reliable measurement. It would have been preferable to have used the ActivPAL activity monitor. The ActivPAL is an accelerometry-based activity monitor which has been validated as a measure of PA and sedentary behaviour for use in free-living populations, and is capable of categorizing behaviour as light, moderate or vigorous activity (Dowd, Harrington, & Donnelly, 2012; Sylvia et al., 2014). This tool would have been preferred as it has been validated against the gold standard, and has demonstrated excellent reliability (Sellers, Dall, Grant, & Stansfield, 2016). That being said, the Storm Activity trackers were easy to use, and provided a step count, which was easy to measure and easy for the participants to understand (Ding et al., 2019). Mental health populations frequently report that motivation is a barrier to engaging in PA (Crone & Guy, 2008), and the activity trackers had a positive impact on motivating participants to engage in PA. Participants reported that they enjoyed using them and felt good about hitting their targets. The trackers were also beneficial for getting the initial buy-in from participants, as they were excited about getting a free "FitBit". Therefore, as a self-monitoring tool they were beneficial, and an important component of the intervention.

## **7.9 Role of Peer Support Model**

An underdeveloped part of this project is the role that the peer volunteers played in supporting participants. This element of the evaluation is underdeveloped as the peer supporters were not available to all, as a condition of peer support was that they had completed the ALBA intervention themselves. Further to this, many participants did not want to be paired with a peer supporter. Monitoring of the uptake of peer supporters was conducted. It was hoped that the benefits of the peer volunteers would be captured in the qualitative process evaluation, however it is unclear what effect they had on the results as the majority of the focus group participants had not had a peer volunteer and only a small number had volunteered themselves. The initial premise that the peer supporters would add sustainability to the ALBA model appears to have been aspirational. Whilst evidence of peer support in mental health has been found to be beneficial to both the volunteer and recipient (Repper & Carter, 2011), there are a

number of challenges faced which require careful management, training and support for the peer volunteers. This is particularly relevant in mental health populations, where the volunteers are also vulnerable, and may struggle with the demands placed on them (Yuen & Fossey, 2003).

### **7.10 Implications and Future Recommendations for ALBA**

There have been some discussion in the literature about the best way in which to deliver complex PA interventions for mental health improvements, with some arguing that they need to be delivered in a pragmatic way so they can be implemented in primary care (Chalder et al., 2012; Morres et al., 2019). The NICE guidelines for Depression recommend a stepped care approach, with structured exercise programmes as a treatment for mild-moderate depression (National Institute for Health and Care Excellence, 2009). However, the evidence suggests that longer term support is needed to increase PA adherence and health outcomes (Rowley et al., 2018), and that interventions should be individually tailored to the needs of the individual. The evidence from this evaluation supports that ALBA helps to improve mental wellbeing. Therefore, the ALBA intervention presents one option for how a supportive, person-centred programme could be built into existing exercise referral pathways to help improve mental wellbeing and gain additional benefits to promote mental health recovery.

As the findings from the ALBA evaluation indicate, PA should be considered in the wider context of how PA can contribute to improving mental wellbeing and mental health recovery. The Active Scotland division recognised the wider contributions of sport and PA in the Active Scotland Outcome Framework (ASOF), Outcome 5 identified that sport and physical activity can be used to foster wellbeing and resilience in communities (The Scottish Government, 2018a). Sport and PA can be used as a tool to generate a sense of community identity and help reduce social isolation. Widening the availability of a public health intervention like ALBA, could help to improve public mental wellbeing by addressing risk factors for poor mental health and encouraging a

healthy lifestyle, which could have economic and social benefits. In Scotland, mental health conditions are estimated to affect 1 in 4 people (Scottish Government, 2018). Therefore, increasing access to an intervention like ALBA could contribute to tackling the health inequalities experienced by this population and help to address the Scottish Government's goal of improving the physical and mental wellbeing of people with mental health conditions.

Scaling up an intervention refers to the process of adapting and disseminating the intervention more broadly across a population. SAMH intends to secure funding in order to scale up the ALBA intervention by expanding into three more areas across Scotland. Evidence from the literature suggests that when interventions are scaled up, there is a reduction in the effectiveness of the intervention (McCrabb et al., 2019; Reis et al., 2016). Pragmatic trials aim to inform either clinical or policy decisions by providing evidence for the adoption of an intervention into real-world practice (Ford & Norrie, 2016; Felipe Barreto Schuch, Morres, Ekkekakis, Rosenbaum, & Stubbs, 2017), as they aim to test an intervention by recruiting participants who would receive the intervention if it were to become available as part of usual care. The ALBA intervention was considered a pragmatic trial, as it was developed and then trialled in a real-world setting, rather than "ideal" conditions. The results reflected in this trial are therefore likely to reflect the results that would be found in future iterations of the intervention. Hence it would be expected that there would be no reduction in the effectiveness of the intervention if scaled up.

There is a growing need for third sector organisations to monitor and evaluate the delivery of services and to evidence their impact in order to receive funding (Bach-Mortensen & Montgomery, 2018). A component of this growing demand is to be able to evidence the economic benefit in order to secure long term funding. Economic evaluations compare the cost of an intervention and the consequences of alternative action, therefore helping to understand the net gain from implementing programme or intervention. As an economic evaluation was not conducted for the ALBA intervention,

it is impossible to determine the economic value gained from the implementing ALBA. Therefore, it is recommended that an economic evaluation should be built into any plans for scale up of the intervention.

## **7.11 Conclusions**

Physical inactivity is responsible for approximately 9% of premature mortality worldwide (Lee et al., 2012). People with mental health conditions are a high-risk population for inactivity and other high-risk health behaviours, which results in an increased level of premature mortality in this population, with people with mental health conditions living between 15 and 20 years less than average (Thorncroft, 2011). Therefore, increasing PA in people with mental health conditions is essential for reducing the life expectancy gap. The ALBA intervention offers an approach which could help improve mental wellbeing, which also aims to encourage improving physical health through PA. This approach joins both physical and mental health in a move towards mental health recovery.

Whilst the evidence from the ALBA evaluation does not support that the intervention significantly increases adherence to PA, it does situate PA in the wider context of mental health recovery. The limitations of this evaluation have been acknowledged, and caution has been taken when interpreting the results. That being said, the findings indicated that ALBA was beneficial for improving mental wellbeing, self-efficacy and patient activation. The positive effects of ALBA have been attributed to the key role of BCP in providing a supportive environment for recovery. They offered encouragement and empathetic support which helped participants to engage in purposeful activity, have an increased sense of control and feel connected to others, which are key elements of mental wellbeing (Slade, 2010). Therefore, in the case of ALBA, PA was used as a tool to facilitate a conversation which helped people to open up about their mental health. This finding highlights the benefits of delivering a cognitive behavioural intervention alongside PA, as the additional support offered was valued by the participants. However, this finding also highlights the importance of having skilled

individuals who are capable of delivering the intervention as a key component of the success.

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## **Appendices**

### *Appendix 1. ALBA Proposal*

#### **Scottish Government Proposal for Investment Behavioural Change Approach to Physical Activity Engagement and Sustainment 29<sup>th</sup> February 2016**

##### **Proposal Summary**

This intervention will result in increased physical activity levels within people living with mental and/or physical health conditions, leading to improved mental and physical health and well-being.

Across Scotland there are a number of physical activity interventions. Usually, but not always, these are part of a referral process for people with health conditions such as CVD, diabetes, mild to moderate mental health conditions, and cancer to name a few. The intention of these interventions is to (re-)introduce individuals to physical activity with a view to physical activity becoming an integrated way for individuals to self-manage their health condition and reduce reliance on medication / avoid further health deterioration. For some individuals this works well, however with average attrition rates of nearly 80% **during** the course of the intervention the current reality is that existing provisions do not lead to lasting physical activity behavioural change and therefore the associated long-term physical and mental health benefits are not achieved. Unless there is a supporting behavioural change intervention to address poor adherence rates, the risk is that the resources allocated to deliver the range of existing time-limited physical activity interventions do not lead to long-term behavioural change & therefore the return on investment is not realised.

SAMH propose a new and unique behavioural change provision which links in with existing physical activity provisions to enhance sustainable individual physical activity engagement. The intention of this new provision is that individuals will be evidently physically active in the long-term (i.e. 18 months – 2+ years post intervention).

##### **Rationale and Context**

Physical activity has well-documented health benefits. Population level cohort studies have shown that people who engage in regular physical activity enjoy a higher quality of life and improved health status compared with those with sedentary behaviours, with subsequent reductions in their risk of adverse outcomes such as admissions to hospital. Randomised controlled trials have shown similarly favourable findings in arthritis, cancer, diabetes, heart disease, and respiratory illnesses, among other chronic conditions. Given the overwhelming evidence in support of the health benefits of physical activity on physical and mental health, the Global Burden of Disease study has recently ranked physical inactivity as the fifth leading cause of disease burden in western Europe, and as one of the top modifiable risk factors along

with smoking<sup>1</sup>. This sits alongside mental health as the biggest public health challenge faced by society (both in Scotland and beyond)<sup>2&3</sup>. Close association between physical and mental health (presented further on Page 3 and 4 below), and the co-existence of poor mental health and poor physical health, give rise to this innovative proposal that seeks to engage and improve individual wellbeing and self-management of health through a behavioural change approach to exercise adherence.

Scottish Government, local authorities, health boards and leisure trusts all recognise the link between physical activity and health. Indeed, investment is made by these agencies in targeted physical activity interventions that seek to engage individuals in physical activity. However, there continue to be significant barriers to participation, **especially** for those population groups who have the most to gain from living an active life. Consequently, population groups such as those with long-term health conditions, co-morbidities, older adults and those living in areas of multiple deprivation encounter particular barriers to, and more often than not do not therefore engage in, long-term physical activity behaviour change. The report commissioned by The Centre for Population Health<sup>4</sup> interestingly notes that these population cohorts know the benefit of physical activity, understand they 'should' engage, but low self-esteem and lack of perceived levels of control result in an attitude that precludes their participation in physical activity.

In short, there are 3 factors that need to be in place for long-term engagement in physical activity:

1. Opportunity
2. Knowledge
3. Attitude

The opportunity is available through existing physical activity provisions through leisure trusts, local authorities, health boards and community-based services. The knowledge and understanding are in place through public campaigns, medical advice and general media attention to the topic. However, there is no provision for tackling the third factor, attitude. As Scotland's leading mental health charity, SAMH is well placed to engage our workforce and volunteer network, connect with existing physical activity provisions and increase the level of sustained engagement of individuals in activity.

It is on this basis that SAMH proposes a new and unique intervention using Cognitive Behavioural Approaches, targeted at those who have the most to gain from engaging in and sustaining physical activity.

For context, this proposal identifies physical activity in many forms beyond sport and gym/fitness-based activities to include walking, making a habit of taking the stairs, doing household chores and gardening.

### **Experience and Capacity**

SAMH has a commitment to promoting positive mental health and supporting people experiencing mental health problems, and this has extended since the organisation was established in 1923.

The experience, knowledge and skills within SAMH, amassed through service provision in engaging service users in making lifestyle choices and changes across housing support, employment services and mental health outreach, can be applied specifically to achieve engagement in physical activity.

SAMH recognises and uses the 5-ways to better mental health as a framework with which to work with individuals and groups in understanding how to promote individual self-management of positive mental health. The 5-ways to better mental health as identified by NEF (the New Economics Foundation) through the UK Government Foresight<sup>5</sup> programme:

1. Take notice
2. Keep learning
3. Stay connected
4. Give
5. Get active

In line with the last of these pillars of positive mental health development, SAMH has invested charitable funds in running a national physical activity programme, Get Active, to champion the use of physical activity as an accessible and sustainable vehicle for promoting positive mental health, addressing mental health problems and reducing stigma. For the last 9 years SAMH has implemented local interventions, offering opportunity to and engaging with over 600 individuals who benefit from physical activity in the management of day-to-day mental wellbeing as well as severe and enduring mental health diagnoses. The experience, evaluation and learning gained from this work informs our current position and this proposal. Most notably, this experience has enforced the value and benefit for sound evaluation and demonstrable outcomes. It is to this learning that evaluation has been built in as a fundamental aspect of this proposal.

Through the Get Active programme, sound links with local and national agencies that inform the Scottish infrastructure of physical activity provision have been made. SAMH has an active relationship with and positive reputation among an extensive range of national and local sports, leisure, recreation and physical activity promotion agencies. Indeed, it is from these relationships and collective discussions about how to address the problem of high attrition rates among those newly referred and progressing through physical activity interventions that the concept for this proposal arose.

### **The Problem**

There is clarity that more individuals need to move more to improve our personal, community and national wellbeing. Indeed, this underpins the 6 outcomes defined by Active Scotland. SAMH can positively contribute to the realisation of the following Scottish Government outcomes through this proposed piece of work:

Within the **Active Scotland** section of Scottish Government, this provision will contribute to the following:

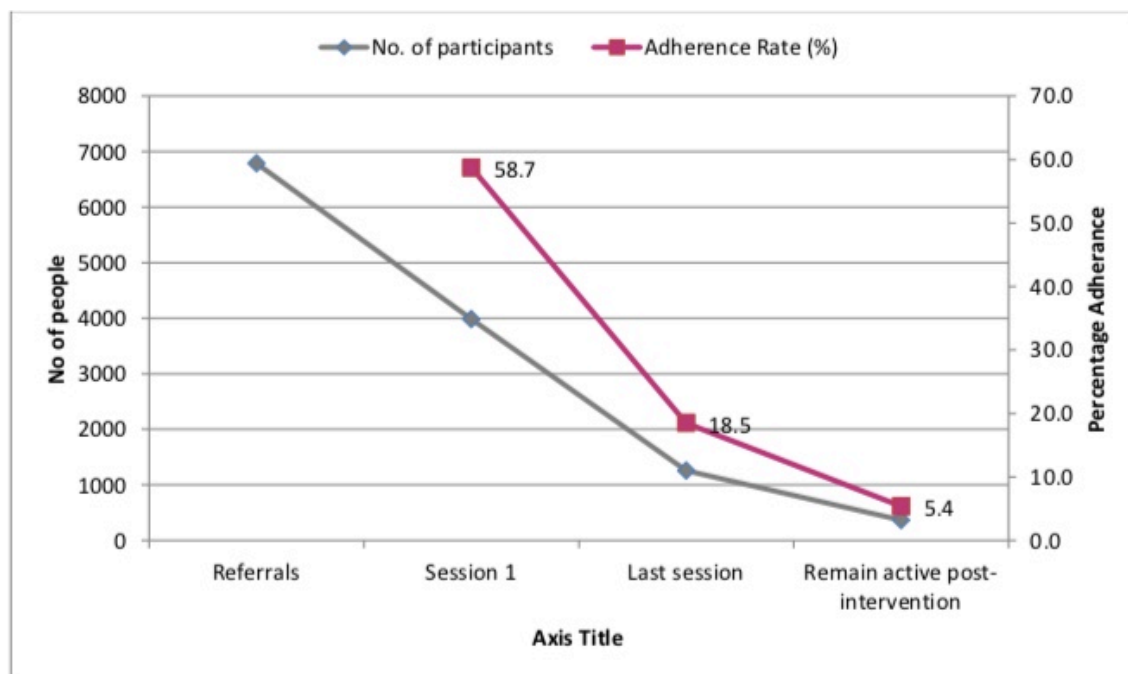
1. We encourage and enable the inactive to be more active
2. We support wellbeing and resilience in communities through physical activity and sport

Within the **Mental Health** section of the Scottish Government, this provision will contribute to the following:

1. Putting a concerted effort into developing and measuring outcomes
2. Developing new models of managing mental health problems in primary care
3. Reconsider our priorities in the balance of healthcare

In particular, SAMH have a role to play in addressing the significant drop-off seen in physical activity programmes among those individuals who stand to gain the most from becoming more

active. This is best illustrated by the following graph which shows the actual and % decline in the number of people within a year, who have been referred into a physical activity pathway, who actively participate in the intervention (this is taken from actual numbers provided by 5 leisure trusts\*). Given that the ultimate intention is for individuals to be independently physically active post-intervention, this rate of decline is worrying. Given the investment that is made to ensure physical activity provision is in place it is wasteful not to address non-adherence rates.



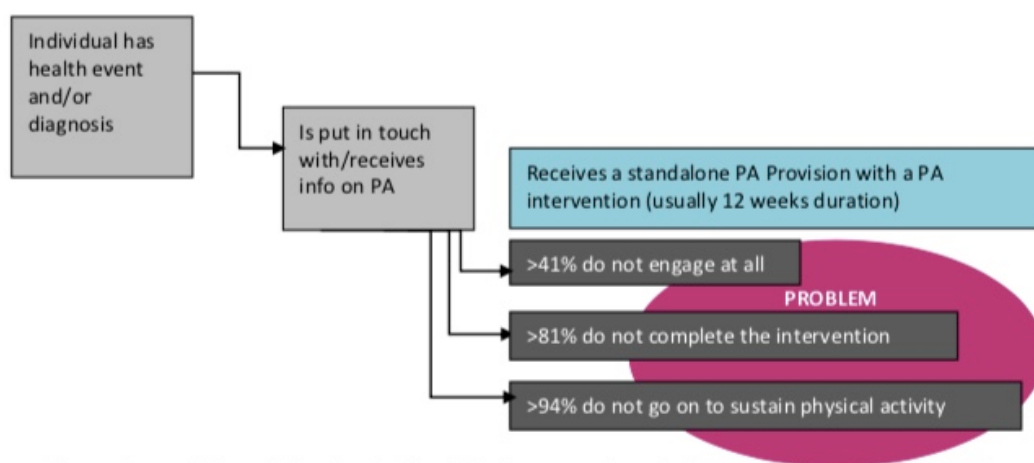
\*The leisure trusts who monitor and were able to provide this information were West Lothian, Fife, Edinburgh, North Lanarkshire, North Ayrshire.

This graph reinforces the findings from speaking to and observing the patterns of physical activity engagement and sustainment behaviour across local and national providers of physical activity. An average of less than 20% of the overall number of people referred into physical activity will remain engaged at the end of a structured intervention. A proportion of those who **complete** an intervention do go on to continued physical activity engagement independent of the intervention and this should be recognised for the success that it is. However, the problem presents itself as the vast majority of individuals, identified to be most in need of physical activity engagement, either (a) fail to attend the first session, (b) begin but do not complete, or (c) complete the intervention but do not continue with physical activity independently. Proportionately, those who go on to remain physically active post-intervention represent less than 5% of those who are referred.

Mental health is a significant health need in its own right. The problem being presented and tackled here is not just about mental health. There is clear evidence that poor mental health regularly co-exists with poor physical health, indeed individuals with specific non-communicable diseases including cardiovascular disease (CVD)<sup>6</sup> and diabetes<sup>7</sup> are reported to have higher rates of depression than the wider population. Not only that, but individuals with depression are more likely to eventually develop CVD and also have a higher mortality rate than the general population<sup>6&8</sup>. Patients with CVD and other non-communicable diseases, who are also depressed, have a worse outcome than those patients who are not depressed<sup>8&9</sup>. There is a graded relationship: the more severe the depression, the higher the subsequent risk of developing co-morbidities and/or mortality. Viewing this from the perspective of non-engagement and attrition in physical activity, it is logical that those facing most barriers to

having the right attitude and behaviour required for long-term engagement are those with most complex needs. SAMH is experienced in working with individuals with complex needs, behaviours and mental health problems. Using this experience to support our partners in the field of physical activity to initiate change in self-esteem, perceived level of control, attitude and engagement will meaningfully augment the existing physical activity interventions and tackle the problem of disengagement.

The flow diagram below gives a visual representation of the existing user journey as it stands with current physical activity pathways.



The quality and provision of the physical activity interventions is in place. However, a lack of targeted and specialised engagement work with individuals facing genuine barriers to making lifestyle changes is the solution to a clear problem of non- and dis-engagement.

### The Proposal

The proposed provision builds on the public health NICE guidelines on Physical activity: brief advice for adults in primary care<sup>10</sup> and Physical activity: exercise referral schemes<sup>11</sup>. The intention is to utilise established pathways, partnerships and provisions (between health practitioners, patients attending medical appointments, brief advice and/or referrals to local physical activity providers) to improve the uptake and long-term commitment to lifestyle change among population groups who stand to benefit the most from physical activity.

This intervention will work with and enhance existing physical activity provisions in Scotland. Relationships between SAMH and the providers of physical activity are in place and an active dialogue with these partner organisations has informed the proposal put forward.

