

# Adjunct Activities for Mental Health Improvement for Veterans

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## Abstract

The disruptive and at times traumatic nature of military service can create mental health issues among veterans. Wounded, injured or ill personnel, even if their physical and psychological rehabilitation goes well, can experience an acute loss of purpose and structure that is provided during their military service, especially post-discharge. It is also increasingly recognised that contemporary veterans have unique requirements, and in this context, military personnel often find their traditional medical and psychological treatments are insufficient to address their needs. Fortunately, there is growing evidence that a range of exercises, such as physical activity as well as animal- and art-based activities can serve as worthwhile adjuncts to more familiar programs of rehabilitation and reintegration. There is growing evidence that these activities reduce anxiety, depression and PTSD symptoms — all of which are relevant to military personnel. The theoretical basis concerning symptom reduction includes behavioural, cognitive and neurophysiological theories. Tests of these theories may result in enhanced treatment. This paper will describe these adjunct activities and how they are being implemented with Australian Defence Force (ADF) personnel, with particular focus on the evidence and theories surrounding art-based endeavours as an adjunct to established therapies.

## Introduction

Military personnel often face abrupt and substantial changes in their lives, which can leave them feeling dislocated. Wounded, injured or ill personnel, even if their physical and psychological rehabilitation goes well, can experience an acute loss of purpose and structure that is provided during their military service. Moreover, should they ultimately discharge, they can face a further loss of meaning as they start to search for a 'new normal'.<sup>1</sup> It is also increasingly recognised that contemporary veterans have unique requirements,<sup>2</sup> and in this context, military personnel often find their traditional medical and psychological treatments are insufficient to address their needs.<sup>3</sup> Fortunately, there is growing evidence that a range of activities can serve as worthwhile adjuncts to more familiar programs of rehabilitation and reintegration, resulting in better engagement<sup>4</sup> and therefore providing new frameworks for enhanced treatment.<sup>5</sup> This paper will describe these adjunct activities and how they are being implemented with Australian Defence Force (ADF) personnel, with particular focus on the evidence and theories surrounding art-based endeavours as an adjunct to established therapies.<sup>6</sup>

The most promising adjunct activities are already widely recognised as being associated with health and wellbeing in everyday life. As distinct from the methods requiring specialised training found in

established therapies, these adjunct activities are commonly used by the general public for their intrinsic benefits of skill development, personal expression and enjoyment. As will be described below, there is increasing evidence that these same activities can be safely and effectively incorporated into treatment and rehabilitation programs for anxiety, depression and other psychological challenges.<sup>7</sup>

These activities fall into three broad classes, specifically: exercise, sport and adventure; contact with animals; and art-based endeavours. Across the Australian Department of Veterans Affairs (DVA), ADF and various ex-service organisations, these activities are being implemented or considered for contemporary veterans. The potential benefits of such activities might be taken for granted in the general public, yet the empirical and theoretical underpinnings of the activities are still being ascertained. In particular, it remains to be determined what underlying mechanisms contribute to their positive outcomes, and whether the outcomes have enduring benefits.

The following sections of this paper will address three main questions about adjunct activities:

- First, what are the adjunct activities? There will be brief descriptions of physical exercise, animal-related activities and creative art-based activities

that may already be familiar to this journal's readers. A longer description will be devoted to the use of art-based endeavours by wounded, injured or ill veterans in both the ADF and elsewhere.

- Second, what are the adjunct activities good for? The answer to this question includes a description of the empirically-demonstrated positive benefits of adjunct activities and how they supplement standard programs of treatment and rehabilitation, especially for psychological challenges that veterans often face.
- Third, how do the adjunct activities work? The answer to this question concerns the behavioural, cognitive and neurophysiological mechanisms that may underpin the effectiveness of adjunct activities. Understanding these mechanisms should assist the further refinement of the adjunct activities and their integration with standard programs of treatment and rehabilitation.

