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***THE IMPACT OF A MULTI-ACTIVITY COURSE
(MAC) ON THE WELLBEING AND BEHAVIOUR
OF RECOVERING UK MILITARY PERSONNEL
12 MONTHS POST-COURSE COMPLETION.***

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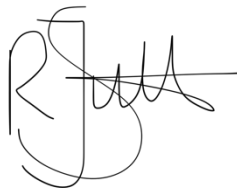
***LEEDS BECKETT UNIVERSITY
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***Submitted in part fulfilment of the degree of MSc.
Psychology of Sport & Exercise (2020)***

Declaration Page

This Major Independent Study constitutes my own work and all material that is not my own is fully acknowledged. No part of this work has been submitted for assessment elsewhere.

Signed by Author:

A handwritten signature in black ink, appearing to be 'RJB' with a horizontal line extending to the right.

Date of Author's Signature: 1st September 2020

Signed by Supervisor:

Date of Supervisor's Signature:

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The Impact of a Multi-Activit Course (MAC) on the Wellbeing and Behaviour of Recovering UK Military Personnel 12 Months Post-Course Completion.

1.0 Abstract

UK military personnel have faced increased demands since 1991; consequently, a rising trend has been observed in physical and mental health problems within the armed forces as a whole. Participation in sports programmes, in particular outdoor adventure sports, are recommended by bespoke rehabilitation centres across the globe. The Battle Back Centre delivers a bespoke inclusive multi-activity and adventurous training course, underpinned by the Self-Determination Theory, to facilitate recovery of UK wounded, injured or sick military personnel. Existing research has primarily focused on the short-term effects and, more recently, the enduring effects 6-months post-rehabilitation on psychological wellbeing however, a paucity exists surrounding the longer-term impacts. The current study aimed to address this gap by exploring the impact of a multi-activity sports programme on UK personnel's ability to make day-to-day changes to facilitate positive mental health and achieve psychological need satisfaction, 12 months post-course completion. UK military personnel who participated (N=146) in this study had all attended a 5-day Multi-Activity Course (MAC) at The Battle Back Centre twelve months previously and completed an online survey designed to provide a quantitative and qualitative representation of their experiences of the MAC recovery programme, underpinned by the self-determination theory, twelve months following completion. Findings suggest that 75% of participants found the course useful for facilitating restorative changes in behaviour 12-months after completion of a MAC.

Results indicate participants' day-to-day changes positively correlate with PPWB (98%). Relevant reported aspects of the MAC mostly align with the satisfaction of the basic psychological needs: autonomy, competence and relatedness.

2.0 Introduction

United Kingdom Military Personnel (UK MP) have faced several intense and enduring conflicts in the last three decades, such as the Gulf War, Balkan, Iraq and Afghanistan conflicts (Kaiseler, Kay & McKenna, 2019; Williamson, Diehle, Dunn, Jones & Greenberg, 2019). The sustained military operations and combat exposure inflicted casualty rates as high as those suffered in the First World War (Samele, 2013). Consequently, a rising trend in physical and mental health problems has been observed in the UK Armed Forces as a whole, between 2012 and 2020 (MoD, 2020).

Health, as defined by The World Health Organisation, is a "state of complete physical, mental, and social wellbeing, and not merely the absence of disease or infirmity" (Conference, 2002). A recent meta-analysis into the health impacts of military service concluded that at least 67, 515 Veterans in the UK, who served between 2001 and 2014, are likely to consequently suffer from a physical or mental health condition (Williamson, Diehle, Dunn, Jones & Greenberg, 2019). Physical health impairments comprise of musculoskeletal injuries, limb amputations, spinal cord and brain injuries inflicted by explosions from gunshots or explosive devices (Kaiseler, Kay & McKenna, 2019). The most frequently reported mental health conditions in UK MP who have deployed are symptoms of common mental disorders, such as depression and anxiety, and alcohol misuse (Fear et al., 2010;

Williamson, Diehle, Dunn, Jones & Greenberg, 2019). However, the development of UK MP's mental health disorders cannot solely be attributed to deployment exposure to trauma, with many disorders having no relation to deployment at all (Williamson, Diehle, Dunn, Jones & Greenberg, 2019). Non-deployed personnel have also reported physical and mental health problems due to physical testing exercises, road traffic accidents, and military training exercises such as parachuting (Jones, Hauschild, & Canham-Chervak, 2018).

Armed Forces Personnel who become wounded, injured or sick (WIS) may make a full recovery and return to duty however, many are medically discharged. The most recent data from the Military of Defence states that in the year prior to 1st April 2017, the percentage of trained regular personnel in recovery who subsequently went on to leave the Service were; 62% of Army WIS Personnel, 72% of Royal Air Force, and 7% Naval Service WIS Personnel (Kay & McKenna, 2019; MOD, 2017). Regardless of the final outcome, the uncertainty of injury and diagnosis of a career impacting illness can be challenging for many individuals and may further impair wellbeing, impact on family functioning and effectiveness of armed forces operations (Bauer, Newbury-Birch, Robalino, Ferguson, & Wigham, 2018; Forbes et al., 2013).

The number of UK personnel who engaged with military healthcare services for mental health support between 2019-20 was 1 in 8 (12.7%) (MoD, 2020). This figure represents only the presenting complaints during a patient's initial appointment with a clinician and is not-representative of the final diagnosis; many patients do not disclose or exhibit their full range of symptoms, signs or medical history during the first appointment therefore the actual statistic for total mental health problems may be much higher (Denning, Meisnere, & Warner, 2014). The Ministry of Defence

recently reported the increased risk of occupational psychological injury for UK MP with prevalence of probable post-traumatic stress disorder and alcohol misuse at 6.2% and 10.0% respectively, in comparison to the UK general population's rates of approximately 4% (Defence Committee, 2018; Stevelink et al., 2018; Stevelink et al., 2019).

