

Peer Outdoor Support Therapy (POST) for Australian Contemporary Veterans: A Review of the Literature

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Abstract

Peer outdoor support therapy (POST) is one approach utilised in Canada, the United States and the United Kingdom to address mental illness and distress amongst contemporary veterans. In the current paper several areas of veteran psychological therapeutic treatment are reviewed.

Research studies for therapist-led treatments and standard practice recommendations are summarised, then critiqued within the wider literature taking into account unique veteran need and known challenges to treatment which can impact responsiveness, reluctance and retention.

Research review results regarding peer support interventions and outdoor therapy interventions for non-veteran and contemporary veteran populations are outlined, alongside an overview of known POST programs for veterans.

The implications of the reviewed literature and research are discussed, particularly the need for further research into the role outdoor peer support may play for the Australian veteran population alongside other veteran mental health services.

Conflict of Interest/Acknowledgements

The literature review was completed within the context of a research article thesis submission for partial requirements for the degree of Masters of Psychology (Clinical), under supervision from Dr Nadine Pelling Senior Lecturer, School of Psychology, Social Work and Social Policy and Clinical Psychologist. The research article included an evaluation of Trojan's Trek, a POST program. Funding was provided by Trojan's Trek to the University of South Australia in relation to this evaluation. No stipulations regarding research outcomes or use of funds was attached to the provision of funding. The author had no relationship to this organisation prior to completion of this research and review.

Introduction

The unique requirements of military deployment and its impact on mental health have been well established¹⁻⁴. Given this association and the challenges to treatments with the veteran population, identifying effective approaches for treatment and early intervention to address veteran mental illness through evidence-based research is needed.

The aims in the current paper are to review peer outdoor support therapy (POST) approaches and their use with contemporary returned post-deployed (CRPD) veterans, and to contribute to the debate regarding the role such approaches play alongside the current standard practice in providing effective, culturally-suited treatment. This paper is a review of the literature and includes a research bibliography. The search methods used are included in Appendix A and the List of Terms in Appendix B.

The effects of deployment, review of current standard practice and research for psychological therapy and the literature regarding veteran reluctance to seek therapy and potential low responsiveness to some treatments are outlined. Current research evidence regarding the effectiveness of peer support, outdoor and POST approaches for non-veteran populations and CRPD veterans experiencing mental illness are reviewed and discussed.

Effects of Deployment for Contemporary Veterans

Australia's involvement in Vietnam demonstrated that many veterans experience significant reductions in mental health and wellbeing as a result of combat deployment as well as issues transitioning to post-deployment life^{1,2}. This remains a significant health issue for CRPD veterans, given the known link between military experience and reduced mental health and functioning and increased suicide risk¹⁻⁴, which is

being exposed in the course of ongoing research. The Australian Department of Veteran's Affairs (DVA) review of research identified a significant, consistent association between deployment and post-traumatic stress disorder (PTSD), anxiety and depressive disorders, alcohol misuse, suicide post-deployment and relationship conflict³.

Bleier et al.⁵ surveyed 5,911 current and former Australian Defence Force (ADF) personnel and found that deployment was significantly associated with negative mental health as measured by self-report clinical questionnaires when compared to those who were not deployed. The researchers found that multiple deployments had a cumulative negative effect on mental health ($p < 0.01$). This link was not found by Hodson et al.⁶ in their 2010 ADF Mental Health and Wellbeing Study (MHWS), which utilised only current serving personnel and not veterans. More recently, Warren Snowdon, Minister for Defence, Science and Personnel, stated that as of June 2012, 32% of all ADF soldiers medically discharged after deployment to the Middle East were discharged due to mental health conditions directly resulting from deployment⁷.

Military service alone is associated with higher mental illness rates, regardless of deployment. The 2010 ADF MHWS showed PTSD rates for 24,481 currently serving ADF personnel were almost double that of the non-military Australian population and total mental health disorder rates were significantly higher⁶. Kaplan and colleagues estimated that the suicide rate for male veterans is double that of the non-veteran population⁸, thus also indicating a higher vulnerability for those who have left military service. In acknowledgement, transition from service is recognised as a key commitment area within the 2011 ADF Mental Health and Wellbeing Strategy⁹.

In particular, CRPD veterans experience situations which may result in a higher mental health risk than previously experienced. For example, the heightened use and efficiency of modern improvised explosive devices (IEDs) in civilian centres amongst other challenges not experienced in previous wars require hypervigilance^{10,11}. One study found that a significant increase in errors of memory and attention (scanned before and 4 months after combat deployment) was seen in Dutch military deployed to Afghanistan compared with those not deployed (22 deployed, 26 in training)¹². These deployed personnel also exhibited weaker neurobiological connections and pre-frontal cortex brain tissue damage compared to the non-deployed and these were not related to blast impacts or other causes. Most reduction in functioning was reversed after 1.5 years, except for the connection strength between the midbrain and prefrontal cortex,

potentially indicative of ongoing function reduction resulting in a permanent heightened susceptibility to future stress¹². ADF re-deployment rates are often more frequent than a minimum of 1.5 years and that recommended by the intergovernmental military alliance North Atlantic Treaty Organisation (NATO). Deployments are also longer than experienced by the ADF previously⁵, indicating that returning service personnel may not be given the time required for their neurological function to recover.

When mental health issues occur as a result of military experience as outlined above, such military-related stress can be defined as "any persistent psychological difficulty resulting from operational duties" (p. 266)¹³. This includes the experience of anxiety, depression and PTSD. It is not only the cumulative trauma from deployment but the readjustment process required after returning from deployment which often results in experiences of emotion dissociation, hyper-arousal and vigilance and aggression. Such states are necessary and useful functions within deployment¹⁴ and are encouraged within the significant physiological and mental preparation for military service. However they become maladaptive once such skills are no longer required and, when maintained long-term, are indicators of PTSD. For many, the autonomic nervous system threat-arousal response is chronically heightened after returning from combat, resulting in cumulative physiological effects of stress or 'allostatic load', greatly increasing the risk of physical and mental illness for veterans^{3,15}. Difficult for many to unlearn, such states affect long-term individual and relationship functioning, including affect shut-down to avoid anger and they reduce engagement and therapy success¹⁶⁻¹⁸.

Therapist-led Psychological Treatment for Veterans

Current Standard Practice and Treatment Reviews

Individual prolonged-exposure (PE) and trauma-focused cognitive behaviour therapy (CBT) are recommended first-line interventions for both military-induced PTSD and PTSD in Australian non-military populations¹⁹⁻²³. Although it is controversial to compare veteran experiences across countries, international studies have been included in the current review given the small number of Australian studies available relating to CRPD veterans. Rothbaum et al.¹¹ conducted a review of evidence-based treatments for CRPD veterans with PTSD from the United States (U.S.), Iraq and Afghanistan deployments. The authors concluded that CBT exhibited the greatest empirical support with non-military populations. Warfe et al.²⁴ also reviewed the

international literature into individual PE therapy, cognitive therapy and cognitive restructuring for CRPD veterans. Twenty systematic reviews, 34 randomised controlled trials (RCTs) and other non-RCT studies were found which supported the recommendations above; however very few utilised CRPD veteran or current serving military.

