

Evidence Compass



Summary Report

What are the physical and mental wellbeing benefits veterans achieve through participating in sporting activities?

A Rapid Evidence Assessment

August 2018

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This project utilised a rapid evidence assessment (REA) methodology. An REA streamlines traditional systematic review methods in order to synthesise evidence within a shortened timeframe. The advantage of an REA is that rigorous methods for locating, appraising and synthesising evidence from previous studies can be upheld. Also, the studies reported can be at the same level of detail that characterise systematic reviews, and results can be produced in substantially less time than required for a full systematic review. Limitations of an REA mostly arise from the restricted time period, resulting in the omission of literature such as unpublished pilot studies, difficult-to-obtain material and/or non-English language studies. A major strength, however, is that an REA can inform policy and decision makers more efficiently by synthesising the evidence in a particular area within a relatively short space of time and at less cost.

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Executive Summary

- Health is a multifaceted concept that describes a person's state of wellbeing (ABS 2001). The objective of this review is to synthesise the published research literature on the physical and mental wellbeing benefits veterans achieve through participating in sporting activities.
- **Physical wellbeing benefit** is any benefit that improves the functional capacity of the individual (ABS 2001). This benefit may be perceived by the individual or objectively measured.
- **Mental wellbeing benefit** is any benefit that improves the individual's emotions, thoughts or behaviours (ABS 2001). This benefit can almost only be perceived by the individual, but in specific situations, change may be objectively measured.
- **Sporting activity** has been defined in this report as any coordinated or organised activity that requires some degree of physical exertion. This working definition is deliberately broad in its scope to capture the continuum of physical activity.
- Reflecting the broad definition used in this review, the sporting activity interventions featured in this review fell into six categories: structured competitive sport; supervised aerobic exercise; supervised mind body exercise; supervised combined aerobic and anaerobic exercise; unmonitored unsupervised physical activity and structured recreational physical activity.
- Wellbeing outcomes were measured subjectively via participant, self-report surveys and when appropriate, supplemented by objective physical measures.
- Results were not pooled as the number of outcome measures used were too great to give confidence in homogeneity. Instead, aggregate scores of outcome measures were used to decide whether the intervention had a positive effect on veteran wellbeing.
- A comprehensive literature review, not restricted by publication date, returned twenty-seven (27) papers in all, comprising twenty-five (25) primary studies and two (2) systematic reviews (SRs). One (1) guideline met the inclusion criteria but upon closer review was deemed irrelevant.
- A publication date was not enforced onto the search strategy, as DVA wished to capture studies (e.g. case control, qualitative studies etc.) not covered by systematic reviews.

The authors of this REA appreciate that this amendment reduces the quality of evidence within the REA and DVA acknowledges this reality.

- The following number of studies were found for each category of sporting activity: structured competitive sport (n=3); supervised aerobic exercise (n=3); supervised mind body exercise (n=5); supervised combined aerobic and anaerobic exercise (n=2); unmonitored unsupervised physical activity (n=5) and structured recreational physical activity (n=7).
- The twenty-five primary studies were made up of the following study designs: randomised controlled trials (RCTs) (n=2); cohort studies (n=20); case control studies (n=2); qualitative studies (n=1) and case study (n=1).
- The evidence for each intervention was ranked via the following categories: ‘Supported’ – clear, consistent evidence of beneficial effect; ‘Promising’ – evidence suggestive of beneficial effect but further research required; ‘Unknown’ – insufficient evidence of beneficial effect; ‘Not supported’ – Clear, consistent evidence of no effect or negative/harmful effect.
- Based on the findings of this REA, sporting activity was overall categorised as ‘promising’ as a means to benefit veteran mental wellbeing but received a ranking of ‘unknown’ for its effect on veteran physical wellbeing. The rankings of evidence for each intervention are listed below:
 - Structured competitive sport: *‘promising’* for mental; *‘unknown’* for physical.
 - Supervised aerobic exercise: *‘promising’* for mental; *‘promising’* for physical.
 - Supervised mind body: *‘promising’* for mental; *‘unknown’* for physical.
 - Supervised combined aerobic and anaerobic exercise: *‘unknown’* for both.
 - Unmonitored unsupervised physical activity: *‘promising’* for mental; *‘promising’* for physical.
 - Structured recreational physical activity: *‘promising’* for mental; *‘unknown’* for physical.
- The evidence base of this REA is at a relatively low level, due to a reliance on cohort studies and the small number of higher level of evidence studies (2 SRs, 2 RCTs). Therefore, the findings of this REA need to be interpreted in this context and future, more

rigorous studies are required to investigate the relationship between sporting activity and veteran mental and physical wellbeing.

