



## Review

# The impact of sport and physical activity on the well-being of combat veterans: A systematic review



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## ABSTRACT

**Objectives:** This review examined the potential impact of sport and physical activity upon the subjective and psychological well-being of combat veterans in the aftermath of physical or psychological combat trauma.

**Design:** A systematic review was conducted. The question guiding this review was ‘what is the impact of sport and physical activity on the well-being of combat veterans?’

**Methods:** Key databases were searched for articles relating to the use of sport *and/or* physical activity in supporting combat veterans. 11 studies were identified as relevant for inclusion. Data from these studies were extracted by means of a directed content analysis, the results of which were reported in a narrative synthesis.

**Results:** Sport and physical activity enhances subjective well-being in veterans through active coping and doing things again, PTSD symptom reduction, positive affective experience, activity in nature/ecotherapy, and quality of life. Impact on psychological well-being includes determination and inner strength, focus on ability and broadening of horizons, identity and self-concept, activity in nature/ecotherapy, sense of achievement/accomplishment, and social well-being. Participating in sport and/or physical activity can also enhance motivation for living.

**Conclusions:** The review advances knowledge by producing a synthesis of evidence that highlights the value of sport and physical activity for supporting the well-being and rehabilitation of disabled combat veterans and combat veterans diagnosed with Post-Traumatic Stress Disorder. It also develops knowledge by identifying the type of sports and physical activities used to promote well-being, offering the first definition of combat veterans in the sport literature, taking a critical approach, and highlighting the under researched role of nature-based physical activity.

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In recent years, research has attested to the value of both sport (i.e., competitive, rule-bound, structured activity) and physical activity (a broad term that encompasses many different forms of energy-expenditure, including ‘exercise’ and ‘recreation’) for enhancing the psycho-social health and well-being of disabled people (e.g., Day, 2013; Martin Ginis, Jørgensen, & Stapleton, 2012; Smith, 2013; Yazicioglu, Yavuz, Goktepe, & Tan, 2012) and people diagnosed with mental illness (e.g., Carless & Douglas, 2010; Hefferon, Mallery, Gay, & Elliot, 2013). One population in which there is mounting interest surrounding the potential impact of sport and physical activity on well-being is that of combat veterans.

Recent military operations in Iraq and Afghanistan, for instance, have thrust the issue of combat veterans’ well-being into the public consciousness and onto political agendas. Serving in these and

other theatres of war can incur heavy costs to the health and well-being of military personnel, and cause much suffering both before and after leaving the military. For example, as of August 2013, the number of US and UK troops listed as ‘wounded in action’ in Afghanistan was 19,141 and 2146 respectively (DOD, 2013; MOD, 2013). These ‘wounds’ include physical injuries, such as amputations, traumatic brain injuries (TBI) and spinal cord injuries (SCI), all of which may damage well-being. In addition, the number of veterans being diagnosed with Post-traumatic Stress Disorder (PTSD) is increasing. In the US, estimates place the prevalence of PTSD among soldiers returning from Iraq and Afghanistan as high as 31% (Tanielian & Jaycox, 2008). In the UK, data collected in a military context suggest that the rate of PTSD among combat-deployed troops is around 6.9% (Fear et al., 2010). Whilst this figure may appear low, given the on-going military presence in Afghanistan, the *total number* of veterans seeking support for PTSD is likely to rise. Besides PTSD, the incidence of other common mental health

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problems such as anxiety (20.6%) and alcohol misuse (22.5%) among combat-deployed British troops is of concern (Fear et al., 2010). As a consequence of not only the physical disabilities, but also the psychological traumas sustained in war, there currently exists among combat veterans a high level of need for treatment and support (Walker, 2010).

One way of addressing this need might potentially be through sport and physical activity. There are several reasons to believe that sport and physical activity might influence the well-being of combat veterans seeking support for PTSD and/or who have crossed the border from able-bodied to disabled as a result of war. First, sport is now routinely used in the rehabilitation of disabled combat veterans in the US (Messinger, 2010). A core assumption embedded in this use of sport is that it helps veterans refashion their lives and identities as disabled individuals (Messinger, 2010). Second, in relation to PTSD, research by Leardmann et al. (2011) indicates that higher levels of physical activity are associated with decreased odds of PTSD symptoms among US service members. These authors further suggest that physical activity may be a valuable component of treatment programs for PTSD. Third, previous research (highlighted above) indicates that both sport and physical activity have the potential to influence psycho-social health and well-being among disabled people or individuals diagnosed with mental illness. Finally, there is a growing international literature exploring the impact of sport and physical activity upon various aspects of well-being in both disabled veterans and veterans diagnosed with PTSD (e.g., Brittain & Green, 2012; Hawkins, Cory, & Crowe, 2011; Otter & Currie, 2004). However, no attempts have yet been made to review this literature and to draw conclusions regarding the impact of sport and/or physical activity upon the well-being of combat veterans.

