



Mapping the landscape: surf therapy program delivery

Extended abstract

Mary Brennan¹ · Helen J. Stain^{1,2,3} · Jamie Marshall⁴

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Abstract

Surf therapy is a structured intervention which utilizes surfing as a vehicle to achieve therapeutic benefit (International Surf Therapy Organization [ISTO], 2019). Surf therapy is presently delivered internationally within a diverse array of contexts and populations. Despite the publication of many internal evaluation studies, little research has examined themes common to the process of surf therapy across programs. The present study recruited a sample of ISTO-affiliated surf therapy programs ($n = 33$) to engage with an online survey, *Mapping the Stoke*, examining core aspects of surf therapy structure and process internationally. Findings indicated both similarities across current program delivery internationally, with examples of primary similarities including target age (adolescents and young adults) and population (mental health), recruitment (self-referral), and structure (group sessions), geographic delivery (major cities) and challenges (funding). Areas of greater diversity included support staff (roles/qualifications), therapeutic aims, measures (outcome) and therapeutic structures. The present study outlines concrete structures and processes which appear integral to the delivery of surf therapy across cultures.

Keywords Surf therapy · Mental health · Process mapping · Program delivery · Exploratory review

✉ Mary Brennan
m.brennan@ecu.edu.au

¹ School of Arts and Humanities, Edith Cowan University, Perth, Western Australia, Building 31, 270 Joondalup Dr, Joondalup, WA 6027, Australia

² School of Psychology, Leeds Trinity University, Leeds, UK

³ TIPS Early Intervention in Psychosis Program, Stavanger, Norway

⁴ School of Applied Sciences, Edinburgh Napier University, Edinburgh, UK

Amid a backdrop of concern highlighting the general deterioration in mental health and wellbeing, alternative approaches to the treatment of mental health are steadily gaining attention. One such alternative is *surf therapy* or the application of a structured approach to surfing to achieve therapeutic benefit (International Surf Therapy Organisation [ISTO], 2018). Informed by the intention to assist a variety of populations to improve wellbeing via surfing, surf therapy programs continue to grow globally (Stephens, 2023). Mapping the rise in interest and reported benefit of such programs has been a growing challenge, as researchers attempt to understand the ‘how’ and ‘why’ these structured interventions may be useful. Answers to these questions would allow greater transparency, accuracy, and core common elements which would in turn guide the delivery and efficacy of surf therapy programs. Given this lack of clarity in the research literature, the following aims to explore whether common elements or processes can be identified which appear essential to the delivery of surf therapy across cultures.

Longstanding evidence exists of the link between physical activity and improved mental health outcomes (see Rebar et al., 2015). Physical activity has been associated with a reduction in symptoms of depression, anxiety, schizophrenia, and post-traumatic stress disorder (Björkman & Ekblom, 2022; Korczak et al., 2017; McDowell et al., 2018; Teixeira et al., 2012; Vancampfort et al., 2012; Wiese et al., 2018). The application of physical exercise in nature settings has been shown to result in increased physical, psychological, and social wellbeing (Moreton et al., 2022). Mental health focused interventions that utilise physical exercise are becoming increasingly popular and one such model involves utilising surfing as a vehicle to improve wellbeing (Marshall et al., 2019). Application of surf therapy as a novel intervention has shown evidence for enhancing human health and wellbeing across varied populations (Drake et al., 2021; de Matos et al., 2017; Hignett et al., 2018; Rogers et al., 2014). For example, surf therapy has been implemented across diverse populations such as, youth, veterans, active military service members, socially or economically disadvantaged, substance addiction, cancer survivors and conflict-impacted individuals (Benninger et al., 2020; Marshall et al., 2020). Individuals who engage with surfing report improved wellbeing including significantly lower prevalence of symptoms of mental health disorders (i.e., depression and anxiety) and increased experiences of meditative states (Levin & Taylor, 2011).

Internationally, growing rates of mental health disorders are an escalating health concern. Mental health problems have been associated with both temporary and longstanding impacts on wellbeing, development and functioning, socialisation, academic achievement, unemployment, and elevated risk for self-harm and suicide (Australian Institute of Health and Welfare [AIHW], 2022; Department of Health [DEH], 2009; Harnois & Gabriel, 2000; World Health Organisation [WHO], 2021). In contrast, mental wellbeing encompasses resilience to common stressors and the capacity to navigate functional and productive contributions to one’s work and community (WHO, 2002). While primary care models operate for the treatment of mental health across many developed countries, uptake of service use remains variable (Bassilios et al., 2017; Eisenberg et al., 2007; Golberstein et al., 2008). As such, there is increasing interest in alternative and grassroot-based approaches to the

treatment of mental health across diverse populations and cultures (Lake & Turner, 2017; Thirthalli et al., 2016).

