Journal of Experiential Education
1–13

DOI: 10.1177/1053825915596431
jee.sagepub.com
SAGE

Natural Medicine: Wilderness Experience Outcomes for Combat Veterans

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Abstract

Wilderness Experience Programs (WEPs) have been shown to enhance psychological well-being for numerous populations. However, among veteran populations, these studies have historically evaluated programs that are short-term experiences, usually less than 1 week. The current research sought to evaluate a WEP for post-9/11 combat veterans engaging in a 6-month long-distance thru-hike of the Appalachian Trail. Narratives were analyzed using grounded theory qualitative data analyses, and four themes were revealed: Social Reconnection, Life-Improving Change, Inner Peace and Psychological Healing, and Processing and Reflection.

Keywords

Wilderness Experience Program, combat veterans, long-distance hiking

The difficulties veterans confront reintegrating into civilian life after experiencing combat have been documented throughout the entire span of human history. The reintegration process can be long and difficult (Shay, 2003), which may exist because attitudes and emotional responses that are adaptive as survival strategies in war are often no longer useful in civilian life (Hoge, 2010). In 2013, the Veteran Administration (VA) released a report that garnered widespread media attention by reporting that approximately 22 combat veterans died by suicide each day (Kemp & Bossarte, 2013). Although this number is staggering, the report failed to show complete statistics with only 21 states included and the potential of many individuals classified incorrectly as

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non-veterans. Despite missing data, this report still lends evidence that many veterans face difficulty integrating back into civilian life.

Specifically, regarding mental health of pre- and post-9/11 veterans, Ramchand et al. (2014) polled caregivers and found that about 46% of pre-9/11 veterans required assistance in coping with stressful situations, and 36% had a mental health condition as opposed to 75% of post-9/11 veterans requiring assistance with coping and 64% having a mental health diagnosis. These numbers illustrate that it is the current generation of returning veterans that are having the most difficult time with transitioning.

The U.S. government has set aside resources to treat returning veterans. In fact, the VA budget has more than doubled since the attacks on September 11, 2001, with a budget of 124 billion dollars in 2012 (Scott, 2012). Despite these resources, long wait times, stigma related to receiving treatment, and perceived benefits of treatment are still barriers for soldiers seeking mental health services (Tanielian & Jaycox, 2008). Furthermore, veterans of Operation Enduring Freedom (OEF) or Operation Iraqi Freedom (OIF) who are actively seeking treatment are less likely to regularly attend treatment and more likely to completely abandon treatment than previous generations of combat veterans (Erbes, Curry, & Leskela, 2009). One belief is that existing treatment programs for combat veterans may simply not be a good fit for a newer generation of combat veterans. In support of this claim, Hundt and colleagues (2014) found that age was the only significant predictor of whether individuals used services offered by the VA, with older veterans more likely than younger veterans to seek out and attend treatment. Moreover, symptom severity was not a significant predictor in service use. In addition, only approximately 35% of veterans with a formal diagnosis of post-traumatic stress disorder (PTSD) seek treatment services within 1 year of their diagnosis (Cully et al., 2008), and even fewer who seek services through the VA are likely to complete treatment (Mott, Hundt, Sansgiry, Mignogna, & Cully, 2014). PTSD is characterized by the re-experiencing of a traumatic event accompanied by symptoms of increased arousal, avoidance of trauma-related stimuli, and negative alterations in cognition and mood either beginning or worsening after the traumatic event (American Psychiatric Association, 2013).

VA researchers found that 96% of those polled were in fact interested in services focusing on transition from military to civilian life; however, 53% of respondents reported they would prefer information through electronic means (Sayer et al., 2010). Receiving information through electronic means may not be a surprise when considering perceptions of OIF/OEF veterans. In a study by Vogt, Fox, and Di Leone (2014), participants consisting of OIF/OEF veterans did not strongly endorse negative stereotypes associated with mental illness. However, they worried about stigma in the workplace; half of the respondents felt that their career opportunities would be significantly limited if colleagues discovered they sought mental health treatment. Although they held generally positive beliefs about mental health treatment, their concerns about workplace stigma served as an obstacle to seeking treatment.