In recent years, there has been a shift in focus from clinical interventions to non-clinical preventative support programmes with prioritisation of early intervention over treatment (Bauer, Newbury-Birch, Robalino, Ferguson, & Wigham, 2018; Dietrich, Joye, & Garcia, 2015; Caddick & Smith, 2018; Straits-Tröster et al., 2011). Physical activity, and adventurous activities in particular provide an intervention environment rife with opportunities for psychosocial development and mental health benefits (Buckley, Brough & Westaway, 2018; Lawton, Brymer, Clough, & Denovan, 2017). Existing research on, and delivery of, adventurous training interventions and recovery programmes in military populations has largely taken place outside of the UK and focused on ex-serving veterans; over 800 recreation therapy specialists are employed by the Veterans Affairs Health Care System (Peterson, 2017). The present study explores a recovery course being delivered to UK military personnel who are still in-service but are on temporary leave from work due to injury or illness. The Multi-Activity Course (MAC) at The Battle Back Centre is mandatory for Army and Royal Air Force (RAF) personnel who have been WIS for 28 days and aims to support participants to achieve their best possible recovery to return to duty or make a smooth transition to civilian life. This early intervention approach protects wellbeing and allows facilitation of positive outlooks for the remainder of individual recovery plans (Bauer, Newbury-Birch, Robalino, Ferguson, & Wigham, 2018).

Many military personnel report profound improvements in their mental health and wellbeing immediately after completion of a course, and these improvements are largely maintained six months post-course completion; evidencing the success of the MAC in achieving its aims for UK MP recovery (Douglas & Carless, 2015; Kaiseler, Kay & McKenna, 2019). Research has also evidenced that the positive mental wellbeing and self-determination outcomes facilitated by the Battle Back programme were achieved much earlier than equivalent interventions across the globe (Allan et al., 2020). However, whether the positive impacts of the course on participants' wellbeing are maintained a year after attendance on a MAC remains unknown. The present study aims to explore the basic psychological needs (autonomy, relatedness and competence) and mental well-being at a follow up period of one year after attendance at a Multi-Activity Course (MAC) at The Royal British Legion's (TRBL) Battle Back Centre.

3.0 Literature Review

The capacity and value of sport, physical activity and exercise to aid positive human development and improve mental health and wellbeing has been extensively researched and evidenced (Allan, McKenna, & Hind, 2012; Caddick & Smith, 2018; Caddick & Smith, 2014). Research focus surrounding military personnel in particular has increased in recent years as the potential impacts of physical activity on health and wellbeing offer an alternative rehabilitation approach to clinical settings (Bauer, Newbury-Birch, Robalino, Ferguson, & Wigham, 2018; Caddick & Smith, 2018; Hawkins, Townsend, & Garst, 2016). Mental health treatments typically include Eye Movement Desensitisation and Reprocessing (EMDR), Trauma Focused Cognitive Behavioural Therapies (TF-CBT) and prescription of pharmaceuticals, primarily Anti-

depressants, to enhance emotional regulation and reduce anxiety (Greer & Vin-Raviv, 2019; Hawkins, Townsend, & Garst, 2016). This typical medical model of care is characterised by a deficit-based approach which focuses on an individual's weaknesses and problems; potential negative side effects, such as increased anxiety, problems with sleep and depression; and barriers to access such as negative treatment beliefs and stigma among serving personnel and veterans (Greer & Vin-Raviv, 2019; Hawkins, Townsend, & Garst, 2016; Hoge, 2011; Tanielian & Jaycox, 2008). Sport and physical activity-based interventions adopt a strengths-based approach to human development to provide a more balanced and alternative approach to traditional care by focusing on reaching personal potential and mental flourishing (Greer & Vin-Raviv, 2019). Adapted sport and adventurous activities in particular provide an intervention environment rife with opportunities for restoration and development of cognitive, physical and social abilities (Buckley, Brough & Westaway, 2018; Greer & Vin-Raviv, 2019; Lawton, Brymer, Clough, & Denovan, 2017).

An abundance of research in the last two decades have suggested the physical and psychological benefits generated by physical activity, in relation to a vast range of fields such as psychology, education, sport science and public health (Allan, Hardwell, Kay, Peacock, Hart, Dillon, & Brymer, 2020). Adventure sports in particular, have been evidenced as providing opportunities for developing both physical and mental health benefits, whilst also facilitating experiential learning processes. A study exploring the experiential learning processes found enhanced wellbeing outcomes greater than the impact of physical activity alone (Thomas, 2004). Experiential learning frameworks often underpin adventure sport programmes; providing potential to directly affect in individual's health and wellbeing

and facilitate mental health interventions (Allan, Hardwell, Kay, Peacock, Hart, Dillon, & Brymer, 2020). However, for an intervention to produce deliberate impacts on everyday life, the programme must be adaptive and evidence-based; requiring a theoretical underpinning framework which justifies and supports the processes involved (Allan et al., 2020; Kaiseler, Kay, & McKenna, 2019; Peacock, Carless & McKenna, 2018; Shanahan et al., 2019).

The Self-Determination Theory is the most widely applied theoretical framework in literature measuring motivation in experiential adventure learning contexts with an underpinning of a valid theoretical and applied framework (Allan, Hardwell, Kay, Peacock, Hart, Dillon & Brymer, 2020). However, work by Shanahan et al. (2019) provide an alternative insight into the most appropriate framework in activity-based health interventions, taking into consideration the target participants and intended outcome. Self-determination Theory (SDT) outlines three basic psychological needs which, in order for humans to flourish and achieve optimal wellbeing, need to be satisfied; these are autonomy, competence and relatedness, and forms the underpinning theory of the MAC at the Battle Back Centre (Kaiseler, Kay, & McKenna, 2019). Autonomy relates to behaving with a sense of volition, endorsement and choice, or the need to feel in control on one's own life and future. Competence encompasses mastering ones' environment. Relatedness represents feeling related to one's social environment, a sense of belonging and importance to others. Based on current literature, Servicemen and women's psychological needs, well-being and overall functioning will be best served when all three basic psychological needs are met.