- Based on the evidence contained in this REA, and the small number of reported adverse events, any form of sporting activity could be considered as a supplement to any veteran, mental wellbeing program.

Background

Health is a multifaceted concept that describes a person's state of wellbeing (ABS 2001). The two major dimensions of wellbeing are physical health and mental health, with the third aspect, the social environment, affecting wellbeing to a lesser extent. A person's state of wellbeing is a particularly subjective notion as an ailment or disease does not necessarily suggest a poor state of being, but rather it is the person's perception of their state of health and the influence that their issue has on their quality of life which determines their wellbeing (ABS 2001).

The objective of this review was to synthesise the published academic literature on the physical and mental wellbeing benefits veterans achieve through participating in sporting activities.

Given the aim of this REA, three working definitions have been provided for physical and mental health benefits, as well as sporting activities:

Physical wellbeing benefit is any benefit that improves the functional capacity of the individual (ABS 2001). This benefit may be perceived by the individual or objectively measured.

Mental wellbeing benefit is any benefit that improves the individual's emotions, thoughts or behaviours (ABS 2001). This benefit can almost only be perceived by the individual, but in specific situations, change may be objectively measured.

Sporting activity has been defined in this report as any coordinated or organised activity that requires some degree of physical exertion. This working definition is deliberately broad in its scope so as to capture the continuum of physical activity.

Sporting activity interventions

Given the breadth of possible activities and the various means by which veterans can participate in an activity, the sporting activity interventions that feature in this REA have been differentiated into six categories. These categories are provided below as well as examples of what constituted each intervention.

Structured competitive sport

Veterans participated in a competitive sporting match (e.g. wheelchair rugby).

Supervised aerobic exercise

This exercise group involved veterans participating in an aerobic activity under supervision with measures taken either immediately following a single episode (acute effects) or following a program of aerobic exercise.

Acute effects: A single, short burst of aerobic exercise (e.g. veteran cycled on a stationary bike and measures were taken pre and post intervention).

Program effects: Veterans were supervised on multiple occasions whilst performing aerobic exercise (e.g. treadmill running program under supervision of a physiotherapist).

Supervised mind body exercise

Veterans participated in exercise that deliberately incorporated a mindful aspect to the physical movement (e.g. yoga under the supervision of a yoga instructor).

Supervised combined aerobic and anaerobic exercise

Veterans were supervised whilst performing aerobic and anaerobic exercise (e.g. a supervised gym class that involved cycling as well as the lifting of weights).

Unmonitored unsupervised physical activity

Veterans completed their physical activity in an unsupervised environment and their exercise levels were not monitored (e.g. veterans were asked to swim regularly. There was no supervision or monitoring of activity during the duration of the trial. Pre-intervention measures were compared with a single post-intervention measure).

Structured recreational physical activity

Veterans participated in physical activity that was not constrained by rules but was guided by instructors (e.g. attendance at a fly-fishing camp).

Evaluating the evidence

Assessment of the evidence was based on the following criteria:

- the **strength of the evidence base** which incorporated the quality and risk of bias, quantity of the evidence (number of studies), and level of the evidence (study design)
- the **direction** of the study results in terms of positive, negative or null findings
- the **consistency** of the study results
- the **generalisability** of the body of evidence to the target population
- the **applicability** of the body of evidence to the Australian context.

Ranking the evidence

After the evidence was evaluated, the studies were ranked as follows:

Figure 1: Categories within the intervention ranking system

a) Effect of sporting activity on *Mental* wellbeing

SUPPORTED	PROMISING	UNKNOWN	NOT SUPPORTED
	<ul style="list-style-type: none"> • Structured competitive sport • Supervised aerobic exercise • Supervised mind body • Unmonitored unsupervised physical activity • Structured recreational physical activity 	<ul style="list-style-type: none"> • Supervised combined aerobic and anaerobic exercise 	

b) Effect of sporting activity on *Physical* wellbeing

SUPPORTED	PROMISING	UNKNOWN	NOT SUPPORTED
	<ul style="list-style-type: none"> • Supervised aerobic exercise • Unmonitored unsupervised physical activity 	<ul style="list-style-type: none"> • Structured competitive sport • Supervised mind body • Supervised combined aerobic and anaerobic exercise • Structured recreational physical activity 	

'Supported' means there was clear and consistent evidence of a beneficial effect of the intervention; **'Promising'** means the evidence was suggestive of beneficial effect, but requires confirmation with additional evidence/research; **'Unknown'** is defined as insufficient evidence at present on whether or not to support the use of this intervention, or additional evidence is

required to determine efficacy of intervention; '**Not supported**' is defined as evidence suggesting that the intervention does not have an effect, or produces a harmful effect when implemented.