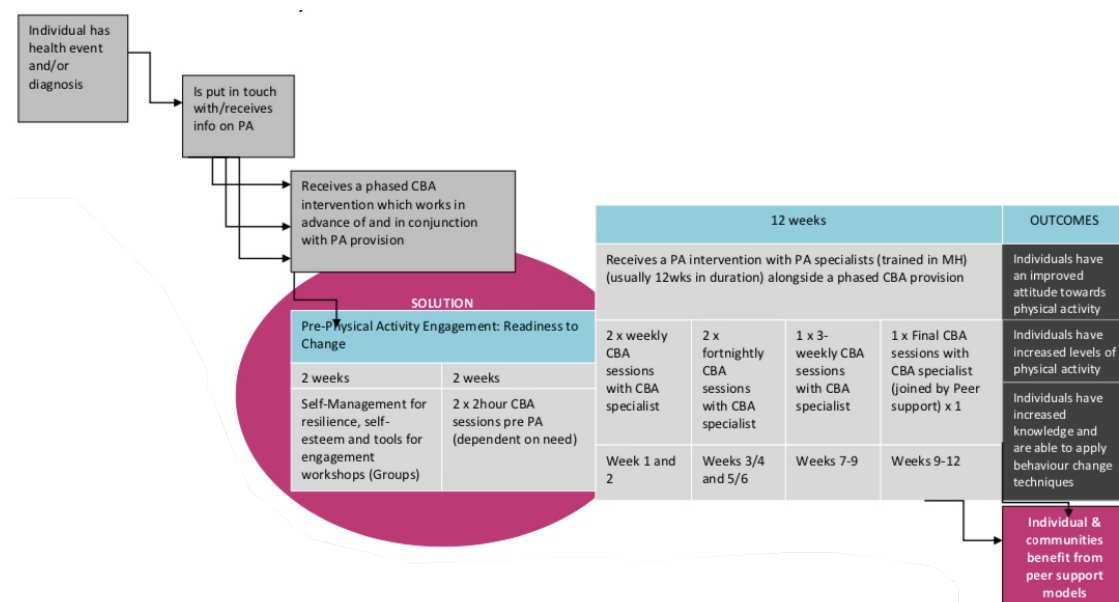
SAMH has experience in delivering new and successful community-based interventions. From this experience it is clear how important capacity building in local communities is for ensuring outcomes, especially for longer-term outcomes, to be realised. Building on the experience SAMH has in engaging and enabling members of the community and local providers to offer and sustain services, a core aspect of this provision will be the development of a peer support network.

The flow diagram below gives a visual representation of how the problem will be addressed and the journey which an individual will be engaged in. Crucial to the success of increasing participation (particularly for those who do not engage at all with physical activity) is the pre-physical activity engagement provision; this will see individuals engage in dedicated & supported self-awareness, self- management and Cognitive Behavioural Approach sessions with trained SAMH staff. As the intervention progresses and participants engage and move



through the model, they will be offered training as peer support volunteers – indeed, this volunteer training and recruitment will be a core aspect of the on-going delivery, sustainability and reach of the provision.

## The Solution and Service User Pathway



CBA is a well-recognised and regarded option for engaging with specific and often challenging conditions, situations or behaviours.

Taking learning from Susan Michie’s ‘COM-B’ model of behaviour change<sup>12</sup>, this intervention recognises that for behaviour change to be effective, physical activity must be embedded as a choice that individuals select resulting in the capability, motivation and opportunity creating behaviour change.

SAMH have participated in a 2 year pilot programme delivered by NHS Education Scotland (NES) which has provided experience and competence in using CBA. The experience and knowledge gained in this pilot informs this proposal and the approach that will be taken to ensure SAMH staff have the competence and confidence to use a range of tools, assess individual needs and enable behavioural change pertaining to physical activity.

## Logic Model

| SITUATION & NEED   | INPUTS/RESOURCE   | REACH (aimed at)   | ACTIVITIES/OUTPUTS  | OUTCOMES   | IMPACT – Wider Aim/Intention   |
|--|---|--|---|--|--|
| Thousands of individuals are referred to physical activity interventions across Scotland. A significant proportion (60-80%) does not start or complete the intervention. An even higher proportion does not go on to independently engage in physical activity post-intervention. One of the main barriers to initiating and sustaining individual engagement in physical activity is low self-esteem and low perceived levels of control. This approach will address this need by changing attitudes. | <p><b>Expertise:</b> There is a gap in Mental Health Awareness and specific behavioural change techniques within the physical activity provision</p> <p><b>People:</b> Staff and volunteers will be required to support individuals into physical activity and to sustain this</p> <p><b>Participants:</b> Participants are currently identified and (in most cases) referred to PA</p> <p><b>Facilities:</b> Facilities for PA are in place, additional 'spaces' will be needed for behaviour change sessions</p> <p><b>Technology:</b> We arable tech to monitor &amp; motivate individuals</p> | <p>People (aged 16+) who have one or more condition(s), physical and/or mental, who are referred to a physical activity intervention (mostly Tier 2) as per NICE guideline in particular this intervention is aimed at people who:</p> <ul style="list-style-type: none"> <li>- Have low self-esteem</li> <li>- Have low levels of perceived control over their condition and/or life</li> <li>- Have little/no experience in and/or desire to being physically active</li> <li>- Have a negative or prohibitive view or attitude toward physical activity</li> <li>- Would benefit from support in becoming independently active</li> </ul> | <p><b>Referrals/Source of Participants</b><br/>Individuals will be introduced to SAMH via physical activity providers. Working with our partners in leisure trusts and local community PA provisions (such as walk groups and jog groups), SAMH will establish pathways suitable for each location. Referrals will be received by local SAMH staff and a key worker will be identified to contact and work with the individual.</p> <p><b>Cognitive Behavioural Approach / behavioural change training and techniques</b><br/>To ensure the capacity to kick-start this new, innovative offering, SAMH staff will require internal up-skilling; this will enable them to:</p> <ul style="list-style-type: none"> <li>- Apply their skills to the context of PA and help challenge and navigate beyond barriers presented by people not wanting to engage in physical activity</li> <li>- Train PA staff in MH awareness and basic approaches, tools and techniques that these staff can go on and use to reinforce the behavioural change that is required</li> <li>- Train volunteers (likely successful service users) to recruit and build a local community based resource of trained and experienced peer support volunteers who can, over a phased period, become active supporters of individuals coming into the intervention</li> </ul> <p><b>Person-centred planning and goal-setting (1-to-1 &amp; group)</b><br/>A clear, constructive and person-centred approach will be set up to address barriers, promote acceptance and commitment to change behaviours and sustain habits.</p> <p><b>Evidence of increased of PA levels</b><br/>Should the intervention be approved, the level of physical activity uptake would be increased. The data collected via the Storm Health technology will capture the extent of this change. Currently the proportion of people going on to be independently physically active is just over 5%.</p> <p><b>Change in attitude/perception and behaviour</b><br/>Individuals will have a positive and committed view of physical activity and their ability to engage.</p> | <p>Individuals have an improved attitude towards physical</p> <p>Individuals have increased levels of physical activity</p> <p>Individuals have increased knowledge &amp; ability to apply behavioural change techniques</p> <p>Individuals have improved Mental Health and Wellbeing</p> <p>Trained peer support volunteers provide locally sustained support in communities</p> <p><b>INDICATORS</b></p> <p>We will know we have achieved these outcomes by measuring the following:</p> <ul style="list-style-type: none"> <li>- barriers to PA pre-, during, and post-CBA interventions</li> <li>- Using the Patient Activation Measure to understand whether and how the intervention empowers behaviour change</li> <li>- Digital technology will enable accurate capture of actual activity levels before, during and after CBA and PA interventions</li> <li>- Long term tracking of PA for a representative sample will indicate the extent of long-term behaviour change</li> <li>- The level of on-going involvement of trained support volunteers in working with new referrals</li> </ul> | <p>To reduce the level of need and demand placed on health and social care due to declining health and onset of co-morbidities</p> <p>To challenge the culture and belief among those most at-risk of sedentary living that physical activity is not for them / too difficult</p> <p>To enable people to be more active</p> <p><b>LINKS TO:</b></p> <ul style="list-style-type: none"> <li>- Long Term Conditions Collaborative 2010, Scottish Government</li> <li>- Physical activity: brief advice for adults in primary care, NICE guideline</li> <li>- Physical activity: exercise referral schemes, NICE guideline</li> <li>- Non-pharmaceutical management of depression in adults: A national clinical guideline, SIGN (114)</li> <li>- Physical Activity Benefits for Adults and Older Adults, Chief Medical Officer &amp; UK Physical Activity Guidelines</li> <li>- A Five Year Review of Let's Make Scotland More Active – A Strategy for Physical Activity 2009</li> <li>- The Scottish Health Survey, Scottish Government 2010</li> <li>- A More Active Scotland</li> <li>- Scottish MH Strategy Commitments 15, 16 and 22</li> </ul> |

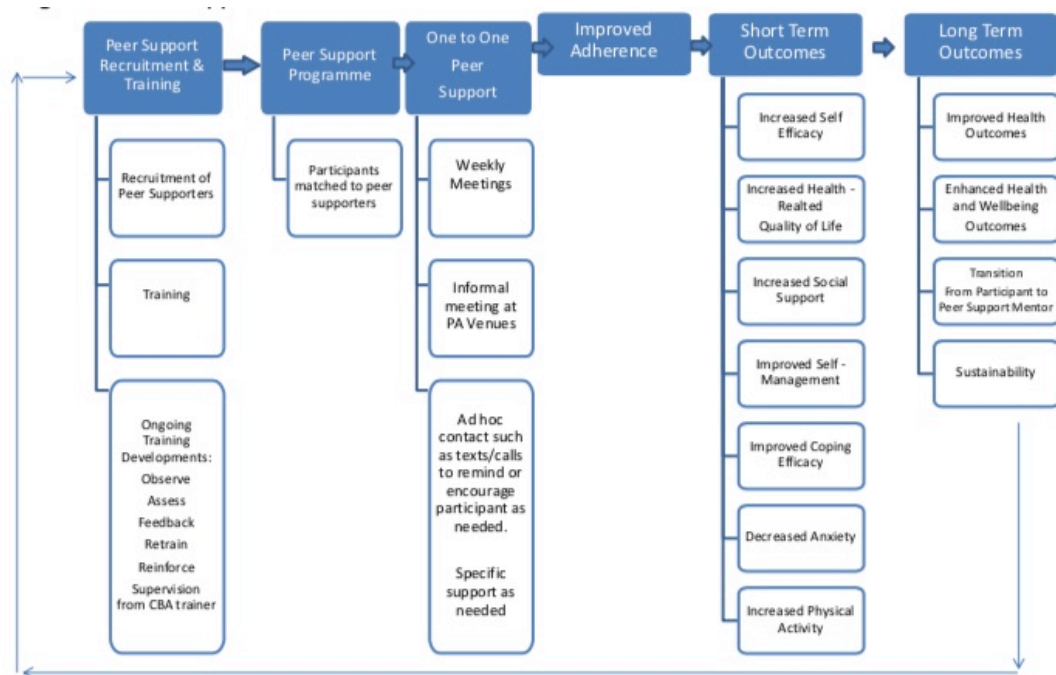
## The Peer Aspect of the Model

As noted in the section above, peer development and deployment is a key aspect of ensuring community capacity and sustainability of this model.

Peer support is a system of giving and receiving help founded on key principles of respect, shared responsibility and mutual agreement. Peer support is not based on medical models and diagnostic criteria, but it is about understanding another's situation empathically through shared understanding and perspective based on experience. In a mental health context, peer support refers to a situation where people with experience of mental health problems are offering each other support based on their lived experience. Peer support offers many health and quality of life benefits. Both peer supporters and the service users they are supporting feel empowered in their own recovery journey, have greater confidence and self-esteem and a more positive sense of identity, they feel less self-stigmatisation, have more skills and feel more valued.

SAMH successfully operates peer support provisions in various localities. Indeed, SAMH operates Scotland's largest peer support service in North Lanarkshire, Experience Counts. In Experience Counts and other existing peer support provisions, support is arranged between the peer (who is in a position in their life where they require support) and a peer supporter. Tools such as Mywrap (My Wellness Recovery Action Plan) enable individuals to work with a peer supporter to think through their goals, coping strategies and how to overcome problems and barriers. Mywrap is CBA based with the intention of promoting self-management, options and choices with individuals to improve their engagement and responsibility for their own health and well-being on an on-going basis.

Diagram of Peer Support



## Staffing

SAMH employ support staff to deliver across 64 services in Scotland. The range of these services is broad in terms of who engages, the geographical reach and the outcomes being delivered. The common factor across each is that these services, and the staff who deliver them, seek to make a positive and enabling contribution towards mental wellbeing and independent living. As such, our network of staff across Scotland bring a gamut of understanding in how to engage, positively challenge and support individuals to bring about constructive changes that result in long-term successes.

## Training

In order to deliver on this proposal, staff will undertake professional development training in Cognitive Behavioural Approach. This training will:

- Be provided by NHS Education Scotland who SAMH already have a relationship with
- Provide staff with the knowledge and practical understanding of a range of behaviour change tools
- Enable staff to learn and practice new skills in practical settings
- Ensure an on-going coaching and supervision provision following completion of the training

Trained SAMH staff will be supported and supervised to deliver quality CBA support in local settings in advance of and alongside the physical activity intervention as described in the model shown on page 6. To initiate this new and innovative intervention SAMH staff will work with the first 4 cohorts of participants in each of the areas. During this time, physical activity staff and volunteers will be trained in CBA and will be integrated into providing support, gaining experience and confidence alongside SAMH staff before becoming more proficient in using the tools and techniques of behaviour change to support participants themselves.

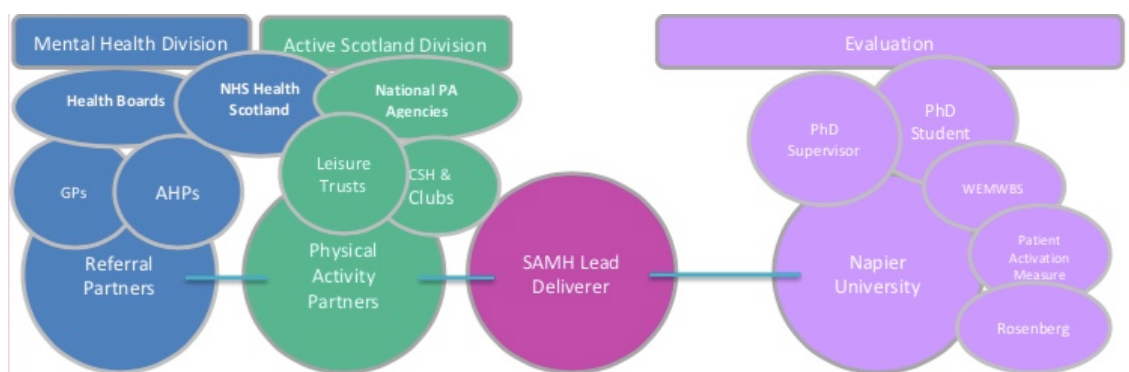
Physical activity staff and volunteers (in particular, individuals who have gone through the pathway themselves and want to continue with the peer support aspect of the provision) will receive E-Learning and Face-to-Face training. This training will cover Mental Health Awareness, working with people with conditions (including physical and mental health, often co-existing), supporting people with their choices and lifestyle changes using tools and techniques covered by CBA.

## Partnerships

This intervention and the overall model proposed are built on positive and productive partnerships. SAMH works with a number of agencies at local and national level to successfully reach and deliver programmes in geographic and thematic communities across Scotland. Leisure Trusts, health boards and local authorities are regular partners with SAMH. In addition, SAMH has positive and on-going engagement with sportscotland, Scottish Governing Bodies of sport and national agencies including Paths for All, Forestry Commission and Scottish National Heritage, all of which have a shared interest in engaging population groups in physical activity and wellbeing.

The process for developing this proposal included stakeholder engagement and consultation. A workshop was held with a range of partners (including leisure trusts and national physical activity agencies) to generate ideas and consensus on what could and should be done to address this problem using existing provisions and assets. A number of meetings were held with stakeholders including Health Scotland, NHS Board representatives and Scottish Government to understand the needs that this provision sets out to address.

As evaluation is crucial to the long-term success of this provision, beyond the scope of the 3 year period detailed in the roll-out plan in section (pg13-16), discussions with Napier University have been on-going in the development of the proposal in relation to how the intervention will embed suitable evaluation approaches to ensure evidence is collated to inform future decisions and to optimise impact in this area of work,



## Areas for Delivery and Extending Roll-Out

To manage the implementation of a new and innovative intervention that can lead to positive population level changes, it is important that the implementation is phased and managed appropriately. Three areas that are in a ready-and-engaged position to work with SAMH to implement this development have been selected to initiate this development for Scotland, these areas are:

1. Edinburgh
2. Fife
3. North Ayrshire

These areas have established physical activity referral programmes that can adopt this model to achieve the intended outcomes. There are 6 further areas that were consulted during the process of pulling this proposal together. They too share interest and enthusiasm for being involved. In the interests of keeping the proposal manageable at this stage, these 3 areas have been selected according to the following considerations:

- State of readiness in relation to refer participants into this model
- Capacity to work with SAMH to establish this new initiative
- Complimentary provisions within the local area that will assist with ensuring sustainability
- Geographical spread across rural and urban settings in Scotland

There are two strands of development for expanding this provision beyond the three geographical areas covered in this initial phase:

Firstly, there is a sustainment and growth opportunity for the 3 areas included in this initial roll-out phase. The commitment from partners engaged in this first phase will ensure that these areas continue to support the provision of the PSV network to enable continued supported engagement in physical activity. The e-Learning platform and the training delivered in the initial phase will provide the resource and capacity to enable learning to continue into year 4 and beyond for existing and new staff and volunteers. Local agencies will use the available resources including staff knowledge and the online training provision, to continue to train and enable local staff and volunteers to sustain the provision. There will be an on-going requirement to ensure that the e-learning content is managed and refreshed, and training is delivered.

Secondly, for the local authority areas that are not included in this initial roll out there is an opportunity to ensure that the learning and practice guidance that results from the initial phase are shared across wider geographical areas. SAMH will work with national partners such as Health Scotland (who have been engaged in the early development of this proposal) and Sporta (who are engaged and are championing the engagement of all Leisure Trusts in Scotland) to promote the learning through direct links with local health boards, leisure trusts and existing forums and channels that these stakeholders are engaged in. This will likely include activities such as presenting information to the Physical Activity Health Alliance and member organisations, generating evaluation infographics to be shared on social media, and partnership meetings and so on.

### **Reach to Individuals**

This proposal has been built, as described above, on the basis of three geographical areas. There is scope to do more either within each of these areas and/or across wider geographical areas. To optimise the successful outcomes by ensuring quality CBA provision for participants and training for physical activity staff, the **direct reach** of this model will be to engage:

- 3 local authority areas
- 3,000 physical activity staff and volunteers trained in Mental Health Awareness &/or behaviour change through e-learning
- 240 participants completing the intervention
- At least 24 peer supporters trained in peer support, goal setting and motivational interviewing
- 100 physical activity staff trained and supported through face-to-face Motivational Interviewing and Behaviour Change learning and development

It is important to note that beyond the 240 completing participants listed above, more participants will be engaged (on an on-going and sustainable way) by the physical activity staff and the volunteers who go through e-learning, training, coaching and support with SAMH staff while the model is embedded during the period in which first 4 cohorts go through the model. Taking a crude assumption that all trained personnel engage with 2 people, this presents a reach of up to 6,000 individuals.

## **Technology**

One of the limitations of current physical activity interventions is the lack of direct data regarding levels of physical activity. Whilst self-reporting can go so far, this intervention will go beyond self-reporting to include the use of wearable digital technology giving direct data insight into all-day, everyday levels of physical activity rather than gym/swim visits or self-reported/perceived levels of activity.

To deliver this aspect of the intervention, SAMH will engage with Storm Health. Storm Health was formed in 2013 and offers a highly experienced team of people who are passionate about developing digital services to improve health outcomes. Storm Health engages healthcare expertise from Dr. Michael Simpson, a highly experienced medical doctor and expertise in behavioural change from Clinical Psychologist, Dr. Kate O'Sullivan.

This technological aspect of the intervention will build on the expertise and provision which Storm Health has developed including the following key components:

- A wearable digital activity tracker which will automatically record activity data for each individual engaged. This will enable a clear insight into activity patterns from everyday living activities including walking, housework, gardening and other important daily movements. As well as providing robust data, this will also serve to provide feedback and motivation for individuals who are inclined to respond to extrinsic and objective sources of feedback.
- A portal for logging, monitoring and reporting physical activity online. This data will be collated centrally and will be analysed by a dedicated resource (factored into this proposal as a PhD).
- An iOS app for activity local coordinators will automate the transfer of activity data from the tracker to the web site for local appraisal and management.

The research literature provides convincing evidence that increased levels of physical activity result in improved mental and physical health for individuals, communities and society. This proposal is based on this research evidence and accepts, as an underlying premise, that increased levels of physical activity lead to positive physical health changes and mental health improvements. The use of technology in this intervention is important as it will enable the crucial collation of hard data on the level of physical activity increase for individuals. This data will be analysed by our academic partner, Napier University, to assess the effectiveness of including the pre-physical activity engagement (readiness to change) support and the peer volunteer support in a physical activity intervention.

## **Monitoring and Evaluation**

Monitoring and evaluation are built into the foundation of this intervention. Indeed, the need has arisen from reviewing the existing data from physical activity interventions.

The use of digital technology is described above and best practice from Storm Health and current initiatives through Living It Up and Forth Valley will inform the approach to the deployment of this technology.

