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Lola Halperin
Sacred Heart University

Jaimee MB Hegge
Sacred Heart University

Sharon McCloskey
Sacred Heart University

Stephen Humphreys
American Veterans Archaeological Recovery

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Abstract

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Keywords

Occupational therapy students, service-learning, military veterans, archaeology-based rehabilitation

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Occupational Therapy Students' Service Learning: Rehabilitation Archeology with Military Veterans

Lola Halperin, EdD, OTR/L[1]

Jaimee Hegge, OTD, OTR/L, CKTP[1]

Sharon McCloskey, EdD, MBA, OT/L, CTP[1]

Stephen Humphreys, PhD[2]

Sacred Heart University[1]

American Veterans Archaeological Recovery[2]

United States

ABSTRACT

Existing research evidence pertaining to the occupational therapy (OT) role with adventure-based outdoor activities for military veterans and the authors' positive experience serving members of a non-profit veteran-run organization that promotes rehabilitation archeology suggest that outdoor rehabilitation for this client population is a promising avenue for the profession. Moreover, students' exposure to outdoor experiences designed for military veterans as well as other populations presenting with physical and mental health conditions has the potential to significantly augment OT curriculum by impacting both the learning trajectory and personal transformation of the students. This paper describes a unique service-learning experience involving graduate OT students who engaged with and provided services to veterans participating in archeological fieldwork, as well as the impact of this experience on the students.

Service learning (SL) is a common pedagogy (Battaglia, 2016) based on experiential learning, in which students engage in activities that address human and community needs (Flecky & Gitlow, 2011). In this approach to teaching and learning, students are presented with intentionally designed learning opportunities during community engagement, allowing them to construct knowledge and meaning from the experience and develop clinical skills (Eyler & Giles, 1999; Flecky & Gitlow, 2011; Yardley et al., 2012), as well as engage with various types of populations (Trudeau & Gately, 2021). Service learning is a promising teaching modality to use in occupational therapy (OT)

education (Bazyk et al., 2010; Maloney & Griffith, 2013; Trudeau & Gately, 2021). We describe a unique SL experience involving services provided by graduate OT faculty and students to military veterans engaged in rehabilitation archaeology and the impact of this experience on the students.

Physical and Mental Health Disabilities Impacting Military Veterans' Occupational Participation

Military service is associated with an increased risk for physical and mental disabilities. Common physical conditions reported are musculoskeletal injuries, amputations, non-traumatic joint disorders, and back and neck pain (Armstrong et al., 2018; Reif et al., 2018). Physical injuries are acquired during active duty, physical training, or overuse of the injured body part over time (Schuh-Renner et al., 2019). Physical pain is a common issue facing military veterans and active military personnel. As many as 59% of veterans report a pain diagnosis as their primary reason to seek medical treatment (Reif et al., 2018), and almost 50% report leg, back, and shoulder pain as a major source of trouble in their daily functioning (Armstrong et al., 2018). Roy and Lopez (2013) demonstrated that many military tasks result in low back pain across different types of military battalions. Other chronic systemic diseases have been associated with chronic pain, suggesting that pain increases sedentary lifestyles, which can prompt other health issues in this population (Molloy et al., 2020). The accumulation of microtraumas over time can lead to tissue damage, inflammation, limited joint movement, and pain, resulting in a variety of physical disabilities among veterans (Gundlapalli et al., 2020; Schuh-Renner et al., 2019). These conditions impact sleep (Molloy et al., 2020) as well as other occupations. Non-traumatic joint disorders and back/neck pain cause the highest rates of work limitations and affect approximately half of non-deployed military personnel (Reif et al., 2018). The above conditions can be treated with occupational and physical therapy, in addition to medications and surgery.

Post-traumatic stress disorder (PTSD) occurs after a traumatic experience, such as combat military events. In 2021, it was estimated that 10% of male veterans and 19% of female veterans were diagnosed with PTSD (U.S. Department of Veteran Affairs, 2021). There is a correlation between persistent pain and PTSD, anxiety, mood disorders, and obesity in military veterans (Molloy et al., 2020). Another significant source of disability among veterans is traumatic brain injury (TBI). According to the Centers for Disease Control and Prevention (CDC), at least 450,000 service members were diagnosed with TBI between 2000 and 2021 (CDC, 2023). Both physical injuries and mental health conditions contribute to a disability rating. Veterans with at least one service-related health condition and a high disability rating (100%) are 2.5 times more likely to die prematurely (Maynard et al., 2018).