While several mixed methods and randomized controlled trial studies have been conducted to examine the efficacy of surf therapy as a medium to improve wellbeing (e.g., Gibbs et al., 2022; McKenzie et al., 2021; Walter et al., 2019), many surf therapy programs face the dual limitations of inadequate funding and a lack of access to both research evidence and development (Benninger et al., 2020). Some internal evaluations examining the outcomes of individual surf therapy programs have been conducted utilising the evaluation guidelines developed by the ISTO (Otis et al., 2020; Van Ewijk et al., 2020). For example, a longitudinal study of 412 participants aged eight to 18 years, engaged in The Wave Project's six week surf therapy intervention measured wellbeing outcomes such as positive functioning, competence, calmness, and fun on a modified version of the Stirling Children's Wellbeing Scale (SCWBS; Liddle & Carter, 2015) (Devine-Wright & Godfrey, 2018; Godfrey et al., 2015). The study findings showed improvements in wellbeing outcomes across multiple program delivery sites one-year post-intervention (Devine-Wright & Godfrey, 2018). Participants also reported remaining regularly engaged in a local surf club or as a surf therapy volunteer, in addition to self-reported improvements in mood, communication, and self-management (Godfrey et al., 2015). Despite this example, a consistent theme remains the lack of robust outcome metrics specifically developed for, and consistently utilised across, surf therapy programs (Walter et al., 2020). In addition, there remains a gap in the program evaluation literature for surf therapy, as thus far there have been solely individual program evaluations conducted (e.g., Gibbs et al., 2022; Marshall et al., 2019; Podavkova & Dolejs, 2022). Although a scoping review of surf therapy literature was published in recent years (Benninger et al., 2020), it included the recommendation for future studies to focus on building an evidence-based understanding of surf therapy program theory. In order to achieve a deeper understanding of program theory, it is important to first determine the existing delivery frameworks of surf therapy programs generally (i.e., across programs), as opposed to in isolation (i.e., individual program evaluation). Thus, mapping the delivery framework of existing interventions will assist in improving the gap in research between individual program evaluations and the delivery of surf therapy generally.

Currently, there exists a lack of research focused on identifying the core processes of surf therapy interventions (i.e., Marshall et al., 2019, 2020; Gibbs et al., 2022), where *processes* can be understood as a series of actions or steps taken to achieve a certain end. One study interviewed 22 participants about their experiences of surf therapy and found two themes associated with positive outcomes, namely, the capacity for self-selected progress and the creation of a physically and emotionally safe space (Marshall et al., 2019). Furthermore, the presence of varying levels of difficulty between waves, an absence of perceived judgement (from others) within the group dynamic, and elevated levels of perceived support from peers and instructors appeared to facilitate the attainment of these perceived core components. Finally, the above components translated to self-reported mental health benefits; theoretically proposed through enhancing a sense of mastery and competence (associated with

achieving a new skill), the sense of escape or reprieve, and feelings of increased social connectedness with peers. Thus, while core processes are beginning to be explored within the field of surf therapy it requires further research (Marshall et al., 2019, 2020).

As outlined above, an understanding of surf therapy program delivery frameworks and structure has previously been applied within individual programs. However, to better understand core processes (and therefore *how* a program may effect change) it is important to examine these *across* programs not just within. Creating a process map can provide an overview of the main relationships between processes and enable a succinct understanding of the operation of a program (Malinova, 2014; Malinova et al., 2014). Creating a process map is an introductory task completed prior to embarking on a process-based understanding of a program, as it provides an abstract and big picture perspective of all processes (Malinova et al., 2014). Blase and Fixen (2013) identified core components and intervention activities, as those *essential to enabling desired outcomes*. Therefore, a process map forms the foundation for understanding the program and directing changes (Malinova et al., 2014). It is evident that clarification of the core processes and relationships at work within surf therapy program delivery are necessary prior to understanding the intervention and thus inform future research which may choose to target evaluation and effectiveness.

The current study aims to examine operational processes across multiple surf therapy interventions to understand core processes of surf therapy delivery. It is proposed that a more informed understanding of the application of surf therapy interventions will facilitate improvements in the fidelity of future surf therapy programs, by illuminating core components and processes integral to program delivery. The current paper may inform research and practice for future effectiveness studies and in supporting the development of multi-site randomised controlled trials.

The research study is clinically relevant as the findings will provide a structure for improving standardisation and the ability to evaluate the efficacy of surf therapy programs where appropriate. The above will assist facilitating comparison of data and outcomes across multiple programs and target populations. Previous research on surf therapy programs has focused on analysis of individual programs and consequently lacked an overarching exploration of themes across differing programs and as applied to varied target populations. Increasing the knowledge of processes presently considered integral to surf therapy delivery is critical to establishing an evidence-based treatment in the alternative therapy space. The aim of this research study is to (i) examine program delivery across surf therapy interventions and (ii) outline program processes and relationships associated with the delivery of surf therapy.

Method

Research design

Research environment

As outlined in the research aims there exists a paucity of data on questions related to examining program delivery across surf therapy interventions, understanding processes and relationships underlying surf therapy. In addition, the paradigm of surf therapy has, for the most part, only begun to be addressed within research literature over the past decade and there is widespread recognition of its adaptability, given that it is presently applied to a diverse array of populations and contexts. Despite this lack of research across such a variety of programs and settings, the number of surf therapy programs on offer continues to grow. It has become apparent that quantitatively based exploratory approaches to examining essential aspects of current surf therapy delivery across interventions, rather than previously extensively reported within program studies of an evaluative (qualitative) nature, are particularly necessary to build greater understanding around this alternative modality and its potential mechanisms for change.