Primary Veteran and Military Population Treatment Studies

Twelve studies into therapeutic treatments with CRPD veterans were found and are summarised in Table 1. Please refer to the Table for intervention and population details and main findings. Four were RCTs with two incorporating non-treatment waitlist controls. Four of the longitudinal studies involved either U.S. or Australian veterans returned from Iraq or Afghanistan deployments and Vietnam veterans. Two studies used only Vietnam veterans, while five did not indicate the deployment era. All included predominantly male participants.

All of the studies found show reductions in PTSD or improvement in wellbeing. Of the research found, one small-sample RCT showed individual PE therapy was effective for reducing PTSD symptoms for Vietnam veterans from the US, but not in reducing behavioural avoidance or increased sleep²⁵. Group PE therapy has been found in two studies to be associated with reductions in PTSD symptoms and depression and improved functioning in sleep for Vietnam, Gulf War and Iraqi deployed U. S. veterans, with one study showing 36% no longer met PTSD diagnosis criteria^{26,27}. Both studies were small with no control group. Khoo, Dent and Oei's longitudinal study found that self-reported reductions in PTSD, depression, anxiety, anger, alcohol use, and quality of life were maintained at 12-month post-group CBT treatment for 496 veterans, with only marriage satisfaction not significantly different²⁸. Changes were independent of concurrent individual treatment.

Two studies found U. S. veterans receiving individual cognitive processing therapy (CPT) exhibited reduced PTSD symptoms more rapidly and decreased avoidance, compared to waitlist controls²⁹. Morland et al. found that group therapy was effective regardless of the mode (face-to-face or via teleconference)³⁰. Blevins, Roca and Spencer noted 63 U. S. veterans who attended an acceptance and commitment therapy (ACT) workshop showed significantly less depression, anxiety and PTSD symptoms and increased relationship satisfaction when compared to control participants³¹. Providing PE via virtual reality has also been researched. Reger and Gahm present a case study³² and a U.S. RCT with 19 active military personnel from Iraqi and Afghanistan deployments

Table 1. Summary of quantitative research into main treatment approaches (non-POST) for veterans experiencing combat-related stress.

Authors and year	Research trial	Intervention	Veteran population	Main findings	P value	Effect size d
Beidel et al. ²⁶ 2011 U.S.	RCT (no treatment control)	Individual - 'trauma management therapy' (TMT) exposure therapy (14 weeks) + group social emotional rehab (14 sessions) vs. individual exposure	30 male Vietnam veterans with chronic PTSD. 14 TMT, 16 control.	Post-treatment: Reduction in PTSD symptoms (CAPS), anxiety and depression both groups	p<0.001	Not measured
Blevins et al. ³¹ 2011 U.S.	Longitudinal with control	Acceptance and Commitment Therapy (ACT) group workshop	144 veterans (63 ACT, 81 control)	Increase in social activity for TMT		
				No difference: hours of sleep or behavioural avoidance	p < 0.01	Not measured
				Significant declines in depression, and increased relationship satisfaction	p < 0.01	
Chard et al. ³⁴ 2010 U.S.	Longitudinal between-groups	Individual Cognitive processing therapy – various treatment lengths (I & A veterans M 10.67 sessions; V veterans M 13.24 sessions).	101 male veterans. 51: Iraq and Afghanistan wars. 50: Vietnam war	Post-treatment. No difference between veteran groups. Not significant change pre-post treatment.	None.	Not measured
Creamer et al. ⁷³ 2006 AUST	Longitudinal 2 years post-treatment (no control)	12 week group DVA 'specialised veteran PTSD treatment' + 6-12 individual sessions	1508 Vietnam veterans at 24 months	2 years post-treatment: Sustained reduction from baseline PTSD	p<0.001	0.85
				Anxiety	p<0.05-	0.5
				Depression	0.01	0.5
Khoo et al. ²⁸ 2011 AUST	Longitudinal (no control)	Group CBT (6 weeks)	496 veterans	At 12 months compared to baseline: reduced PTSD, depression, anxiety, anger, alcohol use, increased quality of life. No change marriage satisfaction.		PTSD = 0.68
						Others = med
						MS = 0.2

Authors and year	Research trial	Intervention	Veteran population	Main findings	P value	Effect size d
Macdonald et al. ²⁸ 2011 U.S.	RCT	Individual CPT (12 sessions over 6 weeks) vs waitlist	60 veterans with PTSD (6 female)	3, 6 and 10 week measures: more rapid decline of PTSD symptoms, decrease in avoidance	p=0.03 p=0.04	0.05
McGuire et al. ²² 2011 AUST	Longitudinal (no control)	DVA funded PTSD group treatment programs	984 veterans	9 months compared to baseline: Significant reduction of scores PTSD checklist military version, increased quality of life, psychological, family functioning and reduced anxiety and depression and anger	p<0.0001 P=0.0004 P=0.004 P=0.002	
McLay et al. ³² 2011 U.S.	RCT	Virtual reality exposure therapy once a week over 10 weeks.	19 active military personnel Iraqi and Afghanistan conflicts	Significant reduction in PTSD in 70% of virtual reality participant symptoms measured by CAPS, compared to treatment as usual participants whose symptoms had changed. Mean PTSD reduced significantly however no overall difference before or after treatment between groups.	p<0.01	
Morland et al. ³⁰ 2011 U.S.	RCT (no treatment control)	Group CPT. Face to face or teleconference (12 sessions over 6 weeks).	10 veterans (5 face to face; 5 teleconference).	No difference between groups. Reductions in PTSD symptoms post-treatment, and at 6 month follow up	p>0.05 p=0.004 p=0.005	Not measured
Ready et al. ²⁶ 2012 U.S.	Longitudinal (no control)	Group-based exposure therapy 16 weeks, twice a week	30 (3 groups of 10) 27 Vietnam, 2 Iraq, 1 Gulf war/Panama	Follow up 7-11 months post-treatment: PTSD symptoms sign lower.		0.89
				Reduction in depression.		0.70
				36% no longer met criteria for PTSD.		
Swanson et al. ²⁷ 2009 U.S.	Longitudinal (no control)	Group CBT exposure therapy and rescripting (10 sessions)	10 Vietnam and Gulf war veterans	Last session compared to baseline: increased sleep efficiency increased sleep onset latency reduced insomnia reduced weekly nightmare distress reduced nightmare frequency increased sleep quality reductions in PTSD		1.01 0.89 1.14 1.7 0.49 0.73 0.42
Yoder et al. ⁷⁴ 2012 U.S.	Longitudinal between-groups	Individual PE therapy (varied session length)	112 total (9 female) Vietnam (34), Iraq and Afghanistan (61) Gulf War (17)	All groups – significant reduction in PTSD symptoms. Gulf war veterans, reduced rate of change compared to other veteran groups.	p<0.01 p<0.01	Medium

Note: d= Cohen's d for effect size (Cohen, 1988) 0.2 = small, 0.5 = medium, 0.8 = large

showed significant reductions in PTSD symptoms for 70% of participants compared to treatment as usual, although no overall group differences were evident³³.