Physical activity and adventure sport programmes are more prevalent in the United States (US), with over 800 activity specialists delivering veterans' courses

(Hyer et al., 1996). One such programme consists of a 6-month annual hike through the Appalachian Trail which focuses on facilitating purposeful change through peer support, gradual resocialisation and the physical demands. Four key themes emerged from participating Veteran's accounts of their experiences: improved social reconnection, life-improving change, inner peace and psychological healing, processing and reflection (Dietrich, Joye & Garcia, 2015). Semi-structured interviews were utilised to understand the veterans' experiences however, no formal therapeutic component or theoretical framework was utilised to design the interviews or interpret the responses; therefore, the validity of this study can be questioned. Similarly, other wilderness experience programmes using adventure training, including a 9-day climb of Mt Kilimanjaro found veterans' experienced increased self-determination, coping skills and perceived increase in social support (Burke & Utley, 2013).

Adaptive sport and adventure programmes have been designed utilising water-based sports such as surfing, fly-fishing and river boarding (Anderson, Monroy & Keltner, 2018; Caddick, Brett & Phoenix, 2015; Dustin, Bricker, Arave, Wal; & Wendt, 2011; Mowatt & Bennett, 2011). These studies have all shown involvement in the programmes produce positive effects on the participants' wellbeing. The element of nature and its effects has largely been studied in these reports however the element of adventure sport alone warrants more in-depth research in order to investigate the transfer of coping skills to participants' every day lives.

In 2011, The Royal British Legion donated £27 million to the Defence Recovery Capability to enable the development of the Defence Adaptive Sport and Adventurous Training Centre (DASATC), now known as the Battle Back Centre. The Multi-Activity Course (MAC) is a core requirement of the individual recovery plans for

all Army WIS (Wounded [battle field casualties], Injured [non-battle field casualties], and/or Sick [mental/physical illness]) personnel, and recommended for the other two Services (Royal Air Force and Royal Navy). The MAC is built on adaptive sport and adventurous training in order to foster personal growth and development. Some examples include indoor caving and climbing, clay pigeon shooting, kayaking and mountain biking. The MAC adopts a participant-centred approach, underpinned by the Self-Determination Theory (SDT) of three basic psychological needs (autonomy, relatedness and competence) in order to facilitate optimal psychological development and mental wellbeing (Ryan & Deci, 2000). The MAC aims to support participants to achieve their best possible recovery to return to duty or make a smooth transition to civilian life (Kaiseler et al., 2019).

The UK based Battle Back programme was founded, and has been researched, since 2011 and now has a substantial evidence base regarding the positive influence the participants report. Between 2012-2015, 971 participants showed an average increase of 15.9% in positive mental well-being over the duration of the 5-day recovery course (Peacock, McKenna, Carless & Cooke, 2019). This sustained positive effect on mental wellbeing has increased to 33% in 759 participants between 2017-2018. The multiple benefits of adapted adventure has been demonstrated during the short-term recovery of UK wounded, injured and sick military personnel (Peacock, McKenna, Carless & Cooke, 2019). This study also reported a more rapid achievement of the mental wellbeing and self-determination outcomes than similar interventions delivered at different rehabilitation centres (Allan, Hardwell, Kay, Peacock, Hart, Dillon, & Brymer, 2020).

A recent study conducted by Kaiseler et al. (2019) adopted Ryff's model of psychological well-being to understand MAC participants' experiences of a MAC on

UK military personnel's ability to make changes in their day-to-day life through the lens of psychological wellbeing at a follow-up point of six months. Ryff proposes six specific well-being dimensions: autonomy, personal growth, environmental mastery, purpose in life, self-acceptance and positive relations with others (Ryff, 1989). UK MP (n = 97) completed an online survey to provide a quantitative and qualitative picture of their experiences of an outdoor and adventure sports programme, underpinned by the basic psychological need's theory, six months following completion. The study has found that 75% of respondents evaluated the course as useful for facilitating adaptive changes. This suggests that elements of the course seem to satisfy their three basic psychological needs. Activities initiated six months later mostly aligned with improved psychological wellbeing. However, this study investigated "started" changes which have been associated with more restorative behaviours, whereas the present study investigated "stopped changes" with a focus on ending deteriorative behaviours (Boehm & Kubzansky, 2012; Shanahan et al., 2019).

Shanahan et al. (2019) identified that a change to the environment or a change in behaviour is needed in order for an intervention to improve health and wellbeing. A protective relationship has been suggested to exist between positive psychological wellbeing and physical health or behaviours (Boehm & Kubzansky, 2012). PPWB is generally positively associated with restorative health behaviours (such as regular physical activity, optimism and positive self-talk) and inversely correlated with deteriorative behaviours (for example excessive alcohol consumption, smoking and self-doubt) (Boehm & Kubzansky, 2012).

Although research attention has focused on the short-term effects of these programmes, the long-term impact and sustainability of these improvements on

psychological well-being and behaviour has yet to be examined and remains unknown (Kaiseler et al., 2019; Kay & McKenna, 2019). This study aims to extend this body of research, and pioneer longitudinal research within the field, by exploring the long-term impact of an adapted adventurous multi-activity programme on the mental well-being of military personnel 12-months following course completion.

The primary research aims of the present study were as follows:

- ◇ to understand the long-term impacts of a MAC, informed by the Self-Determination Theory, on recovering UK Military Personnel;*
- ◇ to explore participants' changed behaviours through the lens of Positive Psychological Wellbeing 12 months post-MAC;*
- ◇ does the MAC have a sustained positive impact on the mental well-being and behaviours of participants, 12 months after course completion?*

4.0 Methodology

4.1 Study Design

The present study will be conducting analysis of secondary data from: An evaluation of the mental health and wellbeing of UK Service Personnel and military Wounded, Injured and Sick. Ethical approval was granted by both the Military of Defence Research Ethics Committee (MODREC Protocol Number: 562) and Leeds Beckett University Research Ethics Committee (LBUREC). The study information and consent forms clearly outlined to participants that data would be used by the Leeds Beckett University research team. The researcher is a member of the Battle Back project evaluation research team. All data received in this study was anonymised before being passed to the researcher.