Process mapping

A process map outlines the individual steps within a process, leading to informing a diagram or progression path of the people, tasks, and decisions that make up a particular process (Department of Health and Human Services, 2015). Initially, process mapping commences with creating a high-level overview, requiring mapping out the high-level steps or stages of the process prior to examining the details, ultimately assisting in creating a greater understanding of the structure and flow of the process. Process mapping has been shown to be of value within various specialities, multidisciplinary teams and healthcare systems (Ben-Tovim et al., 2008; Trebble et al., 2010). Process mapping assists with determining what the current process is and informs evaluation of other potential improvements to the process which can result in optimisation and performance enhancement (Anjard, 1998). Given that minimal research has documented the process of surf therapy across interventions, as opposed to within, process mapping was considered both an appropriate and novel way to attempt to clarify the steps involved in delivery of surf therapy interventions. Process mapping permits researchers to observe the surf therapy participants experience by separating the delivery of surf therapy interventions into a series of consecutive activities or steps. Understanding the pathway of activities can assist with improving the surf therapy delivery (e.g., via removal of unnecessary steps) via enhancing the quality or efficiency of incorporated activities. A preliminary understanding of these steps was understood to be likely to benefit future studies which may focus further on optimisation of these steps (e.g., informing program development and optimisation).

The current cross-sectional study utilized an exploratory framework to identify core components in the delivery of surf therapy programs. Given the paucity of data on surf therapy programs, an exploratory approach informed by process mapping was considered the most appropriate design to examine integral aspects of surf therapy delivery as it currently operates, as the authors were interested in revealing the interrelated activities and resources utilised in a unique manner to understand how surf therapy creates and delivers valued outcomes (Damelio, 2011).

The questionnaire was developed and informed by prior individual program evaluation research (e.g., Devine-Wright & Godfrey, 2018; Marshall et al., 2019) and was tailored to speak to previously identified research themes (Benninger et al., 2020; ISTO, 2020; Marshall et al., 2019; Marshall, 2022). Given the unique position of surf therapy program directors or managers, the survey will be distributed to individuals in these roles, with the understanding that they hold specialized knowledge of program structure and processes.

The initial stage of developing a purposive participant sample involved clearly defining the target population (DiGaetano, 2013; Cochran, 1977). The identified population consisted of English-speaking surf therapy programs affiliated with The International Surf Therapy Organisation (ISTO). Purposive sampling was utilized to ensure more accurate matching of the participant sample to the aims and objectives of the research and to improve rigor and validity of both data and results (Campbell et al., 2020). The four benefits facilitated by purposive sampling included credibility, transferability, dependability, and confirmability (Campbell et al., 2020). For instance, given surf therapy coordinators position it was considered that these individuals were best placed to answer questions relating to process in a credible manner based on experience. Maximum variation sampling, or heterogeneous sampling, is a form of purposive sampling adopted to capture a broad array of perspectives on the topic of interest by examining it from various angles to illuminate reoccurring themes (Raj & Thapa, 2015). Thus, it was deemed most appropriate to utilise maximum variation sampling, given the authors were interested in capturing the widest range of perspectives possible to identify common patterns evident across variations from more normative to more extreme in the field of surf therapy.

A purposive sample was important, as until recently many surf therapy programs operated in isolation and without practice guidelines (ISTO, 2018). ISTO is a global community of surf therapy practitioners and researchers that aims to promote best practice standards and high impact research alongside surf therapy organizations. Given that the ISTO was currently the only practice body existing in the surf therapy space it became evident that a purposive sample of affiliated programs would be most appropriate. In addition, this sampling approach ensured greater inclusion rather than limiting the study to certain regions or cultural groups. As the study consisted of a purposive (non-random) sample, power estimates were not applicable.

Participants

All ISTO-affiliated surf therapy program directors/managers ($n=47$; representing respective programs) were invited to complete the ‘Mapping the Stoke’ online survey. A total of 38 participants, predominantly female ($n=18$), were recruited to the study. All participants confirmed holding a director or managerial position within their program. In addition, all but 3% ($n=1$), indicated that they held further roles as either a program facilitator (61%; $n=20$), a clinician (e.g., occupational therapist, social worker, psychologist, or nurse; 36%; $n=12$) or a self-described ‘other’ (e.g., supervisory/founding roles, volunteer, researcher; 27%; $n=9$). 55% ($n=18$) of surf therapy program directors/managers identified themselves as English speakers, 30% ($n=10$) as fluent in English, and 15% ($n=5$) as not fluent in English.

Materials, procedure and data collection

Email communication was utilized to invite directors of surf therapy programs affiliated with the International Surf Therapy Organisation (ISTO) to participate in the research study. A research study flyer was included with the invitation email. Data was collected using an anonymous online survey-style quantitative questionnaire hosted on the Qualtrics survey platform which allowed ISTO-affiliated surf therapy programs to engage in research participation at their convenience.