### Adjunct activities

#### Exercise, sport and adventure

The value of physical activity in the form of personal exercise, sport and adventurous training in the wellbeing of veterans has been most prominently demonstrated through the increasing use of competitive activities. The Invictus Games is one such international program in which multiple nations send wounded military personnel to an annual event to improve their recovery and rehabilitation. Another example of physical activities open to veterans is surfing, which can be adapted readily to many circumstances.<sup>8</sup> It can be pursued as either individual recreation or competitive sport. Surfing shares with adventurous training its setting in nature combined with a degree of controlled risk. Moreover, key aspects of surfing, such as the patience needed to wait for a wave, the instantaneous thrill, the demands of absorption required to stay on a wave and the connection with the untamed ocean<sup>9</sup> share broad similarities with the challenges of outdoor military activities. These similarities are then used through therapy to develop greater confidence and better coping skills for day-to-day challenges. The United States Marine Corps in conjunction with the University of Southern California has evaluated a surfing program which has yielded the desired benefits to wellbeing and PTSD symptoms of participating veterans.<sup>10</sup>

#### Animal-based activities

Since ancient Greece, the use of animals has been associated with improving general wellbeing.<sup>11</sup>

Following World War I, service dogs were used as aids for those with visual impairments and other sensory limitations. More recently, a new role for canines has seen the development of companion dogs for people with mental health challenges. The use of dogs in this manner has gained preliminary support for benefiting veterans through stress reduction, companionship and lifting of mood.<sup>12</sup> The American Veterans Administration (VA) has commenced a study into the benefits of companion dogs<sup>13</sup>, and the Australian DVA, while not yet funding companion dogs, is monitoring research on the use of dogs for companionship and practical assistance in the therapy and rehabilitation of veterans.<sup>14</sup>

In addition to dogs, the use of horses as an adjunct activity has been developing for some time.<sup>15</sup> The main benefit of using horses is through their sensitivity to human cues. A horse can respond dramatically to behavioural cues thus providing an individual with feedback on their own behaviour.<sup>16</sup> By constantly testing and adjusting behaviours as a reaction to the horse's behaviour, individuals learn to cope with their mental health symptoms. Due to the imposing nature of horses, the responses they provide, such as backing off to aggressive behaviours or crowding when submissive behaviours are displayed, may prompt individuals to be more mindful of their own behaviours.<sup>15</sup>

#### Creative art-based activities

The creation of art-based activities through *inter alia*, painting, drawing, music, writing and dramatic performance has been long recognised as potentially beneficial for people undergoing therapy and rehabilitation.<sup>17</sup> For veterans in America and Great Britain, theatre activities supported by government and military departments have been used over the past several years as an adjunct to standard therapies.<sup>18</sup> In particular, the language in the war-related plays of Shakespeare has provided veterans an appropriate distance in which to engage in therapeutic theatre involving elements of mindfulness, camaraderie and increased self-awareness.<sup>19</sup> Australian military personnel and veterans have been part of several art-based endeavours using theatre as a medium for improvement. An adaptation of a Canadian theatre-based program was found to provide confidence and optimism to Australian Veterans, through safely processing traumatic events from different perspectives.<sup>20</sup> Generally regarded as a success, the ADF adopted theatre production as a potentially useful means for assisting wounded, injured or ill veterans in their recovery and rehabilitation. The 2014 pilot project — The ADF Theatre Project — featured a professionally-written play, centred

on the stories of the cast members, most of whom themselves were wounded, injured or ill veterans. The ADF in conjunction with the Sydney Theatre Company produced 'The Long Way Home', which toured nationally and received acclaim from critics and audiences. Informal discussions with the cast members revealed that they highly valued the opportunity to be part of a team again and tell their stories with the aim of increasing public awareness of the achievements, sacrifices and challenges faced by returning veterans.

As a functional and sustainable model for the adjunct use of the creative arts, the ADF has developed a program called the Art for Resilience, Recovery and Teamwork Skills (ARRTS). It is a four-week program that for the past four years has been conducted bi-annually. The ADF ARRTS program is a non-clinical, creative art-based program that can comprise of up to four streams — visual arts; creative writing; music and rhythm; and acting and performance. The program is overseen by university academics and other specialists with training in the arts in an on-campus arts facility. The program is currently undergoing formal evaluation.

### Do adjuncts to traditional therapies really work?

The following section outlines the specific psychological benefits for of adjunct activities.

#### Exercise, sport and adventure

It has long been established that physical exercise reduces depressive symptoms, with newer research focusing on the improvements that exercise has on quality of life.<sup>21</sup> More specifically, exercise has reliable positive outcomes regardless of what may have caused the depressive symptoms. A meta-analysis of 25 randomised control trials revealed a large mean-effect size in reducing depressive symptoms, specifically 1.11 standard deviations units ( $d$ )<sup>21</sup>. Among veterans, physical activity is associated with a small but significant reduction in depression and adverse somatic symptoms (inverse odds ratios = 0.96, 0.93) such as back pain, headaches, sleep disturbance and fatigue.<sup>22</sup> In contrast, anxiety and stress-related symptoms are not discernibly lessened by exercise.<sup>23</sup>