In response to these barriers, there has recently been a call for novel treatment options that may better suit the needs of combat veterans (e.g., Vogt et al., 2014). One novel approach has been the use of Wilderness Experience Programs (WEPs). WEPs

are defined as "organizations that conduct outdoor programs in the wilderness or comparable lands for purposes of personal growth, therapy, rehabilitation, education, or leadership/organization development" (Friese, Hendee, & Kinziger, 1998, p. 40). The literature is rife with terms used interchangeably to describe using nature as part of the healing process, including wilderness therapy (Russell, 2001), adventure therapy, adventure-based counseling, and outdoor behavioral health care (Houston, Knobb, Welsh, Houskamp, & David, 2010). In this article, we use the term *WEP* because it encompasses most of these other terms.

The concept of using wilderness settings to facilitate treatment is hardly new. Well-documented accounts of physicians prescribing "camp cures" for individuals suffering from mental exhaustion and emotional distress were common in the late 19th century in highly populated urban areas. The belief among physicians of that era was that an urban lifestyle depleted energy, which resulted in psychological distress that could be restored by engaging in a lifestyle closer to nature (Schuster, 2003). The use of WEPs has been specifically evaluated with combat veterans (Hyer, Boyd, Scurfield, Smith, & Burke, 1996). Although there are too few studies specifically evaluating combat veterans to make generalizable conclusions, interest in using wilderness settings for therapeutic gains for combat veterans is increasing (Caddick & Smith, 2014). Burke and Utley (2013) evaluated the response of four combat veterans after they engaged in a 9-day climb of Mount Kilimanjaro. Themes that emerged from structured interviews and researcher observations of the experience suggested an increase in self-determination, active coping skills, and perceived increase in social support occurred during the climb. Similar results emerged when 13 combat veterans engaged in a 4-day experience during which they kayaked during the day and camped along the river at night. Participants were asked to keep a journal of their experience (Dustin, Bricker, Arave, Wall, & Wendt, 2011). Common themes from these journals included decreases in hyperarousal, increased ability to reflect on life events in the natural environment, and increased positive mood. Another study evaluated the impact of a 5-day Outward Bound wilderness adventure course with 219 combat veteran participants who presented with symptoms of PTSD (Hyer et al., 1996). Researchers identified five themes: increased confidence, ability to enjoy life again, rediscovered enjoyment in outdoor activities, better control over negative emotions, and enhanced relationships with others.

Although research looking specifically at combat veterans using wilderness settings as a catalyst for therapeutic gains is promising, the small number of studies makes it difficult to make conclusive arguments (Caddick & Smith, 2014; Dustin et al., 2011). The purpose of the present research is to expand the literature on the benefits of WEPs by providing pilot data on the potential impact a longer and more intensive experience has on combat veterans. In addition, findings will be used to aid in the progression of future programs and lines of research. To date, no known published studies have systematically evaluated the benefits of hiking the Appalachian Trail (AT) for combat veterans. However, returning combat veterans since Earl Shaffer, the first AT thru-hiker and combat veteran of World War II, have used the AT as a method to cope with their wartime experiences. Upon Shaffer's return from combat,

he told his friends that he was going to "walk off the war" (Shaffer, 1983), a term that is commonly used by veterans on the AT today. Although meeting with a therapist once a week has shown effectiveness with improving the mental health for many returning veterans (Monson et al., 2006), we suggest that not only do WEPs carry less stigma than traditional therapy, the sheer number of hours of "therapy" obtained by hiking for a long period of time would take years to accomplish in traditional weekly therapy.

In addition, sometimes treatments that rely on "traditional" discussion or narration of trauma may be ineffective on a physiological level. During a study using positron emission tomography (PET), trauma narratives were constructed and then read to participants. PET scans revealed decreased activity in Broca's area (region responsible for speech production) located in the left hemisphere when the trauma narratives were read (Rauch et al., 1996). Bremner and colleagues (1995) measured hippocampal volume (associated with memory) in Vietnam veterans diagnosed with PTSD and found that those veterans showed a statistically significant 8% reduction in volume of the right hippocampus compared with control participants. Moreover, when these participants were administered the Wechsler Memory Scale, the veteran sample performed 40% worse on verbal memory subtests compared to controls of comparable age and education. Taken together, these studies suggest that even if trauma memories are intact, there may be physiological barriers to communicating thoughts and/or emotions surrounding the trauma.