The research implemented a qualitative exploration of the basic psychological needs and mental wellbeing of UK military personnel 12-months after attending the Multi-Activity Course (MAC) at the Battle Back Centre, Lilleshall. Participants completed a 5-day MAC between November 2016 and November 2018 and completed an online survey at a follow-up period of 12-months.

4.2 Participants

The 146 UK military personnel who participated in this study had all attended a 5-day Multi-Activity Course (MAC) at The Battle Back Centre twelve months previously. Participants were Wounded, Injured or Sick UK MP who had completed a MAC and who met the following criteria for inclusion: i) male and female UK Service Personnel; ii) either wounded [battle field casualties], injured [non-battle field casualties], and/or sick [mental/physical illness]; and iii) be independently mobile and

self-medicating. Out of the 87 participants who provided answers, to all of the questions being analysed in the present study, at the follow-up time point of 12-months, 81 % were Male and 19% were Female, ranging in age from 20-52 years of age (mean=33.75 years). All participants were in-service military personnel for the UK armed forces at the time of attendance on the MAC and were formally receiving support of recovery due to either being wounded, injured or sick. At the time of providing follow-up information for the present study, the participants may have returned to duty, be completing a recovery program, or have been medically discharged from the armed forces. The distribution of participants in each category are not known as this was not included within the ethical approval secured for evaluation research of MAC experiences during follow-ups. Regardless of their subsequent status military status, all participants had provided consent for the evaluative research. Ethical approval was granted by both the Military of Defence Research Ethics Committee (MODREC Protocol Number: 562) and Leeds Beckett University Research Ethics Committee (LBUREC). A participant information sheet and consent form were provided to all MAC participants at a minimum of 24 hours prior to attendance and written consent was obtained upon arrival. Continued consent was confirmed by participants online prior to completion of the 12-month follow-up survey after attendance at a MAC.

4.3 Overview of a Multi-Activity Course:

The five-day MAC targets in-service personnel who are wounded, injured or sick and is the only mandatory course for the British Army and Royal Air Force WIS personnel that uses adaptive sport and adventurous training to facilitate recovery.

The MAC aims to facilitate participants' recovery in order for them to achieve their best possible recovery and either return to service or make a smooth transition to civilian life. Each day during the MAC commences with an educational session lead by specialist coaching staff wherein new psychological concepts and coping strategies, for example motivation, attitude and goal setting are introduced. Teaching content is then contextualised each day by a person-centred delivery approach underpinned by the Self-Determination Theory (SDT) and daily opportunities to develop the three psychological needs: autonomy, competence and relatedness (Peacock, Carless, & McKenna, 2018). Opportunities are provided through various adaptive sports and adventurous training, including kayaking, mountain biking, wheelchair basketball, archery, caving and climbing (Ryan & Deci, 2001). The biological concepts and psychological theories discussed in the educational sessions are discussed and applied within small groups during the activities for facilitation of relatedness among peers (Ferrer & Davis, 2019). A 'challenge by choice' approach during activities allows for participants' to develop autonomy by choosing their level of engagement (Kaiseler, Kay, & McKenna, 2019). Autonomy is facilitated by the opportunity for participants to master sport-based challenges which follow morning discussions surrounding thought processing and mental resilience. Each day finishes with positive reflective discussions with the intentions of developing the participants' understanding of personal development and behaviour change. An extensive array of bespoke adaptive equipment and the full-time presence of a Technical Advisor ensures complete participation is enabled and all activities can be adapted to suit the needs of any individual.

4.4 Measures:

All participants completed an online survey, which was part of a larger research project aiming to establish the efficacy of the MAC and carry out longitudinal research into the basic psychological needs and positive mental health of the participants through self-completed questionnaires during the year following attendance of the course. The present study analysed one closed and two open-ended questions from the completed online survey in order to explore the experiences of UK MP 12-months after completion of a MAC. With this intent, the closed question asked: "Since being at The Battle Back Centre, have you made any changes in your day-to-day life?" and participants could select either "Yes" or "No". This was followed by the first open question, which asked: "If yes, what changes have you made? Use the example sentence "I have stopped..." to help." The second open-ended survey question asked: "What part of the Multi-Activity Course had the greatest impact on you?" which aimed to understand which aspects of the course were most enjoyed by participants.

4.5 Data Analysis

Participants' qualitative responses to the open-ended questions were analysed using content analyses; a recognised approach for its efficacy in health research and used in existing Battle Back research (Elo & Kyngäs, 2008; Kaiseler, Kay, & McKenna, 2019; Nandy & Sarvela, 1997). An abductive approach was adopted for the coding of all answers, by using pre-identified codes in line with health behaviours (smoking, alcohol consumption, sleep, physical activity/occupational activity, food consumption) and positive psychological wellbeing (positive emotion,

optimism and life satisfaction) for the first open-ended question. The second open question was analysed using the pre-identified codes of the self-determination theory: autonomy, competence and relatedness (Boehm & Kubzansky, 2012).

Existing research analysing MAC participants' experiences of a MAC at a 6-month follow-up period utilised Ryff's model of psychological well-being which proposes six specific well-being dimensions: autonomy, personal growth, environmental mastery, purpose in life, self-acceptance and positive relations with others (Ryff, 1989). However, this study investigated "started" changes which have been associated with more restorative behaviours, whereas the present study investigated "stopped changes" with a focus on ending deteriorative behaviours (Boehm & Kubzansky, 2012; Shanahan et al., 2019). Shanahan et al. (2019) identified that a change to the environment or a change in behaviour is needed in order for an intervention to improve health and wellbeing. The behaviours positively correlated with positive psychological wellbeing (PPWB) were used as pre-identified codes to analyse the qualitative responses for the second open question.