An optimum range of exercise for general mental health was found to exist between 2.5 to 7.5 hours per week,<sup>24</sup> and that sports/physical activity in natural environments have a greater impact on improvements than non-natural environments.<sup>25</sup> Furthermore, different forms of physical activity

are variably associated with self-reported mental health.<sup>26</sup> In particular, participation in sports has been associated with small, but significant decreases in distress as measured by the General Health Questionnaire (mean inverse odds ratio = 0.45). In contrast, other physical activities such as walking and bicycling are associated with increases in stress (odds ratio = 1.953).<sup>26</sup>

#### Animal-based activities

Among civilian populations, a systematic review of studies using research designs ranging from staff surveys through pre-post designs to a randomised control trial led the reviewers to conclude that an animal-based adjunct activity to be acceptable and useful in providing relaxation, increasing happiness, reducing anxiety and increasing one-year survival following a cardiac event.<sup>12</sup> Of particular note, animal-based activities produce increases in the biomarker immunoglobulin, which does not rely on an individual having an initial positive attitude towards the animals.<sup>27</sup>

Equine therapy, which relies on a horse's response to cues from the human individual, has been found to be beneficial for reducing anxiety and post-traumatic stress-related disorders,<sup>15</sup> as well as reducing biological indicators of stress such as cortisol levels.<sup>28</sup> For example, six, two-hour sessions with horses produced medium to large reductions in posttraumatic stress symptoms ( $d = 1.21$ ), severe emotional responses to trauma ( $d = 0.60$ ), generalised anxiety ( $d = 1.01$ ), symptoms of depression ( $d = 0.54$ ) and alcohol use ( $d = 0.58$ ).<sup>15</sup> However, physical health, proactive coping, self-efficacy, social support and life satisfaction appeared to be unaffected.

#### Creative art-based activities

In contrast to the foregoing evaluations of the therapeutic effect of adjunct sports-based and animal-based activities, comparable evaluations of the impact of art-based activities are in short supply.

While exercise and animal-based therapies have a demonstrated selective impact on, respectively, depression and anxiety, art-based activities are to have a broader impact reducing both anxiety and depressive symptoms. The clinical disorders that are claimed to benefit from art-based activities include PTSD,<sup>29</sup> anxiety,<sup>30</sup> and depression.<sup>31</sup> Beyond remediation of mental health disorders, art-based activities are also claimed to increase both resilience and a sense of belonging,<sup>32</sup> two factors that are particularly pertinent within the military. Despite these claims being widespread, there has

also been an identified risk that the results may be contaminated by a confirmatory bias<sup>17</sup> and in some cases, the use of unreliable measurement methods.

Repeated searches of the literature have indicated that rigorous evaluations of art-based activities are in short supply. Three relevant studies have appeared. First, in a nonclinical laboratory setting, university students underwent a stress-inducing mental arithmetic task and a Stroop Color and Word interference task. The students then engaged in either creative drawing or a non-artistic map-reading task. The drawing task produced medium-sized reductions in stress relative to the non-artistic task ( $r = .31$ )<sup>33</sup> In the second and third studies, US veterans undergoing Cognitive Processing Therapy (CPT) for combat-associated PTSD were randomised into a group that, in addition to their CPT sessions, received art therapy sessions specifically aimed at using drawing and collage in the processing of the patient's visual trauma narrative and symptoms.<sup>34,35</sup> Over eight sessions of treatment, the results of the two studies were mixed. In one study ( $N = 31$ ) but not in a smaller pilot study ( $N=11$ ), patients in the art therapy groups showed a large-effect reduction in symptoms measured by PCL-M and Beck Depression Inventory relative to a control group of patients that continued to receive only CPT.<sup>34,35</sup>

### The underlying mechanisms

Like so many developing areas of health, there is a diverse number of theories concerning the mechanisms through which adjunct activities may achieve beneficial effects. There are, in fact, three main branches of theory-oriented to behavioural, cognitive and neurophysiological mechanisms underpinning the positive influence of adjunct activities.