The physiological damage induced by periods of extreme stress may be reversible. Brain derived neurotrophic factor (BDNF), a protein that promotes growth of new neurons and synapses, has been shown to act on the hippocampus and other regions of the brain that are essential in memory and higher order thinking (Yamada & Nabeshima, 2003). Studies have suggested that BDNF secretion increases during prolonged periods of voluntary physical exertion (Cotman & Berchtold, 2002). In addition, recent findings suggest that BDNF is essential in fear extinction and may serve a valuable therapeutic role in successful PTSD treatment (Neumeister, Corsi-Travali, & Green, 2013). With the benefits of increased physical activity and an experience that challenges the feelings of helplessness often associated with trauma (van der Kolk, 2002), WEPs may be uniquely positioned to benefit those who have not benefited from traditional psychotherapy as they engage in an active experiential learning paradigm (Gelkopf, Hasson-Ohayon, Bikman, & Kravetz, 2013).

The Warrior Hike program, which is a non-profit organization and seeks to aid combat veterans with their transition back into civilian life, is based on three key features aimed at facilitating change and improved mental health among the hikers (S. Gobin, personal communication, March 31, 2014)

1. *Physical demands*. Hikers in the program have schedules they must adhere to for their 6-month hike that, for the most part, consist of hiking through remote portions of the Appalachian ridgeline for 8 hr a day. This expenditure of energy on a daily basis is believed to help alleviate nervous energy and promote better sleep.
2. *Establishing bonds with other combat veterans*. The director aims to have 10 to 15 hikers on the trail each year. The hypothesis is that the experience of the

trail supports the building of strong friendships and deep bonding between hikers. Furthermore, as part of this philosophy, events are hosted by Veterans of Foreign War posts and American Legions posts in towns that are close proximity to the AT. These weekly events, referred to as "trail town events," typically involve hosted dinners for the hikers. Dinners and social opportunities give veterans from different generations the opportunity to share their stories and struggles as well as model successful reintegration into civilian life.

3. *Gradual re-socialization*. The Appalachian ridgeline is largely isolated and offers hikers a significant amount of time to be alone in the wilderness. This gives hikers long periods of time to be alone with their thoughts. However, the trail town events and contact with other hikers affords a gradual re-entry into social settings as compared with going straight into the workforce after combat. This is accomplished by social interactions with a variety of individuals from diverse backgrounds. Each year, an average of 2,000 hikers attempt to thru-hike the trail, and as many as 3 million hikers hike sections of the trail each year (Appalachian Trail Conservancy, 2000). With long periods of isolation broken up by encountering other hikers, the hypothesis is that veterans will gradually become re-socialized to civilian interaction.

This study aims to evaluate the therapeutic potential of hiking the AT for combat veterans. A review of the literature did not reveal any studies that evaluated a WEP of this length or time. Given the small number of respondents and our plan to continue with this line of research and attempt to obtain larger samples, we consider this investigation a pilot study with obtained themes promoting future research.

Method

Participants

Respondents were combat veterans who completed at least one post-9/11 deployment and completed at least half of the AT with the Warrior Hike program. Of the 14 veterans who started the hike, only seven completed at least half the trail and were therefore eligible to participate in this study. All seven hikers who completed at least half the distance of the trail agreed to participate in this study, but researchers were unable to obtain one interview due to scheduling conflicts. Of the six hikers interviewed (5 men and 1 woman; age range = 28 to 46), five completed the entire hike (2,180 miles) and one completed just over half of the hike (approximately 1,600 miles). All respondents identified as Caucasian, were combat veterans serving the U.S. Armed Forces, and served at least one combat deployment. Although we cannot confirm whether all of the respondents were in any direct combat, all reported that their deployments were significant events that negatively impacted their psychological functioning. However, all respondents were open and enthusiastically shared their experiences with the researchers during the study. They often spoke of difficult scenarios and memories in a way that appeared to the researchers to be healthy and adaptive. Demographic information of the one person who could not participate was not included because of confidentiality concerns.