The development of the online survey was informed by the ISTO guidelines for individual program evaluation (ISTO, 2020) and the current research literature on surf therapy (e.g., Marshall et al., 2019; Devine-Wright & Godfrey, 2018). Ethical approval for the research was obtained from the participating institution, Edith Cowan University, prior to the commencement of the study. To explore integral processes utilised in current surf therapy programs, 45 ISTO-affiliated programs were invited by email to participate in the survey. The director of a surf therapy program informs not only the decisions around practice and application but also holds (expert) knowledge about process and outcomes. Thus, this role was considered the most appropriate to assist in completing the survey given the role’s intrinsic demand for a wholistic understanding of the surf therapy program model.

An online survey, ‘Mapping the Stoke’, was created on Qualtrics. Upon clicking the link to the Qualtrics survey (embedded in the research invitation email), participants were presented with an information sheet outlining details related to the purpose and engagement requirements of the research study and then required to provide consent utilizing a slide toggle. Following consent, participants were then provided access to the survey, commencing with demographic questions followed by others relating to structure, essential elements, duration, and frequency. Survey completion took on average 16 min and no identifying information was collected throughout the survey. Data collection was conducted over the course of two consecutive months, with fortnightly email prompts to encourage participants to complete the survey.

Data analysis

Data analysis was conducted using IBM SPSS V28 (SPSS, 2021). A frequency distribution table was used to outline responses from the different surf therapy programs and to identify core components across the programs. Finally, results from the survey were collated to identify relevant program features, e.g., populations, intervention type (individual/group), outcomes and measures used, to assist in identifying core components and processes of ISTO-affiliated surf therapy programs.

Results

Data screening

A total of 38 participants were recruited to the study and five of these participants were removed from the dataset for non-completion ($> 50\%$ missing data), leaving 33 participants in the final sample. Given the small sample size, descriptive nature of the current study, and Missing Completely at Random (MCAR) characteristics of the missing data, listwise deletion was applied to the cases of non-completion ($> 50\%$) as per recommended guidelines for the treatment of missing data (Kang, 2013, Tabachnick et al., 2013). In order to maximize the available responses, the three remaining cases with missing data ($< 50\%$) were retained.

Geographic delivery

Nearly half (48%) of the surf therapy programs operated within a major city (i.e., relatively unrestricted access [$0 \leq 0.20 \text{ km}^2$] to a broad variety of goods, services, and opportunities for socialization); while 46% operated within an inner regional area (i.e., some limitations to accessibility [$\text{greater than } 0.20 \leq 2.40 \text{ km}^2$] of goods, services, and opportunities for socialization); 21% operated in an outer regional area (i.e., significantly limited accessibility [$\text{greater than } 2.40 \leq 5.92 \text{ km}^2$] to goods, services, and opportunities for socialization); and only 9% operated in remote regions (i.e., very limited accessibility [$\text{greater than } 5.92 \leq 10.53 \text{ km}^2$] to goods, services, and opportunities for socialization). There were no programs based in very remote areas.

Language & cultural adaptation

Results demonstrated 58% ($n = 19$) of participants did not offer programs in a different language or provide cultural adaptations to surf therapy delivery. A further 6% ($n = 2$) offered programs in different languages, 15% ($n = 5$) included culturally specific adaptations to their programs, and 21% ($n = 7$) offered both linguistic and cultural adaptations as part of their delivery.

Target age & population

The main age group targeted by the sampled surf therapy programs was adolescents (73%; $n=24$), closely followed by young adults (70%; $n=23$), then children (48%; $n=16$), adults (40%; $n=14$), older adults (27%; $n=9$) and infants (3%; $n=1$). The primary focus areas for the surf therapy programs were mental health (73%; $n=24$), followed by youth (64%; $n=21$), children (61%; $n=20$), disadvantaged or lower socio-economic populations (52%; $n=17$), individuals with experience of trauma or adversity (48%; $n=16$), veterans or active service members (36%; $n=12$), individuals subject to social exclusion (33%; $n=11$), disability (27%; $n=9$), domestic violence (21%; $n=7$), addictions (15%; $n=5$), gender specific groups (e.g., gender affirming, men's mental health; 12%; $n=4$), cancer survivors (9%; $n=3$), and gender-based violence (6%; $n=2$). Many programs (24%; $n=8$), identified additional target groups, including emergency response workers, families, autism spectrum disorder, refugees, and minority or cultural and linguistically diverse groups.

Recruitment (program participants)

Participant recruitment was predominantly by self-referral (E.g., walk-in, google, word of mouth) (82%; $n=27$), followed by health-based referrals (E.g., hospital, GP) (49%; $n=16$), social care service referrals (E.g., non-governmental organizations) (46%; $n=15$), education-based referrals (E.g., schools) (36%; $n=12$), employment-based referrals (E.g., workplaces) (33%; $n=11$). Programs also indicated that their referrals come through additional sources (15%; $n=5$), such as family, residential homes, probation, or military.