Studies which utilised CRPD veteran participants had a small sample size, used a convenience sample and had no control group, increasing the risk of bias and errors. General limitations also exist given the number of studies where no deployment era was mentioned, or utilised Vietnam veterans only. For example Chard et al. found positive therapeutic change in U.S. veterans from the Iraqi, Afghani and Vietnam conflicts involved in individual PE therapy³⁴. Their study showed younger veterans exhibited a trend toward reduced PTSD post- CPT compared to Vietnam veterans, after accounting for sessions attended and initial PTSD severity, indicating that contemporary veterans may be more responsive to treatment regardless of symptoms severity.

The individual studies show clinical significance supporting the use of individual PE therapy and CPT with veterans. However, while the treatment recommendations are clear, there are limitations as listed above, and they appear based predominantly on empirical research with non-military populations generalised to military and veteran groups. Although supporting the current first-line recommendations for standard practice with veterans, several review authors concluded that research into therapies directly utilising military populations is insufficient. Available trials for their reviews were mostly with Vietnam veterans and limited in sample size, limiting general application to the CRPD population^{11,15,22}.

Challenges in the treatment of military veterans

Despite empirical support for the treatments outlined above, evidence suggests that many CRPD veterans affected by PTSD may be reluctant to seek treatment and show reduced responsiveness and low retention in individual therapist-led treatments. Help-seeking may be impaired by attempts to maintain a strong self-view, fear of prejudice in current or future work opportunities, and mistrust factors regarding therapist likeness-to-self, given military cultural group identity^{13,35,36}. In addition, if veterans perceive indifferent or ignorant responses when initially help-seeking this may hinder future help-seeking and treatment responsiveness^{17,37}.

Military culture promotes emotional toughness, strength and camaraderie where mental illness is still seen as malingering or weakness^{17,19} despite recent awareness efforts, inconsistent with help-seeking behaviour and treatment responsiveness. While necessary for survival in combat, such a culture often means that acknowledging a mental health issue is counter to one's self-identity¹⁵, creating social

isolation in dealing with a negative mental health experience^{16,17}. The MHWS showed for example that 48.8% of current serving military personnel who met the criteria for PTSD were not receiving treatment. Of those meeting criteria for a generalised anxiety disorder, 24.4% were not receiving treatment, nor were 85% who meet criteria for an alcohol disorder⁶.

Creamer and Forbes¹⁵ concluded that psychological treatments, although beneficial, appeared less effective for veterans than for non-veteran populations. Creamer et al.¹⁹ observed that effect sizes for change for veteran populations are often lower than for non-veteran populations for the same treatment approach. This review also indicated that the military training and the requirement to shut-off emotion to be able to complete combat tasks is a key factor in reduced treatment response¹⁵. Arousal mal-adaption is seen in the pairing of stress with anger, and veterans may use numbing and dissociation to avoid anger in civilian life, particularly with loved ones. They argue that veterans with mental illness may show less responsiveness to PE therapies until such arousal pairing is addressed first, thus general CBT and some PE therapy approaches may be ineffective²⁶. In addition, Garcia et al. showed in their study that 68% of 117 U. S. veterans returning from Iraq and Afghanistan terminated treatment before completion³⁸. This highlights the need to consider carefully when using general CBT and PE approaches with this unique group.

Evidence for POST with Non-military Populations

Although autobiographies such as *Exit Wounds*³⁷ and other public media exposures may slowly change the stigma of mental illness in the Australian military³⁹, the unique experience of CRPD veterans indicates a need to explore the evidence-base for innovative interventions provided outside of the clinical and hospital context, particularly when addressing seeking treatment, retention/engagement and responsiveness. In particular, peer and outdoor group approaches for treating PTSD and depression may illuminate effective alternative treatment approaches that will engage veterans.

Peer Support Intervention Evaluation

Peer support is a widely used intervention for mental illness within non-military populations. Table 2 summarises 15 research studies found which measured peer support approaches with non-military populations, including intervention, population and their main findings.

In the U.S. 47% of 13,513 substance abuse treatment facilities surveyed in 2009 offered some form of peer-support service⁴⁰. It is also estimated

Table 2. Summary of research into peer mentor approaches for non-military populations.

Authors and year	Research trial	Intervention	Population	Main Findings	P value	Effect size
Berrick et al. ⁷⁵ 2011 U.S.	Qualitative	Parents reunified with children mentor for parents first entering child protection system	25 mentees, 6 mentors.	Themes - value of shared experience, communication, support. Both mentors and mentees experienced benefit		
Dorgo et al. ⁴⁵ 2009 U.S.	RCT	Peer mentor groups (1:1) vs qualified student led group. Fitness session content the same (14 weeks)	131 older adults – 87 peer mentor, 44 student mentor condition	At 14 weeks: Self-reported physical, mental and social functioning improved for peer mentored except for bodily pain Change but not significant for student mentored Both groups improved fitness significantly. Presence of a special adult only significant change from baseline which lasted over time. 9 months: Short term sign better with academic performance and perceptions of abilities. 1.5 years compared to baseline: no impact on effort, self-worth, relationships with parents peers or teachers, rate of problem behaviour.	p<0.05 p>0.06 p<0.03. p<0.01 p<0.05	
Herrera, Grossman, Kaub & McMaken ⁷⁶ 2011 U.S.	RCT	Mentoring Big Brothers Big Sisters	1139 students age 9-15 from 10 schools. 554 mentors. Self and teacher reports and school academic records.	Both groups improved fitness significantly. Presence of a special adult only significant change from baseline which lasted over time. 9 months: Short term sign better with academic performance and perceptions of abilities. 1.5 years compared to baseline: no impact on effort, self-worth, relationships with parents peers or teachers, rate of problem behaviour.	p<0.01 p<0.05	
Ljungberg, Kroll, Libin & Gordon ⁶⁰ 2011 U.S.	Longitudinal (no control)	Peer mentoring (1 year weekly, fortnightly then weekly contact)	24 patients with spinal cord injury. Self-report to mentor	At 6 months: Reduction in Dr visits pre-test, reduction in self-reported medical complications. No sign of difference from self-efficacy score	p<0.01 – 0.001	
Lucksted et al. ⁴³ 2009 U.S.	Longitudinal (no control)	Peer mentor program (9 2hr group sessions led by mentors)	138 with diagnosed mental illness - bipolar disorder, depression, schizophrenia, schizoaffective	Immediately after treatment compared to baseline: Increased confidence re own knowledge and management of illness, less powerlessness, more confident re decision making, connection with others. No difference for relationships, attitude to medication, spirituality, money management, housing planning, education or employment planning.	p<0.01	
Ott and Doyle ⁷⁷ 2005 U.S.	Longitudinal (no control)	Social norming workshop re peer substance use.	414 students across school.	One week later compared to baseline: changes in perception of norm for smoking cigarettes, alcohol and marijuana towards more accurate rate.	p<0.001	
Purcell et al. ⁷⁸ 2007 U.S.	RCT	Peer mentor groups for HIV transmission reduction – or video discussion (10 sessions)	966 injection drug users.	At 12 months vs baseline: Both groups sign reduction in injection and sexual risk behaviours. No sign difference between groups. No change in medical outcomes. No change using care or adherence to medication.	p < 0.01	
Robinson and Niemer ⁷⁹ 2010 U.S.	Longitudinal Controlled	Peer mentor tutoring vs no tutoring (1 year weekly contact) 1:5 ratio.	97 'at-risk' nursing student participants vs control (rest of that year level (number not defined)	Peer mentor group - increased academic performances – grades – test scores, significantly compared to controls	p<0.001	
Rowe et al. ⁴⁴ 2007 U.S.	RCT longitudinal	Group treatment peer support and citizen training + standard vs standard treatment (8 weeks course, 4 months peer support)	114 adults with drug use diagnosis and criminal history. 41 control, 73 group treatment	12 months post-treatment: Peer group participants - reduced alcohol use. Drug use and criminal charges reduced in both groups.	p< 0.005 p<0.05 p<0.05	0.05
Rowe et al. ⁸⁰ 2009 U.S.	Qualitative	Group treatment with peer mentorship, 5 month citizens program group becomes participant led. 21 classes	3 case studies	Positive affect on substance use, criminal justice contact, transition to community supports, community living for people with dual-diagnosis and criminal justice history.		