Complexity Surrounding Treatment of Veterans

While poly-trauma (e.g., a combination of TBI, PTSD, and chronic pain) is common in military veterans, especially among those who served in Iraq and Afghanistan, treatment of the mental health symptoms and chronic pain is particularly complicated in this population (Barry et al., 2015; Scaffa, 2020; Tam et al., 2020; Wheeler et al., 2020). Conventional interventions for veterans affected by mental health conditions include

medications, cognitive-behavioral therapy, supportive psychotherapy, and Eye Movement Desensitization and Reprocessing (EMDR; Barry et al., 2015; Finnegan, 2016; Havlick et al., 2021; Tam et al., 2020; U.S. Department of Veterans Affairs, 2021). Similarly, chronic pain, which is often complicated by the emotional distress experienced by veterans, is commonly treated with medications and cognitive-behavioral therapy (CBT; Barry et al., 2015; Stewart et al., 2015; Tam et al., 2020).

Pharmacological treatment for the above conditions can be problematic, especially when opioids and psychotropic medications are combined, producing significant side effects, such as mental confusion, cardiovascular and respiratory complications, falls, and overdose deaths. Moreover, potential long-term dependence on opioids remains a concern (Barry et al., 2015; Tam et al., 2020). Additionally, treatment of mental health conditions and chronic pain in the veteran population is often compromised by adherence issues, diminished intervention effectiveness, and comorbidities. Lack of treatment adherence often results from symptom minimization/denial, negative perceptions regarding treatment, feelings of shame and hopelessness, and fear of stigma, as well as limited access to services, and a shortage of healthcare providers who are versed in the military culture (Finnegan, 2016; Johnson & Possemato, 2021; Rogers et al., 2014; Scaffa, 2020; Wheeler et al., 2020). Limited social supports and negative emotions and avoidant behaviors that often come with PTSD further impede treatment outcomes for the affected veterans (Finnegan, 2016; Wheeler et al., 2020). Moreover, many veterans continue to struggle with various symptoms even after receiving treatment and some misuse substances in attempt to self-medicate, which further complicates symptomatology (Havlick et al., 2021; Tam et al., 2020; Vella et al., 2013). Subsequently, veterans often seek alternative treatment modalities, such as meditation, mindfulness, acupuncture, Yoga, and wilderness-based rehabilitation (Duvall & Kaplan, 2014; Everill et al., 2020; Finnegan, 2016; Havlick et al., 2021; Krpalek et al., 2020; Rogers et al., 2014; Vella et al., 2013; Wheeler et al., 2020).

Adventure-Based Outdoor Therapy

Outdoor recreational activities appear to have a positive impact on one's affect, mood, cognition, sleep, stress management, and overall well-being. More specifically, Attention Restoration Theory implies that spending time in nature helps with restoring mental energy and managing stress, which is afforded by the fact that natural environments offer pleasant and relaxing types of stimuli that are not easily found in urban contexts (Duvall & Kaplan, 2014; Havlick et al., 2021; Ohly et al., 2016; Vella et al., 2013; Wheeler et al., 2020). Activities carried out in natural environments may have a grounding effect and divert one' attention from everyday concerns; offer a sense of purpose, mastery, and opportunities to practice problem-solving; and help one reclaim their sense of self (Duvall & Kaplan, 2014; Rogers et al., 2014; Vella et al., 2013; Wheeler et al., 2020). The calming effect resulting from the steady breathing and movement patterns naturally embedded into many outdoor activities (e.g., walking, hiking, paddling, riding, etc.) may provide an additional explanation regarding the mechanisms through which activities carried out in nature improve mental and physical

health (Havlick et al., 2021). Conversely, some high-intensity outdoor activities (e.g., surfing, SCUBA diving, rock climbing, etc.) allow participants to experience an uplifting sense of thrill accompanied by adrenaline surge in a controlled environment (Krpalek et al., 2020; Rogers et al., 2014).