Program structure, facilitation & delivery

Results demonstrated most surf therapy programs used a closed (I.e., set beginning and end) block of sessions (76%; $n=25$), while others had a flexible structure (movable beginning and end) (33%; $n=11$), or a one-off program model (E.g., day workshop) (12%; $n=4$). Additional engagement structures (24%; $n=8$) included week-long programs or commencing with closed and continuing with rolling (for graduates of the original program) or the opportunity to move into a mentor/training roles post-engagement. Programs reported opting for group sessions (64%; $n=21$) as opposed to individual (6%; $n=2$), while some programs provided both (30%; $n=10$). Of the programs providing group sessions, 39% ($n=13$) aimed for group sizes of between 5 and 10 individuals, 21% ($n=7$) of 10–20 participants, a further 21% extended group sizes beyond 20+ individuals, and 18% ($n=6$) preferred to maintain a group size of 3–5 participants.

The most important pre-requisite to program delivery was reported as time of day (70%; $n=23$), followed by weather conditions (58%; $n=19$), season or time of year (49%; $n=16$), safety (36%; $n=12$), and wave quality (27%; $n=11$). Furthermore, 52% ($n=17$) identified additional pre-requisites to be satisfied prior to delivery, included determining unsafe water/weather (I.e., shark attacks, tsunamis) or political

conditions (community violence/unrest/protests), psychological safety of participants, and fulfillment of necessary staff to participant supervision ratios.

The average number of sessions completed by participants in a single program cycle was between 6 and 9 sessions (33%; $n=11$), followed by 10+ sessions (24%; $n=8$), 3–5 sessions (21%; $n=7$), ‘other’ (12%; $n=4$) and 1–2 sessions (9%; $n=3$). Within the option of ‘other’, participants described delivery once or twice a week over the duration of a year. For the majority of programs average length of participant engagement exceeded 12 months (27%; $n=9$), while other programs indicated approximately 12 months (15%; $n=5$), six months (6%; $n=2$), three months (21%; $n=7$), one or two months (9%; $n=3$), a month (9%; $n=3$), a week (3%; $n=1$) or a day (9%; $n=3$). Furthermore, most programs (71%; $n=22$) endorsed participants re-engaging or re-attending surf therapy programs following completion and a further (29%; $n=9$) advised it was possible in some cases or capacity.

It was found that therapy sessions were delivered at an average frequency of once per week (58%; $n=19$), followed by ‘one-off’ sessions (15%; $n=5$), daily (12%; $n=4$), monthly (9%; $n=3$) or seasonally (9%; $n=3$), and fortnightly (6%; $n=2$). An additional 21% specified subjective or seasonally subjective session schedules. The average duration of a session was reported to be over 2 h (42%; $n=14$) or between 1 and 2 h (39%; $n=13$), with some exceptions specifying an hour (6%; $n=2$) or less (3%; $n=1$). One remaining program (3%) indicated a full day delivery option (E.g., workshop).

Surf coaches were the predominant support staff utilized for program facilitation (88%; $n=29$). Additional facilitation support staff was reported as volunteers (76%; $n=25$), psychologists (46%; $n=15$), occupational therapists (46%; $n=15$), social workers (30%; $n=10$), parents (30%; $n=10$), youth workers (24%; $n=8$), and nurses (12%; $n=4$); 30% ($n=10$) of programs utilized additional facilitator roles, including community ambassadors, coaches, substance recovery specialists, active military service members, researchers, lifeguards, and varied clinical roles (e.g., counselors, speech therapists [breath therapy], exercise physiologists, paramedics). Overall, allocation of time during surf therapy sessions prioritized being in the water (E.g., surfing), then socialization ‘on the beach’, socialization ‘in the water’, group discussion, psychoeducation, and water safety.

Goals, outcomes, challenges & therapeutic structures

Most programs provided both consent and an information form prior to program delivery (85%; $n=28$), additionally questionnaires or outcome measures were often provided (70%; $n=23$), as well as introductory session information or packs (46%; $n=15$), or ‘other’ (24%; $n=8$) including social stories, access to online resources and community and/ or an intake call. One program indicated none of the above were utilized (3%). Comparatively, 79% ($n=26$) of programs provided post-intervention materials in the form of questionnaires and/ or outcome measures, 52% ($n=17$) debriefing, 46% ($n=15$) some form of future planning, and 33% ($n=11$) certificates (E.g., of completion). A further 24% ($n=8$) provided ‘other’ post intervention materials, such as a mental health care plan or referral, debriefing,

certificate, ‘graduation’, gift (art), or follow up phone call and/ or invitation to ongoing community events and resources.