Authors and year	Research trial	Intervention	Population	Main Findings	P value	Effect size
Sledge et al. ⁴⁵ 2011 U.S.	RCT	Peer mentoring with standard care vs standard care alone. Ongoing weekly contact 9 months	74 psychiatric patients (38 peer mentor condition, 36 standard care), 8 mentors.	Sign. of fewer re-hospitalisations at 9 months for peer-mentored patients. Reduced days in hospital.	p=0.042 p<0.03	
Smith ⁸¹ 2004 U.S.	RCT: One post-test survey	Student social norming lecture re alcohol use.	774 students – 390 standard, 384 standard + lecture	No sign of difference between groups re personal drinking self-report.	p=0.56 and p=0.62	79% power to find d=0.2.
Stewart et al. ⁸² 2010 U.S.	Longitudinal	Group and one-one peer support (14 weeks)	23 women nicotine addicted	3 months post-treatment: Self-reported decrease in tobacco and nicotine use and dependence, maintained No difference self-efficacy	p= 0.002	
Thrasher et al. ⁴⁷ 2010 Canada	RCT	Social support factor for exposure therapy (ET) (20 people), cognitive restricting treatment and ET (19), CR (18) vs relaxation control (20).	77 adults with PTSD	More support predicted better outcome in therapy – reduction in PTSD. Not helpful for relaxation condition control. Accounted for 33% of variance.	p< 0.001	
Tracy et al. ⁸³ 2012 U.S.	Longitudinal (no control)	Peer mentor weekly group and individual contact (12 week)	30 participants, 10 mentors. Both diagnosis of alcohol abuse, mentors 6 months abstinent.	From baseline to week 12 Frequency of alcohol use reduced, drug use reduced	p<0.01 p<0.01	

Note: d= Cohen's d for effect size (Cohen, 1988) 0.2 = small, 0.5 = medium, 0.8 = large

that more people in the U.S. use self-help groups for substance abuse than any other mental health support combined⁴¹. They found that self-help participation was associated with reduced substance use, increased psychosocial functioning, and reduced health care costs.

Hogan, Linden & Najarian conducted a review of 100 studies into social support interventions addressing substance abuse, parenting skills, weight loss and cancer for non-military populations⁴². They concluded there was some support for the usefulness of social support. However, no studies were rigorous enough to be ranked as clearly efficacious. They noted issues with the study in general, the lack of control groups and randomisation. However the authors outlined that social support interventions were generally better than no treatment. Twelve studies showed superior or equal results to alternative treatments, 22 had partial benefits, 17 had no benefits and in 2 studies participants got worse, indicating the importance of matching intervention type to need and with mindfulness of the setup of groups⁴².

Within the individual studies, evidence supporting the peer approach was seen by Lucksted et al., who conducted a longitudinal study using a peer support intervention for 138 people with mental illness (bipolar, schizophrenia and other diagnoses)⁴³. They found that participation was significantly associated with increased confidence regarding knowledge and management of their illness, less powerlessness, more confidence regarding decision making, and greater connection with others. Many participants wanted to become involved in advocacy and in the educating others as a result of participation. Another randomised trial compared standard clinical treatment to treatment plus group intervention involving peer support and citizen training for 114 adults with dual-diagnosis mental health disorders and criminal history. Although drug use and criminal charges were reduced in both groups, the study showed that peer support was effective for decreased alcohol use beyond standard treatment at 6 months and at 12 months post treatment⁴⁴. In addition, a study by Sledge et al. showed peer support was associated with significantly reduced re-hospitalisations and number of days in hospital after 9 months of support for patients with psychiatric diagnosis as compared to standard care⁴⁵. They showed peer support was an effective adjunct to treatment to engage mental health patients with social network preventing relapse.

One study in particular outlined how peer-led approaches can be more effective than professional-led. Dorgo, Robinson & Bader conducted a randomised control study into peer-support for 131

older adults when an identical fitness program was provided either by peers or by a qualified student⁴⁶. Although both groups' fitness improved significantly, peer-led fitness groups showed significantly better outcomes in self-reported physical and mental wellbeing, social functioning, general health, vitality and the ability to carry out physical and emotional roles. They speculated that peer-led interventions may increase adherence to programs, providing positive role modelling and dispelling negative stereotypes about age and ability.

The presence of supportive social relationships alone has been shown to predict better outcomes in therapy for PTSD exposure therapy and cognitive restructuring treatments⁴⁷. These results strengthen the argument that peer support is valuable in role modelling, health, challenging stigma, and isolation around PTSD experiences. Such approaches may be particularly beneficial if the participant identifying as a group member feels ostracised or judged by the wider society, which may be the case for many veterans. In such situations, peer-led groups may decrease isolation and enable trust and connection with others^{11,15,24}.

Outdoor Therapy Intervention Evaluation

Various U.S. review studies have shown outdoor therapy with at-risk youth, focusing on changing negative behaviours and building team and leader skills, is associated with increased self-worth, self-regulation, physical health effects, reduction in anxiety and stress and sleep issues, improved participant social skills, improved critical thinking and reductions in antisocial/ delinquent behaviour⁴⁸⁻⁵⁰. There is also some evidence of reduced depression and drug and alcohol misuse^{20,50}, with greater outcomes seen for participants involved in peer leadership opportunities⁵⁰.