Group outdoor recreational activities, regardless of their specific nature, level of difficulty, location, or duration have been linked to a sustained decrease in PTSD symptoms, depression and anxiety, feelings of guilt, hostility and fear, somatic symptoms, and perceived levels of stress. Additionally, outdoor recreation has been shown to increase attentiveness and mental clarity; evoke positive moods and a sense of tranquility; enhance self-confidence, spiritual growth, and optimistic outlook; foster compliance with treatment; and improve sleep, social functioning, and vocational outcomes in various populations. Moreover, many of the above benefits appear to persist over time (Duvall & Kaplan, 2014; Everill et al., 2020; Finnegan, 2016; Havlick et al., 2021; Jeffery & Wilson, 2017; Krpalek et al., 2020; Rogers et al., 2014; Nimenko & Simpson, 2014; Vella et al., 2013; Wheeler et al., 2020).

Furthermore, spending time in nature, while facing physical challenges involved in outdoor tasks and problem-solving as a group, reinforces both self-efficacy and social connectedness, provides augmented forms of social support, and represents a special meaning for the veterans because of their previous experiences with training outdoors and developing a sense of togetherness while training (Duvall & Kaplan, 2014; Everill et al., 2020; Finnegan, 2016; Havlick et al., 2021; Krpalek et al., 2020; Rogers et al., 2014; Nimenko & Simpson, 2014; Vella et al., 2013; Wheeler et al., 2020). However, the exact mechanisms through which group outdoor activities produce positive changes in individuals with a history of trauma require further investigation (Havlick et al., 2021; Rogers et al., 2014).

Outdoor group activities as a form of therapy for injured veterans are currently gaining popularity both in clinical practice and research. These activities include, but might not be limited to horticulture, hiking/backpacking, rope/rock climbing, equine care/horseback riding, karting, canoeing, whitewater rafting, sailing, surfing, SCUBA diving, fly-fishing/angling, snow sports, falconry, and archery (Duvall & Kaplan, 2014; Finnegan, 2016; Havlick et al., 2021; Krpalek et al., 2020; Rogers et al., 2014; Vella et al., 2013; Wheeler et al., 2020).

Rehabilitation Archaeology

Therapeutic use of archaeology is an emerging rehabilitation modality that attempts to improve well-being and life satisfaction of diverse populations (National Academy for Social Prescribing, 2022). It has become a new form of outdoor rehabilitation for military veterans in the last decade (Everill et al., 2020; Finnegan, 2016; Nimenko & Simpson, 2014; Waters-Barham, 2023). Archaeological tasks (e.g., surveying, mapping, and navigating the field; examining the ground; engaging in manual labor, often under harsh weather conditions; and problem-solving as a team) as well as the tasks involved in sharing living accommodations with others during an excavation, greatly resemble the military experience and offer a myriad of psychosocial benefits to the veteran

population. More specifically, the above benefits include opportunities to re-immerse in the military culture and army-like daily structure; to replace post-military sedentary lifestyle with physical activities; to gain new knowledge, skills, and experience; to accomplish tangible goals (e.g., retrieving historical artifacts); to be supported by fellow veterans and to give back by assisting peers, including those who happen to be more disabled. Furthermore, rehabilitation archaeology has the potential to promote a sense of belonging and accomplishment among the participants, and to increase their self-esteem/confidence and motivation to seek help in the future (Everill et al., 2020; Finnegan, 2016; Nimenko & Simpson, 2014). Moreover, Everill et al. (2020) discovered a decrease in depression and anxiety, and feelings of isolation, as well as an increase in overall mental wellbeing and sense of self-worth among military veterans following archaeological fieldwork. This finding was in alignment with the prior study conducted by Nimenko and Simpson (2014), who investigated the effects of rehabilitation archaeology on a group of injured soldiers placed in a recovery facility.

