

AN INTERNATIONAL LITERATURE REVIEW ON THE EFFECTIVENESS OF SERVICE DOGS AS AN ADJUNCT THERAPY FOR PTSD MANAGEMENT

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A Contemporary Review of the
Literature

Declaration: This literature review was commissioned by Integra Service Dogs Australia and was completed as a component of a participatory community practice (PCP) project in conjunction with the Monash University, Department of Occupational Therapy.



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Introduction

The provision of trained service dogs is emerging as an effective adjunct intervention for the management of post-traumatic stress disorder (PTSD) (Yarborough, Stumbo, Yarborough, Owen-Smith, & Green, 2018). PTSD is defined as a ‘trauma and stressor-related disorder’ arising from exposure to, or threat of, a traumatic event (American Psychiatric Association [APA], 2013). The symptoms of PTSD arise in four distinct clusters. These are: intrusive memories, avoidance behaviour, negative alterations in thinking or mood, and arousal and reactivity alterations. (APA, 2013). Moreover, PTSD is associated with significant and persistent impacts upon quality of life, sleep, ability to maintain employment, and engagement in leisure activities (Edgelow, MacPherson, Arnaly, Tam-Seto, & Cramm, 2019). For this review, quality of life refers to the subjective evaluation of an individual’s position in life (World Health Organisation [WHO], 2012). Quality of life incorporates individual factors such as coping skills, resilience behaviours, sense of self-efficacy, and environmental features such as social support and participation in opportunities for leisure and recreation (Vincent et al., 2019).

Previous reviews of the empiric literature indicate preliminary evidence demonstrating service dogs may be associated with a significant reduction in PTSD symptoms, elicit a positive influence on quality of life, and support independent living (Krause-Parello, Sarni, & Padden, 2016). Service dogs are considered to mitigate PTSD symptomology through the performance of specific tasks. These tasks can include reducing or distracting from panic or distress, instilling a sense of confidence in public, and waking individuals from nightmares. There is also evidence to indicate service dogs provide support to alleviate hyperarousal/hypervigilance and anxiousness (O’Haire & Rodriguez, 2018). Furthermore, anecdotal evidence suggests service dogs can act as social facilitators, assisting individuals to reconnect with friends, family, or their community (Krause-Parello et al., 2016).

This review was developed to present a contemporary overview of the international literature on the use of service dogs as an adjunct therapy for the management of PTSD. This piece is intended to supplement the existing review published on Integra’s website – *The effectiveness of service dogs as an intervention for post-traumatic stress disorder* conducted by Frazer (2018). Notably, this piece expands upon the previous review to incorporate studies exploring the impact of service dogs on participation in daily occupations and family member psychosocial wellbeing. This expansion is reflective of a developing understanding of the impact of PTSD on performance of meaningful activities (McLaughlin & Hamilton, 2019), and emerging evidence indicating the broader familial impacts of the condition (Van Hooff et al., 2018).

The objective of this review is to systematically identify and summarise the empirical evidence and research emerging since the completion of the 2018 review. In addition, the current review presents an evaluation on the state of the evidence base to determine its strength and generalisability and provide considerations for the direction of future research.

Study Selection

A total of 15 articles were selected for final inclusion in this review. This selection comprises all relevant articles which empirically evaluate the effectiveness of service dogs on the management of PTSD or the promotion of family member psychosocial wellbeing. The final article sample consists of a wide range of study designs and outcome measures, and the publication dates ranged from 2018 to 2021. Among the final sample, 11 studies originated from the United States of America, two originated from Canada, and the remaining from the Netherlands and Australia. A summary of the included studies and their key findings is presented in table 1. As with the previous review, the table has been colour coded - yellow indicates studies with participants assigned to a service dog.

Health and Wellbeing Outcomes

Reduction in PTSD Symptoms

Five studies reported service dogs were associated with a significant reduction in the experience of PTSD symptoms (Bergen-Cico et al., 2018; Rodriguez et al., 2020; Scotland-Coogan, Whitworth, & Wharton, 2020; Whitworth, Scotland-Coogan & Wharton, 2019; Vincent et al., 2019). Moreover, the preliminary evidence from the randomised large-scale Department of Veteran' Affairs (VA) Office of Research and Development trial (2021) indicates a significant drop in PTSD symptom scores on the PTSD Checklist – Military Version. Moreover, these six studies all indicated significant improvements in reported quality and duration of sleep, and a reduction in the experience of anxiety and depression. An additional study presented qualitative evidence indicating a self-reported reduction in the severity of PTSD symptoms with the commencement of a 14-week service dog training program (Scotland-Coogan, 2019). An exploratory case study conducted by Husband, Ahmed & Dell (2019) reported participants, self-identifying as having problematic substance use, attributed the introduction of their service dog with a decrease in problematic prescription and licit or illicit substance use.