The purpose of this study was to evaluate the current evidence base surrounding the impact of sport and physical activity upon the well-being of combat veterans. In order to achieve this aim, the systematic review method was chosen. Systematic reviews allow researchers to evaluate and interpret all the available research evidence relevant to a particular question (Glasziou, Irwig, Bain, & Colditz, 2001). The question guiding this review was ‘what is the impact of sport and physical activity on the well-being of combat veterans?’ Having defined the question, systematic reviews follow a set process for finding relevant studies, appraising and selecting studies, and summarising and synthesising the studies (Glasziou et al., 2001). Procedural guidelines (e.g., Glasziou et al., 2001; Jackson & Waters, 2005) are followed for searching, selecting, and appraising studies in order to ensure that the methods are transparent and the conclusions reproducible (Grant & Booth, 2009; Swann, Keegan, Piggott, & Crust, 2012). One key strength of this review type is it enables researchers to draw together all the knowledge on a topic area (Grant & Booth, 2009). Systematic reviews are thus valuable for condensing scientific findings from multiple studies and generating comprehensive evidence.

### Focus of the review: well-being

Well-being is important to focus on since it is a key indicator of psychological functioning and positive human health (Ryan & Deci, 2001). There are two kinds of well-being associated with the literature on positive human health. The first is termed Subjective Well-Being (SWB). SWB is purportedly comprised of a person's subjectively perceived satisfaction with their life and the balance of positive and negative emotions they feel. As Diener (2000) suggests, the experience of SWB is characterised by feeling many pleasant and few unpleasant emotions, being engaged in interesting activities, and being satisfied with one's life. According to Ryan and Deci (2001), the SWB concept derives from the *hedonic*

tradition of philosophical thought on what constitutes well-being, which suggests that happiness or pleasure are the primary goals of life. Summarising research on SWB, Lundqvist (2011) notes that objective “goods” such as health, wealth and social advantage do not always determine people's happiness and SWB. Thus, SWB is emphasised as a *subjective* evaluation of one's life (Diener, 2000).

The second type of well-being is Psychological Well-Being (PWB). Contrary to SWB, PWB derives from the *eudaimonic* tradition of philosophical thought which considers well-being in terms of personal flourishing and the fulfilment of human potential (Ryan & Deci, 2001). PWB is thought to consist of six dimensions including a sense of self-acceptance, positive relationships with others, a sense of purpose in life, living with a degree of self-determination or autonomy, the ability to manage one's environment effectively, and feeling that one is growing or progressing towards one's potential (Keyes, Shmotkin, & Ryff, 2002). Ryff (1989) argued that PWB be distinguished from SWB on the basis that happiness and pleasure do not necessarily equate with positive psychological health. Thus, she proposed that well-being may be cultivated by experiences and relationships that bring meaning and fulfilment to life, and that may result in personal growth as opposed to, predominantly, in pleasure.

### Method

#### Search strategy

Key databases were searched including SPORTDiscus, PsychARTICLES, PsychINFO, Web of Science, Scopus, and Medline. These databases are similar to those used for other systematic reviews in sport and exercise (e.g., Jefferies, Gallagher, & Dunne, 2012; Swann et al., 2012). The primary search was supplemented by hand searching of relevant journals, citation searching of all articles accepted at abstract, and by contacting lead authors in the field in order to identify articles that may not have been indexed in the above databases. This additional searching was deemed necessary because research literature is often widely dispersed and relevant studies might not be indexed in all databases (Jackson & Waters, 2005). Five articles were added through this process. The primary search was conducted using the following search strings in combination with each other:

- String 1: Veteran\* OR Military OR Soldier\* OR Combat
- String 2: Trauma\* OR PTSD OR Posttraumatic\* OR Post-traumatic\* OR Disab\* OR Amput\* OR injur\* OR wound\*
- String 3: “Leisure Time Physical Activity” OR Training OR Recreation OR Fitness OR Sport\* OR Exercise OR “Physically Active” OR “Physical Activit\*\*”

String one was used to identify articles relating to the target population (i.e., combat veterans). The term ‘veteran’ can have different meanings (Burdett et al., 2012). None of the studies eventually included in the review provided a definition of a ‘combat veteran’. However, a number of assumptions appear to be embedded in this term. For instance, ‘veteran’ implies that the individual has previously served in the military, while ‘combat’ may conceivably include all who are deployed to a warzone and exposed to the risks of combat (whether or not they occupied a fighting role). These assumptions guided our search strategy and helped us focus on the population of interest. The strategy was inclusive at this stage (including the terms ‘military’ and ‘soldier’) so as not to exclude potentially relevant articles. String two was used to narrow the target population to veterans who were identified as impacted by combat in the form of acquired disability and/or psychological trauma.

In this study, we were interested in all the various types of sport and/or physical activity that might be used to influence well-being in

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