The self-determination theory is underpinned by the satisfaction of three basic psychological needs for autonomy, competence and relatedness, and forms the underpinning theory of the MAC at the Battle Back Centre (Kaiseler, Kay, & McKenna, 2019). Autonomy (A) refers to the innate need for an individual to feel in control of one's actions, decisions and life. Competence (C) concerns one's ability to master a task important to them successfully and effectively. Relatedness (R) refers to the imperative need to feel connected and a sense of belonging to others.

Some participants responded to a question with more than lifestyle change or enjoyable course element; in this case the answer was allocated more than one code to reflect each response, as appropriate.

5.0 Results

Out of the 146 UK MP that voluntarily completed the 12-month follow-up online survey, 118 responses were provided to the closed and two open-ended questions. The question “Since being at The Battle Back Centre, have you made any changes in your day-to-day life?” received 87 (74%) answers for Yes and 31 (26%) answers for No. In response to the open-ended question “If yes, what changes have you made? Use the example sentence “I have stopped...” to help.”, out of 87 answers provided, some participants reported more than one change, therefore a total of 95 responses were coded. All 95 responses were then coded, in line with health behaviours: smoking, alcohol consumption, sleep, physical activity/occupational activity, food consumption and positive psychological wellbeing: positive emotion, optimism and life satisfaction (Boehm & Kubzansky, 2012). The majority of responses implied restorative changes in behaviour, with only 2 responses reporting deteriorative changes in behaviour (Table 1 provides an overview of data coded for each behaviour and PPWB indicator). Results indicate 98% of day-to-day changes reported by participants positively correlate with PPWB. In relation to the second open-ended survey question “What part of the Multi-Activity Course had the greatest impact on you?”, out of 87 provided responses, some participants reported more than one element of the course, providing 116 responses to be coded. The 116 responses have been coded in alignment with the three basic psychological needs of autonomy, competence and relatedness that were

experienced during participation of the MAC activities (see Table 2 for an overview of coded data).

Table 1 Main themes for the question “Since being at the Battle Back Centre have you made any changes in your day-to-day life? If yes, what changes have you made? I have stopped...” (N=87).

Theme	No/Negative Change Example Quotes	Positive Change Example Quotes	Frequency N
Smoking	-	“Smoking.”	5
Alcohol Consumption	-	“Stopped drinking all the time.”	12
Sleep	-	“Staying up really late.”	4
Physical/Occupational Activity	“Physical activity – negative change.”	“No longer sofa bound.”	7
Food/Diet	-	“Taking sugar in tea and coffee.”	2
Positive Emotion	“Unfortunately, I have been feeling low again and struggling.”	“Stopped feeling so negative.”	27
Optimism	-	“Stopped thinking I can’t do something, because I can at least try.”	17
Life Satisfaction	-	“Stopped putting others before myself all the time and stopped taking work home.”	21

Note: responses could be coded as more than one theme.

Table 2 Main themes for the question “What part of the Multi-Activity Course had the greatest impact on you?” (N=87).

Theme	Elements of the Course Example Quotes	Frequency N (%)
Autonomy (A)	<p>“Realising more about myself and that I am in charge of my own destiny and that all the things I do are based on choices.”</p> <p>“The ability to stop and take stock and have time for reflection.”</p>	32 (34%)
Competence (C)	<p>“Learning I can do things if I put my mind to it.”</p> <p>“Overcoming challenges such as being afraid of heights and having the confidence to get to the top [of the climbing wall].”</p>	31 (36%)
Relatedness (R)	<p>“Meeting like-minded people.”</p> <p>“The opportunity to meet others in a similar situation to me.”</p> <p>“The camaraderie.”</p>	53 (61%)

Note: responses could be coded as more than one theme.

6.0 Discussion

This study extends existing adaptive sport and adventure training research and offers a novel insight to the efficacy of enduring impacts of a Multi-Activity Course (MAC). Overall, 12-months after completion of a MAC, 75% of participants reported as having made valuable changes in their everyday lives. This suggests the MAC helped facilitate the three basic psychological need satisfaction and positive psychological wellbeing (PPWB) for UK military personnel.

These changes are related with restorative behaviours and indicators of improved psychological wellbeing. All relative aspects of the course satisfied the three basic psychological needs of the self-determination theory, of which underpins the MAC design and delivery: autonomy, competence and relatedness (Boehm & Kubzansky, 2012; Deci & Ryan, 2001). The most prominent change reported in relation to PPWB was positive emotion, followed by life satisfaction and optimism. Restorative behaviours and positive behaviour change (i.e. alcohol consumption and smoking) were reported by 35% of participants.

The positive impact of the MAC is evident in these findings and suggesting that near transfer is facilitated from activities during the course to everyday life challenges (Kaiseler, Kay, & McKenna, 2019). Participants stated “[I] realised more about myself and that I am in charge of my own destiny and that all the things I do are based on choices” and “[Learnt] I can do things if I put my mind to it’ which implies that the programme facilitated the development of participants’ positive mindsets, improved self-confidence and purpose in life and ability to manage behaviours.

The long-term impact of adaptive sport and adventure programmes on UK MP wellbeing is also supported by these findings; deteriorative behaviours such as negative mindsets, alcohol misuse and low life satisfaction are stopped to allow for an inverse increase in self-acceptance and personal growth, in turn improving quality of life. These findings may be explained by the experiential learning and person-centred approach of the MAC delivery by expert coaching staff. A recent study quantitatively explored the short-term impacts of an adapted sport recovery programme at the Battle Centre for UK MP and found statistically significant increases in positive mental health and basic psychological need satisfaction (Peacock, McKenna, Carless & Cooke, 2019). These significant findings were also reported at a six-month follow-up conducted via qualitative abductive analysis, wherein 75% of participants reported a positive change in daily behaviours following completion of a 5-day MAC (Kaiseler, Kay & McKenna, 2019). In line with these findings, the present paper extends this knowledge at a 12-month follow-up period post-course completion of a MAC; reporting the same percentage of positive changes made by participants in their everyday lives, with a focus on stopped deteriorative behaviours.