Quality of Life

Only one of the studies included self-reported measures assessing quality of life outcomes (Vincent et al., 2019). The results of the study indicate that the acquisition of a service dog was positively correlated to a veteran's quality of life at 18-months post intervention. These results are supported by the preliminary evidence presented within the VA Office of Research and Development trial (2021). These early results confer service dog provision is associated with improvements across the physical component and mental component summary scores of the Veteran's Rand 12 Item Health Survey. A mixed method study reported the impacts of service dog provision on quality of life and relationship functioning amongst military-connected couples (McCall, Rodriguez, MacDermid-Wadsworth, Meis, & O'Haire, 2020). The results on a series of standardised self-report measures indicated, after controlling for demographic variables, partners in the intervention group reported improvements in veteran

functioning, family relationship, and partner's quality of life. Finally, a cross-sectional study presented the impacts of a service dogs on the psychosocial functioning of family members or spouses of individuals with chronic conditions (Bibbo, Rodriguez & O'Haire, 2019). The results determined that provision of a service dog was closely associated with greater psychosocial health and emotional functioning as a result of the amelioration of health-related worry regarding the service dog recipient.

Qualitative Accounts of Health and Wellbeing Outcomes – Sleep, Activity Engagement, and Social Reintegration

Twelve of the included studies utilised semi-structured interviews to report on qualitative outcomes for service dog recipients. Consistent themes arising across the studies included, decreasing isolation, companionship, and renewed sense of safety. Three of these studies reported on additional themes such as reintegration into the community and a return to meaningful patterns of activity performance (Crowe, Sanchez, Howard, Western, & Barger, 2018a; Crowe, Nguyen, Tryon, Barger & Sanchez, 2018b; McLaughlin & Hamilton, 2019). An exploratory qualitative study conducted by Crowe et al. (2018a) utilised a series of focus groups and individual interviews to report a positive relationship between service dog provision and handler re-integration into the community. A preliminary pilot study conducted by McLaughlin & Hamilton (2019) indicated participants saw an improvement in their participation in daily occupations due to a sense of safety and confidence. Participants in this study reported a return to valued leisure activity, reconnection with their friends and family, and indicated an increased sense of safety in public spaces or crowded areas. Finally, a study completed by Crowe et al. (2018b) reported service dogs supported healthy behaviours such as reducing reliance on medication, improving quality of sleep, pain management, and physical and emotional health awareness. In addition, participants identified the sense of safety provided by their service dog enabled the completion of meaningful household tasks and leisure activities and facilitated interactions with friends and family.

Challenges Associated with Service Dog Ownership

Three studies utilising a series of qualitative questionnaires identified participants reported challenges associated with service dog ownership. All three studies indicated participant's reported challenges regarding the financial strain associated with their service dog's veterinary care (Floore-Guetschow, 2020; McLaughlin & Hamilton, 2019; Van Houtert et al., 2019). One study, comprising six participants, reported concern regarding the death of their service dog and how they would cope with the loss (McLaughlin & Hamilton, 2019).

Evaluation of Article Methodology

The current selection of articles was evaluated on the basis of sample size and characteristics, study design and assessment type. The included articles presented the outcomes of a total of 418 individuals paired with a service dog. The participant sample size ranged from four to 122, with seven of the included studies presenting a small