#### Behavioural activation theory

Recently, a new method of therapy has been identified for treating depression. Behavioural activation aims to assist a patient in developing psychologically meaningful activities for identifying their place in the world.<sup>36</sup> This method is targeted at reducing a patient's sense of isolation from their identity, family, friends and society. According to this theory, scheduling meaningful activities and skills training<sup>37</sup> provides a sense of purpose, enjoyment and mastery. Similarly, the same activities are thought to promote increases in a sense of personal accomplishment, self-esteem and social connection.<sup>38</sup> While behavioural activation is being recognised as an effective treatment, it currently consists of a basket of multiple elements rather than a precisely-defined set of procedures.<sup>36</sup>

#### Cognitive theories

**Sense of belonging** — Central to theories of effectiveness and resilience of soldiers in combat is the role played by cohesiveness and belonging in small groups.<sup>39</sup> Similarly, a sense of belonging in a small analysis of veterans post-deployment has been found to protect against PTSD and depressive symptoms.<sup>40</sup> There is evidence that different types of service, such as part-time, can reduce a sense of belonging,<sup>41</sup> leading to an increased risk of mental health disorders such as PTSD and susceptibility to suicide.<sup>42</sup> More generally, a consistent sense of belonging with family, friends, small groups and colleagues may have far-reaching implications for the mental health of veterans both during and following service. When veterans perceive dissonance between their civilian and military cultures, they feel alienated from friends and family, reducing their sense of identity, leading to feelings of distress.<sup>43</sup> For mental health disorders such as depression and anxiety, both have symptoms of social isolation as core components.<sup>44</sup> However, belonging is part of a multifaceted concept, which may include a person's sense of physical place as well as their place in a group.<sup>45</sup> Hence, in evaluating any therapy's effect in alleviating symptoms associated with perceived isolation, it may be worthwhile to ascertain its effects on the person's sense of belonging in a place as well as in a group.<sup>46</sup>

**Cognitive flow** — Flow is commonly described as living in the present including the ability to become fully immersed in an activity with a feeling of energised focus and enjoyment, potentially losing a sense of space and time.<sup>47</sup> Flow has been discussed in the context of combat.<sup>48</sup> One notable instance was reported in the book *Black Hawk Down* where a soldier compared flow in combat to a similar sensation in surfing.<sup>49</sup> Flow has been theorised as an underlying mechanism in art-based activities, possibly leading to the positive outcomes in art therapy.<sup>50</sup> In either case, activities that produce this state may be connected to the relief of debilitating anxiety.<sup>30</sup> Along similar lines, absorption in an activity can enhance the levels of satisfaction from an optimal challenge and can increase belief in competence, thus influencing the enjoyment of activities.<sup>51</sup> However, the concept of flow and its supporting findings have recently been the subject of criticism contending, among other things, that there is a lack of theoretical and empirical consensus regarding the number and/or combination of dimensions required to classify a flow state.<sup>52</sup>

**Therapeutic alliance** — Beyond the specific features of therapeutic interventions, a set of factors around

the relationship between a client and therapist may contribute to therapeutic success.<sup>53</sup> The most widely studied common factor is the 'alliance' between therapist and patient.<sup>54</sup> This alliance is a bundle of three components: the bond of mutual trust and connection, agreement about the goals of therapy and agreement about the tasks of therapy. Similarly, the bond of mutual trust and connection are consistent with the core values and behaviours of the Australian Navy, Army and Air Force. Meta-analysis of multiple findings has revealed that alliance has a medium-sized positive effect.<sup>53</sup> In addition, the ability of a therapist to empathise with a patient has been experimentally demonstrated to improve therapeutic success.<sup>55</sup> In meta-analytic studies, empathy has small positive effects on outcomes.<sup>53</sup> A third factor that has a small positive effect entails the patient's expectations about the consequences of engaging in therapy.<sup>53</sup> While the effects are not large, recent research has highlighted the known effect of therapeutic alliance in art-based activities but also, in that context, the need for well-validated measures of the therapeutic alliance.<sup>56</sup>

**Core self-evaluations** — A higher-order dispositional trait comprised of locus of control, neuroticism, self-efficacy and self-esteem — called an individual's core self-evaluations — has been proposed as influential for an individual's effectiveness in the workplace.<sup>57</sup> This trait, when viewed as one nomological network, demonstrated greater predictive validity for job behaviours than when each trait was used in isolation.<sup>58</sup> A person's core self-evaluations have been found to be one of the best predictors for job performance and job satisfaction<sup>57</sup> and have been linked to improved goal setting.<sup>58</sup> In a therapeutic context, core self-evaluations may be associated with therapeutic success and general wellbeing. In turn, adjunct activities may increase an individual's core self-evaluations; however, the challenge at this stage is the absence of published evidence for the effect of this trait in the context of adjunct therapies.