Psychological wellbeing research has increasingly reported the wider implications of mental health and wellbeing in relation to physical functioning, brain resilience and social interactions (Allan, McKenna, & Hind, 2012). These positive outcomes are maintained a year after facilitation of development of autonomy, competence and relatedness through adaptive and adventure sport during a MAC.

The abundance and mounting research evidencing the importance of wellbeing and the positive effects of physical activity and sport, and the application of theoretical underpinnings among a military population, the present paper supports

the need for future adaptive sport and rehabilitation programmes to incorporate the three basic psychological needs into their design and delivery; as highlighted by existing research surrounding the short term impacts of a MAC (Kaiseler, Kay & McKenna, 2019).

The present findings should be considered with acknowledgement of the study's limitations to inform future research. This paper assessed self-reported survey responses by participants and adopted an exploratory qualitative analysis, potentially affecting the reliability of the responses provided and may have restricted the depth and breadth of information collated. With only 87 fully completing the survey out of the 146 which participated, meant that some participants' responses were omitted in order to obtain reliable and consistent data; this may affect the reliability of the results and may not be a fair representation of the majority of participants' experiences of a MAC after a follow-up period of a year.

7.0 Conclusions

To conclude, the present study offers a novel contribution and significant extension to existing literature, by exhibiting the enduring impacts of adaptive sport and adventure training programmes in supporting UK wounded, injured and sick military personnel's ability to make constructive changes in everyday life. This research also strengthens the support for use of the self-determination theory as an underpinning theoretical framework for adventure sport program design in order to facilitate long-term improvements in health behaviours and positive psychological wellbeing (Shanahan et al., 2019). Psychological wellbeing research has suggested the potential facilitative nature of a person-centred approach with regards to mental

health intervention outcomes; this is a key feature of the MAC delivery and may explain the positive impacts produced (Kaiseler, Kay & McKenna, 2019).

8.0 Recommendations

Future research should consider qualitative methods more comprehensive and less reliant on self-reported measures, for example a dual study design utilising both interviews and self-reported questionnaires or daily diaries, in order to more fully understand the psychological well-being experiences of participants a year after completion of a MAC. Long-term impact research should also consider comparing data collected at more regular intervals in order to explore any external influences which may have impacted on the participants' wellbeing. Future research is also needed to explore the long-term impacts of similar adventure sport interventions among serving military personnel in order to compare outcomes and greater understand the design and delivery of successful mental wellbeing recovery programmes (Allen, Hardwell, Kay, Peacock, Hart, Dillon, & Brymer, 2020). Analyses of course components, for example nature, warrants more in-depth consideration considering the importance that previous literature has identified surrounding such variables (Lawton, Brymer, Clough & Donovan, 2017). By addressing the limitation of the present study and blending the strengths of existing literature and what is now known regarding the success of a Multi-Activity adventure training programme among UK WIS MP, subsequent research can focus on refining and defining these findings even further.

9.0 References

Allen, J. F. & Hardwell, A. & Kay, C. & Peacock, S. & Hart, M. & Dillon, M. & Brymer, E. (2020). Health and wellbeing in an outdoor and adventure sports context. **Sports**, 8 (50), pp. 1-4.

Allen, J. F. & McKenna, J. & Hind, K. (2012). Brain resilience: Shedding light into the black box of adventure processes. **Australian Journal of Outdoor Education**, 16 (1), pp. 3-14.

Anderson, C. L. & Monroy, M. & Keltner, D. (2018). Awe in nature heals: Evidence from military veterans, at-risk youth, and college students. **American Psychological Association**, 18 (8), pp. 1195.

Bauer, A. & Newbury-Birch, D. & Robalino, S. & Ferguson, J. & Wigham, S. (2018). Is prevention better than cure? A systematic review of the effectiveness of well-being interventions for military personnel adjusting to civilian life. **PLoS One**, 13 (5), pp. e0190144.

Boehm, J. K. & Kubzansky, L. D. (2012). The heart's content: The association between positive psychological well-being and cardiovascular health. **American Psychological Association**, 138 (4), pp. 655-691.

Buckley, R. C. & Brough, P. & Westaway, D. (2018). Bringing outdoor therapies into mainstream mental health. **Frontiers in Public Health**, 6, pp. 119.

Caddick, N. & Smith, B. (2014). *The impact of sport and physical activity on the well-being of combat veterans: A systematic review.* **Psychology of Sport and Exercise**, 15 (1), pp. 9-18.

Caddick, N. & Smith, B. & Phoenix, C. (2015). *The effects of surfing and the natural environment on the wellbeing of combat veterans.* **Qualitative Health Research**, 25 (1), pp. 76-86.

Caddick, N. & Smith, B. (2018). *Exercise is medicine for mental health in military veterans: A qualitative commentary.* **Qualitative Research in Sport, Exercise and Health**, 10 (4), pp. 429-440.

Conference, I. H. (2002). *Constitution of the World Health Organization.* 1946. **Bulletin of the World Health Organization**, 80 (12), pp. 983.

Defence Committee. (2018). **Mental Health and the Armed Forces, Part One: The Scale of Mental Health Issues.** London: House of Commons.

Denning, L. A. & Meisnere, M. & Warner, K. E. (Eds.). (2014). **Preventing Psychological Disorder in Service Members and Their Families: An Assessment of Programs.** Washington, DC: National Academies Press.

Dietrich, Z. C. & Joye, S. W. & Garcia, J. A. (2015). *Natural Medicine: Wilderness Experience Outcomes for Combat Veterans*. **Journal of Experiential Education**, 38 (4), pp. 394-406.

Douglas, K. & Carless, D. (2015). *Finding a counter story at an inclusive adapted, sport and adventurous training course for injured, sick, and wounded soldiers: Drawn in-drawn out*. **Qualitative Inquiry**, 21 (5), pp. 454-466.

Dustin, D. & Bricker, N. & Arave, J. & Wall, W. & Wendt, G. (2011). *The promise of river running as a therapeutic medium for veterans coping with post-traumatic stress disorder*. **Therapeutic Recreation Journal**, 45 (4), pp. 326-340.