sample of ≤ 15 participants. Almost all participants were military veterans, however, McCall et al. (2020) included partner veteran dyads (n = 30), Bibbo et al. (2019) reported on caregivers and spouses (n=128) and Husband et al. (2019) included 1 participant who was an ex-police officer. Fourteen of the studies included participants with a diagnosis of PTSD, and one study reported on outcomes across a range of disabilities and chronic conditions (Bibbo et al., 2019). Only five of the final sample of studies included a comparison condition, across all studies this was a between-participant comparison against a waitlist control group. Three studies included a follow up assessment conducted at either 12-months (Bergen-Cico et al., 2018) or 18-months post intervention (VA Office of Research and Development, 2021; Vincent et al., 2019). Qualitative interviews were the most common means of assessment across the studies included for review (n = 6). Two studies reported the experience of PTSD symptomology using the Trauma Symptom Inventory-2 (TSI-2) (Scotland-Coogan, 2020; Whitworth et al., 2019). Three studies assessed PTSD symptom management using the PTSD Checklist Military Version (PCL-M) (Bergen-Cico et al., 2018; VA Office of Research and Development, 2021; Vincent et al., 2019) and another using the PTSD Symptom Severity 20-item scale (Rodriguez et al., 2020). The VA Office of Research and Development trial (2021) examined limitations on activity using the WHO-DAS 2.0 and quality of life using the Veterans Rand 12-item survey (VR-12). The studies reporting on the impact on relationship functioning and family member psychosocial wellbeing, assessed these outcomes using a range of scales and qualitative prompts.

The majority of studies included for review reported on a small sample size of participants, did not present a control condition, and relied on anecdotal or self-reported measures. These limitations in study design and methodology indicate a need for caution when considering the overall effectiveness of the intervention. However, four studies with sound methodological rigour present a promising significant reduction in PTSD symptomology comparative to a waitlist control (Bergen-Cico et al., 2018; Rodriguez et al., 2020; VA Office of Research and Development, 2021; Vincent et al., 2019). These studies, in addition to the four previously discussed by Frazer (2018), contribute to the development of a robust and increasing evidence base for this adjunct intervention.

Future Directions of Research

Studies Currently Underway

There are a number of pending results from a series of International and Australian based clinical trials and pilot programs which seek to fortify the current evidence base and contribute to future trial design. The three current International trials are presented in Frazer's original 2018 review, and the results of these trials are still awaiting publication. Of particular interest, will be the final publication of the results of the large-scale randomised trial - *Can service dogs improve activity and quality of life in veterans with PTSD?* conducted by VA Office of Research and Development. This three-year prospective study engages a total sample of 220 military veterans, randomised

to either an intervention or control group. Preliminary results published March 2021 indicate a significant reduction in PTSD symptom scores, improvements in quality of life, and a decline in suicidality. The final results of the extended 18-month follow up period will contribute to the largely unknown longer-term effects of service dog intervention.

In addition, the Department of Veteran Affairs (DVA) in collaboration with La Trobe University is conducting a four-year pilot program to match and train 20 service dogs for ADF veterans. The pilot program will investigate the impact of service dogs on PTSD, with preliminary recruiting for additional trials underway. The program, conducted by lead researcher Tiffani Howell, will provide a significant contribution to the sparse Australian evidence base, and is expected to report 2021/22.

Recommendations for Further Study

The current review indicated the strength and generalisability of the emerging preliminary evidence regarding the effectiveness of service dogs was limited by design and methodological features of the current evidence base. These limitations typically included a small sample size and reliance on self-report measures, presenting the risk of expectancy biases (Cook, 2010). Furthermore, previous studies posit the potential that baseline measurements may be inflated to justify the provision of a service dog (O’Haire & Rodriguez, 2018; Van Houtert et al., 2018). To mitigate biases in self-report, future studies should combine physiological and blinded assessment to obtain objective indicators of change over time and between participant groups (O’Haire & Rodriguez, 2018).

In addition, there is a limited number of studies employing substantial follow up periods, therefore the long-term impact is largely unknown. Yount et al. (2012) demonstrates significant anecdotal evidence to suggest a multitude of long-term benefits including re-engagement in the community, support for independent living, and decreased usage of prescription medication. Further robust studies should employ a longitudinal design to fortify this preliminary evidence.

Finally, individual differences in treatment receptivity have yet to be explored, further studies should include an extensive intake process to define type of usual care (Van Houtert et al., 2018). O’Haire & Rodriguez (2018) indicate this will provide beneficial evaluation on the impact of service dogs on usual care and generate an understanding of ‘best-practice’ with regards to incorporating service dogs as an adjunct to traditional treatment modalities.

Conclusion

This review presented a contemporary overview of the current state of the evidence base regarding the effectiveness of service dogs as an adjunct therapy for the management of PTSD. A final selection of 15 studies was included for review, comprising 418 participants paired with service dogs and a single systematic review.