### Neurophysiological theories

There are various theories related to neurophysiological changes in the body. As outlined below, some of these theories have been supported by measurable changes in hormones and other biomarkers. Such evidence is compelling and, to a limited extent, has been demonstrated in the context of adjunct activities.

**Endorphin release mechanisms** — Depression has been hypothesised to be linked to the pain system being activated when someone is in stress.<sup>59</sup> The way exercise could influence the pain system, is through

the positive outcomes associated with endorphins being released post-exercise. Therefore, those who associate exercise with feeling better will be encouraged further to use it to reduce depression and improve their overall health.<sup>60</sup> Likewise, pleasurable interactions with animals have also been thought to produce endorphin release leading to associations with relaxation and safety that in turn reduce at least some aspects of the PTSD symptomology.<sup>61</sup>

**Neurological theory** — At a neurological level, exercise and stress have opposing effects on the encoding of memories. In particular, the physical fitness resulting from exercise reduces interference in the manner in which memories are encoded.<sup>62</sup> Service in the military requires maintenance of physical fitness,<sup>63</sup> and ongoing exercise regimes could be a protective factor for memory-based disorders. This encoding effect could be an important factor for the veteran community who generally experience stress in combat while they are physically fit, thus possibly creating a protective factor.

**Physiological mechanisms** — When people with a mental illness have been in contact with animals, evidence of a positive effect has been gathered via a change in biomarkers such as cortisol, epinephrine, norepinephrine and blood pressure.<sup>64</sup> These effects are theorised to occur via the underlying oxytocin system.<sup>65</sup> Benefits of animal contact have also been attributed to the action of mirror neurons, whereby a patient involuntarily mimics the positive attitude of an animal in the therapeutic regime.<sup>66</sup> Although no studies concerning art therapy have been conducted with clinical and/or military populations, art therapy has been found to reduce cortisol levels and state anxiety among employees under ordinary occupational stress.<sup>67</sup>

### Conclusions

Adjuncts to traditional therapies rely on theories or mechanisms that integrate well-researched therapies with less well-tested adjunct activities to improve therapeutic outcomes. The various theories and mechanisms described in this review are still subject to ongoing research and development allowing us to better understand how they contribute to therapeutic outcomes. However, for developing and testing adjunct therapy, especially art-based activities, there are at least two impediments. First, art-based activities are not well defined. They occupy a broad spectrum of behavioural treatments ranging from recreation and leisure to therapeutic and supportive programs, as well as formalised therapy and psychotherapy.<sup>68,69</sup> Second, some advocates of art therapy fear that the development of well-defined

formulated interventions will compromise the free-form, expressive intent of art and will ultimately diminish its effectiveness.<sup>69,70</sup>

As to be expected, with a relatively new area of research, there is a high proportion of qualitative data being collected which can be expected to inform future quantitative data collection.<sup>45</sup> Discussion around research methods and lack of validated measures continues.<sup>71,72</sup> The theoretical concepts while being tested in a variety of settings are largely observational and are yet to be researched using large randomised control trials.<sup>72</sup> Where they have recently been used, they are small-scale studies.<sup>35</sup> Even from proponents of adjunct activities, there is a wariness that the lack of data remains problematic.<sup>73</sup>

Adjunct activities through their everyday enjoyment and ease of access are being increasingly used by veteran populations. There is growing evidence that these activities reduce anxiety, depression and PTSD symptoms — all of which are relevant to military personnel. The theoretical bases concerning symptom reduction include behavioural, cognitive and neurophysiological mechanisms. Regarding veterans as a special population, it remains to be determined which of the theoretical mechanisms is most relevant to their needs. Moreover, which characteristics of veterans might make them particularly suitable for different adjunctive activities also remain to be determined.

The increasing evidence base has led the ADF to develop the ADF ARRTS program — a sustainable art-based training intervention that so far has seen over 190 participants complete and present their art-based endeavours to their families, supporters and the senior leadership of the ADF. This program goes beyond good intentions and actively engages with subject matter experts in the arts and health

to holistically support veterans on their path to recovery and reintegration in their communities.

The future of this endeavour and others like it will require further research for three purposes: first, for developing an evidence base documenting the improvements in the wellbeing of military personnel in the ARRTS program; second, for uncovering which theoretical mechanisms best explain how an arts-based program leads to improvement in mental health; and thirdly, to test whether the effects are enduring.

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### Statement of Conflict of Interests

MAJ Watt is currently a reservist officer in the Australian Army and receives normal wages for his current duties in the ADF ARRTS program.

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