A PhD study is embedded into this proposal. Napier University Edinburgh is engaged with and supportive of this proposal. Expertise from the School of Life, Sport and Social Sciences (including psychology) will supervise the PhD and work closely with SAMH and Scottish Government on defining the parameters and key data analysis requirements. The immediate requirements for evaluation that will be included are:

- Attitude towards physical activity. The intention is to use the Patient Activation Measure tool (licence fee has been costed into this proposal) which will complement the intention to generate behaviour change among participants. This will also provide the opportunity for an economic assessment of the health impact.
- Levels of physical activity / physical activity behaviour patterns. As previously noted, the intention is to use digital technology and compile this centrally across the 3 different local authority areas creating a centralised source of intelligence which can also be viewed and used locally
- Individual knowledge of and ability to apply behaviour change techniques. This will be a qualitative piece of work to gain insight into what worked for individuals and how.
- The peer support aspect of the model, given the importance for sustained community provision, will be subject to data capture and analysis to enable learning, development of best practice and improvement.
- The health and wellbeing of participants

Proxy measures will be used to evidence and understand what changes happen to individuals as they go through this intervention. These measures will include:

- Mental Health and wellbeing using validated scales such as WEMWBS and Rosenberg
- Engagement in behavioural change using the Patient Activation Measure (PAM). PAM identifies where an individual falls within four different levels of activation. This gives practitioners insight to more effectively support each individual. Each point increase in PAM score correlates to a 2% decrease in hospitalisation and 2% increase in medication adherence.
- Wider measures, using Likert scale response options, on items such as self-confidence, attitude towards physical activity, level of physical activity, lifestyle choices including smoking and eating habits. The questions and analysis will be developed by the PhD student.

The intention here is to gather clear insight to inform improvements and developments that would further improve positive outcomes, as well as seeking to provide the evidence for communicating with partners and wider stakeholders about the successes and learning of the intervention.

### **Costs of the intervention**

Below is a breakdown of the cost structure of this intervention:



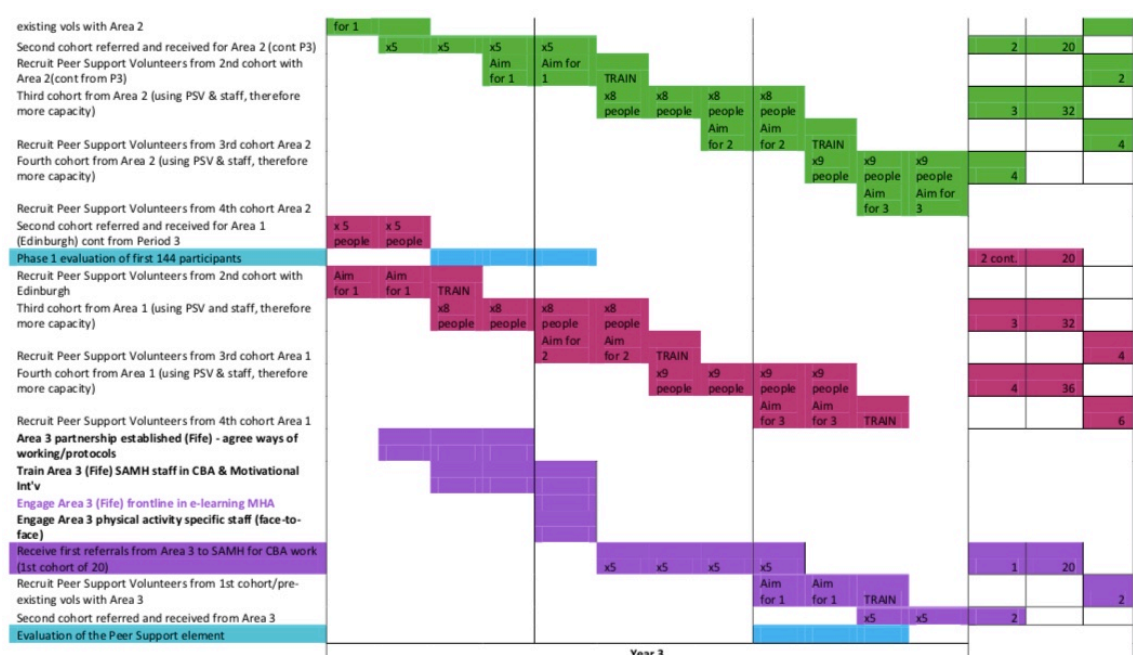
| Scottish Association for Mental Health                                      |            |                |            |                |            |                |            |                |
|---|------------|----------------|------------|----------------|------------|----------------|------------|----------------|
| Behavioural Change Approach to Physical Activity Engagement and Sustainment |            |                |            |                |            |                |            |                |
|   |            | Year 1         |            | Year 2         |            | Year 3         |            | Total          |
| Direct Staffing costs   | 46%        | 139,252        | 46%        | 200,890        | 43%        | 109,262        | 45%        | 449,404        |
| Specialist Training   | 4%         | 12,000         | 1%         | 6,000          | 0%         | -              | 2%         | 18,000         |
| Recruitment Training and Travel   | 6%         | 16,664         | 7%         | 28,444         | 6%         | 15,142         | 6%         | 60,250         |
| <b>Sub Total Staffing Costs</b>   | <b>56%</b> | <b>167,917</b> | <b>54%</b> | <b>235,333</b> | <b>49%</b> | <b>124,403</b> | <b>53%</b> | <b>527,653</b> |
| Depreciation of Capital Items (over 3 years)                                | 2%         | 5,987          | 1%         | 5,987          | 2%         | 5,987          | 2%         | 17,960         |
| Office Costs  | 2%         | 4,800          | 2%         | 7,361          | 2%         | 4,165          | 2%         | 16,327         |
| <b>Sub Total ICT and Office costs</b>                                       | <b>4%</b>  | <b>10,787</b>  | <b>3%</b>  | <b>13,348</b>  | <b>4%</b>  | <b>10,152</b>  | <b>3%</b>  | <b>34,287</b>  |
| Storm Health costs  | 5%         | 15,600         | 5%         | 22,460         | 7%         | 17,545         | 6%         | 55,605         |
| PhD Student costs   | 8%         | 25,000         | 6%         | 25,000         | 13%        | 33,000         | 8%         | 83,000         |
| <b>Sub Total Analysis</b>   | <b>13%</b> | <b>40,600</b>  | <b>11%</b> | <b>47,460</b>  | <b>20%</b> | <b>50,545</b>  | <b>14%</b> | <b>138,605</b> |
| e-learning platform and content - for PA staff, participants and volunteers | 10%        | 30,735         | 2%         | 10,750         | 4%         | 10,750         | 5%         | 52,235         |
| PA Staff - CBA Training   | 0%         |                | 4%         | 16,800         | 3%         | 7,200          | 2%         | 24,000         |
| Facility/Room Hire  | 2%         | 6,000          | 4%         | 16,000         | 5%         | 12,000         | 3%         | 34,000         |
| <b>Sub Total Training Costs</b>   | <b>12%</b> | <b>36,735</b>  | <b>10%</b> | <b>43,550</b>  | <b>12%</b> | <b>29,950</b>  | <b>11%</b> | <b>110,235</b> |
| Peer Support - Development Work Costs                                       | 2.4%       | 7,235          | 8.9%       | 38,807         | 5%         | 12,801         | 5.9%       | 58,843         |
| Peer Support - External Training - CBA and Other                            | 2.8%       | 8,400          | 2.6%       | 11,400         | 1%         | 2,400          | 2.2%       | 22,200         |
| Peer Support - PVG and Expenses   | 1.0%       | 3,108          | 1.3%       | 5,616          | 1%         | 1,308          | 1.0%       | 10,032         |
| <b>Sub Total Peer Support Costs</b>   | <b>6%</b>  | <b>18,743</b>  | <b>13%</b> | <b>55,823</b>  | <b>6%</b>  | <b>16,509</b>  | <b>9%</b>  | <b>91,075</b>  |
|   | 0%         |                | 0%         |                | 0%         |                | 0%         |                |
| Management and Administration Cost  | 9%         | 27,478         | 9%         | 39,551         | 9%         | 23,156         | 9%         | 90,185         |
| <b>Sub Total Management and Administration Costs</b>                        | <b>9%</b>  | <b>27,478</b>  | <b>9%</b>  | <b>39,551</b>  | <b>9%</b>  | <b>23,156</b>  | <b>9%</b>  | <b>90,185</b>  |
| <b>Total Programme Cost</b>   |            | <b>302,259</b> |            | <b>435,065</b> |            | <b>254,716</b> |            | <b>992,040</b> |

## Roll Out and Timeline for the Intervention across 3 Areas

The intended roll-out of this intervention across these three areas is shown the roll-out plan below:

| Detail  | Year 1       |       |     |      |             |     |            |            |            |            |            |            | Cohort | Users | PSVs |
|---|--------------|-------|-----|------|-------------|-----|------------|------------|------------|------------|------------|------------|--------|-------|------|
|   | Period 1     |       |     |      | Period 2    |     |            |            | Period 3   |            |            |            |        |       |      |
|   | Jun          | Jul   | Aug | Sept | Oct         | Nov | Dec        | Jan        | Feb        | Mar        | Apr        | May        |        |       |      |
| Receive investment  | [Yellow bar] |       |     |      |             |     |            |            |            |            |            |            |        |       |      |
| Engage Storm re Digital Tech (likely to start pre-Apr)                              | [Yellow bar] |       |     |      |             |     |            |            |            |            |            |            |        |       |      |
| Engage Napier & define eval (likely to start pre-Apr)                               | [Yellow bar] |       |     |      |             |     |            |            |            |            |            |            |        |       |      |
| Engage e-learning partner & design e-learning solution (ref Comic Relief)           | [Yellow bar] |       |     |      |             |     |            |            |            |            |            |            |        |       |      |
| Area 1 partnership established (Edinburgh) - agree ways of working/protocols        | [Pink bar]   |       |     |      |             |     |            |            |            |            |            |            |        |       |      |
| Train Edinburgh & W.Loithian* SAMH staff in CBA & Motivational IntV                 | [Pink bar]   |       |     |      |             |     |            |            |            |            |            |            |        |       |      |
| Engage Area 1 (Edinburgh) frontline in e-learning MHA                               | [Pink bar]   |       |     |      |             |     |            |            |            |            |            |            |        |       |      |
| Engage Area 1 (Edinburgh) physical activity specific staff (face-to-face)           | [Pink bar]   |       |     |      |             |     |            |            |            |            |            |            |        |       |      |
| Receive first referrals from Edinburgh to SAMH for CBA work (1st cohort of 20)      |              |       |     |      |             |     | x 5 people | x 5 people | x 5 people | x 5 people |            |            | 1      | 20    |      |
| Recruit Peer Support Volunteers from 1st cohort/pre-existing vols with EL           |              |       |     |      |             |     |            |            |            |            |            |            |        |       | 2    |
| Second cohort referred and received for Area 1 (Edinburgh)                          |              |       |     |      |             |     |            |            |            |            |            |            |        |       |      |
| Area 2 partnership established (North Ayrshire) - ways of work/protocol             |              |       |     |      | [Green bar] |     |            |            |            |            |            |            |        |       |      |
| Train Area 2 (North Ayrshire) SAMH staff in CBA & Motivational IntV                 |              |       |     |      | [Green bar] |     |            |            |            |            |            |            |        |       |      |
| Engage Area 2 frontline (awaiting staff no's) in e-learning MHA                     |              |       |     |      | [Green bar] |     |            |            |            |            |            |            |        |       |      |
| Engage Area 2 physical activity specific staff (face-to-face)                       |              |       |     |      | [Green bar] |     |            |            |            |            |            |            |        |       |      |
| Receive first referrals from Area 2 to SAMH for CBA work (1st cohort of 20)         |              |       |     |      |             |     |            |            |            |            | x 5 people | x 5 people | 1      |       |      |
| Recruit Peer Support Volunteers from 1st cohort/pre-existing vols with Area 2       |              |       |     |      |             |     |            |            |            |            |            | Aim for 1  |        |       |      |
| Detail  | Year 2       |       |     |      |             |     |            |            |            |            |            |            |        |       |      |
|   | Period 4     |       |     |      | Period 5    |     |            |            | Period 6   |            |            |            |        |       |      |
|   | Jun          | Jul   | Aug | Sept | Oct         | Nov | Dec        | Jan        | Feb        | Mar        | Apr        | May        |        |       |      |
| Receive first referrals from Area 2 to SAMH for CBA work (1st cohort of 20) cont P3 | x 5          |       |     |      |             |     |            |            |            |            |            |            | 1 cont | 20    |      |
| Recruit Peer Support Volunteers from 1st cohort/pre-                                | Aim          | TRAIN |     |      |             |     |            |            |            |            |            |            |        |       | 2    |





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| YOU MUST ANSWER ALL QUESTIONS   |  | YES                                 | NO                                  | N/A                      |
|---|--|-------------------------------------|-------------------------------------|--------------------------|
| 1   | Will you describe the main procedures to participants in advance, so that they are informed about what to expect in your study?                          | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 2   | Will you tell participants that their participation is voluntary?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 3   | Will your participants be able to read and understand the participant information sheet?   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 4   | Will you obtain written consent for participation?   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 5   | If the research is observational (including tape and video), will you ask participants for their consent to being observed?                              | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 6   | Will you tell participants that they may withdraw from the research without penalty and without reason?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 7   | With questionnaires and interviews, will you give participants the option of omitting questions they do not want to answer?                              | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 8   | Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?      | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 9   | Are the data to be stored anonymously (i.e. the identity of the person is NOT linked directly or indirectly with their data)?                            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 10  | Will you debrief participants at the end of their participation (i.e. give them a brief explanation of the study and an opportunity to ask questions)?   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| 11  | Will the research involve deliberately misleading participants (deception) in any way?   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 12  | Is there any realistic risk of any participants experiencing either physical or psychological distress or discomfort?                                    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 13  | Is the information gathered from participants of a sensitive or contentious nature?  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 14  | Will any payment or reward be made to participants, beyond reimbursement or out-of-pocket expenses?  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 15  | Do participants fall into any of the following special groups? <i>If the answer is YES, indicate which group(s) by checking the appropriate box(es).</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| <input type="checkbox"/> Children (under 18 years) <input type="checkbox"/> People in custody<br><input checked="" type="checkbox"/> Clinical population <input type="checkbox"/> People with learning or communication difficulties<br><input checked="" type="checkbox"/> People with mental health issues <input type="checkbox"/> People engaged in illegal activities (e.g. drug-taking) |  |                                     |                                     |                          |
| <p><i>NOTE: You may also need to obtain clearance from Disclosure Scotland or an equivalent authority.</i></p>  |  |                                     |                                     |                          |

You must check **either Box A or Box B** below and provide **all** relevant information in support of your application in the Details of Project section. If you answered **NO** to any of **questions 1-10**, or **YES** to any of **questions 11-15** (with a shaded background), then you **must** check Box B.

## DETAILS OF PROJECT

### 1. Background information (300 words maximum; references should be cited and listed)

There is substantial evidence that supports the positive relationship between physical activity and mental health (Daley, 2002). Research has shown that physical activity is associated with improved psychological wellbeing, reduced symptoms of anxiety and depression. Physical inactivity has been found to be a primary cause of chronic illness (Booth, Roberts and Laye, 2012). Evidence has shown that regular physical activity can reduce the risk for heart disease, stroke, type 2 diabetes, arthritis, hypertension, respiratory illnesses, and other chronic conditions (Naci and Ioannidis, 2013). It is also now well established that there is significant co-morbidity between mental health conditions and chronic physical health conditions (Scott et al, 2007). For example, evidence shows that depression increases the risk of development of cardiovascular disease approximately 1.5-fold (Kemp and Quintana, 2013). Physical activity is therefore essential for maintenance of health and wellbeing, with current guidelines suggesting that adults should participate in 150 minutes of moderate to vigorous physical activity a week (Scottish Government, 2010). Yet, evidence has found that large numbers of people do not manage this, with only two thirds of the adult population meeting these guidelines (Scottish Government, 2010). Drop-out (or non-adherence) to physical activity has been identified as a major problem in intervention studies in both physically healthy and clinical populations (Daley, 2002), with an average of less than 20% of the overall number of people referred into physical activity remaining engaged at the end of a structured intervention. Therefore, the long term mental and physical health benefits of physical activity are not achieved. The Scottish Association of Mental Health (SAMH) have developed the intervention, 'Active Living Becomes Achievable' (ALBA), which aims to improve adherence to the existing physical activity provisions in Scotland. The research aims to monitor and evaluate the intervention, and therefore provide the evidence of the interventions effectiveness.

#### References

- Booth, F. W., Roberts, C. K., & Laye, M. J. (2012). Lack of exercise is a major cause of chronic diseases. *Comprehensive Physiology*, 2(2), 1143–1211. <http://doi.org/10.1002/cphy.c110025>
- Daley, A. J. (2002). Exercise therapy and mental health in clinical populations: is exercise therapy a worthwhile intervention? *Advances in Psychiatric Treatment*, 8(4), 262-270.
- Kemp, A. H., & Quintana, D. S. (2013). The relationship between mental and physical health: insights from the study of heart rate variability. *International Journal of Psychophysiology*, 89(3), 288-296.
- Naci, H., & Ioannidis, J. P. (2013). Comparative effectiveness of exercise and drug interventions on mortality outcomes: metaepidemiological study.
- Scott, K. M., Bruffaerts, R., Tsang, A., Ormel, J., Alonso, J., Angermeyer, M. C., ... & Gasquet, I. (2007). Depression–anxiety relationships with chronic physical conditions: results from the World Mental Health Surveys. *Journal of affective disorders*, 103(1), 113-120.
- Scottish Government (2010) Scottish Health Survey 2009.

### 2. Aims & research questions

This study will evaluate the long-term effectiveness of the community-based intervention "Active Living Becomes

Achievable" (ALBA), which aims to increase levels of physical activity in people who have been referred by a GP to exercise referral schemes due to a long-term health condition or mental health condition. The behaviour change intervention combines a cognitive behavioural approach with exercise referral programs already existing in local leisure trusts. The aim of the intervention is to address poor adherence rates in these exercise referral programs and provide support which will help people to achieve long term behaviour change.

The intervention will be based on the COM-B model of behaviour change and will aim to provide knowledge and skills, which will enhance participants' capability and motivation which will enable and encourage self-management, self-esteem and a positive attitude towards physical activity. A peer support element has also been built into the intervention, where participants who have been through the intervention will be invited to continue as volunteers, who will support in the cognitive behavioural element of the intervention. Individual's physical activity will be monitored throughout the intervention using Storm health technology trackers.

#### Objectives

The primary aim of this study is to evaluate the long-term effectiveness of the ALBA intervention at increasing adherence to physical activity in people who have been referred by a GP to exercise referral schemes due to a long-term health condition or mental health condition.

The secondary aims of the study are:

To evaluate the impact of the intervention on:

- Participants' mental wellbeing
- Participants' self-esteem
- Participants' self-efficacy
- Participants' activation level
- Participants' ongoing levels of physical activity

To evaluate the effectiveness of the training and delivery of the behaviour change intervention.

### 3. Participants

- **Number & nature of sample:** 112 participants will be recruited from the 3 areas over the course of the study, therefore a total number of 336 participants will be recruited. Participants will be aged over 18, have been referred by their GP or another health care professional to exercise due to a physical or mental health condition.

**Inclusion/exclusion criteria:** Participants will be excluded if they are under the age of 18, unable to give consent or have any of the following which would classify them as high risk: unstable angina; Uncontrolled resting BP > 180/100 mmhg; Significant drop in BP during exercise; Tachycardia >100bpm; Unstable or acute Heart failure; Uncontrolled acute systemic illness; Unable to maintain seated upright position; Recent injury through a fall without attention; Impaired cognition therefore not able to follow instructions (may be accepted if carer always present) ; Place others and themselves at risk; Unstable or severe and enduring mental health conditions

- **Recruitment of participants, including details of formal permissions from another organisation (where appropriate):** Potential participants will be identified by the local Leisure trusts, after they have been referred by a health professional. The Leisure trusts will be familiar with the inclusion/exclusion criteria for the study and will also be provided with information to give potential participants about the study and what is involved.
- **Details of any relationship with participants which may affect the research:** [Click here to enter text.](#)

### 4. Outline of methods & measurements (approx. 500 words)

#### Design

The study is a prospective repeat measure mixed method design.

#### Measures

SPAQ: measures moderate to vigorous activity for past seven days'. Data will be used to validate tracker data.

WEMWBS: 14 items, mental wellbeing measure, includes items on positive affect, satisfying interpersonal relationships, and positive psychological functioning, has good content validity, and high internal consistency (Cronbach's  $\alpha=0.91$ ).

Rosenberg: 10 items, measure of self-esteem. Internal consistency for the RSE range from 0.77 to 0.88. Test-retest reliability for the RSE range from 0.82 to 0.85.

PAM: 13 items, measures patient activation, which captures core components of patient involvement, such as knowledge, skills, and confidence in self-management.