This piece indicates growing preliminary evidence to support service dogs' effectiveness as an adjunct therapy. The included studies conferred service dogs can improve quality of life, positively influence the experience of PTSD symptomology, and facilitate social reconnection. However, limitations in the included articles' design and methodology indicate a need to view the current results with caution, particularly the generalisability to larger population groups outside military veterans (ie. First Responders and other clients with a clinical diagnosis of PTSD). The pending clinical trials and pilot programs seek to address these limitations, fortify the evidence base, and contribute to the sparse Australian based literature. Given the promising preliminary data and anecdotal value of service dogs as an adjunct therapy, further robust research should be undertaken to standardise treatment protocols and evaluate the generalisability to larger population groups.

Articles Selected for Inclusion

References & Title	Participant Group	Study Type	Outcomes	Results
<p>Bergen-Cico, Smith, Wolford, Gooley, Hannon, Woodruff (2018), United States of America</p> <p><i>Dog ownership and training reduces post-traumatic stress symptoms and increases self-compassion among veterans: results of a longitudinal control study.</i></p>	<p>N= 48 U.S Military Veterans with a diagnosis of PTSD, either enrolled in assistance dog training program or waitlist control group</p>	<p>Quasi-experimental, two cohorts, 12-month follow-up assessment</p>	<p>PTSD Symptom Management (measured using the PTSD Checklist, Military Version [PCL-M]), Perceived Stress, Self-Compassion (self-compassion scale composite and subscales for isolation and self-judgment)</p>	<p>Veterans participating in Dogs2Vets owner-trainer program experiences significant reductions in symptoms of PTSD, perceived stress, isolation, and self-judgement and significant increase in self-compassion. There were no significant improvements in these measures among veterans in the waitlist control group.</p> <p>Qualitative data reinforced statistical findings with the following themes emerging: (a) decreases isolation; (b) unconditional acceptance and companionship; (c) renewed sense of safety and purpose.</p>
<p>Bibbo, J., Rodriguez, K.E., & O’Haire M.E. (2019), United States of America</p> <p><i>Impact of Service Dogs on Family Members’ Psychosocial Functioning</i></p>	<p>N = 143 family members N=51 currently has a service dog N=77 on waitlist to receive a service dog</p>	<p>Cross-sectional with a single time-point assessment</p>	<p>Presence of a service dog saw significant and positive impact on family members. Evidence suggested a service dog had an indirect impact of improved emotional functioning</p>	<p>Service dogs saw reduced anxiety of recipient’s health</p>
<p>Crowe, Nguyen, Tryon, Barger & Sanchez (2018), United States of America</p> <p><i>How Service Dogs Enhance Veterans’ Occupational Performance in the Home: A Qualitative Perspective</i></p>	<p>N = 6 U.S Military Veterans with a diagnosis of PTSD graduated from assistance dog training program</p>	<p>Exploratory qualitative research</p>	<p>Semi-structured interviews collecting data on performance of home activities across the following areas: self-care, household tasks, leisure activities, and interactions with family and friends</p>	<p>Semi-structured interviews identified four themes (a) providing physical safety and peace of mind; (b) supporting healthy behaviours; (c) my service dog, my hero; (d) influencing family and friend relationships.</p>