A total of 52% ($n=17$) of programs utilized validated outcome measures and an additional 15% ($n=5$) reported use of another type of measurement (I.e., qualitative; such as focus groups, un-validated measures, drawings). While 4% used alternative methods of tracking progress over time (E.g., follow up surveys) and 12% ($n=4$) did not currently use a measure. Of the programs utilizing a quantitative measure, many used region-relevant questionnaires (E.g., the Difficulties in Emotion Regulation Scale [DERS] [Gratz & Roemer, 2004]) or had designed (program-specific) evaluations 12% ($n=4$). However, 30% utilized the Edinburgh Warwick Personal Wellbeing Scale (Short or Full), 24% ($n=8$) the World Health Organization (WHO) Wellbeing Index, 12% the Children’s Hope Scale ($n=4$),

Table 1 Measures utilized pre and/ or post surf therapy interventions

Type	Scale
Quantitative	Adverse Childhood Experiences (ACEs) Questionnaire
	Adult Hope Scale (AHS)
	Brief-COPE
	Children’s Hope Scale (CHS)
	Child Revised Impact of Event Scale (CRIES)
	Connor-Davidson Resilience Scale (CD-RISC)
	Difficulties in Emotion Regulation Scale (DERS)
	Edinburgh Warwick Personal Wellbeing Scale (Full)
	Edinburgh Warwick Personal Wellbeing Scale (Short)
	General Anxiety Disorder Assessment (GAD-7)
	Gratitude Questionnaire (GQ-6)
	How I Feel (HIF)
	KIDSCREEN 10-Index
	KINDL-R
	Mindful Attentional Awareness Scale (MAAS)
	Multidimensional Body-Self Relations Questionnaire (MBSRQ)
	New General Self Efficacy (NGSE) Scale
	Patient Health Questionnaire (PHQ-9)
	Rosenberg Self-Esteem Scale
	Screen of Drug Use (SoDU)
	The Friendship Scale
	Valued Living Questionnaire (VLQ)
	WHO (Five) Wellbeing Index
	Youth Quality of Life Instrument (YQOL-S)
Other	Self-developed
	Whoop Band/ s

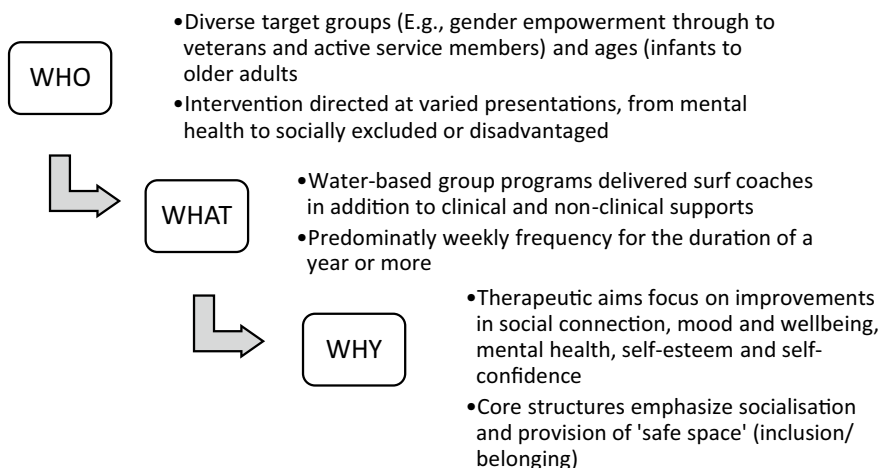
and 9% ($n=3$) the Gratitude Questionnaire. See Table 1 for the full list of scales utilized.

All programs perceived the objective of multiple therapeutic goals as integral to surf therapy delivery structure, with the majority agreeing upon increasing social connection as most important (94%; $n=31$); followed closely by improvements in mood and wellbeing (88%; $n=29$), mental health (88%; $n=29$), self-esteem and self-confidence (88%; $n=29$), then building coping skills (76%; $n=25$), increasing self-efficacy (64%; $n=21$), improving psychoeducation (46%; $n=15$), and reducing trauma-related symptoms (42%; $n=14$). In addition, other aims (21%; $n=7$) included reduction in recidivism and mental health related stigma, return to employment, improved emotion regulation and body image and enhanced physical activity.

The main challenge faced by surf therapy programs was reported to be finances or funding. This was followed by challenges to coordination/organization, staffing, retention of participants, training for staff, safety, community engagement, retention of staff, and finally achieving outcomes.

Finally, participants endorsed multiple therapeutic structures as integral to the delivery of surf therapy. The majority indicated provision of a 'physical and emotional safe space' (82%; $n=27$) and socialization-based activities (82%; $n=27$) as equally important therapeutic structures, followed by physical activity promotion (73%; $n=24$), psychoeducational activities (64%; $n=21$), coping skills training (58%; $n=19$), facilitated discussion (58%; $n=19$), community mapping (55%; $n=18$), trained volunteers (55%; $n=18$), support in overcoming population specific barriers (46%; $n=15$), adaptive surfing support (36%; $n=12$), counselling (30%;

Brief Summary of Overall Findings



Discussion

Fig. 1 Brief summary of overall findings

$n=10$), and clinically led therapies (21%; $n=7$). Additionally, several programs (15%; $n=5$) endorsed supplemental therapeutic structures including recovery/strengths-focused and trauma-informed practice, advocacy, and somatic or breath-based therapies. See Fig. 1 for a brief summary of results.