American Veterans Archaeological Recovery (AVAR) is a veteran-run registered non-profit that coordinates archaeology-based rehabilitation activities for military veterans with emotional and physical challenges (Waters-Barham & Humphreys, 2022). AVAR excavations take place in various international locations. Participating veterans present with joint injuries, chronic pain, and mental health conditions, such as PTSD and depression. A pilot study was carried out by AVAR in 2021 with forty-eight veterans, of which 37 reported symptoms of anxiety, 36 shared symptoms of depression, and 41 reported feeling stressed. Following the archaeological fieldwork, of the veterans who initially presented with symptoms, 84.6% reported diminished stress levels, 76.1% reported a reduction in depression, and 68.1% reported diminished anxiety levels (Burkhart et al., 2023).

It is important to mention that archaeology often presents with certain challenges, such as exposure to the wilderness, unpredictable weather, poor living conditions, excavation-related injuries, increased social demands, unhealthy and sometimes unsafe social interactions, and a culture shock resulting from facing unfamiliar environments. Some literature even suggests that archaeological fieldwork might negatively impact one's mental health, unless proper emotional supports are in place (Eifling, 2021; Everill et al., 2020; Peixotto et al., 2021). While overcoming physical challenges can be beneficial for the mental health and confidence of participants (Waters-Barham, 2023), the physical demands of archaeological work may result in soreness, repetitive injuries, and compromised joint health in some individuals, adding to the list of health hazards routinely encountered during excavations, such as allergies, dehydration, cuts, and insect bites (Eifling, 2021; Everill et al., 2020; Finnegan, 2016; Peixotto et al., 2021). This evidence suggests the need for healthcare providers' presence during excavations, especially when vulnerable populations are involved. In fact, several outdoor recreation programs designed for military veterans have been employing healthcare providers to both assure participants' safety and augment the therapeutic programming (Duvall &

Kaplan, 2014; Everill et al., 2020; Finnegan, 2016; Havlick et al., 2021; Krpalek et al., 2020; Nimenko & Simpson, 2014; Rogers et al., 2014; Wheeler et al., 2020). We propose that the profession of occupational therapy is well positioned to play a key role in therapeutic interventions carried out outdoors, including rehabilitation archaeology.

The Role of Occupational Therapy with Outdoor Rehabilitation

Occupational therapy (OT) practitioners assist their clients with pursuing meaningful roles and daily occupations through the use of therapeutic activities that strategically address barriers to participation, in order to improve function and promote healthy living, adaptation and recovery (American Occupational Therapy Association, 2021; Krpalek et al., 2020; Scaffa, 2020). There is some overlap between the OT profession and adventure-based outdoor therapy, as both employ purposeful activities and experiential learning to assist clients with making positive personal changes (Jeffery & Wilson, 2017). However, while OT emphasizes a client-centered approach and skill training in familiar contexts, adventure therapy deliberately challenges clients with unfamiliar and stressful environments and tasks. Despite these differences, competencies offered by OT, such as activity analysis, holistic assessment of clients' abilities, environmental modifications, and task adaptations, add to the value of adventure-based outdoor therapy, and some OT practitioners have recently adapted this modality as one of their approaches (Jeffery & Wilson, 2017; Krpalek et al., 2020; Rogers et al., 2014).

Occupational therapy interventions have the potential to augment therapeutic outdoor activities for military veterans. For instance, Krpalek et al. (2020) found that, following a SCUBA diving experience supplemented by OT group sessions focusing on deep breathing, stretching, mindfulness, reflective discussions and journaling, participating veterans reported diminished anxiety, and enhanced self-awareness, self-regulation, mood, and sense of connectedness/openness to others. These benefits were reported by the participants in addition to the advantages they attributed to the SCUBA diving activity itself, such as improved focus/concentration and decreased stress and physical pain. Even more importantly, participants shared that they were able to apply the skills learned in OT sessions to their everyday lives. This research partially echoed the findings of a prior study by Rogers et al. (2014), who had reported a decrease in PTSD and depression symptoms among veterans attending a therapeutic program designed and co-facilitated by an occupational therapist and consisting of surfing lessons combined with thematic group discussions pertaining to various aspects of resilience.