<p>Crowe, Sanchez, Howard, Western & Barger (2018), United States of America</p> <p><i>Veterans transitioning from isolation to integration: a look at veteran/service dog partnerships</i></p>	<p>N = 9 U.S Military Veterans with a diagnosis of PTSD participating in assistance dog training program</p>	<p>Explorative qualitative research</p>	<p>Semi-structured interviews were used to investigate veteran/service dog relationships related to community involvement, family and friend relationships, self-care, work, and leisure</p>	<p>Results from semi-structured interview indicated that service dogs supported veterans to meet their goals to develop key areas of their lives</p>
<p>Department of Veterans Affairs 2021, United States of America</p> <p><i>A Randomised trial to differential effectiveness of service dog pairing verses emotional support dog pairing to improve quality of life for Veterans with PTSD</i></p>	<p>N=227</p>	<p>Randomised Control Trial</p>	<p>Both groups showed slight improvements in mental health, however no change in level of disability or physical health. Both groups saw improvements in overall quality of life</p>	<p>Both cohorts saw a decrease in PTSD symptomology, but service dog provision cohort saw a significant 3.7-point drop in PTSD symptomology and improvements in sleep quality and duration in both groups.</p>
<p>Floore-Guetschow (2020), United States of America</p> <p><i>Exploring the Effects of Service Dogs on PTSD Symptoms</i></p> <p>*Dissertation</p>	<p>N = 7 U.S Military Veterans with a diagnosis of PTSD and currently engaged with service dog</p>	<p>phenomenological qualitative study</p>	<p>Semi-structured interview of participants process in obtaining a service dog and changes observed since obtaining their service dog. Service dog has been found to be a constant companion and veterans and their service dog form a close bond, likened to a “battle buddy.”</p>	<p>Thematic analysis identified positive themes associated with providing support, benefit of having a service dog, drawbacks to having a service dog and service dog training. Service dog has been found to assist their handler in reintegrating and improve in daily life.</p>
<p>Husband, Ahmed & Dell (2019), Canada</p> <p><i>An exploratory case study of the impact of psychiatric service dogs on problematic</i></p>	<p>N = 4 participants at assistance dog training program with diagnosis of PTSD and self-identifying</p>	<p>Explorative case study</p>	<p>Semi-structured interview of</p> <ul style="list-style-type: none"> - Prescribed medication use - Licit and illicit substance <p>before introduction of service dog</p>	<p>All participants associated their current problematic substance use in large part to managing their PTSD symptoms.</p> <p>The current study found that assistance dogs were perceived by the participants to provide steady and additional personalised</p>

<i>substance use among PTSD-diagnosed veterans.</i>	as having problematic substance use, n = 3 Canadian Military Veterans and n= ex-police officer			support and attributed decrease in problematic use of prescribed and licit or illicit substances to introduction of assistance dogs.
McCall, Rodriquez, MacDermid-Wadsworth, Meis & O’Haire (2020), United States of America <i>“A Part of Our Family”? Effects of Psychiatric Service Dogs on Quality of Life and Relationship Functioning in Military-Connected Couples</i>	N= 60 (partner veteran dyads), n= 37 veterans paired with a service dog, and n= 23 awaiting placement on waitlist.	Mixed-method cross sectional	Partner Mental Wellbeing, Partner Quality of Life, Partner Social Functioning, Partner Work Functioning, Partner Relationship Functioning & Veteran Relationship Functioning	After controlling for demographic variables, partners in the service dog group (relative to those on the waitlist) may experience higher levels of resilience and companionship, and lower levels of anger, socialisation, and work impairment. Partners reported improvements in veteran functioning, family relationships, and partner’s quality of life.
McLaughlin & Hamilton (2019), Australia <i>Exploring the influence of service dogs on participation in daily occupations by veterans with PTSD: a pilot study</i>	N= 6 ADF Veterans with a diagnosis of PTSD partnered with an assistance dog	Pilot study – qualitative data	PTSD Symptom Management Participation in daily occupations	Semi-structured interviews with participants identified the following main themes (a) reduced isolation (b) increased feelings of safety (c) referring to dog as ‘lifeline’ (d) improved self-management (e) reconnection to social or familial relationships (f) challenges arising ownership and training assistance dog
Rodriguez et al., (2020) United States of America <i>Defining the PTSD Service Dog Intervention: Perceived Importance, Usage, and</i>	N = 186 military members and veterans, n=112 who had received a PTSD service dog and n=74 who were on	Cross sectional design	PTSD Symptom Severity: 20-item PCL-5	After controlling the demographic variables there was a significant association between having a service dog and lower PTSD symptom severity in both total severity (p <.001), and each symptom cluster (p <.001).