SEE: 9 items, scale has a range of total scores from 0-90. A higher score indicates higher self-efficacy for exercise. Self-efficacy, one of the most consistent predictors of exercise adherence, is related to stage of change. Internal consistency = 0.92.

Storm Tracker: data will be step count for each day. Data will be collected for 16 weeks; participants will then opt in to being monitored for up to 18 months.

#### *Procedure*

Participants who consent to taking part in the study will be set up with a Storm tracker, which will be used to collect physical activity data throughout the 16-week intervention period, by the LT exercise instructor at assessment meeting. The LT will be provided with the trackers, study information sheets and consent forms. After being set up on the tracking device, the participant will be booked into an appointment with the local behaviour change practitioner.

At the first appointment with the behaviour change practitioner, the participants will complete the baseline measures of the SPAQ, WEMWBS, PAM, SEE and Rosenberg. The behaviour change practitioner will also support the participant to sync their tracker, the intervention appointments will function as touchpoints to remind participants to sync their trackers. Participant will receive a minimum of 2 weeks of 1:1 behaviour change session prior to starting an exercise program, then during the 12 weeks of PA they will receive fortnightly meetings with the behaviour change practitioner.

At the end of the 16-week intervention period participants will have a final meeting with the behaviour change practitioner, at this meeting they will complete post-intervention measures of questionnaires. Participants will be asked if they will consent to long term follow up, participants who opt in will be allowed to keep tracker which will have an extended licence. Tracker data will be shared by STORM at predetermined dates, up until the beginning of 2019, after this date the monitoring of ALBA participants will be continued by SAMH. At the 6, 12- and 18-month points for participants that have opted in, will be sent by post or email (whatever preferred contact by participant) the questionnaire measures.

In order to obtain qualitative data on the participant's experience of taking part in the intervention, participants will be asked if they would like to attend a focus group. If a participant is happy to take part in the focus group, then they will be contact by the ALBA project assistant when the date and time for the focus group in their area has been arranged. One focus group will run per area. Participants will be provided with an information sheet and consent form at the start of the focus group, in order to consent to being audio recorded. The focus of discussion will be around the participants experience of taking part in the intervention, what they found challenging, and what they found worked well. The focus groups will be held in 2018, to allow for a mixture of cohort participants.

The delivery of the intervention by the behaviour change practitioners and peer support volunteers will be assessed through a focus groups and through the analysis of pre and post training knowledge and skills. The focus groups discussion will revolve around the behaviour change practitioners and the peer support volunteers' personal experience of delivering the intervention content, their competency level and how confident they felt delivering the intervention. The focus groups will be held in late 2018, to ensure that enough behaviour change practitioners and peer support volunteers have completed the training. The focus group participants will be informed that the group discussion will be audio recorded and consent will be obtained.

#### **5. Risks to participants' and researcher's safety & wellbeing**

Completing some of the measures, for example the WEMWBS, may generate distress. For participants to recognise that their mental wellbeing is not good is not necessarily a bad thing. It can be the first step towards taking action to feel better. Participants who become distressed will be advised to talk to their GP. The researcher will not have any direct contact with the participants during the intervention period.

#### **6. Consent and participant information arrangements, debriefing, withdrawal from the study**

Potential participants will first be approached about participating in the study at the point of referral to the local leisure trust, where an instructor who conducts their assessment for the exercise referral will inform them about the study and the intervention. The participant will receive a written information sheet containing information about the intervention and study. If verbal consent is given, then an appointment will be made with the local

ALBA practitioner who will at the first meeting, go over the study and if the participant is willing a consent form will be completed. At the end of the 16-week intervention period participants will be asked if they wish to opt-in to the follow up study, participants who chose not to will be debriefed at their final appointment with the behaviour change practitioner.

### **7. Anonymity and confidentiality**

No sensitive personal data from participants will be obtained during the course of the study. All data that is obtained will be anonymized to ensure confidentiality.

Participants will generate a unique identifier, which will use a code to determine the area and cohort they are in and their first and last initials and a memorable date, this will be used for identification and matching tracker data to questionnaire data. This unique identifier will not be used in the final report or any publications of the data, it is purely for data matching purposes.

### **8. Data protection arrangements**

Data will be held in accordance to the Data Protection Act 1998. During the study STORM health technology will have access to the data generated from the participants' tracker, which will be shared with Edinburgh Napier at specified time points. This data will be shared securely using an encrypted file transfer. Questionnaire data will be kept in password protected files on a password protected computer. Audio recordings will be kept until they have been fully transcribed, after which they will be destroyed.

### **9. Ethical considerations raised by the project and how you intend to deal with them**

The research participants are people who have been referred to an exercise programme by a healthcare professional, the participants will be asked to opt in to participate in the research and informed consent will be obtained. It will be ensured that participants fully understand what they have consented to and will be aware that they may withdraw from the study without needing to provide an explanation. However, as some participants will be referred due to a mental health problem there is a chance, they may lose capacity during the intervention – this will be carefully monitored by the behaviour change practitioners and the Leisure Trust staff.

High risk participants will be excluded from the study, determining whose high risk will be done by the Leisure Trust during their pre-activity assessment using their exclusion criteria. An individual will be classified as high risk if they have: Unstable angina; Uncontrolled resting BP > 180/100 mmhg; Significant drop in BP during exercise; Tachycardia >100bpm; Unstable or acute Heart failure; Uncontrolled acute systemic illness; Unable to maintain seated upright position; Recent injury through a fall without attention; Impaired cognition therefore not able to follow instructions (may be accepted if carer always present) ; Place others and themselves at risk; Unstable or severe and enduring mental health conditions.

## **DECLARATION**

*There is an obligation on the researcher to bring to the attention of the School Research Integrity Committee any issues with ethical implications not clearly covered by this application form.*

**I request ethical and governance approval for the research described in this application. I have read Edinburgh Napier University's policies and guidelines relating to ethics and governance in research, and those of relevant professional bodies (e.g. BPS, BSA, IFPA, SIR, NMC) and agree to abide by these.**

**A**

**I consider that this project has minor/no significant ethical implications to be brought to the attention of the School Research Integrity Committee**

|   |   |
|---|---|
| <b>B</b> <input type="checkbox"/>   | <b>I consider that this project may have significant ethical implications to be brought to the attention of the School Research Integrity Committee</b> |
| <b>Signature</b><br><b>Date</b>   |   |
| <b>I am the Director of Studies or supervisor for this research. I have read this application and approve it. I do not consider that any part of the research process will cause physical and/or psychological harm to participants or be detrimental to the reputation of Edinburgh Napier University.</b> |   |
| <b>Signature</b><br><b>Date</b>   |   |

- You must also attach the following documentation, where appropriate (please tick to confirm or provide information as to why the materials are not available):

|  |                |
|--|----------------|
| Research materials (questionnaire, interview schedule, experimental stimuli, etc.)   | x              |
| Recruitment materials (poster, leaflet, social media message, covering letter, etc.) | Not applicable |
| Participant information sheet  | x              |
| Consent form   | x              |
| Debrief sheet  | x              |
| Evidence of permission from outside organisation                                     | x              |

- You may need to create different versions of these materials (e.g. parental Participant Information Sheet and Consent Form if research involves children); if so, all the different versions should be attached. Materials should be printed on paper headed with the University logo.
- Submit the completed and signed form (with supporting materials) to Hilary Sawers, 1.B.21, Sighthill Campus, Sighthill Court, Edinburgh, EH11 4BN; an electronic copy should also be sent to: [ethics.fhlss@napier.ac.uk](mailto:ethics.fhlss@napier.ac.uk).



### *Appendix 3. Content of LLTF Books*

- 1) *"Write all over your bathroom mirror."* This book introduces the series, encourages goal setting, action planning and introduces agenda setting.
- 2) *"Why do I feel so bad?"* This workbook uses a cognitive behavioural formulation model to emphasise how an individual's thoughts, feelings, behaviour and physical symptoms interact.
- 3) *"I can't be bothered doing anything."* This workbook focuses on identify vicious cycles and activity scheduling.
- 4) *"Why does everything always go wrong?"* This workbook focuses on identifying negative automatic thoughts and encourages individuals to make thought records to help challenge these negative thoughts.
- 5) *"I'm not good enough."* This book encourages the use of "positive data logs" to help challenge maladaptive core beliefs and develop more adaptive ones.
- 6) *"How to fix almost everything."* This workbook focuses on developing "SMART goals" i.e. specific, measurable, achievable, realistic and time-limited goals, it also encourages using graded task assignment to break down goals into manageable steps.
- 7) *"The things you do that mess you up."* This workbook focuses on identifying maladaptive behaviours and action planning.
- 8) *"Are you strong enough to keep your temper?"* This workbook focuses on using anger management techniques and breathing exercises.
- 9) *"Ten things you can do to help you feel happier straight away."* This book encourages healthier lifestyle choices and also encourages writing "happy lists".

Further information about LLTF is available from: <https://lltf.com/>

## COM-B ANALYSIS SHEET

### Issues with capability

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### Implications

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### Issues with opportunity

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### Implications

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### Target goal/behaviour

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**Issues with motivation**

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**Implications**

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# COM-B ANALYSIS WORKSHEET

Issues with capability

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Issues with capability

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Implications

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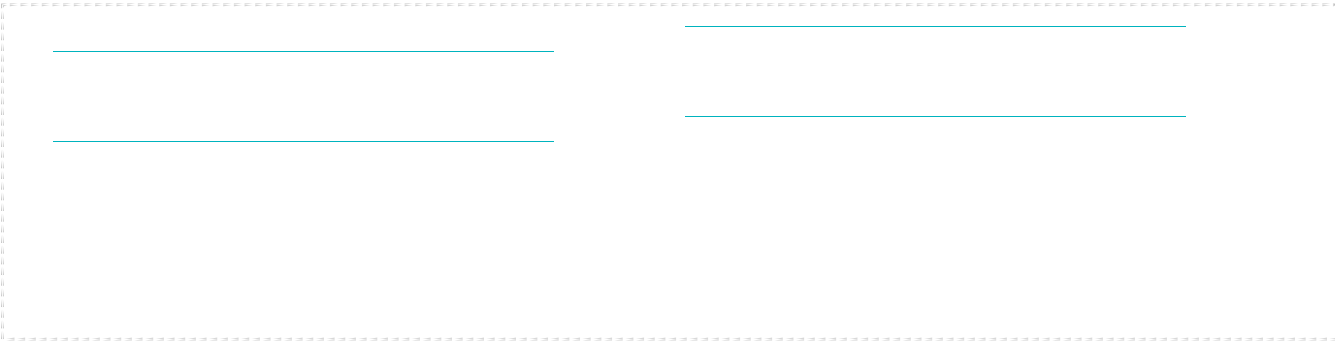
Implications

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Target goal/behaviour

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### **Issues with motivation**

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### **Implications**

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# **CUSTOMER PROBLEM SOLVING SHEET**

(based on Falloon et al, 1993)

| <b>Problem identification – write a problem statement in clear objective language</b>             |  |
|---|--|
|   |  |
|   |  |
|   |  |
|   |  |
|   |  |
| <b>List of potential solutions – list all the solutions you can think of to solve the problem</b> |  |
| <b>1</b>  |  |
| <b>2</b>  |  |
| <b>3</b>  |  |
| <b>4</b>  |  |
| <b>5</b>  |  |
| <b>Evaluate the consequences of each listed potential solution</b>                                |  |

Go through your list of possible solutions and consider the positive and negative consequences of each listed solution and the advantages and disadvantages of each one.

| Solution | Positive consequences | Negative consequences |
|----------|-----------------------|-----------------------|
| 1        |                       |                       |
| 2        |                       |                       |
| 3        |                       |                       |
| 4        |                       |                       |
| 5        |                       |                       |

**Select the best solution**

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|  |

**Formulate plan to carry out best solution** – consider the resources needed.

Strengths/assets/supports. Obstacles/barriers to overcome. Practice difficult steps. Time for review.

**Step 1**

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|  |
|--|

Step 2

Step 3

Step 4

Step 5

**Review implementation and successes**

Focus on achievement first. Review plan. Revise as necessary.

**PROBLEM SOLVING SHEET (EXAMPLE)**

(based on Falloon et al, 1993)

**Problem identification**

(write a problem statement in clear objective language)



*Martin is unable to attend his gym session because his mother has had a fall and she is having difficulty mobilising around the house and she cannot look after her needs when he is out attending the gym sessions.*

**List of potential solutions**

(list all the solutions you can think of to solve the problem)

1. *Not attending the gym until mother is recovers*
2. *Local authority carer service to sit with mother whilst Martin attends gym sessions*
3. *Alarm fitted to call social care agency in the case of emergency*
4. *Martin and his mother use mobile phones to stay in touch*
5. *Martin exercises at home*

**Evaluate the consequences of each listed potential solution**

(Go through your list of possible solutions and consider the positive and negative consequences of each listed solution and the advantages and disadvantages of each one.)

| <b>Solution</b> | <b>Positive consequences</b>  | <b>Negative consequences</b>  |
|-----------------|---|---|
| 1.              | <i>Martin can look after mother and attend to all her needs.</i>                                      | <i>Martin loses motivation and benefits already achieved from attending gym.</i>                              |
| 2.              | <i>Martin able to continue to attend to gym and continues with progress and benefits of exercise.</i> | <i>May be waiting list and cost. Befriender does not know needs of mother; timing needs to be considered;</i> |

|    |   |  |
|----|---|--|
|    |   | <i>Martin may worry and be unable to focus on gym activity.</i>  |
| 3. | <i>Mother has more control over her decision to call for help; Martin can attend gym and continue to benefit and recover.</i> | <i>Higher risk to mothers safety; cost; Martin may worry more about mothers safety and lose focus.</i>       |
| 4. | <i>Martin can speak directly to mother to advise and respond; Allows Martin to attend gym and continue to benefit.</i>        | <i>Cost; Slower response in the case of emergency; Martin focusing on phone rather than exercise regime.</i> |
| 5. | <i>Allows Martin to continue to benefit in some way until a longer-term solution is found.</i>                                | <i>Martin loses motivation; benefits less obvious.</i>   |

**Select the best solution**

*Caring service to provide support for mother 2-3 times per week for three hours.*

*Due to waiting time Martin will do some activity at home as directed by instructor to include more steps about the house and a short walk around the block each day. To review need for further support after two weeks.*

**Formulate plan to carry out best solution** – consider the resources needed.

Strengths/assets/supports. Obstacles/barriers to overcome. Practice difficult steps. Time for review.

*Step 1 Martin to contact local authority to arrange assessment, enquire if waiting list, if waiting list consider investigating solution three.*

*Step 2 Agree time and days of required care with mother and carer service to meet needs.*

*Step 3 Martin and mother to meet carer.*

*Step 4 Trial carer sessions, ensuring arrangements meet everyone's needs.*

*Step 5 Meantime, Martin will accumulate more steps about the house to remain active.*

**Review implementation and successes**

Focus on achievement first. Review plan. Revise as necessary.

*Week two- discuss speed and suitability of arrangements with mother and carer service. If problems cannot be solved-consider solution three.*

*Martin to record number of steps and discuss progress with instructor via weekly phone call.*

*Martin to reflect on benefits and on-going achievement at gym sessions.*

## **PROCEDURE FOR PROBLEM SOLVING CHECKLIST**

| Step | Procedure  | Achieved |
|------|--|----------|
| 1    | Agree rationale for the need to solve a problem  |          |
| 2    | <p>Introduce, define and describe steps of problem solving, check for understanding of each step and ask for examples of how this step is applied to the customers real life problems</p> <p>Steps of problem solving (Falloon et al, 1993)</p> <ol style="list-style-type: none"> <li>1. Identify and define problem clearly</li> <li>2. Generate list of potential solutions.</li> <li>3. Evaluate potential consequences of each potential solution.</li> <li>4. Agree on "best" strategy to solve problem.</li> <li>5. Plan and implement solution.</li> <li>6. Review results.</li> </ol> |          |
| 3    | Check for past experience of problem solving and existing level of skills.   |          |
| 4    | <p>Ask customer for example of a problem – ensure problem is clearly defined and is a priority in relation to goal achievement.</p> <p>Help customer to define problem statement.</p>  |          |

|   |   |  |
|---|---|--|
| 5 | When problem has been clearly identified support and guide the customer systematically through each of the six steps of problem solving as applied to the identified problem until each of the steps have been completed. Use of problem-solving sheets as a record of the process. |  |
| 6 | Offer positive feedback and reframing in relation to the application of problem-solving steps to the identified problem.  |  |
| 7 | Discuss and plan for steps of problem solving to be applied to other problems and encourage wider use of the steps of problem solving.  |  |
| 8 | Between sessions tasks can be used within the process agreed collaboratively and relating to the application of steps of the problem-solving process. Any between session tasks should be reviewed at the start of the next session.  |  |

# DECISIONAL BALANCE WORKSHEET

The decision

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Changing behaviour

(Scoring 0= very low meaning

10= very high meaning)

Not changing behaviour

(Scoring 0= very low meaning

10= very high meaning)

| Benefits |  |  |
|----------|--|--|
|          |  |  |

|       |  |  |
|-------|--|--|
| Costs |  |  |
|-------|--|--|

**DECISIONAL BALANCE WORKSHEET (EXAMPLE)**

**The decision:** *To attend the gym for 45 min, twice weekly.*

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**Changing behaviour**  
 (Scoring 0= very low meaning  
 10= very high meaning)

**Not changing behaviour**  
 (Scoring 0= very low meaning  
 10= very high meaning)



|                        |   |   |
|------------------------|---|---|
| <p><b>Benefits</b></p> | <p><i>Improved fitness (7)</i></p> <p><i>More energy (6)</i></p> <p><i>Weight reduction (8)</i></p> <p><i>Feeling of achievement (5)</i></p> <p><i>Social contact (6)</i></p> <p style="text-align: right;"><i>Total score: 32</i></p>                        | <p><i>More time to do other things (4)</i></p> <p><i>Can focus on other activities and goals (7)</i></p> <p><i>More money to use on other priorities (3)</i></p> <p><i>Reduced risk of being ridiculed (6)</i></p> <p style="text-align: right;"><i>Total score: 20</i></p> |
| <p><b>Costs</b></p>    | <p><i>Money to purchase clothing, equipment and transport (7)</i></p> <p><i>Time required for transport (4)</i></p> <p><i>Effort versus actual benefits (4)</i></p> <p><i>Risk of injury (3)</i></p> <p style="text-align: right;"><i>Total score: 18</i></p> | <p><i>Same poor level of fitness (7)</i></p> <p><i>Continued weight gain (8)</i></p> <p><i>Increased risk of health-related problems (8)</i></p> <p><i>Limited energy for other activities (6)</i></p> <p style="text-align: right;"><i>Total score: 29</i></p>             |

Peddie, N., Snowden, A., & Westbury, T. (2019). The Effectiveness of Cognitive-Behavioural Interventions at Increasing Adherence to Physical Activity in Mental Health Populations: A Systematic Review. *Advances in Mental Health*

**The Effectiveness of Cognitive-Behavioural Interventions at Increasing Adherence to Physical Activity in Mental Health Populations: A Systematic Review**

**ABSTRACT**

**Objective:** There is growing global evidence for stark inequalities in the physical health status and life-expectancy of people with a mental health diagnosis. In most cases, physical activity (PA) is one of the most effective methods of maintaining physical and mental health. However, people with mental health challenges are less likely to adhere to recommended levels of PA, leading to a vicious cycle of poor physical and mental health. The objective of this paper is to assess if, and how cognitive-behavioural (CB) techniques increase adherence to PA in mental health populations.

**Method:** Systematic review and narrative synthesis. Inclusion criteria were a behavioural change intervention which targeted PA using CB approaches; Delivered to adults with a mental health condition as defined by DSM V or ICD-10; Report adherence to the intervention AND physical activity; RCT, cluster RCT, quasi-experimental, or controlled before and after study.

Electronic searches conducted in MEDLINE, CINAHL, Cochrane Library (Trials), SPORTDiscus and PsycINFO.

**Results:** Ten studies from seven countries were synthesised. Methodologically moderate to weak, all showed adherence to the intervention to be associated with increased levels of PA. All studies reported higher than average adherence to PA in the intervention groups.

**Discussion:** CB interventions were associated with improved adherence to PA in international samples of people with mental health conditions. Studies adopting more robust designs are needed to quantify optimal interventions and impact, but this original synthesis is encouraging for researchers and clinicians alike looking to maximise the synergy between physical and mental health.

**Registration number:** CRD42017057918

DECLARATION OF INTEREST: None

Key Words: Anxiety, depression, exercise, behaviour change, interventions, physical activity

## **Introduction**

The aim of this review is to assess if and how cognitive behavioural (CB) techniques increase adherence to physical activity (PA) for those presenting with mental health concerns. The first section of this paper examines the evidence for the mental health benefits of physical activity. It describes the unique barriers to PA faced by those with mental illness to show that adherence is a discrete problem in this population. It goes on to suggest that cognitive behavioural approaches may help this population start and maintain physical activity. It concludes with a justification for the need to review the literature to examine the degree to which this is true.