Current Study

Recruitment

Our pilot study aimed to explore the impact of a clinical fieldwork/SL experience that involved offering services to AVAR members by graduate OT students. The Institutional Review Boards (IRBs) of the University of Hartford and Sacred Heart University (SHU) approved this research. All nine students who volunteered for the SL experience with AVAR were invited to participate in this study. The investigator met with the students and faculty to introduce the pilot study during one of their pre-trip meetings. The

qualitative study design was discussed, and students and faculty were invited to participate. All students consented verbally to participate and were encouraged to engage in unstructured daily reflection while immersed in the SL experience, followed by an invitation to participate in a post-trip focus group, to measure the impact of this experience.

Service-Learning Experience

In June 2019, two SHU OT and one Physician Assistant (PA) program faculty along with nine first-year graduate OT students engaged in a five-day archaeological excavation with AVAR members. Prior to their SL trip, the OT students who had volunteered received three intensive training sessions from the OT faculty members who later accompanied them during the trip. During these sessions, students learned basic kinesiotaping techniques and planned their group interventions for the AVAR members. Students had learned about and practiced group-based OT interventions in their mental health semester, which preceded their SL experience with AVAR.

The excavation took place at Saratoga National Historical Park in Saratoga Springs, New York. The five-day experience consisted of faculty and students digging alongside the veterans and providing services to them during lunch breaks and evening hours. These services included daily stretch exercises and kinesiotaping for pain management, and group sessions offering education on ergonomics/body mechanics, CBT strategies for chronic pain, conflict resolution, relaxation techniques, trauma-informed yoga, and managing medications. The trauma-informed yoga session was led by an OT faculty member certified in this treatment modality, who had joined the SL experience for a day. The medication management session followed by brief individual consultations were provided by the PA faculty who had been trained as a pharmacist. No PA students participated in this SL experience. Faculty and students who participated in the experience also joined AVAR members during some of their meals and the Saratoga National Historical Park tour offered by the park personnel. Additionally, students engaged in debriefs with faculty on most days. Upon their return to SHU, students submitted reflection papers describing their SL experiences to their clinical fieldwork coordinator and participated in a focus group. Schedule of the activities included in this SL trip is provided in the table below.

Table 1

Schedule of Activities During Saratoga Service-Learning Trip

	Morning	Afternoon	Evening
Day 1			Meet and Greet social event
Day 2	Morning stretch group (led by students) Excavation	Lunch and Learn: Ergonomic & Body Mechanics for Archaeology (led by students) Excavation PA faculty presentation on effects and side effects of medications	Students/faculty dinner and debrief
Day 3	Morning stretch group (led by students) Excavation	Group lunch Excavation	Group dinner Relaxation class led by OT faculty Students/faculty debrief
Day 4	Morning stretch group (led by students) Excavation	Lunch and Learn: Assertiveness Training (led by students) Excavation	Trauma-informed yoga class (led by OT faculty) Group dinner Students/faculty debrief
Day 5	Group tour of Saratoga National Historic Park	Group lunch CBT group session (led by students)	Departure

Methods

Data collection and analysis in this study were guided by a qualitative interpretivist approach, which attempts to gain insight into the lived experience and the meaning of the experience for the participants (Creswell, 2007). This method requires a systematic, non-judgmental approach to the coding of data. It involves a three-step process: initial coding followed by the creation of categories and the construction of themes. With sorting and re-sorting of data, the process involves the discovery of patterns, and generalizations that emerge from the data, along with interactively co-constructing meaning, learning from participants, and interpreting their views about the experience (Gray, 2018). Traditionally, most phenomenological studies utilize one-to-one interviews (together with other varied sources of data), however, it was decided in this pilot study to utilize a focus group approach, as the group had had a collective experience, and the individual lived experience can be uncovered within a group context. The focus group was designed to stimulate discussion, and to explore individual and group responses and shared perspectives.

The one-hour-long focus group took place after the students and faculty returned to campus. All nine students (six females and three males) participated in it. Data was collected using open-ended questions. The discussion was documented by the investigator. The investigator did not participate in the SL trip, but constructed the questions based on relevant literature about SL in OT education and prior knowledge about the structure of the trip.

The questions focused on three areas of interest: a) perceptions of the experience, b) perceptions of the learning relative to the role of the occupational therapist, and c) perceptions of the experience as being impactful. Examples of specific questions are provided below:

- What happened? Describe some of your experiences.
- What kind of issues, problems, learning opportunities took place?
- What did the experience teach you about occupational therapy?
- Tell us your thoughts about the experience and if it was what you expected.
- Do you feel you made an impact on the participants with whom you engaged?
- How do you feel now about the experience since your return?