Elo, S. & Kyngäs, H. (2008). *The qualitative content analysis process*. **Journal of Advances Nursing**, 62 (1), pp. 107-115.

Fear, N. T. & Jones, M. & Murphy, D. & Hull, L. & Clversen, A. & Coker, B. & Machell, L. & Sundin, J. & Woodhead, C. & Jones, N. & Greenberg, N. & Landau, S. & Dandeker, C. & Rona, R. J. & Hotopf, M. & Wessely, S. (2010). *What are the consequences of deployment to Iraq and Afghanistan on the mental health of the UK armed forces? A cohort study*. **The Lancet**, 375 (9728), pp. 1783-1797.

Ferrer, M. & Davis, R. (2019). *Adapted Physical Activity for Wounded, Injured, and Ill Military Personnel: From Military to Community*. **Palaestra**, 33 (2), pp. 6.

Forbes, H. J. & Boyd, C. F. & Jones, N. & Greenberg, N. & Jones, E. & Wessely, S. & Fear, N. T. (2013). Attitudes to mental illness in the UK military: A comparison with the general population. **Military Medicine**, 178 (9), pp. 957-965.

Greer, M. & Vin-Raviv, N. (2019). Outdoor-based therapeutic recreation programs among military veterans with posttraumatic stress disorder: Assessing the evidence. **Military Behavioural Health**, 7 (3), pp. 286-303.

Hawkins, B. L. & Townsend, J. A. & Garst, B. A. (2016). Nature-based recreational therapy for military service members: A strengths approach. **Therapeutic Recreation Journal**, 50 (1), pp. 55-74.

Hoge, C. W. (2011). Interventions for war-related posttraumatic stress disorder. **The Journal of the American Medical Association**, 306 (5), pp. 549-551.

Hyer, L. & Boyd, S. & Scurfield, R. & Smith, D. & Burke, J. (1996). Effects of outward bound experience as an adjunct to inpatient PTSD treatment of war veterans. **Journal of Clinical Psychology**, 52 (3), pp. 263-278.

Jones, B. H. & Hauschild, V. D. & Canham-Chervak, M. (2018). Musculoskeletal training injury prevention in the U.S. Army: Evolution of the science and the public health approach. **Journal of Science and Medicine in Sport**, 21 (11), pp. 1139-1146.

Kaiseler, M. & Kay, C. & McKenna, J. (2019). The impact of an outdoor and adventure sports course on the wellbeing of recovering UK military personnel: An exploratory study. **Sports**, 7 (112), pp. 1-8.

Lawton, E. & Brymer, E. & Clough, P. & Denovan, A. (2017). *The relationship between the physical activity environment, nature relatedness, anxiety, and the psychological well-being benefits of regular exercisers. **Frontiers in Psychology**, 8, pp. 1058.*

Mowatt, R. A. & Bennet, J. (2011). *War narratives. **Therapeutic Recreation Journal**, 45 (4), pp. 286-308.*

Nandy, B. R. & Sarvela, P. D. (1997). *Content analysis re-examined: A relevant research method for health education. **American Journal of Health Behavior**, 21 (3), pp. 222-234.*

Peacock, S. & Carless, D. & McKenna, J. (2018). *Inclusive adapted sport and adventure training programme in the PTSD recovery of military personnel: A creative non-fiction. **Psychology of Sport and Exercise**, 35, pp. 151-159.*

Peacock, S. & McKenna, J. & Carless, D. & Cooke, C. (2019). *Outcomes from a one-week adapted sport and adapted recovery programme for military personnel. **Sports**, 7, pp. 135.*

Peterson, H. (2017). ***The Success of Recreation Therapy for Veterans.** Available from: <https://www.va.gov/HEALTH/NewsFeatures/2016/February/The-Success-of-Recreation-Therapy-for-Veterans.asp>.*

Ryan, R. M. & Deci, E. L. (2001). *Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. **American Psychology**, 55 (1), pp. 68-78.*

Ryff, C. D. (1989). *Happiness is everything, or is it? Explorations on the meaning of psychological wellbeing. **Journal of Personality and Social Psychology**, 57 (6), pp. 1069.*

Samele, C. & Mental Health Foundation (London, England). (2013). *The mental health of serving and ex-Service personnel: A review of the evidence and perspectives of key stakeholders. **Mental Health Foundation.***

Shanahan, D. F. & Astell-Burt, T. & Barber, E. A. & Brymer, E. & Cox, D. T. C. & Dean, J. & Depledge, M. & Fuller, R. A. & Hartig, T. & Irvine, K. N. & Jones, A. & Kikillus, H. & Lovvell, R. & Mitchell, R. & Niemelä, J. & Nieuwenhuijsen, M. & Pretty, J. & Townsend, M. & von Heezik, Y. & Warber, S. & Gaston, K. J. (2019). *Nature-based interventions for improving health and wellbeing: The purpose, the people and the outcomes. **Sports**, 7 (6), pp. 141.*

Stevellink, S. A. M. & Jones, M. & Hull, L. & Pernet, D. & MacCrimmon, S. & Goodwin, L. & MacManus, D. & Murphy, D. & Jones, N. & Greenberg, N. & Rona, R. J. & Fear, N. T. & Wessely, S. (2018). *Mental health outcomes at the end of the British involvement in the Iraq and Afghanistan conflicts: A cohort study. **The British Journal of Psychiatry**, 213 (6), pp. 690-697.*

Stevellink, S. A. M. & Jones, N. & Jones, M. & Dyball, D. & Khera, C. K. & Pernet, D. & MacCrimmon, S. & Murphy, D. & Hull, L. & Greenberg, N. & MacManus, D. & Goodwin, L. & Sharp, M. Wessely, S. & Rona, R. J. & Fear, N. T. (2019). *Do serving and ex-serving personnel of the UK armed forces seek help for perceived stress, emotional or mental health problems? **European Journal of Psychotraumatology**, 10 (1), pp. 1556552.*

Straits-Tröster, K. A. & Brancu, M. & Goodale, B. & Pacelli, S. & Wilmer, C. & Simmons, E. M. & Kudler, H. (2011). *Developing community capacity to treat post-deployment mental health problems: A public health initiative. **Psychological Trauma: Theory, Research, Practice, and Policy***, 3 (3), pp.283.