Discussion

The present research aimed to examine the delivery of surf therapy programs in order to identify program processes. The study results provided explorative information about the current delivery of surf therapy programs world-wide, given previous studies have predominantly focused on single program evaluation (e.g., Devine-Wright & Godfrey, 2020; Sarkisian et al., 2020a, b; van der Merwe & Yarrow, 2020; Walter et al., 2019). Findings from the study confirmed similarity across key domains (see Walter et al., 2020) such as population served, dosage (i.e., session frequency, duration and program length) and outcomes measured across surf therapy programs internationally.

Findings

Overall findings appear to portray a picture of substantial variation in service delivery across surf therapy programs. Some consistency existed in relation to geographic delivery location, participant age, recruitment, session structure (i.e., dosage duration), support staff, and time allocation during sessions across programs. For example, most programs report currently operating within a major city or inner regional area and participants predominantly fall within the age categories of adolescent or young adult. In addition, participant recruitment to programs appears mainly sourced through self-referral and delivery seems to occur predominantly within the context of group-based delivery via a set block of sessions. Session dosage indicated common preferences of between 6 and 9 sessions, delivered over the course of a year or more at weekly intervals for a period of 1–2 or 2+ hours. Furthermore, periods spent in the water (e.g., surfing) appeared to be the foremost priority for time allocation within sessions. Support materials (pre and post program), outcome measures, goals, main challenges, and therapeutic structures also demonstrate some consistencies across programs. Many programs offer both consent and information prior to engagement, in addition to questionnaires or outcome measures. A slightly greater number of programs provided post intervention materials (i.e., questionnaires or measures). Many programs also utilized validated outcome measures to map participant progress (the most popular identified was the Edinburgh Warwick Personal Wellbeing Index [Short or Full]), while others used either qualitative or alternative metrics.

Overwhelmingly, therapeutic goals endorsed by surf therapy programs included enhancing social connection, as well as improvements in mood and wellbeing, mental health, self-esteem and self-confidence, congruent with previous research findings (e.g., de Matos et al., 2017; Gibbs et al., 2022; Godfrey et al., 2015; Marshall

et al., 2019; McKenzie et al., 2021). The main challenge faced was identified as funding, consistent with prior research (Benninger et al., 2020; Mattila, 2020). In the present study, widely endorsed therapeutic structures included prioritising the provision of ‘safe space’ and socialization-based activities. These findings are consistent with previous research highlighting the core component of a ‘safe space’ as integral to surf therapy delivery, although the additionally identified component of ‘self-selected progress’ was not found to emerge within the present study (Marshall et al., 2019). However, it is important to observe that due to the current data being collected from practitioners (directors) as opposed to participants, there may exist subtle differences in responses or reported components of merit between the two populations.

Safe space and social environments were also important concepts highlighted in previous work examining surf therapy program practice and theory (e.g., Gibbs et al., 2022; Marshall et al., 2020). Notably, the understanding of safe space may differ based on population, age, gender, and individual presentation potentially demanding consideration as part of intervention delivery (Marshall, 2022). Furthermore, the highest endorsed therapeutic structures map to the most widely supported program delivery goals, i.e., increasing social connection and improvements in mood and wellbeing, mental health, self-esteem and self-confidence. The above suggests an overlap in commonly incorporated program delivery structure and goals across the sampled ISTO affiliated programs. However, as previously noted, it must be acknowledged that the present study represents the views of directors (practitioners) as opposed to participants and the potential for differences in perception and reporting that may exist as a result.

In addition, it emerged that many programs are not currently offered in either a different language or with cultural adaptations provided. In support of this, one suggestion posed by a surf therapy program within the present study highlighted the importance of considering the inclusion of culturally appropriated work/ research. Notably, programs such as Waves for Change provide examples of such adaptations (e.g., “Bananas’ Culture”; see Marshall et al., 2020). An aspect of this finding may be evident in the limitations of the current study, given that a portion of program directors did not identify as fluent in English or as English speakers.

As identified in earlier research, it was supported that surf therapy programs are targeting immensely varied populations internationally, in addition to illustrating an array of dosage (i.e., session frequency, duration, and program length) differences (Benninger et al., 2020; Sarkisian et al., 2020a, b). However, it also suggested that there might be more consensus than perhaps traditionally assumed (i.e., preferences for offering between 6 and 9 sessions, delivered over the course of a year or more, at weekly intervals for a period of 1–2 or 2+ hours). However, it is worth considering whether this is based in pragmatic, as opposed to therapeutic, rationale; given that few (if any) studies appear to identify best practice approaches, especially around dosage, within this space thus far.

The current research illustrated that the diversity of delivery evident across programs also extended to the type of support staff utilised (i.e., varied qualifications/training), use of validated (or other) forms of outcome measures (see Table 1 for examples), and therapeutic goals (i.e., the present study identified that all programs

were targeting more than two goals within program delivery). In part, the above supports the concern that so far research in relation to surf therapy program delivery lacks a coherent path to generalisable and widely applicable findings (Benninger et al., 2020).