An Australian longitudinal evaluation of Operation Flinders (OF), an 8-day camp for at-risk youth, found that participants at higher risk of offending showed significant improvement on self-reports for self-esteem, anger, attitude toward police and de-identification with criminals compared to those at lower risk⁵¹. Raymond evaluated OF, using a non-randomised control group design comparing 58 participants with 55 non-participants and showed that although improvements on most measures were seen, these changes were not significant compared to controls⁵².

Very few studies have been completed with non-youth. Walker et al.⁵³ conducted an evaluation of an Australian outdoor adventure program for 11 adults with severe brain injury and found a trend toward

improved mental health. The 18-month program involved peer planning for a 9-day camp run in conjunction with Outward Bound Australia (OBA). Results were not statistically significant, although qualitative personal goal achievement was attained for 10 of the 11 participants. Lastly, Stuhlmiller completed a qualitative evaluation of an Australian camp to reduce mental health stigma among student nurses⁵⁴. Two hundred students and 100 mental health service consumers participated in the week-long camp. Student nurse attitudes about mental health consumers shifted in a positive direction.

Lubans et al.'s review of 15 camp evaluations for at-risk youth concluded that while outdoor adventure programs had the potential to improve wellbeing, the findings were mixed⁴⁸, due to research design limitations resulting in a high risk of bias. Therefore, empirically determining program efficacy is difficult if attempting to compare to other approaches where more controlled research is possible.

POST Approaches for the Veteran Population

Therapist-led Outdoor Therapy Intervention Evaluations

There have been several research studies into therapist-led outdoor therapy for post-deployed veterans. Table 3 summarises research into both outdoor therapy and peer support utilising military populations. Please refer to Table 3 for details of intervention, measures used and main findings.

There is some evidence that outdoor programs (non-peer led) are linked to positive change for veterans; however the available research results are mixed. Hyer et al.⁵⁵ published results from a control-group evaluation of Outward Bound for Veterans Program (OBVP) for veterans with chronic combat-PTSD. The camp is non-clinical, is focused on outdoor activity and developing leadership qualities⁵⁶. Participants included 108 in OBVP and 111 in clinical hospital group therapy and psychiatric support. All were interviewed using high reliability clinical measures before treatment, directly after, and at exit from treatment. They found no significant difference between those in the camp treatment versus the control group, indicating OBVP was equivalent to clinical therapy. Results indicated greater effectiveness for those with lower clinical PTSD scores. Participants reported positive changes to self-esteem and indicated the important role social support played for their wellbeing⁵⁵.

More recently, Ewert et al.⁵⁷ evaluated OBVP, assessing 142 CRPD personnel deployed to Iraq and Afghanistan and 175 non-veterans post-participation using scale course evaluation

Table 3. Summary of quantitative and qualitative research into peer mentor, outdoor and POST approaches for military populations.

Authors and year	Research trial	Intervention	Population	Measures	Main Findings	P value	Effect size
ACPMH ⁶⁸ 2010 AUST	Longitudinal and qualitative program evaluation	Trojan's Trek 6 day peer outdoor support therapy (POST)	10 participants and spouses from TT 2009.	DASS21 AUDIT PNI HILDA Life Satisfaction. Self-efficacy GSE. Qualitative Interviews.	Trend toward mental health improvement. 50% completed follow-up questionnaires. Those who did not complete follow-up showed initial higher ratings of unhappiness with life than those who completed follow-up questionnaires. Effective in addressing participant goals for managing day to day problems and achieving life goals such as managing anger and improving communication. 46% serving members or receiving veteran pensions. 54% retired members. OSISS only source of continuous social support for retiring personnel with OSI		
Department of National Defence and Veterans Affairs Canada ⁶⁷ 2005	Program evaluation	Operational Stress Injury Social Support (OSISS) (peer)	900+ current serving and veterans.				
Dustin et al. ³⁵ 2011 U.S.	Qualitative	River Running. 4 day outdoor therapy river camp (non-peer)	10 male, 3 female veterans with PTSD diagnosis.	method not mentioned	Re-experiencing of traumas appeared to diminish over the time of the camp for participants from journal entries, avoidance and numbing replaced with 'joyful involvement' (pg. 335) in the trip experience, hyper-arousal replaced with fatigue from physical activity. Post-participation questionnaire only. Veterans showed higher levels of agreement for increased confidence, physical ability, emotional state and success compared to non-veteran participants, and lower levels in leadership skills, compassion, teamwork and accepting responsibility compared to non-veterans	Not given	
Ewert et al. ⁵⁷ 2010 U.S.	Control group post-program comparison	Outward Bound for Veterans Program (OBVP) (non-peer). Wilderness-based courses – natural world, teamwork, challenge-based activity.	142 Iraqi and Afghanistan conflict veterans. 175 non-veterans.	9 Likert-scale course evaluation questions (non-clinical and no reliability or validity testing).			
Ewert et al. ⁵⁷ 2010 U.S. and Ewert et al. ⁵⁸ 2011 U.S.	Longitudinal survey	OBVP (non-peer)	266 veterans from 32 difference OBVP sessions	11 item Outward Bound Outcomes instrument (no reliability or validity published). Sense of Coherence	Significant change of between $p = .05$ or 0.01 levels with effect sizes from .26 to .74 for 11 leadership quality constructs. The authors do not explain which constructs showed most significant change, and in what direction. Effect size range from 0.40-.095 (not defined to constructs) Sense of Coherence Improvement Alpha = .86	$p=0.05$ $p=0.01$	
Greden et al. ³⁶ 2010 U.S.	Participation surveys	Buddy to Buddy trains veterans to provide peer support and links to resources to other CRPD veterans (peer)	926 returned deployed current serving personnel and veterans and spouses.	Survey, interviews and program evaluation.	50% stated they had used resources/services suggested by their buddy and more than 20% self-referred to formal treatment as a result of participation who were not previously accessing any formal treatment		
Hawkins et al. ⁵⁶ 2011 U.S.	Qualitative	3 day Paralympic military sports camp for 50 current serving personnel with physical injury. (non-peer)	10 veterans interviewed from Iraqi, Afghanistan deployments. age 20-40.	Semi-structured interviews, transcribed by three researchers.	Social comparison assisted participant engagement and change with improvements in sense of competence and autonomy. Themes from participation in camp: (a) perceptions of disability and normalisation (see beyond injury, self-acceptance); (b) finding motivation (through participation and through social comparison); (c) experiencing a sense of relatedness and social connection (with others in similar situation and to family); (d) establishing a connection with previous interests (transfer of skills confidence) (e) improved health, fitness, and general well-being; (f) improved sense of competence; and (g) increased autonomy (ie freedom of choice).		

