Service Dog Training Program for Treatment of Posttraumatic Stress in Service Members

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ABSTRACT
In July 2008, social worker and certified service dog trainer Rick Yount created the first Warrior dog-training program designed to be a safe, effective, nonpharmaceutical intervention to treat the symptoms of posttraumatic stress disorder (PTSD) and traumatic brain injury in Veterans and service members undergoing treatment at a large Veterans Administration residential treatment facility. In 2009, Yount was asked to establish the program at a prominent Department of Defense medical center. In October 2010, Yount was invited to create a service dog training program to support the research and treatment mission at the new National Intrepid Center of Excellence (NICoE), in Bethesda, Maryland. This program, now being offered through the nonprofit foundation Warrior Canine Connection, continues to produce anecdotal evidence that training service dogs reduces the PTSD symptoms of Warrior-trainers and that the presence of the dogs enhances the sense of wellness in the NICoE staff and the families of our Wounded Warriors. Under the research leadership of the NICoE, the Warrior Canine Connection research team plans to systematically investigate the physiological, psychological, and behavioral benefits of this program.

BACKGROUND
In 1996, Rick Yount, a social worker who specialized in working with children in the foster care system, was directed by the court to transport an 11-year-old boy from his biological mother to an emergency foster home. Yount took his new golden retriever pup, Gabe, along for the ride and found that this young dog had a knack for soothing a child, even during the most traumatic times. Yount subsequently had Gabe certified as a therapy dog, and Gabe began accompanying him to work every day.

In 2001, Gabe inspired Yount to create the award-winning Golden Rule Assistance Dog (GRAD) program. The Morgantown [West Virginia] Alternative Learning Center hired Yount to offer his GRAD program to at-risk teens unable to participate in the public school system. Training service dogs helped the teens develop social and emotional skills. Two of the GRAD-trained assistance dogs were partnered with disabled Veterans.

In 2008, Yount created a similar program to help troops returning from combat zones cope with the trauma of war. The Warrior-trained service dog program he established at a large Veterans Administration residential treatment center for posttraumatic stress disorder (PTSD), was conceived as a safe, effective, nonpharmaceutical intervention to help treat the symptoms of PTSD and traumatic brain injury. The program was also designed to offer service members suffering from PTSD the opportunity to reengage in a critical military support mission while receiving treatment for their psychological wounds. The purpose-bred program dogs, trained by service members with PTSD, become highly skilled assistance dogs capable of offering Veterans with disabilities the social support and mobility assistance they need to enhance the quality of their lives. The Warrior Ethos has inspired even the most traumatized service members to participate in and benefit from the program. Approximately 200 service members have participated in the pilot for this service dog training program at the Veterans Administration (VA) treatment facility. Five Warrior-trained service dogs have been placed with Veterans. Two service members have become accredited service dog-trainers and are pursuing careers in this field.

In 2009, Yount and the VA team presented anecdotal program observations at the Veterans Administration National Mental Health Conference and the annual meeting of the International Society for Traumatic Stress Studies. Based on the promising effects, Yount was asked to establish the program at a prominent Department of Defense medical center. Over 50 Soldiers have participated in the formal internship program or
the patient service dog training program since February 2009.

In October 2010, Yount was invited to design a service dog training program at the new National Intrepid Center of Excellence (NICoE), located on the campus of the Walter Reed National Military Medical Center in Bethesda, Maryland. The NICoE is a medical facility dedicated to the research, diagnosis, and treatment of military personnel suffering from traumatic brain injury and psychological health issues. Through this program, now being offered through the nonprofit foundation Warrior Canine Connection (WCC), approximately 85 Wounded Warriors have had direct involvement with the service dogs in training at the NICoE.

The idea of incorporating a volunteer service dog training program specifically designed to remediate the core symptoms of PTSD builds on a well-described body of research into the use of therapy dogs with patients who have psychiatric disorders. Studies have shown that under stressful conditions, the presence of a dog is effective at reducing stress responses in healthy adults, adults with hypertension, and in children with attachment disorders.