For the purpose of review, physical activity (PA) is defined as “bodily movement produced by skeletal muscles that results in energy expenditure” (Caspersen, Powell, & Christenson, 1985, p6). In this review, physical activity includes exercise. Exercise is defined as PA that is “planned, structured or repetitive, targeted to maintain or improve one or more components of health-related physical fitness” (WHO, 2018, webpage) such as aerobic endurance, muscular strength, muscular endurance, body composition, flexibility. The distinction is important because PA can include walking-based interventions, lifestyle improvement intervention, and non-structured exercise.

People ‘diagnosed with mental health problems’ are those with a diagnosis as defined by the DSM V and ICD-11 (WHO, 2019). Cognitive behavioural interventions refer to interventions that employ cognitive behavioural techniques, such as goal setting, problem-solving and homework to examine associations between thoughts, feelings and behaviour in order to elicit behaviour change.

Finally, 'adherence to PA' is inconsistently defined in the literature. Hawley-Hague, Horne, Skelton, and Todd (2016) concluded that adherence to PA should refer to one or all of the following: completion of a prescribed programme of activity (i.e. retention), attendance frequency, attendance duration, and intensity of activity. They concluded that adherence to PA should be defined according to the purpose of the study. Following Hawley-Hague et al (2016) the key elements of adherence to PA are defined here using the following parameters: a) completion of programme of activity or not (retention), b) proportion of sessions/classes attended (frequency), c) amount of physical activity, measured in time, during intervention (duration), d) intensity of activity during programme, and e) b to d at follow-up.

## BACKGROUND

Physical activity is essential for maintaining health and well-being. For example, it can reduce the risk of chronic physical diseases, such as cardiovascular disease (CVD), type 2 diabetes, hypertension, and respiratory illnesses (Naci & Ioannidis, 2013). However, PA is not only beneficial for physical health. A growing body of evidence also supports the positive relationship between PA and mental health (Schuch, Vancampfort, Richards, et al., 2016).

Physical activity has been shown to be an effective treatment in populations with clinical depression (Craft & Perna, 2004; Daley, 2008). In some studies PA has been shown to be as effective as pharmacology or psychotherapies for reducing severity of depressive symptoms (Schuch, Vancampfort, Richards, et al., 2016). The UK National Institute for Health and Clinical Excellence (NICE) guidelines recommend structured physical activity as an appropriate treatment for people with mild to moderate depression (NICE, 2010).

There is less research investigating PA in patients with diagnosed anxiety disorders, however, available evidence suggests that exercise can reduce symptoms and is an acceptable treatment (Herring, Lindheimer, & O'Connor, 2013). A review of exercise interventions for people diagnosed with schizophrenia concluded that PA could help to

alleviate secondary symptoms, such as anxiety and depression, and other negative symptoms of schizophrenia (Faulkner, Gorczynski, & Arbour-Nicitopoulos, 2013).

Engagement in PA can have a wide range of benefits for people with mental health conditions, even in the absence of objective diagnostic improvements. PA can improve quality of life, reduce isolation by providing opportunities for social interaction and increase the likelihood of individuals returning to 'normal' previously enjoyed activities (Crone, Heaney, & Owens, 2009). This increasingly extensive body of evidence of the positive effects of PA and exercise on a broad range of mental health conditions has led to the recommendation that PA should be used as an adjunct to usual treatment for a range of conditions, including anxiety disorders, depression, substance abuse and schizophrenia (Rosenbaum et al., 2015).

However, despite these well-established benefits, people diagnosed with mental health problems are significantly less active than the general population (Nyboe & Lund, 2013). They often face substantial illness-related barriers to PA, above and beyond those experienced by healthy individuals (Glowacki, Duncan, Gainforth, & Faulkner, 2017). Psychotropic medicines cause weight gain and metabolic changes (Haddad, 2004), as well as other side effects such as lack of energy and motivation (Glover, Ferron, & Whitley, 2013). On average, people with chronic mental health conditions die 10 to 25 years earlier than people without mental health conditions (WHO, 2014). As much of this mortality is linked to cardiovascular issues, it is logical to suggest that PA may be beneficial for reducing this risk (Nocon et al., 2008). The problem is that physical activity is uniquely difficult for people with mental health problems.

In the general population, adherence to PA programmes drops off after six months, with less than half the participants completing (Gidlow, Johnston, Crone, & James, 2005; Richardson et al., 2005). In people with mental health conditions, some suggest that attrition is significantly greater (Rosenbaum et al., 2015). However, cognitive behavioural interventions

have been found to be somewhat effective at increasing PA. Reviews which have looked at adherence to PA interventions in a range of populations, including people with chronic illness, elderly and obese populations (O'Halloran et al., 2014; Picorelli, Pereira, Pereira, Felício, & Sherrington, 2014; Samdal, Eide, Barth, Williams, & Meland, 2017), have found evidence to suggest that interventions which emphasize a person-centred style, facilitate self-regulation and sustained positive motivation are associated with long-term effectiveness and maintenance of behaviour change. Cognitive behavioural interventions may therefore be helpful in increasing PA in individuals with mental health conditions.

There have been relevant systematic reviews conducted in this area which have examined the relationship between mental health, PA, and adherence (Rosenbaum, Tiedemann, Sherrington, Curtis, & Ward, 2014; Rosenbaum, Tiedemann, Stanton, et al., 2016; Firth, Rosenbaum, Stubbs, Gorchynski, Yung, & Vancampfort, 2016; Stonerock, Hoffman, Smith & Blumenthal, 2015; Stubbs et al., 2016; Vancampfort, et al., 2017). However, these reviews examine the impact of PA on individuals with mental health conditions, rather than examining how cognitive behavioural techniques can be used to enhance the effectiveness of PA interventions. The aim of the present review is to assess if and how the use of cognitive behavioural interventions increases adherence to PA in adults with mental health conditions.

## METHODS

The protocol for this systematic review was registered 24<sup>th</sup> April 2017 on the PROSPERO database prior to conducting this review (CRD42017057918) and can be accessed at [https://www.crd.york.ac.uk/PROSPERO/display\\_record.asp?ID=CRD42017057918](https://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42017057918).

Reporting has been conducted as per the PRISMA statement (Moher, Liberati, Tetzlaff, & Altman, 2009).

## ELIGIBILITY CRITERIA

To be included in this review, studies had to (1) contain a behaviour change intervention which targeted physical activity using cognitive behavioural/psychological approaches; (2) be delivered to adults aged over 18 with a diagnosis of a mental health condition as defined by relevant editions of the DSM or ICD-10 (3) reported adherence to the intervention; (4) be a Randomised Controlled Trial (RCT) or cluster RCT(s), quasi-experimental, or studies with pre and post assessment data were included. Comparison groups included control groups who receive no intervention or usual treatment. Studies without a control group were eligible for inclusion provided pre and post data were available.

Studies were excluded if they were delivered to children or adolescents. Studies which focused on chronic health or physical conditions were excluded although papers which stated participants had comorbid health conditions were considered based on meeting the other eligibility criteria. Interventions that did not have a psychological or behavioural element, or were not behaviour change focused were not included. There was no exclusion based on the duration of intervention, length of follow up or format of intervention. Studies were excluded if they were not available in English, due to practical limitations. Qualitative studies were excluded since it was not within the scope of this review to examine qualitative data. Systematic reviews and study protocols were excluded, as were conference abstracts and papers where no full-text was available.

## INFORMATION SOURCES AND SEARCH

Electronic searches were performed in the following databases from the year of inception to May 2017: MEDLINE, CINAHL, Cochrane Library (Trials), SPORTDiscus and PsycINFO.

The following search terms were entered in each database: (“Motivational interviewing” OR “Cognitive interventions” OR Behaviour Therapy OR Cognition Therapy OR “Cognitive Behaviour Therapy” OR “Cognitive Behavioural Therapy” OR Cognitive Psychotherapy OR Cognitive Therapy OR Psychotherapy OR Behaviour Change OR Intervention OR treatment OR “Goal setting” OR “Self-monitoring”) AND (Adherence OR Compliance OR Concordance OR “Noncompliance” OR “Non Adherence” OR Engagement) AND (“Physical activity” OR

“Leisure activity” OR Exercise OR Running OR Jogging OR Swimming OR Sport OR Cycling OR Inactivity OR Sedentary) AND (Lifestyle OR Gym OR outpatient OR structured exercise) AND (“Mental health” OR “Psychological wellbeing” OR “Mental well-being” OR “Mental wellbeing” OR Anxiety OR Depression OR Psychosis OR Schizophrenia OR Dementia). In addition, hand searches of reference lists and most recent reviews (Rebar & Taylor, 2017; Glowacki et al., 2017; Rosenbaum et al., 2014; Schuch et al., 2016) were conducted to identify additional relevant studies.

## STUDY SELECTION

After the removal of duplicates, all the remaining titles generated from the search were screened. Articles were rejected on initial screening if the reviewers could determine from the title that the articles were an inappropriate design. Titles and abstracts were then screened using the inclusion/exclusion criteria. If an abstract did not provide sufficient exclusion information then the article was obtained for full-text screening. All searches were performed by one investigator and a second reviewer checked a random set of 20% studies (using the true random number generator at [www.random.org](http://www.random.org)), to assess agreement regarding whether they met the inclusion criteria. Where any dubiety remained a third author would adjudicate. The final list of included articles was reached through consensus.

## DATA EXTRACTION

Data were extracted by the principle investigator using a data extraction form. Data were extracted from the method and results sections of the included studies. The following information was extracted for all included studies: study design and method, country, participants (sample size, age, gender, cultural background when reported and diagnosis), intervention (delivery, timing, content and duration), outcome measures and results.

## QUALITY ASSESSMENT OF SELECTED STUDIES

An analysis of the methodological quality of each study included in this review was performed, using the Quality Assessment Tool for Quantitative studies, developed by the



Effective Public Health Practice Project, Canada (Thomas, Ciliska, Dobbins, & Micucci, 2004). This tool was selected as it can be used for a variety of quantitative designs, such as RCTs, quasi-experimental studies and uncontrolled studies (Jackson & Waters, 2005) and has been reported to have construct and content validity (Armijo-Olivo, Stiles, Hagen, Biondo, & Cummings, 2012). This tool assesses the following domains: selection bias, study design, confounders, blinding, data collection methods, withdrawals and dropouts, intervention integrity, and statistical analyses. Each domain was rated as either strong, moderate or weak, and the domain scores were averaged to provide a total score to determine the strength of the quality of evidence. Lead author assessed all of the included studies, whilst the two other authors assessed 20% each of the included studies at each phase. Level of agreement was discussed between authors, and where dubiety remained a third author would also review, with final adjudication going with majority view. However, dubiety was very rare.

## DATA ANALYSIS

A narrative review of all studies was conducted due to the methodological and clinical heterogeneity between the studies. The focus of the review was to summarise key findings pertinent to the research question (Ferrari, 2015). Harvest plot (Ogilvie et al., 2008), was constructed to assist the process of synthesis and provide a visual representation of evidence according to whether the interventions favoured the control, the intervention or no difference; how significant the finding was, and whether the effect was low, moderate or high. Where no comparison was available the outcome was excluded from the synthesis.

## RESULTS

### STUDY SELECTION

In total, 1253 studies were identified through the search. An additional 12 papers were identified through hand searches. 937 papers remained after duplicates were removed. This number was reduced to 56 through the screening of titles and abstracts. The full-texts of

these 56 papers were reviewed using the inclusion/exclusion criteria. Of the full-text papers, 10 met the inclusion criteria. The full results of the search and reasons for exclusion can be seen in the PRISMA flowchart (Figure 1).

## STUDY CHARACTERISTICS

The studies came from seven countries: Canada, Brazil, Italy, Sweden, UK (n=2), USA (n=2) and Australia (n=2). Methodological quality of the individual studies ranged from low to high, and taken together constituted weak to moderate evidence. Four of the included studies targeted populations with severe mental illnesses, such as schizophrenia, psychosis and other psychotic illnesses; three studies were focused on anxiety and depressive disorder; one study included participants with alcohol dependency, one with OCD and one with exhaustion disorder. Sample sizes ranged from 13 – 347, with four of the studies having sample sizes over 100. The duration of the studies varied from 10 weeks to 12 months, with the number of sessions in which the behavioural interventions was delivered ranging from 4 sessions to 24 sessions. Follow up periods ranged from 6 months – 18 months, although only 6 studies examined the effect of the intervention beyond the intervention period. On average studies consisted of 12 intervention sessions, usually delivered on a weekly basis. PA was the sole targeted behaviour in eight of the included studies. In the other two studies PA was reported alongside diet. This was because the main purpose of increasing PA was principally as a means of weight management rather than to reduce psychological symptoms. For further detail of individual interventions and study characteristics (eg country, sample size etc) please see table 1.

## INTERVENTIONS

Self-monitoring of behaviour was a common feature of the interventions, with interventions utilising diaries and pedometers (Attux et al., 2013; Brown et al., 2014; Duda et al., 2014; Goracci et al., 2016; Merom et al., 2008). Goal setting was also a commonly used cognitive-

behavioural strategy implemented in the interventions (Brown et al., 2014; Duda et al., 2014; Lindegard et al., 2015; Lovell et al., 2014). The use of motivational interviewing was implemented in two of the studies (Curtis et al., 2016; Duda et al., 2014) and psychoeducation featured in three of the studies (Attux et al., 2013; Beebe et al., 2011; Lovell et al., 2014). Two of the interventions combined group CBT with a PA intervention (Merom et al., 2008; Rector et al., 2015).

The majority of the interventions were delivered as an adjunct to supervised exercise programmes or offered access to group activities (Attux et al., 2013; Brown et al., 2014; Curtis et al., 2016; Duda et al., 2014; Lindegard et al., 2015; Lovell, et al., 2014; Rector et al., 2015). Three studies focused on increasing PA through walking (Beebe et al., 2011; Goracci et al., 2016; Merom et al., 2008).

#### MEASUREMENT OF PHYSICAL ACTIVITY

All of the studies measured PA using self-reported measures. The International Physical Activity Questionnaire (IPAQ) was used the most frequently, with three studies using either the full or short form version (Attux et al., 2013; Curtis et al., 2016; Lovell et al., 2014). Other questionnaire measures included the 7-Day Physical Activity Recall (PAR) (Duda et al., 2014), The Paffenbarger Physical Activity Questionnaire (Goracci et al., 2016), The Active Australia Questionnaire (Merom et al., 2008) and Saltin-Grimby Physical Activity Level Scale (Lindegård, Jonsdottir, Börjesson, Lindwall, & Gerber, 2015). Two studies used a measure of minutes walked (Beebe et al., 2011; Merom et al., 2008). None of the included studies used an objective measure of PA (i.e. pedometers or accelerometers).

#### EFFECT ON PHYSICAL ACTIVITY

Of the included studies, four reported significant improvements in PA (Attux et al., 2013; Curtis et al., 2016; Duda et al., 2014; Merom et al., 2008). However, of these studies, only two reported significant effects of the intervention (Curtis et al., 2016; Merom et al., 2008). Four did not report a significant change in levels of PA (Beebe et al., 2011; Brown et al.,

2014; Lovell et al., 2014; Rector, Richter, Lerman, & Regev, 2015). Two studies did not report changes in PA, even though measures had been taken at baseline and follow up (Goracci et al., 2016; Lindegård et al., 2015).

## ADHERENCE OUTCOMES

The method of measuring adherence to the interventions in each of the included studies is presented in Table 1. The most common measure of adherence was attendance (5 studies, range 39%-79%); followed by attrition (3 studies, range 49.5%-78.1%); only one study used a self-reported exercise log and another used adherence to physical activity guidelines.

The reported levels of adherence ranged from 39%-80.56%; with 7 of the included studies reporting adherence higher than 60% (Attux et al., 2013; Brown et al., 2014; Curtis et al., 2016; Goracci et al., 2016; Lovell et al., 2014; Merom et al., 2008; Rector et al., 2015). The highest level of adherence to the intervention was reported in Rector et al. (2015) and the lowest level of adherence was reported in Beebe et al. (2011). The studies that reported the greatest level of effectiveness of the intervention (Curtis et al., 2016; Merom et al., 2008) reported adherence levels of 62% and 55% respectively. However, as adherence to the intervention was measured in a variety of different ways, it was not possible to meaningfully compare adherence rates across the studies included in this review.

## DISCUSSION

The aim of this systematic review was to assess the effectiveness of cognitive-behavioural interventions at increasing adherence to PA in people with mental health conditions. Due to the heterogeneity in the study designs and mental health conditions targeted it is difficult to draw strong conclusions. Further, the majority of the studies did not report significant changes in levels of PA. This is consistent with the wider evidence that suggests changing PA behaviour is complex, with many interventions targeted at adults reporting small effect sizes (Rhodes, Janssen, Bredin, Warburton, & Bauman, 2017).

Changing PA behaviour in people with mental health conditions appears to be particularly challenging. However, the majority of the studies here reported adherence rates above 60%. Given that between 40-50% of adults that begin an exercise program drop out within 6 months (Dishman, 1991; Richardson et al., 2005), the results of this review can be interpreted as an indicator of the positive potential of cognitive behavioural interventions at improving adherence to PA in this cohort. Cognitive behavioural interventions are effective, but only moderately. This is important to understand, as future interventions are much more likely to become sustainable if they meet realistic expectations (Shelton, Cooper & Stirman; 2018).

Regarding adherence rates within the individual studies, Merom et al's (2008) data went as expected with non-completers demonstrating significantly lower amounts of PA than completers. Brown et al. (2014) also found that the intervention was more effective for participants with better adherence. These results are important because they suggest that adherence to the intervention is an important factor in increasing levels of PA. Similar findings have been found elsewhere: O'Halloran et al. (2014) found that motivational interviewing (MI) had a small but positive effect on self-reported PA, with the effect increasing with levels of participation in MI. This highlights the importance of monitoring all aspects of adherence in intervention studies.

Given the variability in measurement of PA, it was not possible to meaningfully compare adherence rates between studies. This is unsurprising as no gold standard way of measuring adherence to PA has been established (Nyboe & Lund, 2013). This hinders the understanding of adherence to PA, particularly in mental health populations.

Most of the included studies relied on self-report measures of PA, which are subject to recall and social desirability bias, which can lead to over or underestimations of PA (Rhodes et al., 2017). Non self-report measures of PA, such as accelerometers, are considered more accurate at measuring actual levels of PA, as findings suggest that self-report measures of adherence to PA are much higher than those that are objectively measured (Prince et al.,

2008). Therefore, it is recommended that non-subjective measures should be used in combination with self-report measures, particularly in studies which aim to measure the percentage of participants meeting PA guidelines or actual levels of activity.

Beyond the benefits to mental health, PA is beneficial for improving physical health, which is particularly relevant to people with mental health conditions, as they are at a significantly greater risk of comorbid conditions, such as heart disease, obesity and diabetes (Nocon et al., 2008). Of the included studies, very few made reference to any co-morbid health-related issues present in the participants under study. In light of this, other outcomes, such as quality of life, sleep quality, self-esteem etc. may be valuable when examining PA interventions, particularly in mental health populations, as the benefits that come from PA are not necessarily just physical (Schuch, Vancampfort, Rosenbaum, et al., 2016). It is possible that psychological benefits, such as improved self-esteem, body image and positive feelings, can accrue without a change in physical fitness. However, in the included studies quality of life outcomes were not always measured, therefore an analysis of the effects was not within the scope of this paper, but something that could be considered in future research.

Taking into consideration the nature of complex behavioural change interventions and the fact that terms such as “cognitive” or “motivational” can be used to describe a range of techniques for eliciting behaviour change, it is unsurprising that the included interventions varied in their content and delivery. The majority of the included studies also only provided brief descriptions of the interventions, which often lacked detail, for example, stating that techniques such as goal setting or self-regulation would be used, but not stating how. This made identifying the specific behavioural change techniques and how they were utilised very challenging. This is a recurring issue within behaviour change intervention studies, as noted by Michie, Fixsen, Grimshaw, and Eccles (2009). Complex behaviour change interventions are not well described in journal articles, and when they are the terminology used is often inconsistent. One way around this problem would be for authors of interventions to publish details online. That way, authors would be able to refer to this detail in publications, saving

space in journal articles, and fellow researchers and clinicians alike would be better able to understand and replicate where appropriate.

As highlighted by the quality assessment, the overall methodological quality of the included studies was moderate to weak. This can be attributed to the particular challenges that are faced in designing methodologically robust studies for people with mental health conditions. RCTs are considered the “gold standard” design for trialling intervention efficacy, however in the community and clinical settings person level randomisation is not always possible (Landsverk, Brown, Reutz, Palinkas, & Horwitz, 2011). The screening and methods of recruitment of participants also threaten the generalisability of the results. For the most part the included studies screened participants for suitability or had very specific inclusion/exclusion criteria, and as a result, the participants may not be truly representative of the general mental health population (Borschmann et al. 2014). Another challenge in developing robustly designed trials of psychological interventions is in blinding. Whilst in medical interventions placebo treatments can be used to blind participants and practitioners, it is almost impossible to blind participants and practitioners from interventions which involve exercise and psychological interventions (Feliu-Soler et al., 2017; Shean, 2014). One long term solution would be for policy makers to take a different perspective of the research hierarchy when considering ‘real world’ evidence, and place a higher value on observational research conducted in appropriate complex environments. There has certainly been progress in this regard, with a much wider recognition of the limitations of reductionist thinking in relation to multifactorial community interventions (Shelton, Cooper & Stirman; 2018). A less radical method would of course be to conduct cluster randomised trials (Hemming et al., 2017).