<i>symptom specificity of psychiatric service dogs for military Veterans</i>	waitlist to receive assistance dog			
Scotland-Coogan (2019), United States of America <i>Anxiety Symptoms and Sleep Disturbances in Veterans with Post-Traumatic Stress Disorder: The Impact of Receiving and Training a Service Dog</i>	N= 15 U.S military veterans diagnosed with PTSD and participating in 14 week training program, receiving, and training their service dog	Collective case study	Semi-structured interview, considering experience of symptoms and changes in symptoms once starting the program.	Participated reported symptom severity decreased with commencement of the program, with residual effects of decreased anxiety symptoms, sleep disturbances, and nightmares.
Scotland-Coogan, Whitworth & Wharton (2020), United States of America <i>Outcomes of Participation in service dog training program for veterans with PTSD.</i>	N = 55 U.S Military Veterans with a diagnosis of PTSD, participating in service dog training program		Experience of PTSD Symptomology, measured using Trauma Symptom Inventory-2 (TSI-2)	Participants noted significant decreases in the four summary factors of self-disturbance, post-traumatic stress, externalisation, and somatization. Indicating that participants experienced significant reduction in a broad scope of psychological symptoms associated with PTSD
Van Houtert, Endenburg, Wijnker, Rodenburg & Vermetten (2019) <i>The study of service dogs for veterans with posttraumatic stress disorder: a scoping literature review</i>		Scoping Literature Review	only originally published articles which focus on the influence of dogs on veterans with PTSD as a primary subject were included.	This systematic review builds upon 2016 review conducted by Krause-Parello et al. Themes emerging consistent with this review include: definition of a service dog, lack of consensus regarding PTSD development, social/psychological benefits of a service dog, cost and availability barriers, and welfare of service dogs. Additional themes identified include expectations veterans have of a service dog, reservations about service dogs, role of service dog in overall treatment plan, and best practice regarding PTSD.

<p>Vincent et al. (2019)</p> <p><i>Psychiatric Service Dog Outcomes for Veterans with Posttraumatic Stress Disorder over an 18-month period: A Pilot Study</i></p>	<p>N = 19</p>	<p>Pilot Study</p>	<p>Veterans reported improved quality of life and increased social participation and improved sleep quality. Veterans felt more relaxed when accessing public places</p>	<p>Psychiatric service dogs improve veterans well-being and community functioning and saw decreases in PTSD and depressive symptoms</p>
<p>Whitworth, Scotland-Coogan & Wharton (2019), United States of America</p> <p><i>Service dog training programs for veterans with PTSD: results of a pilot-controlled study</i></p>	<p>N=30 military veterans with diagnosis of PTSD, n=15 received and training with assistance dog and n=15 on program waitlist</p>	<p>Pilot study</p>	<p>PTSD Symptomology, measured using Trauma Symptom Inventory-2 (TSI-2) and World Health Organisation-Disability Assessment Schedule 2.0 (WHO-DAS 2.0)</p>	<p>Compared to the waitlist control group, participants who completed the service dog training program reported significant improvement in three of four factors on TSI-2, including self-disturbance, post-traumatic stress, and externalisation. There was no significant difference between groups on somatization.</p> <p>Veterans in service dog group noted significant reductions in broad psychological symptoms associated with their PTSD, significant decreases in depression and anger comparative to control group</p>
<p>Clinical Trials and Pilot Programs</p>				
<p>Krause-Parello & Morales, 2018</p> <p><i>Military Veterans and Service Dogs: A Qualitative Inquiry using Interpretive Phenomenological Analysis</i></p>	<p>N = 21</p>	<p><i>Interpretive phenomenological analysis</i></p>		<p>Uncovered the perspective of veterans with service dogs through semi-structured interviews. Results indicated improvement in veteran's physical and psychological health, providing a coping resource and form of social support, supported sustaining independence</p>
<p>La Trobe University in conjunction with the Cwth Department of Veterans' Affairs -</p>	<p>N = 20</p>			<p>Australian Government is working in collaboration with LaTrobe University to investigate the impact of service dogs in veterans with PTSD.</p>

Preliminary Pilot Program (commenced 2018), Australia				Recruitment of participants commenced in early 2019. Australian Government is currently investing in this trial to analyse the impact of service dogs on veterans with PTSD. Trial is expected in 2021/22.
O’Harie (2020) United States Quantifying the Efficacy and Role of Service Dogs for Military Veterans with PTSD	N = 100	Non-randomised	Provision of evidence-based efficacy of service dogs. completion of trial aims to establish initial therapeutic efficiency of service dogs	
Saunders et al., 2017. <i>Design and challenges for a randomised, multi-site clinical trial comparing the use of service dogs and emotional support in Veterans with PTSD</i>		<i>Randomised, multi-site clinical trial</i>		Aims to guide future researchers to better understand the role of service dogs and management of veterans experiencing mental health conditions such as PTSD.

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