The WCC service dog training program provides Wounded Warriors with PTSD the opportunity to engage in highly focused, safe, positive social contact with dogs that are specifically bred for the temperament that best responds to and solicits therapeutic social engagement. Anecdotal information from this program supports previous findings that suggest that training service dogs reduces the symptoms of PTSD in the Warrior trainers.

**Military Need for Service Dogs**

In 2009, Seal et al found that approximately 40% of Iraq and Afghanistan Veterans treated at American health centers during the previous 6 years were diagnosed with PTSD, depression, or other mental health issues. Their study also found that a lack of social support (separated, divorced, widowed, etc) may pose a serious risk for new postdeployment mental health problems and underscores the need for social support services for returning Veterans who are unmarried and/or without social support. Sixty percent of PTSD patients still meet the criteria for PTSD after being treated with empirically supported interventions. Therefore, it is imperative to explore adjunctive treatments for PTSD that may improve outcomes.

There is also substantial interest in service dogs among Veterans with spinal cord injuries. In 2007, Brashear and Rintala reported that 30% of Veterans with spinal cord injuries indicated at least some interest in obtaining a service dog, and 42% desired information concerning service dogs. This urgent need of Veterans for well-trained service dogs has been recognized by Congress with passage of several laws authorizing the Department of Veterans Affairs to provide service dogs to disabled Veterans. Further, the Army Family Action Planning Committee named “funding of service dogs for Wounded Warriors” as their number 2 priority for 2010.

**Cost Effectiveness**

The WCC program breeds its own high-quality, purpose-bred service dogs. Warrior Canine Connection staff or trained “puppy-parents” take responsibility for the welfare and behavior of the dogs at all times when the dogs are on military or Veterans Administration property. This circumvents the logistical difficulties of owning and keeping service dogs on military or Veterans Administration property. It also affords active-duty service members and Veterans who cannot or do not own dogs the opportunity to experience the high quality connection with a dog that can provide powerful relief of PTSD symptoms. The program is also highly cost-effective, providing dog-assisted therapeutic relief to the largest number of PTSD patients with a limited number of service dogs. The Warrior-trainers experience relief from their PTSD symptoms while creating highly valuable service dogs that can be provided free of charge to Veterans with disabilities. The net result is a highly symbiotic, effective method of meeting several critical needs of Wounded Warriors and their caregivers.

**Working Dogs/Working Trainers**

The WCC training philosophy is based on positive methods of shaping behaviors that are most effective at forming strong social bonds. Mastering the skills and patience required to train a service dog helps the WCC trainers to regain control of their emotions, focus their attention, and improve their social competence and overall sense of wellbeing. Two participants in the original Veterans Administration pilot program have gone on to pursue accreditation as professional dog trainers, and it is anticipated that many more will be inspired to become professionally involved in creating the thousands of service dogs that will be needed by our Wounded Warriors.

**Dogs Healing the Workplace**

The impact of the WCC program has been observed to reach well beyond its participants. Health practitioners, staff, and patients being treated throughout the Department of Defense medical center report feeling happier just having such beautiful, loving, well behaved dogs with which to interact throughout the day. These
frequent and fun encounters also offer Warrior-trainers the therapeutic opportunity to share their positive experiences with fellow Veterans and service members.

**DOGS HEALING THE HOME**

The methodology used in training service dogs to assist individuals with mobility impairments has striking similarities to the best practices of effective parenting. The goal of creating a respectful and responsible service dog requires the employment of sound behavioral shaping techniques based on positive and humane methods. Using the service dog training to draw attention to these parallels provides a means to teach critical parenting tools in a nonthreatening manner.