Procedure

Respondents began their hike on March 17, 2013, at Amacolola Falls State Park in Georgia on Springer Mountain, and those who completed the entire thru-hike finished at Mount Katahdin, Maine, on September 13, 2013. The AT is roughly 2,180 miles long and passes 14 states (Appalachian Trail Conservancy, 2000). The group of veterans involved with the Warrior Hike Program hiked on the same schedule (e.g., stopping in the same towns at the same time) but were not required to hike together each day. All the hikers spent time hiking as a group, hiking in sub-groups, or hiking alone. In addition to hiking with fellow Warrior Hike members, respondents frequently interacted with other hikers on the AT. The only structured/planned interventions for the hikers were weekly trail town events held by veteran organizations aimed at promoting social interaction with other veterans. There was no formal therapeutic component using a psychologist or other mental health professional.

Interviews were conducted by telephone just after participants returned home from hiking the AT (September, 2013). Respondents were read the informed consent and gave verbal consent before proceeding. All participants gave permission for calls to be recorded for transcription. Respondents were offered an electronic copy of the consent form and interview questions as well as aggregate study results. Despite only being asked 13 questions, interviews ranged from 21 to 52 min in length. Interviews were transcribed following the phone call with all identifying information redacted from written transcripts; all recordings were then destroyed.

The interview was modeled after a semi-structured open-ended interview used by Davis-Berman and Berman (2012). Participants were asked to answer five questions on a scale of 0 to 10, with 10 indicating strongly agree, 0 indicating strongly disagree, and 5 indicating neither agree nor disagree. The following questions were asked of all participants:

1. I enjoyed my experience.
2. I believe this experience will have lasting effects.
3. The people I hiked with were an important part of my experience.
4. The environment I hiked in was important to the experience.
5. The duration of the thru-hike was important to the experience.

In addition, participants were asked the following open-ended questions:

1. What were the conditions that led to your participation in the wilderness experience trip?
2. What are your general recollections of the trip?
3. What was the most beneficial part of the trip for you?
4. What was the most difficult part of the trip for you?
5. What are some of the positive and negative events that have occurred in your life since the trip?
6. As you look back on your life, did this trip have any value for you?

7. Would you recommend a trip like this for others? Why or Why not?
8. Was there anything else, positive or negative, about your hike that you would like to share with me?

Results

Participants responded by rating their experiences from 0 to 10, with 0 being *strongly disagree* with the statement and 10 being *strongly agree.* Hikers agreed that the experience was enjoyable (M = 9.83, SD = 0.41), that it would have lasting effects (M = 10.00, SD = 0), that their fellow hikers were important (M = 9.83, SD = 0.41), that the environment was important (M = 9.00, SD = 1.67), and that the duration of the hike was important (M = 8.83, SD = 1.94).

To assess the open-ended questions, the researchers used grounded theory qualitative data analysis. The researchers who performed the analysis were two graduate students who held master's degrees and were trained in qualitative analysis. Grounded theory is commonly used in sociology and looks for common themes among respondents' narratives. When conducting grounded theory, the researchers do not have a hypothesis that is tested; rather, they pull the hypothesis from the data for future research (Glaser & Strauss, 1967). Similar to other studies that have analyzed data using grounded theory (e.g., Davis-Berman & Berman, 2012), the goal of our analysis was to ask respondents about their experience and to uncover common themes in their narratives. Furthermore, qualitative analysis is useful when conducting studies with low sample sizes. It allows the researchers to pull descriptive information out of the narrative as opposed to simply analyzing self-report measures (Guest, Bunce, & Johnson, 2006). This richness of data is useful when collecting data from small sample sizes, which is usually the case with WEPs.

Grounded theory analyzes data through a constant comparison method. Three stages are proposed for the proper use of grounded theory: *open coding* (comparing, conceptualizing, and categorizing), *axial coding* (reassembling data into groups based on patterns), and *selective coding* (identifying and describing the central themes). To control for potential researcher bias (Starks & Trinidad, 2007), researchers with different levels of involvement in the research separately analyzed the data. Although resulting themes varied linguistically, they were synonymous in content. In addition, the same number of themes and explanations emerged. Four themes were extracted from respondents' narratives. These themes did not seem to differ in strength of endorsement or importance to the respondents, but all respondents noted all four themes. Themes were then emailed to respondents as a method of member checking for respondent confirmation (Carlson, 2010).