Strengths and limitations

This study provides a unique contribution to the field of surf therapy research through the examination of multiple programs. A strength of this work was thus the use of a novel lens through which to observe both common ground and differences present in surf therapy delivery, given the emerging nature of this field. Findings from the above research appears to have provided a plethora of information relating to current surf therapy delivery practice internationally, particularly evident was the congruence with past research in relation to key concepts such as social connection and the importance of group therapy delivery.

The lack of inclusion around inability to offer the questionnaire in alternative languages was a limitation of the study. Potential outcomes of this limitation may have been related to the number of participants drop out in the current study, particularly given that some respondents had noted that they were not fluent in English. Another aspect of consideration related to this limitation is the concern that respondents may have unintentionally answered questions inaccurately as a result of the language barrier. A further limitation of the current study included the inability to ask participants location-specific data due to concern that this might violate anonymity of data, given the scarcity of surf therapy programs in many parts of the globe. Furthermore, the current study targeted a single perspective (that of directors/managers) and included only surf therapy programs affiliated with ISTO, thus results may not be representative of other surf therapy programs presently in operation. However, given that ISTO acts as a hub of research and guidelines within the surf therapy space, it seems unlikely that surf therapy programs seeking to engage with best practice delivery would not be associated this organisation.

Implications

Consistent with prior research, the present study illuminated the importance of contextual and population specificity in the delivery of surf therapy, even within overarching themes (such as safe spaces) and the necessity of considering contextual and population specific adaptations when deliberating on how programs are delivered (e.g., Marshall et al., 2020). More specifically, the findings of this study highlighted that all programs targeted more than one outcome goal and utilised a minimum of two or more therapeutic structures. Furthermore, it appears that the primary goals of programs are aligned with the embedded therapeutic structures. For example, creating a goal of trauma-informed practice and ensuring the concept of a ‘safe space’ is followed throughout the multiple environments which programs inhabit (I.e., sea, sand, discussion groups). However, consideration of the variety of target groups and populations for which surf therapy is being utilised may continue to impact

the ability for coherent and consistent intervention guidelines across programs. In contrast, while the aspect of diverse target groups and populations may complicate standardized research or development of universal practice guidelines, it also speaks to the person-centred or participant-led nature of surf therapy and thus perhaps also illustrates a strength of this unique intervention.

For additional consideration, is the indication that most surf therapy programs are utilising group-based approaches delivered over a certain duration of time or at least offering this modality as the main foundation for engaging with their target population. The presence of group therapy as being potentially integral to surf therapy delivery has received limited attention in previous literature with one possible exception (see Fleischmann et al., 2011). It raises the question of whether group work is indeed *essential*, or at least more effective than individual work, to surf therapy (i.e., socialisation and connectedness as a primary therapeutic mechanism).

The current study found that funding was the main challenge for surf therapy program delivery internationally and that volunteers, parents, and community members play a critical role in the delivery of programs. Given previous research has also shown that funding remains a constant challenge for surf therapy, it is not surprising that there appears to remain a high reliance on volunteer roles in program delivery (Benninger et al., 2020; Walter et al., 2020). The present study's confirmation of the element of community support within surf therapy program delivery, may potentially suggest a further perceived benefit provided by the community aspect of surf therapy delivery and as yet little explored within the research literature.

Future

Future directions for surf therapy programs based on the study results showed a demand for evidence-based interventions and that this required the development of valid and reliable methods to gather such evidence. While a number of programs reported using validated outcome measures, the diversity of such measures precluded a comparison of data across sites. It is thus essential to continue to build the space of evidence-based practice within this evolving field, as previously highlighted (Benninger et al., 2020; Walter et al., 2020). The current study identified some consistent aspects of surf therapy program delivery. Yet future research is needed to investigate the theory of change in surf therapy programs; in addition to specifically focused and deeper exploration of core components highlighted within the present study (i.e., safe spaces) (see Marshall et al., 2020, Marshall, 2022) In addition, effectiveness trials such as randomised controlled trial designs will provide robust evidence for current programs to support best practice and inform funding applications.

One potential avenue toward finding common ground across surf therapy interventions and therefore enabling easier facilitation of evidence-based trials, may be to bring together current best practice approaches and identification of endorsed metrics to create delivery guidelines as recommended previously (see Walter et al., 2020). Future research should also build on the recommendations of recent findings indicating the need for a common set of metrics, evaluation, and assessment tools

appropriate for both populations and outcomes (Walter et al., 2020). The above suggestions are likely to assist in establishing greater rigour in relation to research and outcomes across the field of surf therapy and, consequentially, enabling access to broader funding options.

Conclusion

The findings of the current study contribute valued knowledge to the delivery of surf therapy programs and provide a preliminary framework for the development of robust efficacy intervention trials. Knowledge of shared practices and differences (based on target population and intervention purpose) create opportunities for building strength, collaboration, and connection within the formative years of surf therapy program delivery. Shaping the future of surf therapy will be led by this growing knowledge and by increasing understanding of components (such as group work and social connection) which are currently being utilised effectively. Consideration of the above, and other emerging research, will assist in creating a suitable container of best practice guidelines and contribute to an evolved and informed definition of the meaning of surf therapy.

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Declarations

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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