**CLINICAL OBSERVATIONS AND PARTICIPANT TESTIMONIALS**

As reported by Yount and his VA colleagues at the 2009 Veterans Administration National Mental Health Conference and the Annual Conference for the International Society for Traumatic Stress Studies, anecdotal reports collected from clinicians and program instructors indicate that Veterans and service members who engage in the training of service dogs exhibit the following improvements:

- Increase in patience, impulse control, emotional regulation
- Improved ability to display affect, decrease in emotional numbness
- Improved sleep
- Decreased depression, increase in positive sense of purpose
- Decrease in startle responses
- Decrease in pain medications
- Increased sense of belongingness/acceptance
- Increase in assertiveness skills
- Improved parenting skills and family dynamics
- Fewer war stories and more in the moment thinking
- Lowered stress levels, increased sense of calm

The ability of these dogs to help Warrior-trainers become less reliant on powerful pain and antipsychotic medications takes on particular significance in light of the 2010 Department of Defense report, *Health Promotion, Risk Reduction, and Suicide Prevention*, which found that suicides and accidental drug overdoses are on the rise, particularly in the Army and Marine Corps. According to the report, one third of Army suicides involve prescription drugs, and 14% of Army personnel are taking prescribed opiate painkillers. Many service members also take more than one kind of medication, including those that are known to increase suicidal thinking in patients.

The following voluntary interviews* were given to WCC staff by service members participating in the WCC program:

It’s been great working with the dogs. They are helping me with my depression, anxiety, and sleep. With a WCC dog at my side, my stress measurements returned to normal for the first time.

The dogs have a drive to work and take care of people. They do so because they care, not because they have to. It’s great knowing that I am helping to train a service dog for a service member who has physical disabilities.

The dog I am training bonded quickly with my daughter and me. I was given the opportunity to take the dog I bonded with overnight while my 4-year-old daughter was visiting. She was able to see a different side of me. Instead of being a strict father, she and the dog were getting praised for doing something right rather than being punished for something they did wrong. It brought to light

*All persons involved in these accounts gave consent for publication.

*The Authors*
The results of animal and human experiments show that, under stressful conditions, the existence of a partner to which the subject shows attachment and bonding can produce a “stress buffering effect.” For example, interaction with animals reduces symptoms of depression and stress responses as measured by cardiac reactivity and serum cortisol.

Research also shows that positive social interactions with dogs may offer a safe, effective, and relatively inexpensive way to increase endogenous levels of the neurochemical oxytocin and other important antistress agents in humans.

In 2003, Odendaal and Meintjes first showed that human-dog affiliative behavior (quiet play with the dog involving talking, stroking, and petting the dog with the human subject’s attention focused completely on the dog) produced a significant change in neurohormones related to stress reduction: increases in beta endorphin, oxytocin (OXT), prolactin, dopamine, and decreases in cortisol. The most impressive increase was in plasma levels of OXT (doubling in both dog and human after an interaction session). Subsequent to that study, Nagasawa showed that focused eye contact between humans and dogs increased OXT levels in the human (urine level). Miller found that serum oxytocin levels increased more for women when interacting with their dogs than when reading nonfiction material. Most recently, Handlin et al found a significant increase in serum oxytocin in both dog and owner after 15 minutes of friendly interaction, along with a decrease in the heart rate of their owners. The authors concluded that this antistress effect indicates that sensory interaction with dogs can trigger a concurrent increase of oxytocin in the human brain. Neumann agrees:

It is very likely that such interactions activate intracerebral OXT pathways contributing to the positive mental and physical health effects of dog ownership.

The hypotheses gained support when Strathearn et al found that elevations of peripheral oxytocin are, indeed, correlated with increased activity in the oxytocin-related hypothalamic-pituitary regions and the reward centers of the human brain.