Data Analysis

To analyze the data, an inductive content analysis approach was employed. In this iterative process, the initial steps were to engage in dynamic reading of the data, identify initial *in-vivo* codes, and “fracture” the data (Strauss, 1987). This was followed by line-by-line coding, and rearrangement of the data into categories. With repeated rounds of analysis and a process of constant comparisons, refinement of the codes resulted in emergent themes, patterns, and theoretical categories (Saldaña, 2009).

Trustworthiness

The investigator facilitated the focus group, and the two faculty members who had supervised the SL trip engaged with the students during the discussion. The faculty set aside their own perceptions of the SL experience and its impact on students but kept a

record of the key points made by the students. Records pertaining to participants recruitment, data collection, and data analysis were kept throughout the study. An audit trail included meetings between the investigator and the two faculty members, as well as records review.

Findings

Data analysis resulted in the identification of several themes and patterns found in the categories that emerged.

Setting

The context of an archeological dig was unfamiliar to all participants. Students reported that this was an excellent non-traditional setting for OT students and practitioners. They felt as students, they had the physical ability to work alongside the veterans in long hours of physical labor while utilizing their OT knowledge and skills effectively. “It was absolutely rewarding to dig. We would dig every day, and it was a real work-out. But it was so satisfying. Such a good tiredness at the end of each day.” Students very much enjoyed the digging and the experience of the group sessions. Students were excited about this setting and saw the positive impact of their interactions and interventions on the veterans. “I had never been on a former battlefield before. It was a special place. It was particularly moving doing this work alongside and with army veterans.”

Perspective-Shifting

Students reported that, prior to the SL experience, they simply envisioned an opportunity to further develop their therapeutic use of self by participating with veterans in an archeological dig - a chance to engage with people who had “life experience.” Most students did not anticipate the impact such an experience might have on their thinking and consciousness. One student stated, “Initially I was a little nervous meeting the veterans. I did not feel comfortable or confident in what to do or say. Working on the dig, sharing meals, participating in groups, enjoying their company, and getting to know the veterans - it surprised me that I had something to offer others.” Following the SL trip, students experienced much more self-awareness, a greater appreciation for the variabilities among people relative to context and background, and a deeper level of empathy and understanding for veterans. Several students reported on a ‘shift’ in their thinking, they learned to appreciate the comradery and connection among the veterans. Participants emphasized a change in their ability to think critically about what they were observing and experiencing. Overall, students viewed this experience as reinforcing what they had learned in class about how to build therapeutic relationships with clients.

Professional Confidence

Prior to the experience, students felt that they “did not have a lot to offer.” However, after they had been able to apply prior knowledge and skills during the SL experience, they felt greater confidence in their abilities to engage with veterans (“I found myself able to think on my feet.”; “I was surprised I was able to run a group.”). Students reported their comfort level “working with strangers” increased (“… and I did have a lot to offer.”). Another theme that emerged as a contributor to professional confidence was

one of trust – students shared that they felt the veterans had trust in their competence. One of them stated, “We gave a ‘lunch and learn’ session to the group toward the end of the week. Sharing knowledge, I felt like a real OT.”

Ability to Relate and Connect

Relationship building was a strong theme that emerged from the students’ discussion about the SL experience. They reported that making meaningful connections with the veterans and each other strengthened their interpersonal skills and shifted their internal perspectives. Students commented that relating and connecting with others incorporated not just an affective domain, but also a change in the development of communication skills. They reported that increased awareness about how to relate with others afforded them meaningful experiences of connection and success in understanding another person. One student stated, “I made a connection with one of the female soldiers. I knew she liked me. She trusted me enough to laugh with me. I let down my guard and so did she. It felt really good to know I could work with her, and we could connect.”

Occupational Therapy Role

Students shared many examples of the OT roles they experienced during their SL trip – practitioner, educator, collaborator, and professional. They reported the ability to design and deliver group interventions that enabled improved occupational performance and participation among the veterans, “We could actually run a group session.” During the SL experience, students collaborated with various stakeholders, including veterans as well as professionals from other disciplines. They reported a greater awareness of the importance of collaboration.