Authors and year	Research trial	Intervention	Population	Measures	Main Findings	P value	Effect size
Hyer et al. ⁸⁵ 1996 U.S.	Controlled group longitudinal	OBVP versus hospital group therapy. Outdoor activity and developing leadership qualities. Non clinical. (non-peer).	108 OBVP participants, 111 hospital group participants, from two hospitals.	Combat Exposure Scale, Mississippi Scale for Combat Related PTSD, Impact of Events Scale, Hamilton Depression and Anxiety scales, SCL-90 Roter Locus of Control, State Trait Anxiety Scale.	Pre-, post and follow-up. no significant difference between those in the camp treatment versus control group. However, results indicated greater effectiveness for those with lower clinical PTSD scores and qualitatively measured participants showed positive changes to self-esteem and indicated the important role social support played for participant's wellbeing.	ANCOVA – no significant group effects.	
Lebeau et al. ⁸⁶ 2008 Canada	Qualitative	Operational Stress Injury Social Support (OSISS) (peer)	26 current serving personnel with serious OSI, 8 family members	Focus group content analysis	Main themes for areas of need: peer support, family support, home coming and recovery, assisting officers, medical care, reservists needs, decompression, and prioritizing of injuries.		
Lundberg et al. ⁸⁴ 2011 U.S.	Quantitative longitudinal	Higher Ground. Paralympic adaptive sports one week therapy program. (non-peer).	18 Iraqi and Afghanistan conflict injured veterans	WHO's Quality of Life Assessment. Profile of Mood States-Brief. Perceived Competence Scale.	Significant reductions in self-reported mood disturbance, tension, depression and anger post-camp compared to pre-camp. Increase in perceived competence No significant difference was found for self-reported quality of life in general, or for physical health, social relationships or environment. Psychological health of GOL showed a significant increase. Alpha = .0038	All p<0.001 p= 0.001 p= 0.044 p= 0.024	
Mowatt and Bennett ⁷¹ 2011 U.S.	Qualitative	Rivers of Recovery outdoor therapy run by Vietnam vet's for CRPD veterans. POST program.	67 male participants	Analysis of letters	Four themes: camaraderie is necessary while receiving treatment, there was ongoing regret experienced by veterans, reflection was involved in process of memory reconciliation, and participants saw benefits from involvement in outdoor recreational activity. No outcome data available. Model of engagement presented.		
Mosack et al. ⁸⁵ 2012 U.S.		1 year health management program (peer-led).	219 veterans, hypertensive	Participation rates			
Pietrzak et al. ⁴ 2010 U.S.	Survey correlation	Once-off survey questionnaire	272 Iraqi and Afghanistan conflict veterans	PTSD and depression screening measures, and questionnaires assessing resilience, social support, and psychosocial functioning.	Self-reported lower unit support and post-deployment social support associated with increased PTSD and depressive symptoms, decreased resilience and psychosocial functioning. Path?? analyses: resilience fully mediated the association between unit support and PTSD and depressive symptoms. Post-deployment social support partially mediated the association between PTSD and depressive symptoms and psychosocial functioning. At 8 weeks compared to baseline: Increased self-reported 'emotional/information support' and 'positive social interactions' associated with greater rate of PTSD symptom reduction. No significant associations for 'affectionate' or 'tangible' support.	p< 0.001	
Price et al. ²³ 2011 U.S.	RCT + correlation survey	Social support measured for participants in individual exposure therapy. In- person or telehealth (8 weeks).	69 contemporary veterans from Iraq and Afghanistan conflicts experiencing PTSD symptoms.	Medical Outcomes Study Social Support Survey Form		p<0.05	

Authors and year	Research trial	Intervention	Population	Measures	Main Findings	P value	Effect size
Wynn, G. (n.d.) ² U.S.	Longitudinal	Rivers of Recovery Outdoor therapy retreat for CRPD veterans led by Vietnam veterans. (POST)	67 men, 2 women returned deployed veterans with PTSD diagnosis	Pos Affect and Neg Affect Schedule (state mood). Brief Symptom Inventory – dep. anx and somatic stress in past week. Perceptual Stress Scale, PTSD Checklist Military Version, Pittsburgh Sleep Quality Inventory.	1 month prior, last day of retreat, 1 month follow up. Significant reductions in perceived stress, PTSD symptoms (19% reduction, with some no longer meeting PTSD diagnosis) and sleep issues, compared to the initial baseline prior to camp participation (Prestwich, 2010??), and significant reductions in anxiety, depression and somatic stress symptoms and also negative mood states, with a significant increase in positive mood states. Results also showed a significant reduction in daily cortisol production (stress measure) between the first and second days for 23 participants as measured by salivary cortisol, urinary catecholamines (e.g., epinephrine and norepinephrine) and immune function (salivary immunoglobulins).	p<0.001 p=0.002 p<0.001 p<0.001. p<0.001.	
Travis et al. ⁶³ 2010 U.S.	Longitudinal	Telephone based mutual peer support (12 weeks). Patients with depressive symptoms paired together, used telephone computer platform to contact (peer).	Community treatment centres 22 veterans, 32 non veterans	BDI-II Quality of Life Enjoyment and Satisfaction Questionnaire Short Form SF-12 – health related quality of life General Self-Efficacy Scale	At 12 weeks compared to baseline: BDI score Reduced Improvement in perception of disability Qual of life increased Psychological health increased Qualitative – found meaning and support. Veterans significantly greater retention – less drop out.	p< 0.02 p=0.02 p=0.04 p< 0.001 p < 0.0001	
Westwood et al. ⁶² 2013 Canada	Longitudinal and qualitative	Groups of 6-8 veterans, residential program 80 hours over weekends therapy 'course'. Peer support and exposure-therapy focused. (peer)	18 male military personnel aged 32-73 years old, two peer facilitators with three non-military facilitators.	Trauma Symptom Inventory, Beck Depression Inventory-II and Self-Esteem Rating Scale. Interviews for content analysis	Before, after and three months follow up measures. Trauma symptom inventory: A reduction in Tension Reduction behaviour, Anger/Irritability Dysfunctional sexual behaviour Impaired self-reference Anxious arousal Depression Defensive avoidance Reduction in BDI score between first and second administration and first and third administration Increase in self-esteem between first and second administration and first and third administration No significant change in depression between second and follow up administration.	0.95 0.45 0.55 0.44 0.19 0.19 0.2 0.75 0.55 0.19 0.17 0.07	

Note: d= Cohen's d for effect size (Cohen, 1988) 0.2 = small, 0.5 = medium, 0.8 = large

questions. The assessment tool was non-clinical and with reliability or validity reported. Veterans showed significantly higher levels of agreement for increased confidence, physical ability, emotional state and success compared to non-veteran participants, and lower levels in leadership skills, compassion, teamwork and accepting responsibility compared to non-veterans. Ewert et al.⁵⁸ also studied 266 OBVP veteran participants before and after participation, using the same assessment tool, and showed significant change of between $p = .05$ and $p = 0.01$ with effect sizes from .26 to .74 for 11 leadership quality constructs. The authors did not indicate which constructs showed the most significant change.