Finally, there was considerable variation in a) the duration of the interventions and in b) the length of follow-up in the included studies. In relation to the intervention duration, again it is difficult to compare studies due to their heterogeneity, and so, despite the intuitive appeal, it is not possible from these studies to say whether longer interventions lead to better

adherence. To answer this question, the intervention would need to be standardised and impact monitored over varying lengths of time. The law of diminishing returns would suggest an optimal amount of intervention is likely (Stebbins, 1944). For example, patients referred to chaplains for their spiritual needs seem to benefit more from having two sessions as opposed to one, and benefit more again for three sessions as opposed to two, but don't appear to improve further for having more than three (Snowden, et al., 2018). In fact, benefit reduces at four. Mental health could be different though, as there is evidence of slow but continuous benefit from psychotherapy (Falkenström, Josefsson, Berggren, & Holmqvist, 2016). Dedicated research is needed here to establish any 'dose' of optimal support for people with mental health problems adhering to lifestyle change to incorporate more physical activity.

In relation to long term impact, only six of the included studies examined impact of the intervention beyond the initial intervention period. Very few studies have evaluated long-term PA behaviour change (Fjeldsoe, Neuhaus, Winkler, & Eakin, 2011). There is a number of reasons why there has been a lack of research into the maintenance of PA, post-intervention, such as publication bias for successful interventions (Ferrari, 2015) and the simple fact that there are more short research programmes than there are longer ones. Most concerningly, funding is very difficult to obtain to support long term interventions.

Governments and third sector providers alike appear trapped in short term thinking commensurate with their terms of office and so long-term projects are rarely funded even when there is overwhelming evidence of their efficacy. The long-term impact of behaviour change interventions is therefore largely unknown, and is likely to remain so without considerable shift in the way public services are funded.

## LIMITATIONS

A limitation of this review was the range of different conceptualisations of adherence. Because there was wide variation in interpretation and measurement of adherence in the reviewed papers, there is a clear risk that the different interpretations may not have been



conceptually comparable. A more restrictive approach to inclusion/exclusion criteria at selection stage would likely have concluded with a more straightforward interpretation. By setting the bar for inclusion criteria very high it is easy to conclude that 'more evidence is needed'. However, this would not have been a fair representation of the literature. The authors instead concluded that a broad inclusion approach was defensible because despite the heterogeneity, the papers were all measuring similar elements of adherence. Further, this narrative synthesis highlighted the complexity of the issue of measuring adherence to physical activity, hopefully encouraging future researchers to consider the concept very carefully. The elements suggested by Hawley-Hague, Horne, Skelton, and Todd (2016) could help with standardisation here: completion/retention, frequency, duration and intensity. This review also has several practical limitations. Although checked by all, the search of the literature was conducted predominately by the lead author, as was data extraction. The search was limited to studies which were published in English.

## CONCLUSION

In conclusion, the studies included in this review varied considerably in terms of their design, delivery, and content. This heterogeneity made drawing conclusions about the effectiveness of cognitive behavioural interventions difficult. However, all the studies reported higher than average adherence to PA, which suggests that cognitive behavioural interventions have a limited but positive effect on increasing adherence to PA in mental health populations. Future prospective longitudinal research should be constructed to examine the long-term effects of cognitive behavioural interventions on the adherence and maintenance of physical activity in people with a range of mental health problems. The research should be constructed with reporting guidelines in mind. That way, the findings, including the details and effect size of the intervention, will be more easily synthesised with comparable research, creating transferable knowledge of both the intervention and its outcome.

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## **“Nobody will put Baby in the Corner!” A Qualitative Evaluation of a Physical Activity Intervention to Improve Mental Health**

### Abstract

Physical activity is beneficial for mental health, but people with mental health issues are less likely to be physically active than the general population. Socially prescribed programmes of activity are rarely adhered to, with high levels of drop out, and the proportion of people who continue after programmes have finished is even smaller. Lasting change therefore needs a fundamental change in behaviour, so an intervention grounded in behaviour change theory may be more likely to succeed. The aim of this original study was to understand the facilitators and barriers to participation and adherence to a supportive, personalised, physical activity programme for patients with mental health conditions. The intervention entailed a sixteen-week programme of activity, tailored to individual capability, supported by a dedicated ‘behaviour change’ practitioner trained in motivational interviewing. Fourteen people who had completed the intervention were interviewed in three focus groups in 2018. Data were transcribed verbatim then analysed for barriers and facilitators using Framework Analysis and the Theoretical Domains Framework. Twenty-five overarching themes were identified, which mapped onto eleven domains from the framework. Ten themes were barriers and fifteen facilitators. Barriers included stigma, negative self-beliefs and difficulty trusting others. The facilitators reframed these negative attributes. For example, participants described feeling confident as a function of achieving personalised goals and learning something new. The intervention changed the way participants thought and acted. This original intervention has succeeded where many have failed, as it changed the way these participants with mental health conditions thought about



physical activity. By reframing it as personally achievable and physically beneficial, participants' attitudes and behaviour changed as well, making it more likely they would sustain physical activity in future. These unique findings are likely to translate internationally due to the simplicity of the intervention, and the potential to improve lives of the most vulnerable.

**Keywords:** Mental health, physical health, activity, exercise, motivation, change.

What is known about this topic

- People with enduring mental health issues die considerably younger than people without
- Much of this morbidity could be addressed by improvements in physical health
- Improving physical health in this population is even more difficult than it is in a general population, but is likely to involve reframing the way physical activity is conceived.

What this paper adds

- Supporting people with mental health conditions to engage in physical activity can help them to change the way they think and feel about physical activity.
- Facilitators of change entail a reframing of previous barriers.
- Reframing is best achieved with peer support and individualised programmes tailored by 'behaviour change' practitioners.

## INTRODUCTION

Physical activity (PA) is "*bodily movement produced by skeletal muscles and which requires energy expenditure*" (Caspersen et al., 1985). It is essential for maintaining physical health, and can reduce the risk of chronic diseases, such as cardiovascular disease (CVD), type 2 diabetes, hypertension, and respiratory illnesses (Naci & Ioannidis, 2013). A growing body of evidence also supports the positive relationship



between PA and mental health. Engagement in PA can improve quality of life and reduce isolation by providing opportunities for social interaction and the chance to return to previously enjoyed activities (Crone, Heaney, & Owens, 2009).

From a clinical perspective, PA has been shown to be an effective treatment in populations with clinical depression when compared to no treatment controls (Craft & Perna, 2004; Daley, 2008); and has been shown to be as effective as pharmacology or psychotherapies for reducing severity of depressive symptoms (Cooney et al., 2013). PA can reduce anxiety symptoms and is an effective treatment for people with chronic illness, panic and generalized anxiety disorder (Herring et al., 2014). This increasingly extensive body of evidence of the positive effects of PA on a broad range of mental health conditions has led to the recommendation that PA should be used as an adjunct to usual treatment (Rosenbaum, Tiedemann, Ward, Curtis, & Sherrington, 2015), with the National Institute for Clinical Excellence (NICE) and the Scottish Intercollegiate Guidelines Network (SIGN) guidelines recommending structured PA programmes as an intervention for people with mild to moderate mental health conditions.

However, despite these well-established benefits, people diagnosed with mental illnesses are significantly less active than the general population (Vancampfort et al., 2017). This could be attributed to people with mental health conditions often facing more barriers to becoming active than the general population. People with mental health disorders are more likely to suffer from co-morbid health conditions and higher body mass which may limit mobility or increase pain associated with PA (Vancampfort et al., 2015). People with depression also often lack the confidence to engage in PA, which compounded with symptoms of their condition such as low mood, lack of motivation and lack of energy, leads to inactivity (Glowacki, Duncan, Gainforth, & Faulkner, 2017). On average, people with long term mental health conditions have a reduced life expectancy of 7 to 11 years (Chang et al., 2011). As much of this mortality is linked to cardiovascular issues, there is clearly a place for PA to reverse some of this harm.

Current guidelines suggest that adults should participate in 150 minutes of moderate to vigorous physical activity a week (*UK Chief Medical Officers' Guidelines on Physical Activity.*, 2019). Large numbers of adults do not meet these recommendations (The Scottish Government, 2018b). Exercise referral schemes aim to increase physical activity among people who are inactive or sedentary and/or have an existing health condition or other risk factors for disease, however the evidence suggests that adherence to these types of programmes is low, with the most optimistic measures ranging from 20 to 49% in an adult population (Gidlow, Johnston, Crone, & James, 2005; James et al., 2008; Pavey et al., 2012). In mental health populations, research suggests that they are even less likely to adhere to prescribed PA than the general population (Rosenbaum et al., 2016; Vancampfort et al., 2017). This lack of adherence to PA interventions is a significant issue, because the majority don't stay long enough to see the health benefits of being active.

Allen & Morey (2010) suggested that effective PA interventions should incorporate multiple components and include cognitive behavioural strategies, such as goal setting and self-monitoring of behaviour. In addition, the provision of professional guidance and on-going support enhances long term behaviour change. Evidence also suggests that PA interventions designed for individuals with mental health conditions need to be individually tailored to the individual's preferences to improve adherence and produce better outcomes (Ussher et al., 2007).

Recognising the benefits of PA to both physical and mental health, and the issue of attrition to exercise referral schemes, the Scottish Association of Mental Health (SAMH) developed the intervention 'Active Living Becomes Achievable' (ALBA). ALBA aimed to improve adherence to PA in individuals with mental health conditions by delivering a behaviour change intervention using a cognitive behavioural approach alongside existing exercise referral schemes. ALBA is based on the capability, opportunity and motivation (COM-B) model of behaviour change (Michie et al., 2011), aiming to equip participants

with skills, knowledge and confidence that will help them feel they are able to participate in physical activity on a regular basis.

The ALBA project was funded by the Scottish Government in 2016. Evaluation was a fundamental part of the agreement, so that any learning from the programme could be articulated and transferred in a systematic manner. A significant part of that evaluation was to understand '*what it is like*' to receive the intervention (Cheng & Metcalfe, 2018). Understanding this can help improve subsequent delivery of the intervention and better understand possible contextual factors which influence the implementation (A. Bauman & Nutbeam, 2013).

#### AIM/RESEARCH QUESTION

The study aimed to explore participant's experience of taking part in the ALBA intervention, and to identify the barriers and facilitators to participation.

#### METHOD

##### *Analytic plan*

The analytic plan consisted of a theoretical model of behaviour change linked to a set of domains the intervention was designed to impact on. The model of behaviour change was the COM-B model (Michie et al., 2011). The domains were articulated by the theoretical domains framework (TDF) (Atkins et al., 2017b). For a detailed discussion on the links between COM-B and TDF please see Richardson et al., (2019). In brief, the TDF is an integrated framework of behaviour change theories that has been used widely in implementation research (Atkins et al., 2017). It consists of 14 domains (Cane et al., 2014) describing cognitive, affective, social and environmental influences on behaviour. In this study it provided a framework to identify barriers and facilitators to behaviour change, consistent with COM-B model of behaviour change. Table 1 summarises the TDF domains, definitions and their relationship to COM-B.

*Table The Theoretical Domains Framework and definitions from Michie, van Stralen, & West (2011)*

### *Intervention*

The ALBA intervention was a multicomponent intervention based on the COM-B model, designed to equip participants with skills, knowledge and confidence to help them feel able to participate in physical activity on a regular basis. It consisted of the following:

- (a) weekly or fortnightly 1:1 hourly meeting with a behaviour change practitioner (BCP) over the course of 16 weeks;
- (b) access to the exercise referral programme that was offered by the local leisure centre;
- (c) an activity tracker and the “Get Active” app which was designed to increase motivation and facilitate self-monitoring of behaviour; and
- (d) access to peer supporters, who have been through the ALBA intervention and peer supporter training. Their role was to offer support outside of the sessions with the BCP's.

In the 1:1 sessions the BCPs used motivational interviewing techniques alongside the “*Living Life to the Full*” materials (C. Williams, 2015) to help elicit behaviour change by encouraging participants to set goals designed to identify and overcome barriers which prevent them from engaging in physical activity. BCPs were workers in the local gymnasiums. To prepare for the role of delivering the ALBA intervention, the BCP's underwent a training program which included: Mental Health Awareness and Behaviour Change E-learning developed by SAMH specifically for delivering ALBA; Applied Suicide Intervention Skills Training (ASIST); Safeguarding; Living Life to the Full and Motivational interviewing.

### *Setting*

The intervention was delivered in three regions in Scotland: Fife, West Lothian and North Ayrshire, and was offered through all local authority leisure trusts in these areas. All three regions were composed of a mixture of both urban and rural areas. Fife is a socio-economically diverse with 19.84% of the data zones according to the SIMD in the

20% most deprived. West Lothian has 15.48% of the data zones in the 20% most deprived. North Ayrshire is the third most deprived local authority in Scotland (SIMD, 2020), with 39.78% of the data zones in the 20% most deprived.

*Data collection: participants, information and consent.*

Participants: All participants of the focus groups were individuals who had either completed the ALBA intervention or were currently taking part in the intervention.

Inclusion criteria: People aged over 18 who were inactive and have been referred either by their GP or health professional into an exercise referral scheme due to a mild to moderate mental health condition.

Exclusion criteria: Participants will be excluded if they are considered high risk due to health reasons (Unstable angina, Uncontrolled resting BP > 180/100 mmhg, Significant drop in BP during exercise, Tachycardia >100bpm, Unstable or acute Heart failure, Uncontrolled acute systemic illness, Unable to maintain seated upright position, place others and themselves at risk) or if their mental health condition is classified as severe and enduring.

Recruitment: Participants were recruited by the BCP who had supported them throughout the intervention.

Consent: At least one week before the focus group, all participants were provided with an information sheet to take home with them, which informed them of the purpose of the focus group and how any data would be used. Informed consent was obtained from all participants on the day of the focus group, prior to the discussion beginning.

Participants were also asked to complete a demographics questionnaire.

Ethical approval: ethical approval for this project was granted by the NRES Committee for West of Scotland on 09 January 2017 (REC ref 16/WS/0246) and from Edinburgh Napier School of Applied Sciences Ethics committee.

*Data collection: process*

Focus groups are a type of group interview which uses the communication between participants to generate data (Kitzinger, 1995). Focus groups work best when there is group cohesion, formed through sharing similar cultural backgrounds and social status for example (Acocella, 2012). In this case all participants would have shared experience of ALBA.

Three focus groups were run, one in each of the three areas where ALBA was in operation. All participants took part in only one of the focus groups. Participation was voluntary, and any costs incurred in attending were reimbursed by SAMH. The focus groups took place between March 2018 and June 2018 and lasted for between 60 to 75 minutes each. They were facilitated by the lead author and an ALBA project assistant. The facilitators had no prior relationships with the participants and had not been in communication with them prior to the day of the group.

The focus groups were all audio recorded and the same interview guide was used for all three. The interview schedule is available in the supplementary file. The questions were open-ended and were developed using the Theoretical Domains Framework to ensure discussion a) focused on the participant's experience of taking part in the ALBA intervention and b) could be interpreted using the TDF (Richardson et al., 2019). The focus groups were transcribed verbatim into the qualitative data analysis software NVivo 11, cross-checked against the audio recordings for accuracy and de-identified.

## ANALYSIS

Framework Analysis (Ritchie & Spencer, 1994) was used to analyse the data. This process broadly followed the principles described by Richardson et al., (2019). The Theoretical Domains Framework was used as the 'framework' against which thematic analysis was carried out (Srivastava & Thomson, 2009). Data were coded and sorted in accordance with the preconstructed themes of the TDF.

In more detail, following anonymization of the transcripts, a familiarization process was carried out (Srivastava & Thomson, 2009). Broadly following the process detailed by

McSherry et al., (2012), NP read and re-read all transcripts, coded these, paying particular attention to statements regarding capability, opportunity and motivation. Codes were then combined into subthemes and allocated these, including direct quotes from participants, to one of the 14 domains of the TDF or 'other'. The other two authors (TW & AS) took parts of the transcripts and independently coded those using the same "capability, opportunity and motivation" lens. All three researchers held regular discussions to compare coding (Ward, Furber, Tierney, & Swallow, 2013). To enhance rigour, once the first round of coding was complete, a second cycle was undertaken, focused particularly on elements where the greatest uncertainty had arisen. The final iteration was agreed by all three authors, with codes and themes matched to specific domains of the Theoretical Domains Framework (TDF), where appropriate.

## RESULTS

A total of 28 (20% of total population) participants were invited to take part in the focus groups and 14 (50%) participated (11 females and 3 males; mean age 46.6; 85% White British). Reasons given for not wishing to attend included anxiety about the group setting, difficulty traveling to the focus group location, work and childcare commitments.

Twenty-five overarching themes were identified, which mapped onto eleven of the fourteen domains from the TDF. Ten of the themes were identified as barriers to participating in the intervention and 15 were identified as facilitators (figure 1). Table 2 presents an example of finer level of detail, showing the themes and subthemes alongside relevant quotations. The full coding is in the supplementary file. Where quotes have been included, participants are referred to with a label only, i.e. "P1", to protect anonymity (Greaney et al., 2014). Space prevents a detailed discussion of all the themes, but a representative selection of results are discussed below under the broad headings of barriers or facilitators, starting with the facilitators.

## ***Facilitators***

### *Learning something new*

Participants spoke about learning something new as positive. As becoming active was new to a lot of the participants, they particularly valued the support they received from leisure trust staff, and how they felt they were being taught by someone who knew what they were doing. Participants also spoke about how taking part in ALBA had opened them up to new opportunities, with many participants discussing how it had subsequently led them to take up other new activities (Table 2).

### *Confidence*

Participants discussed the effect that taking part in ALBA had on their beliefs about their capabilities, reporting that they had a new sense of confidence in themselves, and their abilities, which had encouraged them to engage and stay with the intervention. A recurring theme was the importance of 'pacing yourself', with participants frequently talking about the importance of going at their own pace, and how breaking down goals made them more achievable.

Participants reported that they felt they had learnt to be kinder to themselves after taking part in ALBA. They felt the intervention had equipped them with the life skills to escape what they called the "vicious cycle", and how they felt they were more capable of recognising this and as a consequence help themselves overcome any mental health challenges that they may face in the future.

### *Don't Feel Alone*

ALBA helped to foster a sense of community, as participants reported that it helped them to feel less alone. They were more able to talk about their mental health and as result they found that others were open about their own mental health. The intervention also helped to foster a sense of optimism for the future, as well as helping participants to feel proud of themselves. Measurement of progress was important, as participants felt that through participating in ALBA, they could see how far they had come.



Importantly, the ALBA intervention had helped them to change the way they thought of PA, with some participants reporting that they didn't think of themselves as being an active person, but through ALBA they realised that being active did not just mean participating in sport or being "fit", but encompassed all aspects of activity.

*Figure 1: Thematic Map of Barriers and Facilitators using Theoretical Domains*

*Table 2 Example of coding and associated verbatim quotes for facilitators participating in ALBA*

*Table 3 Example of coding and associated verbatim quotes for barriers to participating in ALBA*

### *Sense of Purpose*

Participants reported that ALBA had given them a new sense of purpose, as they felt attending intervention appointments and engaging in PA helped to give them some structure in their lives. Participants spoke about how the appointments with BCP helped them to feel motivated to get out the house. They now felt like they made more effort to be active and that they thought about their activity more than they ever had before.

### *Lifestyle Change*

A common theme throughout the group discussions was change, with participants describing changes in thinking and how taking part in ALBA had a positive wider impact on other aspects of their life and their behaviour. For example, some felt that taking part in ALBA had helped them better manage their anger and had helped them to improve relationships with people around them. Participants frequently discussed how the intervention had encouraged them to set goals, and the positive benefit that this had on their mental wellbeing. For the most part, goal setting was discussed as a

positive, that made them feel like they had something they were working to achieve, be it a step goal or taking up a new hobby. Participants also discussed how becoming engaged with the intervention had made them feel more socially connected.

#### *Support from BCP*

The participants all put a lot of emphasis on the importance of the interpersonal factors, particularly the 1:1 behaviour change sessions. They reported finding the relationship that formed with their BCP to be very supportive and encouraging, giving them “something to look forward to”. Participants really valued having somebody who was “there for them”, who they could speak to, who listened to what they were saying, no matter if it was good or bad. Through the experience of taking part in ALBA, participants felt more able to open up about their mental health. The importance of this relationship and the skills needed to make the most of each individual’s abilities will be returned to.