Post Scriptum: Veterans’ Perspective

During the excavation, veteran participants and AVAR staff met informally daily to debrief and share impressions of the archaeological fieldwork environment. Additionally, AVAR leadership circulated among the participants and the National Park personnel throughout the workday to gather impressions and observations from veterans and staff alike (practicing ‘management by walking around’). Some veterans were initially hesitant to work with civilian students, citing differences in age and lived experience. Prior to the project, some veterans had expressed doubts about students being able to handle the necessary physical exertion. However, cooperation in the excavation environment created rapport between the two populations; many veterans stated that they were impressed by the work ethic exhibited by the students even during adverse weather conditions. Shared challenges and a sense of mutual dedication to accomplishing a common goal built trust between the two populations and facilitated dialogue during the group sessions facilitated by the students.

Study Limitations

A small sample size might have weakened this pilot study. It might be also important to mention that faculty who supervised the SL experience were present during the student focus group, which could have biased students’ responses. Additionally, while we have focused on the students’ perspectives pertaining to their SL experience involving

rehabilitation archaeology for military veterans, we have not yet measured the impact of the OT services on the outcomes of the veterans who choose to engage in archeology. We are currently designing a study that will measure such impact.

Discussion and Implications for Occupational Therapy Practice and Education

Outdoor rehabilitative activities, including rehabilitation archeology, are becoming increasingly popular among military veterans because of the mental health benefits these modalities offer. However, outdoor rehabilitation also presents potential physical risks. This project focused on rehabilitation archaeology along with the benefits and challenges it comes with. Following the harm reduction approach (Logan & Marlatt, 2010), we argue that, since military veterans who choose to engage in archeology and other forms of adventure-based activities find these activities to be meaningful, the focus should be on providing adaptations and modifications that will make these endeavors less harmful to the participants. To optimize participation in therapeutic excavations and to minimize their side effects, a trained health professional should be present to help prevent additional injuries among the veterans, while providing them with the psychoeducation needed to help them unlearn ignoring their physical pain and emotional distress (Duvall & Kaplan, 2014; Everill et al., 2020; Finnegan, 2016; Havlick et al., 2021; Krpalek et al., 2020; Nimenko & Simpson, 2014; Rogers et al., 2014; Wheeler et al., 2020). We assert that OT practitioners are well positioned to offer the above services, as they are trained in providing holistic care to individuals with both physical and mental health conditions (American Occupational Therapy Association [AOTA], 2023; Jeffery & Wilson, 2017; Krpalek et al., 2020; Rogers et al., 2014).

Another important implication of this research project has to do with OT education. The results of our pilot study suggest that exposure to SL experiences involving outdoor activities for military veterans and potentially other client populations may be beneficial to OT students' academic learning and personal transformation, as these experiences may boost their confidence, solidify their understanding of unique attributes of our profession, and increase their ability to relate to and understand others. Because our study involved a small sample of students, additional studies exploring this topic are warranted.

While the subsequent in-person SL trips we had planned with AVAR were canceled due to the Covid19 pandemic, our faculty and students have been continuously involved in serving AVAR members virtually since 2019. We have provided an online seminar on chronic pain management and have created educational materials, including a video, on this topic for AVAR. These experiences have benefited both the veterans and the students, suggesting potential value of Telehealth-delivered OT services to clients engaged in outdoor rehabilitation. This topic too requires more extensive research.

In summary, existing research evidence pertaining to the OT role with the use of adventure-based outdoor therapeutic modalities and our positive experience serving AVAR members so far suggest that outdoor rehabilitation for military veterans is a promising avenue for our profession, and that it requires further investigation. Such scholarly endeavors will contribute to the veterans' rehabilitation and might have

broader applications to chronic pain and comorbid mental health conditions management in diverse populations. Moreover, exploring the role of OT with outdoor rehabilitation might expand the horizons of our profession in the future. An additional promising research avenue is the impact of outdoor therapy-based SL experiences on the learning trajectory and personal transformation of OT students. These experiences have the potential to significantly augment OT curriculum and, therefore, require future investigation as well.

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