River Running, a therapist-led 4 day outdoor therapy river camp focused on utilising nature to manage distress and promote relaxation, was qualitatively evaluated by analysing journals and was completed by 10 male and 3 female veterans with diagnosed PTSD³⁵. Participants were selected by defence health staff, and 17 professional staff were present. They reported that the re-experiencing of traumas appeared to diminish over the duration of the camp, avoidance and numbing replaced with “joyful involvement” (p. 335) in the trip experience and hyper-arousal replaced with fatigue from physical activity for the participants³⁵. However, no method details were outlined in the report regarding their analysis approach and no follow up data were assessed, thus it is uncertain whether these effects were sustained after participation.

Hawkins, Cory & Crowe conducted a qualitative analysis of a 3-day Paralympic military sports camp for 50 injured contemporary U. S. personnel⁵⁹. Ten participants volunteered to be interviewed using a semi-structured model. Researchers found that social comparison assisted participant engagement and change with improvements in the sense of competence and autonomy. Another week long Paralympic therapeutic adaptive sports and recreation program called Higher Ground for 18 recently returned injured U.S. veterans from the Iraq and Afghanistan conflicts was evaluated. The quantitative pre-post no control sample study showed significant reductions in self-reported mood disturbance, tension, depression and anger post-camp compared to pre-camp⁶⁰. No significant difference was found for self-reported quality of life in general, nor for physical health, social relationships nor environment, although the subscale of psychological health showed a significant increase ($p = 0.024$).

To summarise, while published research indicates that outdoor therapy (non-peer) for non-military veteran populations appear to show promise in

increasing mental health, they however show methodological limitations. These include small self-selected sample sizes and a lack of randomised controlled groups, resulting in a convenience sample bias^{56,48}. However, this is not unlike other treatment studies with veterans outlined earlier in this paper. Difficulty exists in finding a sufficient evidence-base because outdoor therapy is often run intentionally with small participant numbers. It is also difficult to draw conclusions regarding the effectiveness of the outdoor therapy approach and general application due to program diversity. It appears, however, that the clinical or self-reported qualitative change noted is of importance and the peer relationships formed and subsequent benefit of social modelling, social support and peer mentoring may be an important area not adequately studied within these outdoor therapy evaluations.

Peer Support Approaches for Veteran Populations

While peer support approaches show a good evidence-base with non-military populations and show potential applicability to veterans, our interest was in finding direct research with veterans as opposed to generalising from the non-military data. Several studies were located evaluating peer support interventions for PTSD and mental health with veteran populations, see Table 3 for detail of intervention, measures and main findings.

Social support for veterans can act as a protective factor, but also appears important for clinical change as a deliberate adjunct to other therapies⁶⁰. For example Pietrzak et al.⁶¹ showed that lower self-reported unit support and post-deployment social support was associated with decreased resilience and psychosocial functioning and greater depression and PTSD for 272 contemporary U.S. Iraq and Afghanistan deployed combat veterans. Unit support association with PTSD and depression was mediated by personal resilience. Price et al.²³ also completed research into the effect of four types of social support on the outcome of exposure therapy for 69 U. S. CRPD veterans experiencing PTSD symptoms from the Iraq and Afghanistan conflicts. They found that positive treatment response was significantly associated with emotional or informational support and positive social interactions, rather than affectionate or tangible support. These elements of support are often intentionally included in peer support models of therapy⁶².

Based on such studies, if therapy responsiveness is enhanced for CRPD veterans through peer support approaches there is a possibility for improved veteran wellbeing. Travis et al.⁶³ conducted a longitudinal study into telephone-based mutual peer support

with 22 veterans and 32 psychiatry outpatients and community mental health centre consumers who experienced ongoing depressive symptoms. Depression, quality of life, and psychological health all significantly improved over time. Of particular significance, veterans had significantly better adherence to treatment than non-veterans (2 veterans dropped out compared to 20 non-veterans).

A sense of camaraderie, important in any therapeutic setting⁶⁴, is significant within veteran culture particularly^{11,15,24} and seen by Travis et al. where veterans felt they could censor themselves less. A high majority of participants, 94%, stated they would be more satisfied with their general care if they had peer support routinely available. Participants reported having someone who could relate, and who had common experiences, was of particular importance. Based on the quantitative and qualitative results, the authors concluded that this form of support may be considered valuable and more meaningful for veterans than for non-veterans⁶³. This study demonstrated that veterans may be particularly well suited to this type of intervention support and is thus a potential treatment in combating compliance issues with veterans.

Veteran peer mentor programs in particular have shown to assist treatment adherence and enhance outcomes, improve behaviour and motivation for self-care, potentially de-stigmatise veteran mental illness, correct stereotypes of the mentally weak person, and act as a stress buffer in reducing psychological despair^{13,65}. An increased uptake and responsiveness to other clinical treatment options is also seen³⁶. Significant support exists for the peer approach with veterans, when conducted in a structured, formal and accountable way where appropriate training is provided¹³. For example, in evaluating the group peer support Veterans Transition Program in Canada with 18 male military personnel returning to civilian life post-combat, Westwood et al.⁶² found that participation was associated with decreased trauma-related symptoms including defensive avoidance, anxiety, anger and depression.

Although a peer support program exists for ADF military personnel in their first year of service⁹, a wide-scale program for ADF veterans does not appear available. In contrast, veteran programs such as Shoulder to Shoulder (STS)⁶⁶ in the UK and Buddy to Buddy (BTB)³⁶ in the U.S. utilise the peer support framework. Whereas STS utilises civilian volunteers to support veterans, BTB trains veterans to provide peer support to CRPD veterans, and views peer mentoring and social support as an integral component to the treatment approach for veterans. Preliminary research into the BTB program showed

that after participation, 50% stated they had used resources/services suggested by their buddy and more than 20% self-referred to formal treatment as a result of participation when they had not previously accessed any formal treatment³⁶. A Canadian veteran program, Operational Stress Injury Social Support (OSISS), also provides peer and family support to current serving personnel and veterans in one-on-one and in group formats^{13,67,68}. A program evaluation completed by the Department of National Defence and Veterans Affairs Canada⁶⁷ indicated that over 900 personnel and veterans were utilising the service and OSISS appeared to be the only form of ongoing social support for many veterans.

POST for Veteran Populations

Bringing both outdoor therapy and peer support together, POST approaches addressing veteran wellbeing have been in operation for many years, but as yet not formally or systematically evaluated. Of those programs evaluated, many remain organisational reports and not subject to peer-review and journal publication. Given the limited published literature, relevant organisational reports have been included in this review. Examples of non-evaluated POST approaches for CRPD veterans are outlined in Table 4.

POST programs for veterans that have been evaluated are included in Table 3 with details of materials and findings. Rivers of Recovery (ROR) is a U.S. fly-fishing camp run by Vietnam veterans for CRPD veterans. ROR also includes a focused post-camp outreach program to aid veteran mental health^{69,70}. The program provides more than 200 CRPD veterans with camps for men and women and couples every year⁶⁹. Mowatt and Bennett analysed the content of letters written by 67 male participants of ROR during 2010 to their sponsors, who assisted financially for camp attendance⁷¹. The authors found four themes: camaraderie is necessary while receiving treatment; veterans experienced ongoing regret; reflection was involved in the process of memory reconciliation; participants saw benefits from involvement in outdoor recreational activity. A high risk of bias in results appears evident in this research however, because participants may have felt obligation to justify the sponsor's costs and express gratitude.