#### *Technology*

The discussion about the activity trackers suggested that the participants found them motivating, as they could see when they were achieving their goal. Participants reported that they enjoyed using them, as they enjoyed seeing high step counts, and found it encouraging when they saw they how much activity they had done just going about their day. They also reported that the use of the trackers helped them to monitor their mood as well as their behaviour, as they could look back on how far they had come. In this reflective mode they expressed relief that they felt they had found something that was helping to improve their mental wellbeing. Some spoke about how they felt they had got their life back, wishing they had been able to do something like ALBA sooner, as they realised that the intervention had changed the “vicious cycle”:

*I felt as if there was a big sack on my back and every time you tried something, somebody put another rock in to keep you hunched and all that, or you were in a cave and you could see daylight and you had to dig yourself out, and it was like digging with a teaspoon to begin with, but then you kinda moved up to a shovel, cause you can*

*see the light now, which just makes an awful difference! It's like nobody will keep me down. Nobody will put baby in the corner! – P13*

## **Barriers**

### *Stigma*

Participants spoke at length about the stigma they felt existed around mental health issues which had prevented them speaking about their mental health before. Some felt that there was a lack of awareness at the Leisure Centers about mental health, which put them off attending. Some talked of having an invisible illness. They perceived their mental ill-health as not being recognized, and as a result they felt they struggled to get access to support and services that they needed, including benefits in some cases.

### *Beliefs about self*

Negative self-beliefs were frequently discussed as being barriers for both engaging with the intervention and in PA in general. Participants spoke about how low mood and negative thoughts about themselves had made them feel so uncomfortable in themselves that they did not want to engage with others. Participants also spoke a lot about a sense of guilt they felt for putting themselves first and how this had stopped them from acting or seeking help in the past.

### *Trust*

A recurring theme was the issue of trust, with the majority reporting that they were apprehensive about putting their trust in the BCP's. This acted as a barrier to participating in the intervention, as participants felt that they were afraid to open up to someone, due to previous bad experiences. They were also sceptical about how becoming more active would improve their mental health. They found aspects of the intervention challenging, and at times they found that they had set goals that were too difficult to achieve. If they set a goal that was unattainable at the time then this had a negative effect on how they felt about themselves. Occasionally they found that the intervention material made them face issues and feelings that they did not feel they were prepared to face.

### *Access*

Participants reported several barriers that had prevented them from accessing the ALBA intervention. Some said that they had not heard about the intervention before. Issues around access included the settings in which the intervention was delivered. The intervention was initially planned to be implemented within the local leisure centres, intended in part to help participants become familiar with the centres. However, in practice this was not always appropriate as there were often limited availability of private rooms and public spaces were not always suitable.

### *Intervention resources*

Participants also commented on the evaluation process. Particularly at their first appointment, nearly all felt that filling in the questionnaires required for the baseline measurement was very overwhelming and they found them very challenging, as it required both concentration and to think about how their mental health had been.

### *Social influence*

Finally, some participants explained that they had complicated relationships with family and friends, making them hesitant to share that they were participating in the ALBA intervention, as they were concerned about judgement or lack of support. For some these difficult relationships were a source of anxiety or depression. Feelings of fear were a common barrier to PA discussed during the groups, with many agreeing that prior to taking part in the intervention they felt scared of going to the gym and exercising. They feared others would laugh or stare at them for going to the gym. Participants also described a “fear of failure”, concern about starting an activity and not being able to keep it up. Participants in the past had made “excuses” so that they didn’t have to do the activity.

## DISCUSSION

On the whole, the facilitators outweighed the barriers, and most of the barriers consisted of reflections on life before ALBA. These barriers didn’t apply following the

intervention. For example, participants discussed not wanting to go out of the house prior to ALBA, but not afterwards. Likewise, they would never have been seen in a gym before, but now they are more comfortable. It is important to recognise that these barriers need to be overcome, but the clear message is that engaging with ALBA had helped them do just this.

In relation to the framework, it would appear that individual beliefs about personal capabilities were both a barrier and a facilitator to participating in ALBA, as were beliefs about consequences, social influences, goals, environmental context, resources and emotion. This is consistent with the findings of Glowacki, Duncan, Gainforth, & Faulkner (2017) who found the most common barriers to PA in people with depression were emotion, environmental context and resources, beliefs about capabilities, and intentions, whereas the most prominent facilitators of PA were social influence, belief about consequences, and environmental context and resources. These domains should therefore be considered as lying on a continuum. None are inherently positive or negative. They are instead a useful method of understanding and communicating how a particular intervention might work or not depending on its likelihood to invoke personal change; moving from the negative to the positive.

#### *Therapeutic relationship*

Social influence was a prominent facilitator of engagement in ALBA. Due to the face-to-face nature of the delivery of the ALBA intervention, there is the opportunity to develop a relationship between the participant and the practitioner. This was central to the discussions in all of the groups, which suggested that the relationship between the participants and the BCP influenced engagement with ALBA. It appears to be one of the biggest strengths of the ALBA intervention. It has been argued in psychotherapy literature that the therapeutic alliance which develops between practitioner and client is more important than any specific technique or approach (Horvath et al., 2011), with evidence suggesting that the quality of the alliance is a consistent predictor of treatment success. Stronger alliances improve trust and hence cooperation.

Participants are unlikely to agree to therapeutic tasks or enact health actions without (Wampold & Imel, 2015).

Another important element was the warmth and empathy conveyed by the BCP, which helped the participants to feel comfortable opening up about their mental health. Expressing empathy is an integral part of most psychotherapies. According to Rogers (1975), underlying the principle of empathy is acceptance, and an understanding of the client's emotions. Wampold & Imel (2015) found that rating of therapist's empathy is often correlated with a positive outcome. Participants from the focus group valued having somebody who listened to them without judgement. This 'unconditional positive regard' is a well-known Rogerian principle (Amadi, 2013). More recently, helping people to be able to talk about what is on their mind, whatever that may be, is a central tenet of expert spiritual care (Snowden et al., 2018).

In ALBA this helpful therapeutic environment had a positive impact on other aspects of the framework, for example, making people feel more capable. Participants discussed how meeting with the BCP helped to provide structure and routine in their lives, which helped to give them a sense of purpose. This 'virtual circle' of positive reinforcement (Stanislaus, 2016) is the opposite of the 'vicious circle', where low self-esteem reinforces beliefs about poor performance that reinforce low self-esteem and so on (Baron & Kenny, 1986; Steca et al., 2017; Wäschle et al., 2014). Positive beliefs about capabilities increased self-efficacy, which facilitated engagement in ALBA and encouraged PA.

These findings are also consistent with Self-Determination Theory (SDT; Deci & Ryan, 1985), which proposes that steady increases in self-efficacy and self-esteem can be achieved through achieving self-directed goals. However, the simple act of enjoyment should never be under rated. As highlighted by Glowacki et al (2017), emotion is a particularly important domain within mental health populations, but it is often neglected in health models and is not largely accounted for within the literature. Previous research into adherence to PA has often found enjoyment as a key determinant, and

“low mood” or fatigue are frequently found to be barriers to PA, particularly in individuals with poor mental health (Firth et al., 2016). ALBA worked because participants were valued, listened to, and encouraged to see active living not only as achievable but enjoyable.

### *Limitations*

Participation in the focus groups was low. A frequently cited reason for not wishing to take part in the focus groups was due to anxiety about the group setting. Participants in qualitative research often feel uncertainty or anxiety about participating, but often decide to take part for the sake of others who would benefit from the research (Dennis, 2014). It is understandable that the idea of the group setting was off putting to some in this particular study, and individual interviews could have been offered to participants who wished to share their experience but were uncomfortable attending a focus group.

Another limitation of this study was the potential for bias. The participants who attended the focus groups were individuals who had completed the intervention or were still actively taking part. The focus group discussions reflected a mostly positive view of the ALBA intervention as the individuals who had participated had actively engaged with the intervention and had been able to overcome their barriers. An additional limitation was that the focus groups were only conducted at one time point. Given the target population and the tendency for mood changes in some mental health conditions. This may have also generated bias, as the results might have been significantly differed on another day.

Possibly the most serious limitation was theoretical. To obtain funding, evaluation methods had to be articulated earlier on in the research process that would otherwise be the case. As a consequence, the theoretical underpinning was ‘fixed’ from the start and could therefore be seen as a form of conceptual bias. Having said this, the TDF

model proved very useful in explaining the findings here. It was also good for checking for any data falling outside the model.

## CONCLUSION

This original intervention has succeeded in an area where many others have tried and failed. Helping people to change the way they think about activity has been a difficult problem, and so any intervention that appears to have achieved this is worthy of considerable attention. Whilst it is certainly true that the intervention required a lot of investment, particularly in training the trainers, ALBA nevertheless succeeded in changing the way these participants with mental health problems thought about physical activity. By reframing it as not just physically beneficial but personally achievable, participants' attitudes and behaviour changed as well, making it more likely they would sustain physical activity in future. Whilst it is clear that larger multicentre studies would help formalise the intervention further, we hope there is sufficient information in this paper for local community teams to get together with mental health service users to consider adopting and evaluating their own versions of structured support to make active living become achievable for people around the world.

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## SAMH Role Profile



|                                |                                      |
|--------------------------------|--------------------------------------|
| <b>Job Title</b>               | ALBA (Behaviour Change) Practitioner |
| <b>Job Family</b>              | Physical Activity and Sport          |
| <b>Department/Service/Area</b> | <b>Delivery &amp; Development</b>    |
| <b>Reports to</b>              | <i>ALBA Project Co-ordinator</i>     |
| <b>Direct Reports</b>          | N/A                                  |

|                     |   |
|---------------------|---|
| <b>Role Summary</b> | <p>The Active Living Becomes Achievable (ALBA) project is a SAMH led physical activity behaviour change intervention funded for 3 years by the Scottish Government.</p> <p>The ALBA (Behaviour Change) Practitioner will provide a person-centred behaviour change intervention service that is responsive to the needs of individuals opting into the ALBA intervention as part of an existing physical activity referral programme. The ALBA Practitioner will support individuals to identify issues that are affecting their ability to become more active, in terms of self-esteem, attitudes towards physical activity and perceived levels of control.</p> <p>Working collaboratively with the individual both before and during the physical activity programme, the ALBA Practitioner will support individuals in identifying barriers, appraising options and enabling individuals to make decisions on issues that they would like to address to help them to develop solutions to enable them to be more sustainably active. As well as one-to-one support, the ALBA Practitioner role will involve facilitating group sessions for participants.</p> <p>The ALBA Practitioner will provide a mentoring role to other professionals (e.g. Gym staff) and Volunteers to increase confidence to apply the behaviour change skills as the ALBA intervention is rolled out.</p> |
|---------------------|---|

|   |  |
|---|--|
| <p><b>Essential Duties and Responsibilities</b></p>             | <ul style="list-style-type: none"> <li>• Work within the remit of the ALBA project, including the requirements of the study, partners ways of working as required by the project co-ordinator</li> <li>• To deliver a behaviour change service to participants experiencing a long-term physical health condition and/or a mental health condition, using agreed, Cognitive Behavioural Approaches (CBA) both in time limited one-to-one and group workshop settings.</li> <li>• Support individuals to set up and use the physical activity tracking devices required by the study</li> <li>• Co-ordinate individual assessments, monitoring, review and exit processes for individuals using the CBA tools developed by ALBA</li> <li>• To provide mentoring support to Leisure staff and peer support volunteers in the delivery of the CBA intervention as part of ALBA</li> <li>• To provide cross function support and delivery within the designated Hub area</li> <li>• Taking a lead role in the development of positive working relationships with local stakeholders to engage referrals</li> <li>• To record and monitor information as required for ALBA reporting.</li> <li>• Staff will be required to undertake specific training developed for the ALBA project including CBA, the benefits of physical activity, Mental Health Awareness related to Physical Activity and other specific workshops related to the ALBA intervention and group facilitation</li> <li>• Represent ALBA at local events with key stakeholders as required</li> <li>• To liaise with ALBA steering group, SAMH management team and other staff as required</li> <li>• Protect vulnerable groups and individuals from abuse in accordance with SAMH's safeguarding framework.</li> </ul> <p><b>Key result areas</b></p> <ul style="list-style-type: none"> <li>• Enabling sustained behaviour change amongst ALBA recipients by increasing physical activity levels</li> <li>• To ensure that the applied intervention complies with the standards set by ALBA training</li> <li>• To support the sustainability of the intervention amongst leisure staff and peer support volunteers through mentoring</li> <li>• To record appropriate information on planning, interventions and outcomes of work undertaken with participants</li> </ul> |
| <p><b>Key Working Internal Relationships &amp; Contacts</b></p> | <p>Accountable to and will work positively and effectively with ALBA</p> <p>Project Co-ordinator</p>   |



|   |   |
|---|---|
|   | <p>Will work positively and effectively with all colleagues within SAMH including Hub Service Managers.</p> <p>Establish and maintain positive relationships with external agencies and partners, including:</p> <ul style="list-style-type: none"> <li>• One-to-one relationships with participants opting into the ALBA intervention</li> <li>• Working closely with colleagues, volunteers and professionals from partner organisations to engage referrals and deliver group workshops to participants</li> <li>• Work closely with leisure trust staff and volunteers to ensure a smooth process for each participant</li> </ul> |
| <b>Working Environment/<br/>Special Circumstances</b> | <p>May include</p> <ul style="list-style-type: none"> <li>• Lone Working</li> <li>• Working with individuals with challenging behaviour</li> <li>• Some weekend/evening working may be required</li> <li>• Cross function working within the hub area with an agreed allocated base within the hub area.</li> </ul>   |

|  |  | <b>Essential OR<br/>Desirable</b>   |
|--|--|---|
| <b>Experience &amp;<br/>Qualifications</b> | <p><b>Experience</b></p> <ul style="list-style-type: none"> <li>• Experience of relevant community working</li> <li>• Experience of dealing with people facing life challenges and changes</li> <li>• Experience facilitating groups</li> <li>• Experience of working, volunteering or participating within a physical activity setting</li> <li>• Experience in partnership working</li> <li>• Experience of working in counselling or other behaviour change interventions</li> <li>• Experience working in mental health field</li> <li>• Experience of mentoring</li> <li>• Experience facilitating groups</li> </ul> <p><b>Qualifications</b></p> <p>SVQ3 in Health and Social Care</p> | <p>Essential</p> <p>Essential</p> <p>Essential</p> <p>Essential</p> <p>Desirable</p> <p>Desirable</p> <p>Desirable</p> <p>Desirable</p> |

|                               |   |   |
|-------------------------------|---|---|
|                               | <p>Or further education study in topic related to Psychology, Community Education/Development or Physical Activity</p> <p>Training Delivery qualification/accreditation<br/>Behaviour change training<br/>Physical activity training/facilitator</p>  | <p>Desirable</p> <p>Essential</p> <p>Desirable</p> <p>Desirable</p> <p>Desirable</p>  |
| <b>Knowledge &amp; Skills</b> | <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• Knowledge of mental illness and associated issues and an understanding of the difficulties people face.</li> <li>• Understanding of the challenges faced by people with physical and or mental health conditions in relation to living well and being more active.</li> </ul> <p><b>Functional/Work-based Skills</b></p> <ul style="list-style-type: none"> <li>• Excellent communication skills</li> <li>• Positive, supportive and professional outlook</li> <li>• Strong influencing, negotiation and motivational skills</li> <li>• Able to operate in a team and autonomously on own initiative.</li> <li>• IT skills in word processing, spread-sheets, email and the internet.</li> <li>• Driving Licence with the ability and willingness to travel within the local community and wider area if required</li> <li>• Proven facilitation skills</li> </ul> | <p>Desirable</p> <p>Desirable</p> <p>Essential</p> <p>Essential</p> <p>Essential</p> <p>Essential</p> <p>Essential</p> <p>Essential</p> <p>Essential</p> <p>Desirable</p> |

## Core Competencies and Commitment

At SAMH, our values underpin everything we do. We believe that everyone has the right to be treated with dignity, respect and equality. We believe that everyone is entitled to hope and choice and to achieve personal fulfilment.

These are the competencies that SAMH looks for and expects from staff who support the people who use SAMH social care services. These competencies enable SAMH to deliver its core purpose of mental health and wellbeing for all.

| Core Competency                                | Behaviour and Skills  |
|--|---|
| <b>Recovery Focussed</b>                       | <p>Empathise, inspire and motivate others.</p> <p>Deliver person centred and recovery focussed support to enable individuals to achieve positive outcomes.</p>  |
| <b>Communication</b>                           | <p>Communicate effectively and professionally and contribute to the accurate recording and monitoring of all case and incident recording systems. This includes communications by email, by phone/text and other on-line methods.</p> <p>Build and develop positive relationships with those who use our services.</p> <p>Engage with a range of people from a wide variety of backgrounds.</p>   |
| <b>Deliver a high standard/quality of work</b> | <p>Maintain the highest personal and professional standards. Work professionally and collaboratively with internal and external colleagues, those who use our services and members of the public and to meet the requirements of funders and regulators.</p> <p>Undertake personal responsibility for conduct and work ethic in line with SAMH Code of Conduct, the SSSC Codes of Practice and other relevant professional standards.</p> |
| <b>Critical Reflection and Learning</b>        | <p>Ability to reflect on own practice and learn from own experiences and those of others.</p> <p>Develop skills and knowledge of theory and practice and understand where role fits within SAMH and externally.</p>   |
| <b>Supportive of Equality and Diversity</b>    | <p>Challenge inequality and stigma; recognise and respond to the barriers individuals and groups face within society.</p> <p>Treat all people within SAMH (both staff and service users) fairly and with respect regardless of their age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex and/or sexual orientation.</p>  |

|  |  |
|--|--|
| <b>Commitment to Health, Safety and Well-being</b> | Understand, encourage and carry out the principles of integrated safety management; comply with SAMH Health and Safety Policy and Procedure; complete all required H & S training; take personal responsibility for safety.  |
| <b>Participation</b>                               | Ensure the people who use our services have the opportunity to get involved in their support, their service, their community or in SAMH as an organisation.  |
| <b>Team Working</b>                                | Ability to work as part of a team.   |
| <b>Service User Engagement</b>                     | Develop, maintain and demonstrate a wide range of interpersonal skills when working with the people we support, including open-minded, respectful, active listening, empathetic, promote independence, maintenance of confidentiality, honest, honourable in agreements and practices, appropriate body language, solution focussed, supportive and approachable, non-judgemental, pro-active, patience and resilience, professional approach. |

Employees are required to read and understand the role profile for their position and are required to comply with SAMH's policies, all laws, rules, regulations and standards of conduct relating to their position and report any suspected violations of conduct to my line manager. All employees should adhere to the SAMH values in all interactions with service users, customers and colleagues.

## **Participant Information Sheet**

### **Title of the study: Evaluating the effectiveness of “Active Living Becomes Achievable”**

As you have completed the ALBA intervention, we would like to invite you to take part in a focus group to discuss your experience. Taking part in this focus group is voluntary and you are not under any obligation to attend, however, if you are interested, your participation will be greatly appreciated.

#### **What will happen during the focus groups?**

Nicola Peddie, a PhD student for Edinburgh Napier University, will lead the discussion in each focus group. You can expect to be asked to discuss various aspects of your experience of taking part in the ALBA intervention, for example how comfortable you felt using the tracking device, what you felt worked well and any barriers you encountered. There are no right or wrong answers in a discussion of this kind – we are simply interested in your opinions. The focus group will consist of a maximum eight people who have also been involved in the ALBA intervention and it will take around an hour and half (to include registration and group discussion).

#### **What will happen to the results?**

The focus group will be audio-recorded. The recordings will then be transcribed by the research team at Edinburgh Napier University. Our analysis will involve merging all of the transcripts from each group that we run and looking for the common factors in what people have said. The findings will be included as a chapter in a PhD thesis.

#### **What about confidentiality?**

Any data you provide will be treated in accordance with the UK Data Protection Act 2017. The focus groups will be recorded and transcribed, however, you will not be identified in the recordings. We will not tell anyone that you have taken part in the focus group, although there is of course a possibility that another member of the group might recognise you. We will also not name you in any of our reports or publications. In our reports and publications, we will use quotes from the focus groups to help illustrate the points that are being made. Some of these quotes may come from you. We will not use any quotes that might reveal who you are. All audio recordings will be destroyed once transcripts have been made and checked.

### **Ethical approval**

The study has been granted ethical approval by the West of Scotland Research Ethics Service and Edinburgh Napier University School of Applied Science Ethics committee.