Theme 1: Social Reconnection

One of the most salient themes among all respondents was the desire to establish and maintain relationships. Many expressed that after their combat activities, they experienced difficulties in relationships. At the beginning of the trail, 14 combat veterans started together as strangers, and according to the six that completed the interview, the

entire group became close friends very quickly. Sample statements included, "We will be lifelong friends, and just during the 6 months of hiking together, it is like we've known each other our whole lives." "It is comparable to the camaraderie of the [military branch name removed for confidentiality]."

Not only did respondents mention their relationship with their fellow Warrior Hike hikers, but they also mentioned the friendship and bonding they experienced with strangers along the trail. In fact, nearly all hikers reported more positive social interactions with their fellow hikers (whether veteran or non-veteran) than with non-hiking veterans. One person reported, "The trail is a community of other hikers . . . you get through it because you are making friends all the time." Another person reported,

> There is this thing called trail magic on the trail and it's people you've never met and they will set up on intersections of main roads and one day I ran across five little old cute ladies that were grilling us hamburgers and hotdogs, and giving us cold sodas, and doughnuts and stuff, so stuff like that it instills in you a sense of what we really fought for, there's a reason we go to war, and it's to fight for these people and this country so it just instills that reason why you did what you did, for these wonderful people, there's wonderful people in this country and hiking the Appalachian Trail truly shows you who these wonderful people are.

Theme 2: Life-Improving Change

Respondents openly discussed their current life situations and their struggles to adapt to their post-military lives. The isolation of the trail gave time for respondents to contemplate what they wanted and needed for their future well-being. Although their goals were vastly different, all respondents made decisions to improve their lives and were confident that they would follow through with their decisions.

A salient theme that appeared with all participants in regard to the effect the trail had on them was a renewed sense of motivation to tackle these changes. Many of the participants described their difficulties coping with the reintegration to civilian life after their discharge from the military. They described difficulties with finding or maintaining employment, difficulties making decisions, and for some, a general disinterest in civilian life. When questioned, all six participants described their future with newfound expectations and motivation.

Theme 3: Inner Peace/Psychological Healing

All respondents reported dealing with psychological distress. Although diagnosis was not asked for in interviews, many discussed their struggle with PTSD. Respondents described their time on the trail as providing time for reflection, acceptance, and self-discovery. Respondents reported, "I accept myself more for who I am" and that their time on the trail was "the time I [was] taking to heal." One respondent who was prescribed medications for mental health issues since his or her combat experiences reported, "I found myself not having to take my medications . . . I just didn't have to worry about taking them . . . I guess it's just natural medicine."

Theme 4: Processing and Reflection

Respondents discussed their difficulties with processing and adapting to civilian life. They described the isolation of the AT as giving them a chance to "go out and clear my head." One respondent reported that he or she was "forced to examine [himself or herself]." Although respondents frequently had stops along their hike where they camped or ate together, all respondents endorsed a significant amount of time being alone in the wilderness. The frequent periods of isolation over the 6-month hike was reported as a major contributing factor to the hikers' psychological well-being. These periods were free from outside distractions and gave hikers time to think. All respondents expressed some level of difficulty processing difficult thoughts and emotions before hiking the trail.

Discussion

Despite available mental health services specifically for combat veterans, many veterans are not benefitting from these services. Furthermore, there has been a call for novel treatments to reach more combat veterans than the system currently reaches, regardless of whether this lack of reach is due to availability, desirability, or perceived efficacy of the treatments offered (Hoge et al., 2004). The purpose of this study was to evaluate whether a long-term WEP can have a positive impact on veterans returning from combat. Long-distance hiking programs offer unique experiences that our participants found beneficial. Within our sample, four common themes emerged: social reconnection, life-improving change, inner peace, and time for processing and reflection. These themes reflect the claims made by many WEPs that promote psychological health. Similarities included time and environment that afforded reflections, decrease in psychological symptoms (Dustin et al., 2011), ability to enjoy life again, increased socialization (Hyer et al., 1996), and self-determination (Caddick & Smith, 2014).