Research available on the ROR website appears rigorous and uses sound within-subject longitudinal methodology⁷². The participants, 67 men and 2 women post-deployed veterans with PTSD diagnosis, were assessed 1 month prior to the fly fishing excursion (baseline), the last day of the fly fishing retreat, and at 1 month follow up using reliable self-report questionnaires⁷². The study found statistically

Table 4. Non-evaluated POST approaches for CRPD veterans

Program Title	Country	Format	Detail	Website Link
Challenge Aspen	US	Veteran camps	For physical injury and PTSD but include therapist support	http://www.operationwearehere.com/WoundedWarriorRehabTherapy.html
Coming Home	Australia	12-day bush camp	Focusing on companionship and utilising a buddy system plus ongoing counselling post-camp participation. Young Diggers is a Returned and Services League (RSL) initiative.	http://www.youngdiggers.com.au/home
Expedition Balance	US	one-week outdoor therapy	Health retreat, veterans on the board of directors. Uses health and fitness and creative expression to address PTSD. Using a model similar to the evidenced based Post-Traumatic Stress Disorder Day Treatment Program, Landstuhl Regional Medical Centre, Germany, in an outdoor camp setting.	http://www.expeditionbalance.org/
In and Out	Australia	Fitness Program	Run by an Australian veteran to address the transition back to civilian life and support mental health in veterans	http://www.youngdiggers.com.au/and-out-fitness-program
Pandanus Park	Australia	Veteran retreat	Annual group retreat and camp sites open to veterans	http://www.pandanusparkinc.com/
Soldiers to Summits	US	Outdoor trips	Outdoor trips run by soldiers and civilians for address disability due to combat	http://soldierstosummits.org/
Summit for Soldiers	US	Peer-led outdoor therapy program	Camps for veterans, raising PTSD awareness	http://www.tmgherd.webs.com/
Veterans Expeditions	US	Peer-led outdoor challenge program	Expressly not therapeutically focused but hopes nonetheless to reduce suicide rates in recent returned veterans through social connection and team challenge involving national and international trips.	http://vetexpeditions.com/
Veterans in Action	UK	Adventure therapy	Outreach and outdoor trips by veterans and civilians	http://www.v-i-a.org.uk/index.php

significant reductions in perceived stress, PTSD symptoms (19% reduction, with some no longer meeting PTSD diagnosis) and sleep issues, compared to the initial baseline prior to camp participation⁷⁰. Significant reductions in anxiety, depression and somatic stress symptoms and negative mood states, with a significant increase in positive mood states were also found. Results also showed a significant reduction in stress indicated by daily cortisol production between the first and second days for 23 participants. This was measured by salivary cortisol, urinary catecholamines (e.g., epinephrine and norepinephrine) and immune function (salivary immunoglobulins). The research is however limited due to being an organisational report with no control group reported.

Closer to home, Trojan's Trek (TT) appears to be the only Australian program evaluated and available for review. This evaluation is also an organisation report and has not been subject to peer-review and not available via standard journal publication. Data from TT's first camp in 2009 was evaluated by ACPMH⁵⁶ using self-report questionnaires and interviews with 10 participants and their partners before camp, immediately after camp and at 2-months follow-up. Outcomes showed a trend toward mental health improvement. However, only 5 participants completed post-intervention questionnaires, limiting statistical analysis. Some respondents showed diminished perceived benefit of camp involvement

after 2 months compared to immediately after the camp, and those who did not complete follow-up showed initial higher ratings of unhappiness with life than those who completed follow-up questionnaires. Due to the small sample size, self-selection and the lack of a control group, conclusions could not be drawn regarding the camp's effectiveness. However, positive qualitative results from diary and interviews were evident. The most common goals at the start of the trek were managing anger and improving communication and the camp was most effective in managing day to day problems and achieving these goals⁵⁶.

Programs for veteran populations such as TT and ROR both utilised medallions as symbols for belonging, accomplishment, and legacy-making⁶⁹, providing culture specific meaning-making important in many therapy approaches with veterans¹⁴. TT and ROR are two evaluated examples of where peer support programs have been applied within an outdoor therapy setting for veterans.

Discussion

In this paper the effects of deployment, standard treatment for veterans, and challenges to treatment with CRPD veterans experiencing military-related mental illness have been outlined. The evidence for the effectiveness of outdoor therapy, peer support approaches and POST with non-military and

contemporary veteran populations has also been reviewed.

CRPD veterans experience a relatively high level of mental health issues in contrast to the non-military population^{3,5,6}. Despite recommendations for individual and group PE and CBT therapies supported by research these appear predominantly from the generalisation of non-military population studies to military and veteran populations. Such therapies may be under-utilised by a section of the veteran population, given the unique characteristics and reluctance of this population to engage with these approaches¹⁷. Treatment response and retention may be lower than for other populations accessing similar treatment due to the nature of deployment-related PTSD and the culture of military service.

Currently only a very small number of peer-reviewed research into POST approaches exist compared to other approaches, despite being commonly used, particularly in the U.S. The evidence for veteran POST approaches are organisational based reports without peer review and publication in academic journals. The methodology strengths are mixed, with some outdoor therapy (non-peer) evaluations supporting positive outcomes but which are limited in reliability, not unlike other research into therapeutic approaches with veterans. The conclusions which can be directly drawn about POST approaches are thus somewhat limited given this and the inherent design limitations with using small group therapies. However, the quantitative research available to date which directly explores the POST approach with veterans, supports its use.

In contrast, the research for structured peer support with veterans is promising. There is strong evidence to indicate that therapies which include structured peer support for veterans are efficacious

based on the research with both veteran and non-veteran populations is outlined in Tables 2 and 3. In particular, veterans show greater engagement in mutual peer support and may be well suited to this therapy approach⁶¹. Although there are practical and ethical risks in any peer support approach, and also in generalising methods across diverse U. S. and Australian veteran cultures, the peer support approach is promising in its potential application to Australian CRPD veterans for a number of reasons. From the reviewed literature and studies into peer support approaches, it is reasonable to conclude that veteran peer-mentor interventions have the potential to: (a) be perceived as more accessible than professional-led therapies, (b) directly impact positive therapeutic change and retention for veterans, and (c) encourage access to professional mental health support. Existing veteran social support programs build on the camaraderie which naturally develops as an aspect of deployment and provide social norming and modelling^{23,36} which could lead to more sustained and meaningful change for participants. In addition, under well-structured programs, veterans may benefit from having a strong identification with peers and leaders^{56,11,24}.

Thus, further research is warranted into the efficacy of POST approaches with veterans where structured peer support is a core aspect of the outdoor therapeutic approach. Such research would add further to current knowledge and treatment practice regarding the potentially significant role POST approaches could play within the wider context of treatment for the veteran population.

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