Implications for policy makers and service delivery

The evidence base for the effect of sporting activities on the physical wellbeing of veterans remains an under researched area, and therefore a strong recommendation cannot be made. This is despite considerable attention paid to the effect of sporting activity on the health of the general civilian population where it is commonly accepted that physical activity will improve physical wellbeing (Rutter et al, 2013; Smith-Marek et al. 2016 and Martin et al. 2015).

However, the positive, preliminary findings of this REA should encourage government and veterans alike to pursue participation in sporting activities as a means to promote veteran wellbeing. The effect of certain characteristics of sporting activity interventions on veteran wellbeing also warrants further consideration as in some studies, researchers selected specific activities (e.g. competitive, nature based recreational activity etc.) based on the group of veterans the intervention was directed towards (Caddick & Smith 2014). It is most likely that the specific qualities of these sporting activities appealed to researchers in relation to their participants, but this REA was not able to determine what factors were causal in affecting veteran wellbeing. Only three studies (Burling et al. 1992; Laferrier, Teodorski & Cooper 2015; Sporer et al. 2009b) in this investigation were found to address the benefits to disabled veterans of structured, competitive sport and it would seem prudent that further research is directed at this area given the popularity of the Warrior Games and the Invictus Games.

Further research is also required to identify the aspects of sporting activity which lead to improved wellbeing as the current research base has not controlled these variables. Mindful exercise and recreational exercise in the 'wild' environment have shown promise, but the lack of robust study design again reduces the power of these studies' findings. Similarly, greater attention should be paid to the diversity of the veteran population as to date the majority of research has focussed on Caucasian males (Whitworth & Ciccolo 2016). Likewise, asymptomatic veterans are needed in future investigations as the power of sporting activity as a preventative treatment against mental and physical issues is yet to be extensively explored. This area of research has the potential to have the greatest economic and social effect, as a positive correlation between sporting activity and wellbeing benefits may open up new welfare management programs within the military.

Moreover, the way in which studies assess for mental and wellbeing benefits could be revisited. No study appraised the effects of their intervention based on the International Classification of Functioning framework and given the wide range of self-reported outcome measures used, the research base could potentially be strengthened through the streamlining of outcome assessment. The WHO Disability Assessment Schedule 2.0 (WHODAS) has been shown to cover six domains of functioning (Cognition, Mobility, Self-care, Socialising, Life activities and Participation) and has been validated across different cultures and all adult populations (WHO 2010). The standardisation of wellbeing assessment would open up opportunities to pool data through meta-analyses and ultimately elevate the strength of the evidence base.

Conclusion

Overall, 'promising', low level evidence supported sporting activity as a means to improve the mental wellbeing of veterans with mental health issues. The amount of improvement was correlated to the amount of time in which a veteran participated in the sporting activity, but the evidence for sustained mental wellbeing benefits from participation are less well known. The evidence that underpins this REA is of a lower level (2 SRs, 2 RCTs, 20 cohort studies, 1 qualitative study, 1 case control study and 1 case study) but nonetheless findings can be made. With consideration of the low evidence base, this REA provides promising support for sporting activity as a means to improve mental wellbeing in veterans, but acknowledges that the physical wellbeing benefits are under researched. Further studies that investigate the effects of sporting activity on asymptomatic veterans are needed, as too are studies with larger sample sizes and more consistent follow-up assessments. The type of sporting activity (e.g. competitive, supervised etc.) should also be investigated further, as low level evidence suggests that veterans with comorbidities (e.g. PTSD, physical disability etc.) may benefit from certain styles of activity compared to others. Based on the evidence contained in this REA (Caddick & Smith 2014; Whitworth & Ciccolo 2016) and the minimal risk of adverse events (Cook, Stegner & Ellingson 2010), any form of sporting activity could be considered as a supplement to any veteran, mental wellbeing program.

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