The impact of the hiking experience, as reported by respondents, was overwhelmingly positive. Each finished his or her wilderness experience with an increased sense of self and newfound positive outlook for his or her future. All respondents discussed difficulties they experienced after returning home from their deployments. These reintegration issues included unstable employment, interpersonal struggles, challenges with psychological distress, and uncertainty about their future. Their experiences on the trail appear to have given them the time to evaluate themselves and reflect on their experiences, and afforded ample time for consideration of what they needed to maintain the psychological well-being they obtained during their hike.

Although respondents endorsed the value of the trail town events that were hosted by different veteran's organizations, they also expressed that these were taxing at times. Although this was not mentioned enough to be considered a theme, it has potential implications for future iterations of research. It is interesting to note that all reported more positive social interactions with their fellow hikers (whether veteran or non-veteran) than with non-hiking veterans. This could imply that gradual resocialization occurred more through repeated and unplanned social exchanges with

hikers than through planned events with other veterans. This belief is similar to Gelkopf et al.'s (2013) assumption that experiential programs in a wilderness setting benefit the participant through gradual and repeated exposures to anxiety-evoking stimuli. Specifically in reference to this study, all respondents reported beginning the trail with little interest in social interactions. However, throughout their time on the trail, the respondents found value in these connections. The respondents' credited the culture of non-judgmental, unbiased, and selfless hikers on the AT as facilitators in this transition. A common phrase on the AT is "hike your own hike," which means more to hikers than merely travel at your own pace. It represents individuals allowing others to experience the trail however they choose. Furthermore, "trail magic," which is assistance through either material goods or emotional support from strangers on the AT, represented a major source of support for the veterans. This often takes the form of grilling or providing other foods or drinks, from which respondents reported feeling a sense of gratitude. Furthermore, these experiences with trail magic allowed the veterans opportunities to socialize with non-hiker civilians in a way that positively reinforced these interactions. Respondents were brought from an experience of social isolation to one of an appreciation for social interaction.

This focus of social interactions could have profound therapeutic implications. A meta-analysis revealed that a lack of social support was the greatest predictive factor of developing PTSD (Brewin, Andrews, & Valentine, 2000). Recent studies into the nature of social support and PTSD suggest that an individual's symptoms, such as hyper-vigilance and an increase in perceived threats, erode interpersonal resources that are necessary to obtain or maintain social support and results in a worsening of PTSD symptoms (Brancu et al., 2014). Price, Gros, Strachan, Ruggiero, and Acierno (2013) suggest that veterans who received social support that included emotional (caring, empathy) and informational support (advice, guidance), as opposed to assistance in tasks or continual positivity, responded better to treatment efforts. These types of support are similar to the forms of support reported by our respondents. Most respondents reported a lack of interest in developing or maintaining relationships before their hike. Yet everyone reported an increase in their social interaction on the trail and an appreciation of their interactions. Further research would be necessary to evaluate the depth of this claim.

With the previous evidence for the relaxing effects of a wilderness environment (e.g., Annerstedt et al., 2013; Lee et al., 2011), physiological benefit of engaging in increased physical activity (Cotman & Berchtold, 2002), and the non-judgmental culture observed on the AT, it is conceivable to believe that the environment on the trail, natural and social, led to conditions where respondents felt comfortable increasing meaningful social networks that resulted in an increase in psychological well-being.

Despite the findings that a long-distance WEP was beneficial for combat veterans in this study, many limitations still exist. The sample for this study was drawn from those hikers who completed at least half of the trail. However, there were seven additional hikers who began the trail (for a total of 14). Although we cannot disclose their information due to confidentiality restraints, we can report that reasons for stopping the hike prior to the halfway point typically included health or family concerns. This raises the question

of whether a long-distance hiking program can be beneficial for a wide audience or if it only benefits a select few. Given what we know about the effectiveness of shorter wilderness programs (e.g., Burke & Utley, 2013; Gelkopf et al., 2013), a "dosing" study could be helpful in determining the optimal length for WEPs, which will undoubtedly vary depending on the severity of the adjustment issues faced by each veteran. Another limitation is that this study focused on combat veterans and does not generalize to other populations. We assume, given the nature of trauma, other groups would also benefit. WEPs as long as the one in this study are rare and in need of much research.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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