### **Further Questions**

If you have any questions/concerns, during or after the investigation, please contact:

|   |   |   |
|---|---|---|
| Ms Nicola Peddie<br>PhD Student<br>Edinburgh Napier<br>University<br>[REDACTED] | Dr Tony Westbury<br>Lecturer in Sport and<br>Exercise Psychology<br>Edinburgh Napier University<br>[REDACTED] | Professor Austyn<br>Snowden<br>Chair in Mental Health<br>Edinburgh Napier<br>University<br>[REDACTED] |
|---|---|---|

If you wish to speak to someone who is not directly involved in this evaluation please contact: Rory MacLean, Edinburgh Napier University, [REDACTED]

[REDACTED]

## Focus Group Consent Form

**Title of the study: Evaluating the effectiveness of “Active Living Becomes Achievable”**

**Name of researchers: Nicola Peddie, Tony Westbury and Austyn Snowden**

**Please read the following statements carefully and initial the boxes as appropriate.**

- I understand that participation is voluntary.
- I am fully aware that I will remain anonymous throughout data reported and that I have the right to leave the focus group at any point.
- I am fully aware that data collected will be stored securely, safely and in accordance with General Data Protection Regulation (GDPR).
- I understand that by consenting to participate in this focus group I am agreeing to being audio recorded, so it can be transcribed after the focus group is held.
- I am fully aware that I am not obliged to answer any question, but that I do so, at my own free will.

|                           |  |
|---------------------------|--|
| (PRINT NAME)              | Hereby agree to take part in the above project |
| Signature of Participant: | Date   |
| Witness Name:             | Witness Signature:                             |

## Focus Group Questionnaire

1. Sex?

Male  Female

2. Age?

3. Ethnicity?

White – British  White – Other  Black – British

Black - Other  Chinese – British  Chinese – Other

Asian – British  Asian – Other  Mixed Race – British

Mixed Race – Other

4. Do you consider yourself to have a disability?

Yes  No



*Appendix 10. Focus Group Interview Schedule – Fife, West Lothian, and North*

*Ayrshire*

*Introduction*

Hello, my name is Nicola Peddie, I am a PhD student with Edinburgh Napier University. Thank you for taking the time to participate in a focus group on the ALBA intervention. This focus group is part of a larger assessment process that Edinburgh Napier is carrying out to evaluate the effectiveness of the ALBA intervention.

During this focus group I will ask questions about how you felt the ALBA intervention helped you and what you feel could be improved upon. Please keep in mind that there are no “right” or “wrong” answers to any of the questions I will ask. The purpose is to stimulate conversation and hear the opinions of everyone in the room. I hope you will be comfortable speaking honestly and sharing your ideas with us.

Please note that this session will be recorded to ensure we adequately capture your ideas during the conversation. However, the comments from the focus group will remain confidential and your name will not be attached to any comments you make. Do you have any questions before we begin?

*Consent forms and recording*

Quick round of introductions. Can each of you tell the group your name, and when you took part in the ALBA intervention?

*Beliefs about capabilities/Beliefs about consequences*

Thinking back to when you first started ALBA, how did you feel about starting physical activity?

- How did you feel about being referred to ALBA?
- What were you hoping to get out of taking part?
- Did you think you’d enjoy the program?

And now that you have completed the intervention, how do you feel about being active now?

- Do you see a change in yourself?
- Do you think there were benefits from taking part in ALBA?
- Do you have any regrets?
- What did you most enjoy?

*Skills*

So, as part of ALBA you have met regularly with an ALBA practitioner. What did you find helpful about these meetings?

- Do you think you will continue to use some of the techniques you learned in ALBA?
- Is there anything you feel that you learned from taking part in ALBA?
- Did you find any of the workbooks particularly helpful?
- Was there anything you didn't like/would change?

*Social influence (ALBA practitioners/Peer supporters)*

What did you think about the ALBA practitioner that supported you through the intervention?

- Did you find them easy to talk to? Supportive?
- Have you had any support from any of the gym/leisure trust staff?
- Did you have support from your friends or family for taking part in ALBA?

Have you had any support from a peer supporter during ALBA?

- Do you think a peer supporter would have helped you?
- Did you get to know anyone else that was taking part in ALBA?
- Have you considered becoming a peer supporter?

*Environmental context and resources (Barriers to attending)*

Did you experience any barriers, or anything that made attending appointments with the ALBA practitioners difficult?

- Was there anything that helped you overcome these barriers?
- What could be a barrier for someone starting the program?
- What did you think of the length of 16 weeks for the program?

Did you find the places you met with the practitioners to be accessible?

- Were you able to meet locally?
- Any difficulty with getting an appointment?

*Behavioural Regulation/Reinforcement (Impact of trackers on motivation)*

You were provided with a Storm tracker. How did you feel about using your tracker?

- Did you feel like it motivated you?
- Was it easy to get the hang of?

- Were there any difficulties with it?

*Goals/Intentions/optimism*

Thinking about the future, do you think taking part in ALBA has helped you to become more active?

- Do you feel it has helped you change your behaviour?
- Do you notice a change in yourself mentally?
- Do you have any goals or targets that you wouldn't have had before you started?

*Closing*

Finally, are there any other thoughts you'd like to share about your experience of taking part in ALBA?

Thank you to everyone who made an effort to be here tonight

## *Appendix 11. Focus Group Interview Schedule – BCP*

### *Introduction*

The reason we're here today is to gather your opinions about what your experience of delivering the intervention has been and how you have felt about the training and support you have received.

### *Consent forms and recording*

This focus group will be audio recorded. The purpose of this is to provide a record of what was said and will be used for writing up a research paper. The transcript will be anonymised. Please try and avoid talking over each other, there are no wrong answers just opinions so feel free to speak openly.

### *Introduction of participants*

If we could start by going round and everyone introducing their name and which area, they have been based in.

### *Knowledge*

How would you describe ALBA?

What do you think is the most important part of the intervention?

### *Usefulness of training*

Overall, what do you think of the training you received to deliver the ALBA intervention?

- What were you expecting?
- What do you think about the way in which the training was delivered?

How well did you feel the training prepared you for the role of behaviour change practitioner?

Suppose that you were in charge and could make one change that would make the training better. What would you do?

### *Post training self-efficacy/Perception of capabilities*

Reflecting back on when you first started delivering the intervention, how confident did you feel?

- What were your concerns?

How do you feel about delivering the intervention now?

- Have your skills have developed?
- Is there any more support or training you think you should be offered?

*Closing*

Are there any other thoughts you have had about your experience of delivering ALBA that you think would be helpful to share?

*Appendix 12. Focus Group Transcripts*

Focus group transcripts are available upon request following this link:

<https://www.dropbox.com/sh/gya4b6fejn093a8/AAAquGumghUCWjBNT9dRtys1a?dl=0>

# Participant Information Sheet

## **Title of the study: Evaluating the effectiveness of “Active Living Becomes Achievable”**

### **What is the project about?**

This study is an evaluation of the “Active Living Becomes Achievable (ALBA)” intervention. ALBA is a new physical activity intervention developed by the Scottish Association for Mental Health (SAMH), which aims to help individuals with long term physical or mental health conditions to increase and maintain their levels of physical activity. The intervention involves attending 1:1 sessions, and some optional group-based workshops with an ALBA practitioner, who is a trained member of SAMH staff with a background in mental health. The ALBA practitioner will support the individual throughout the intervention period by building confidence around physical activity, action planning and goal setting. The aim of the study is to assess how effective the intervention is in helping people to change and maintain their physical activity behaviour.

### **Do you have to take part?**

No, it is completely your decision whether or not to take part. If you decide not to take part in the study, you will still be able to access the existing referral programme.

### **What happens if I take part?**

You will be asked to fill out five short questionnaires on two occasions; prior to starting the intervention and at the end of the 16-week intervention period. You will also be asked to wear an activity tracker, either on your wrist like a watch or by attaching it to your waist band, throughout this 16-week period. The activity tracker should be worn at all times, the tracker is water-resistant so can be worn whilst shower or bathing, however it is not recommended to wear the tracker swimming.



You will be invited to meet with an ALBA practitioner who will lead the 1:1 sessions at a mutually agreed time and place and will be invited to attend optional group workshops before commencing and during the physical activity/exercise

programme. These sessions will last up to an hour and will be tailored to your needs and goals.

At the end of the 16-week period you will be asked if you wish to opt-in to the follow up investigation, in which case you would be asked to continue using your activity tracker and will receive 3 further questionnaires to complete at 6 and 12 months' after the intervention.

### **What are the possible benefits of taking part?**

It is hoped that the individuals who decide to participate in the study will benefit from receiving the ALBA intervention as it will help them to maintain lasting change in their physical activity levels. There are no foreseen risks to participating in this study.

### **What happens to the information in the project?**

All identifiable information collected will be removed, non-identifiable questionnaire data will be transferred onto a password-protected computer in the university. Data collected by the trackers will be gathered and anonymised and will be sent securely to the research team at Edinburgh Napier University. Nothing that can identify anyone by name will be stored here. After the research study has ended (in 2019) all data will be deleted.

### **What happens if I don't want to carry on with the study?**

If you decide to take part in the study but change your mind you can withdraw at any point. You do not have to give a reason for withdrawing, but we would ask that you contact your local ALBA practitioner or the ALBA administrator to let them know that you no longer wish to continue, contact details for the ALBA administrator are: Rozita Kirilova email: [REDACTED]

### **What if there is a problem?**

It is not anticipated that there will be any risk to participants. However, if you have any concerns contact details for information and support are provided below.

### **What happens next?**

If you think that you would like to take part, the exercise instructor will make you an appointment with one of your local ALBA practitioners at a time that suits you. At this appointment the ALBA practitioner will go over the intervention and study with you and answer any questions you may have, if you are happy to take part you will be asked to

sign a consent form. After this you will be set up with your activity tracker and asked to complete some questionnaires.

### **Ethical approval**

The study has been granted ethical approval by the West of Scotland Research Ethics Service.

### **Further Questions**

If you have any questions/concerns, during or after the investigation, please contact:

|   |  |  |
|---|--|--|
| Ms Nicola Peddie<br>PhD Student<br>Edinburgh Napier<br>University<br>EH11 4DE<br>[REDACTED] | Dr Tony Westbury<br>Lecturer in Sport and<br>Exercise Psychology<br>Edinburgh Napier<br>University<br>EH11 4DE<br>[REDACTED] | Professor Austyn Snowden<br>Chair in Mental Health<br>Edinburgh Napier<br>University<br>EH11 4DE<br>[REDACTED] |
|---|--|--|

If you wish to speak to someone who is not directly involved in this evaluation please contact: Rory MacLean, Edinburgh Napier University, [REDACTED],  
[REDACTED]



## Consent Form

**Title of the study: Evaluating the effectiveness of “Active Living Becomes Achievable”**

**Name of researchers: Nicola Peddie, Tony Westbury and Austyn Snowden**

**Please read the following statements carefully and initial the boxes as appropriate.**

- I agree that I have received and read a copy of the participant information and had the opportunity to ask questions about the study
- I understand that participation is voluntary and that I can withdraw from the study at any time without having to give explanation
- I understand that my choice about whether to participate in this study does not affect my acceptance into an exercise referral scheme
- I understand that all data will be held securely and anonymously
- I agree to share my contact details with SAMH
- I understand that by consenting to participate in this study I am agreeing to be set up on the ALBA tracker app and to using the activity tracker provided
- I understand that I am consenting to being monitored for the next 16 weeks
- I understand that I am agreeing to attend 1:1 session with an ALBA Practitioner throughout the 16-week intervention period

|                           |  |
|---------------------------|--|
| (PRINT NAME)              | Hereby agree to take part in the above project |
| Signature of Participant: | Date   |
| Witness Name:             | Witness Signature:                             |

## Follow Up Study Consent Form

**Title of the study: Evaluating the effectiveness of “Active Living Becomes Achievable”**

**Name of researchers: Nicola Peddie, Tony Westbury and Austyn Snowden**

**Please read the following statements carefully and initial the boxes as appropriate.**

- I understand that participation is voluntary and that I can withdraw from the study at any time without having to give explanation
- I understand that all data will be held securely and anonymously
- I understand that by consenting I am agreeing to have my activity levels monitored for the next 12 months
- I understand that I will be asked to complete a set of questionnaires at 6- and 12-months post intervention
- I agree to be contacted about participating in a focus group about the experience of taking part in the study, participation is on a voluntary basis

|                           |  |
|---------------------------|--|
| (PRINT NAME)              | Hereby agree to take part in the above project |
| Signature of Participant: | Date   |
| Witness Name:             | Witness Signature:                             |

## **Debrief form**

**Title of the study: Evaluating the effectiveness of “Active Living Becomes Achievable”**

**Name of researchers: Nicola Peddie, Tony Westbury and Austyn Snowden**

Thank you for taking part of the Active Living Becomes Achievable intervention as a research participant. We hope that you enjoyed the experience.

The purpose of the study was to evaluate how effective the ALBA intervention was at increasing adherence to physical activity. Previous research has shown that less than 20% of people who start a physical activity programme see it through to the end. The hope is that ALBA will increase this rate and individuals who have taken part will benefit from improved mental and physical health in the long term.

We are hoping to find that attending the 1:1 session with the ALBA practitioners will increase motivation to engage in physical activity, leading to increased participation in the exercise referral programs and generally increased levels of physical activity. We also hope to find that increased levels of physical activity improve the mental wellbeing and self-esteem of participants.

Again, we thank you for your participation in this study. If you might be interested in discussing your experience of taking part in the ALBA project with the research team, then please let your ALBA practitioner know and you will be contacted about taking part in a focus group in your local area at a future date.

If you are interested in further participation, there is an option to continue into the follow up. This would involve continuing to use your tracker for up to 14 months. The requirements are that you would continue to sync your steps with the "Get Active" App and you would be asked to complete the questionnaire you have completed today a further 3 times. There would be no 1:1 follow up appointments with the ALBA practitioner.

Taking part in this follow up study is optional, but if you might be interested then please discuss it with your ALBA practitioner.

If you have any other questions regarding this study, please feel free to ask the ALBA practitioner at this time, or contact the following:

Dr Tony Westbury ( [REDACTED] ) or

Ms Nicola Peddie ( [REDACTED] )

If you would like a copy of the results of this research via email or post, please feel free to speak to your ALBA practitioner or contact the above Tony Westbury or Nicola Peddie.



## Active Living Becomes Achievable Questionnaire

### Active Living Becomes Achievable

#### 1. Please enter your participant number

If you do not know this, ask the ALBA practitioner and they will help you

The following questions relate to your physical activity over the previous week. Please mark in the appropriate box the number of minutes spent doing a particular activity. Please try and think carefully and be as accurate as possible with your answers and only include activities of either moderate or vigorous intensity. Examples are given of what should and should not be included.

#### 2. Leisure time physical activity

##### In the past week, how many minutes did you spend each day

Please try and think carefully and be as accurate as possible with your answers and only include activities of either moderate or vigorous intensity

|  | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday | Total |
|--|--------|---------|-----------|----------|--------|----------|--------|-------|
| Walking outside of work<br><br>Do include walking to the shops, walking to work, walking the dog, stair walking<br><br>Do NOT include standing, sitting, driving, walking whilst at work |        |         |           |          |        |          |        | 0     |
| Manual labour outside of work<br><br>Do include cutting grass, decorating, washing car, DIY, digging<br><br>Do NOT include weeding, planting, pruning                                    |        |         |           |          |        |          |        | 0     |
| Active housework<br><br>Do include vacuuming, scrubbing floors, bed making, hanging out washing<br><br>Do NOT include sewing, dusting, washing dishes, preparing food                    |        |         |           |          |        |          |        | 0     |
| Dancing<br><br>Do include only time spent dancing at a class, party or nightclub   |        |         |           |          |        |          |        | 0     |

|  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|
| Do NOT include time spent not actually dancing |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|

|   | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |   |
|---|--------|---------|-----------|----------|--------|----------|--------|---|
| Participating in sport, leisure activity or training                                    |        |         |           |          |        |          |        |   |
| Do include exercise classes, cycling, football, swimming, golf, jogging, athletics      |        |         |           |          |        |          |        | 0 |
| Do NOT include darts, snooker/pool, fishing, playing a musical instrument               |        |         |           |          |        |          |        |   |
| Other physical activity if not already covered  |        |         |           |          |        |          |        |   |
| Do include: any activity where you heart rate and breathing rate are faster than normal |        |         |           |          |        |          |        | 0 |
| Do NOT include: any activity you take part in at work                                   |        |         |           |          |        |          |        |   |

### 3. Physical Activity at work

#### In the past week, how many minutes did you spend each day

Please only complete this section if you are in regular employment

|   | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday | Total |
|---|--------|---------|-----------|----------|--------|----------|--------|-------|
| Walking whilst at work  |        |         |           |          |        |          |        |       |
| Do include walking up or down stairs, to and from your desk, "doing the rounds" |        |         |           |          |        |          |        | 0     |
| Do NOT include standing, sitting at desk etc                                    |        |         |           |          |        |          |        |       |
| Manual labour whilst at work  |        |         |           |          |        |          |        |       |
| Do include lifting, stacking shelves, climbing ladders, building work, cleaning |        |         |           |          |        |          |        | 0     |
| Do NOT include sitting at desk, answering telephone, driving, operating a till  |        |         |           |          |        |          |        |       |

#### 4. Was last week typical of the amount of physical activity you usually do?

Yes  No - I usually do more  No - I usually do less

Other comments? If more, normally how much more and of which activity? If less, normally how much less and of which activity?

## Active Living Becomes Achievable Questionnaire

5. Considering the current amount of exercise you do, how confident are you right now that you could exercise three times per week for 20 minutes if

| Not Confident - Very Confident            | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|----|
| The weather was bothering you             |   |   |   |   |   |   |   |   |   |   |    |
| You were bored by the program or activity |   |   |   |   |   |   |   |   |   |   |    |
| You felt pain when exercising             |   |   |   |   |   |   |   |   |   |   |    |
| You had to exercise alone                 |   |   |   |   |   |   |   |   |   |   |    |
| You did not enjoy it                      |   |   |   |   |   |   |   |   |   |   |    |
| You were too busy with other activities   |   |   |   |   |   |   |   |   |   |   |    |
| You felt tired                            |   |   |   |   |   |   |   |   |   |   |    |
| You felt stressed                         |   |   |   |   |   |   |   |   |   |   |    |
| You felt depressed                        |   |   |   |   |   |   |   |   |   |   |    |



## Active Living Becomes Achievable Questionnaire

6. Below are some statements that people sometimes make when they talk about their health. Please indicate how much you agree or disagree with each statement as it applies to you personally by selecting your answer. Your answers should be what is true for you and not just what you think others want you to say.

If the statement does not apply to you, select N/A.

|   | Disagree Strongly     | Disagree              | Agree                 | Agree Strongly        | N/A                   |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| When all is said and done, I am the person who is responsible for taking care of my health                              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Taking an active role in my own health care is the most important thing that affects my health                          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I am confident I can help prevent or reduce problems associated with my health  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I know what each of my prescribed medications do  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I am confident that I can tell whether I need to go to the doctor or whether I can take care of a health problem myself | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I am confident that I can tell a doctor concerns I have even when he or she does not ask                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I am confident that I can follow through on medical treatments I may need to do at home                                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I understand my health problems and what causes them  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I know what treatments are available for my health problems   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I have been able to maintain (keep up with) lifestyle changes, like eating right or exercising                          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I know how to prevent problems with my health   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I am confident I can figure out solutions when new problems arise with my health  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I am confident that I can maintain lifestyle changes, like eating right and exercising, even during times of stress     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

## Active Living Becomes Achievable Questionnaire

7. Below are some statements about feelings and thoughts. Please tick the box that best describes how you have felt about each statement over the last 2 weeks

|  | None of the time      | Rarely                | Some of the time      | Often                 | All of the time       |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| I've been feeling optimistic about the future      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I've been feeling useful                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I've been feeling relaxed                          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I've been feeling interested in other people       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I've had energy to spare                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I've been dealing with problems well               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I've been thinking clearly                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I've been feeling good about myself                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I've been feeling close to other people            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I've been feeling confident                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I've been able to make up my own mind about things | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I've been feeling loved                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I've been interested in new things                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I've been feeling cheerful                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

## Active Living Becomes Achievable Questionnaire

8. Below is a list of statements dealing with your general feelings about yourself. Please select if you strongly agree, agree, disagree or strongly disagree with the statement

|  | Strongly Agree        | Agree                 | Disagree              | Strongly Disagree     |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| On the whole, I am satisfied with myself.            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| At times, I think I am no good at all.               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I feel that I have a number of good qualities.       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I am able to do things as well as most other people. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |



|  |                       |                       |                       |                       |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| I feel I do not have much to be proud of.                                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I certainly feel useless at times.   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I feel that I'm a person of worth, at least on an equal plane with others. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I wish I could have more respect for myself.                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| All in all, I am inclined to feel that I am a failure.                     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I take a positive attitude toward myself.                                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |



## Active Living Becomes Achievable Questionnaire

### 9. Sex

Female  Male  Prefer not to say

### 10. What is your age?

### 11. Ethnicity

White – British   
 Asian or Asian British – Indian   
 Asian or Asian British – Bangladeshi   
 Asian or Asian British - Any other Asian background Mixed - White & Black African   
 Mixed - Any other Mixed background   
 Black or Black British – African   
 Prefer not to say

White – Other   
 Asian or Asian British – Pakistani   
 Asian or Asian British – Chinese   
 Mixed - White & Asian   
 Mixed - White & Black Caribbean   
 Black or Black British – Caribbean   
 Black or Black British - Any other Black background Other

### 12. Do you consider yourself to have a disability?

Yes  No

### 13. What level of education have you completed?

Primary school (less than 7 years)  High school (5 years)   
 University (less than 4 year bachelor)  College ( HND or HNC)

High school (4 years)  High school (6 years)  University (4 or more years)