The neuropeptide oxytocin has been shown to modulate symptoms important in the psychopathology of PTSD, such as anxiety including fear response and hyperarousal, interpersonal difficulties/social isolation, physical pain, and sleep disturbances. According to Marazziti and Dell’Osso, it is well established that OXT acts on the hypothalamic-pituitary-adrenal axis. Oxytocin neurons also modulate the locus coeruleus, the central amygdala, and other arousal centers of the central nervous system to attenuate stress-induced neuroendocrine activity. Oxytocin receptor-expressing neural circuits in the central amygdala connect to the medial prefrontal cortex.
to suppress neurons that produce the freezing reaction to fear while promoting risk assessment and exploratory response to frightening stimuli.OXytocin has also been shown to reduce levels of endotoxin-induced levels of cytokines, adrenocorticotrophic hormone (ACTH), and cortisol. All of these brain systems and neurochemical responses have been shown to be functionally important in PTSD.

Glucocorticoids and their upstream regulators, OXT, corticotrophin-releasing hormone, arginine vasopressin, and ACTH, have also been shown to be altered in PTSD. There is evidence that in PTSD there is deficient glucocorticoid signaling, whether from cortisol deficiency or from changes in the glucocorticoid receptor. As such, this has also been associated with deficient inhibition of immune response, resulting in increases of plasma and colony stimulating factor cytokines such as IL-6, IL-1 and TNF alpha. Posttraumatic stress in combat veterans has been shown to be associated with an increased prevalence of diseases of inflammatory etiology, such as atherosclerosis, arthritis, etc. Oxytocin has also been shown to be a powerful antioxidant with antiinflammatory functions that quicken healing of wounds, interperitoneal sepsis, and renal ischemia in rodents and humans.

With respect to anxiety and arousal, in animal studies, OXT has been shown to potentiate the anxiolytic effect of diazepam through its action on the amygdale and inhibits the norepinephrine system’s arousal of the sympathetic nervous system, while increasing parasympathetic tone. Also, OXT imbalances have been linked to anxiety in patients with major depression and autism.

In rats, oxytocin and corticotrophin-releasing factor neurons co-localized in the paraventricular nucleus and bed nucleus of the stria terminalis strongly suggest that they provide a crucial feedback loop between these 2 systems that could significantly impact affective and social behaviors, particularly during times of stress. Streipsens and colleagues have compiled a comprehensive review of the research showing that intranasal oxytocin application enhances a “plethora of prosocial effects” including: a reduction in interpersonal conflict and negative communication; promotion of trust in strangers; increased gaze to the eye region of faces; improvement in the correct identification of the internal emotional state of another; enhancement of the processing of positive social information compared to negative information; reversal in the effect of aversive conditioning of social stimuli; enhancement of the buffering effect of social support on stress responsiveness; and reduced stress response in people with a history of early trauma.

War veterans with PTSD given one dose of OXT demonstrated decreased physiologic response to provoked combat memories. Oxytocin has also been shown to modulate pain in humans and has been shown to impact sleep patterns in animal studies, two significant corollary symptoms of PTSD.

Oxytocin levels are naturally increased by loving gaze, gentle touch, warmth, and close social relationships. Olff et al. suggest that the “optimalization of social support” might naturally boost oxytocin and aid in the treatment of PTSD symptoms. WCC’s dogs are bred to do just that. They welcome nurturing touch and provide that profound sense of social support that appears to make them potent, natural oxytocin agonists and valuable therapeutic partners in the treatment of combat PTSD.

THE NEED FOR EMPIRICAL STUDY OF THE WARRIOR CANINE CONNECTION INTERVENTION

Based on the scientific literature and the clinical and anecdotal observations of the program to date, we hypothesize that the focused, positive interactions involved in training a service dog are linked to an increase in oxytocin, and reduction in biomarkers of stress and inflammation. Studies designed to investigate the causes and effects of the WCC program may provide valuable evidence that has been lacking in the study of animal-assisted therapy. We hope that the WCC service dog training study will advance not only our scientific understanding of the healing powers of animals in our lives, but provide the rigorous science that the Department of Defense and the Department of Veterans Affairs need to support animal-assisted therapy programs and the placement of service dogs with service members and Veterans with psychiatric and physical disabilities.

REFERENCES


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