Tanielian, T. & Jaycox, L. (2008). *Invisible Wounds of War: Psychological Injuries, Their Consequences, and Services to Assist Recovery*. RAND Corporation. Retrieved from <http://www.rand.org/pubs/monographs/MG720.html>

Thomas, M. (2004). *The potential unlimited programme: An outdoor experiential education and group work approach that facilitates adjustment to brain injury. **Brain Injury***, 18, pp. 1271-1286.

UK Military of Defence. (2017). ***UK Armed Forces Recovery Capability: Wounded, Injured and Sick in the Recovery Pathway 1 October 2010 to 1 April 2017***
(https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/633445/20170727_-_WIS_Official_Statistic-April_2017_-O.pdf).

UK Military of Defence. (2020). ***UK Armed Forces Mental Health: Annual Summary & Trends Over Time, 2007/08 – 2019/20***
(https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/892426/20200618_Annual_Report_19-20_O.pdf).

Williamson, V. & Diehle, J. & Dunn, R. Jones, N. & Greenberg, N. (2019). *The impact of military service on health and well-being. **Occupational Medicine***, 69 (1), pp. 64-70.

Appendix 1 Supervisory Meeting Form 1

MIS Supervisory Meeting Form

Major Independent Study Supervisory Meeting Form

Date of Meeting: Tuesday 22nd October 2019

Time: 11am

Issues Brought by the Student: This should include progress to date; any particular problems; any assistance that is required; and any other issues (to be completed before meeting).

Ideas for topic of MIS and background reading findings for discussion with Supervisor.
Is Battle Back a feasible subject for MIS if I am a research assistant working on the project?

Issues Raised or comments from the MIS Supervisor

Discuss potential for accessing Battle Back data with Dr Chris Kay and enquire about ethical approval procedures.

Summary of Key Issues Raised During the Meeting

Meet with Dr Chris Kay to explore potential ethical difficulties and considerations.

Recommendations/Actions for Next Meeting

Read existing literature on the Battle Back courses.

Date and Time of Next Meeting: Tuesday 12th November 2019

Appendix 2 Supervisory Meeting Form 2

MIS Supervisory Meeting Form

Major Independent Study Supervisory Meeting Form

Date of Meeting: Tuesday 12th November 2019

Time: 2pm

Issues Brought by the Student: This should include progress to date; any particular problems; any assistance that is required; and any other issues (to be completed before meeting).

Potential to explore the stopped behaviours and long-term impacts of a MAC.

Issues Raised or comments from the MIS Supervisor

How would this information be analysed/build on existing literature?

Summary of Key Issues Raised During the Meeting

Consider methodology and data analyses and prepare proposal presentation for feedback.

Recommendations/Actions for Next Meeting

Prepare proposal presentation and continue reading.

Date and Time of Next Meeting: Monday 2nd December 2019

Appendix 3 Supervisory Meeting Form 3

MIS Supervisory Meeting Form

Major Independent Study Supervisory Meeting Form

Date of Meeting: Monday 2nd December 2019

Time: 12pm

Issues Brought by the Student: This should include progress to date; any particular problems; any assistance that is required; and any other issues (to be completed before meeting).

Discuss proposal presentation feedback and methodology questions.

Issues Raised or comments from the MIS Supervisor

Further background reading required to inform measures used and qualitative approach to be adopted.

Summary of Key Issues Raised During the Meeting

Further reading and start application for ethics (LBU).

Recommendations/Actions for Next Meeting

Develop ethical application.

Date and Time of Next Meeting: Monday 2nd March 2020

Appendix 4 Supervisory Meeting Form 4

MIS Supervisory Meeting Form

Major Independent Study Supervisory Meeting Form

Date of Meeting: Monday 2nd March 2020
Time: 2pm

Issues Brought by the Student: This should include progress to date; any particular problems; any assistance that is required; and any other issues (to be completed before meeting).

Discuss feedback from first application for ethics and changes/additions needed for resubmission.
Confirmation of MOD ethics to be included.

Issues Raised or comments from the MIS Supervisor

More specific details regarding methodology and supporting literature.

Summary of Key Issues Raised During the Meeting

Resubmit application for ethics.

Recommendations/Actions for Next Meeting

Resubmit application for ethical approval.

Date and Time of Next Meeting: Tuesday 11th June 2020

Appendix 5 Supervisory Meeting Form 5

MIS Supervisory Meeting Form

Major Independent Study Supervisory Meeting Form

Date of Meeting: Tuesday 11th June
Time: 11am

Issues Brought by the Student: This should include progress to date; any particular problems; any assistance that is required; and any other issues (to be completed before meeting).

Discussion of MIS sections and layout.
Agree date for submitting first draft.

Issues Raised or comments from the MIS Supervisor

Encouraging support.

Summary of Key Issues Raised During the Meeting

Develop methodology and wider reading.

Recommendations/Actions for Next Meeting

Complete first draft of two sections for submission to supervisor for feedback.

Date and Time of Next Meeting: Monday 27th July

MIS Supervisory Meeting Form

Major Independent Study Supervisory Meeting Form

Date of Meeting: Monday 27th July
Time: 11am

Issues Brought by the Student: This should include progress to date; any particular problems; any assistance that is required; and any other issues (to be completed before meeting).

Discuss feedback for two sections submitted: lit review and methodology.

Issues Raised or comments from the MIS Supervisor

More specific details needed.

Summary of Key Issues Raised During the Meeting

Develop, read and complete.

Recommendations/Actions for Next Meeting

Complete and submit MIS.

Date and Time of Next Meeting: N/A.