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Exploring the possibility of using outdoor recreation to promote mental health in veterans with PTSD

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Exploring the possibility of using outdoor recreation to promote mental health in veterans with PTSD

Disciplines

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Exploring the possibility of using outdoor recreation to promote mental health in veterans with PTSD.

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CLINICAL SCENARIO:

Over the past decade the United States has deployed over two million service members overseas and many into combat (Sayer et al., 2011). It has been estimated that many of these returning veterans will suffer from posttraumatic stress disorder (PTSD) and that a number of these veterans won't seek help due to the stigma of mental illness. Combat veterans, in general, often have a difficult time reintegrating into society and this is compounded when they are also battling PTSD. This can impact functioning in almost every area of life and is a serious problem. Outdoor recreation, including hiking, backpacking, climbing, kayaking, snowboarding etc., is a valued occupation for many people. Occupational therapists (OT) understand the importance of incorporating meaningful activities into treatment to optimize the personal benefits the client receives from both occupational therapy as well as counselling to reduce symptoms of PTSD. OT's have the ability to help veterans explore new and lost activities, in this case outdoor recreation. Veterans may then utilize the tools they gain from participation in meaningful occupations to assist them in successfully coping with their symptoms from PTSD reintegrating into civilian life.

FOCUSSED CLINICAL QUESTION:

How does outdoor recreation impact PTSD symptoms in returning veterans?

SUMMARY of Search, 'Best' Evidence' appraised, and Key Findings:

Three databases were searched for peer reviewed articles relating to the clinical question posed above. Five articles were chosen for appraisal.

A systematic review of controlled and observational studies by Annerstedt & Wahrborg (2011) was determined to provide the "best evidence" for the following reasons:

- Level of evidence and design- it is the only systematic review of its kind on nature-assisted therapy and offers a comprehensive look at the available evidence.
 - Quality- Five databases were searched extensively and, using the research found, additional articles were obtained by "hand searching" to find more relevant research.
 - The research was published 2011, the most current available.
- Annerstedt & Wahborg (2011) reviewed research using horticultural therapy, wilderness therapy and nature-assisted therapy with no further specification as interventions in a variety of populations. These studies had one or more

outcome measures including psychological outcomes, intellectual outcomes, social outcomes and physiological or physical outcomes. No specific therapy was found to be more beneficial than another. The results were generally positive in all outcome areas but not necessarily significant.

- Hyer, Scurfield, Boyd, Smith & Burke (1996) found that Outward Bound Experiences (OBE) did not make a difference in the recovery of the patients from either facility. Quantitatively there were no significant changes in the primary PTSD symptoms; however, qualitatively the secondary symptoms seemed to be greatly improved in the patients who received OBE. Patients also expressed more trust and rapport with their therapist after the OBE.
- Sayer, Noorbaloochi, Frazier, Carlson, Gravely & Murdoch (2010) found that PTSD is still being under diagnosed in war veterans and is closely linked to readjustment problems. Veterans may be more receptive to interventions labelled as “community reintegration services” than mental health services - The need for evidence-based innovative strategies to deliver these services has been deemed a necessity.
- Russoniello & Howard (2005) showed that recreational therapy, when paired with counselling, was effective in ameliorating PTSD symptoms and increasing the use of positive coping strategies in children after a natural disaster.
- Kyriakopoulos (2011) found that outdoor adventurous activity paired with the counselling process had a positive impact on the therapeutic process for college students with depression and anxiety.

CLINICAL BOTTOM LINE:

War veterans typically avoid seeking help when they are dealing with their symptoms of PTSD. Utilizing innovative, evidence-based interventions to help veterans manage their PTSD and successfully reintegrate into civilian life is much needed. Research suggests that using outdoor recreation as an adjunct intervention may enhance the counselling process and help build rapport between the veteran and care provider. Research has shown that nature-assisted therapy, including outdoor recreation, to have a significant effect on many different psychological and social aspects in diverse populations. However, due to the nature of this research, it is difficult to determine generalizability and whether or not it would have a similar impact on veterans with PTSD. Occupational therapists should consider using outdoor recreation within their treatment plan, if it is a meaningful occupation for the client, because of the multitude of potential benefits including a decrease in depression and anxiety, an increase in self-efficacy and improvement in social interactions.

Limitation of this CAT: This critically appraised topic was performed by a master's of occupational therapy student and has been reviewed by one other student and a university professor. The search was done in an unreproducible way due to poor cataloguing of related articles and the literature search was not exhaustive. This paper does not present a complete review of the literature.

SEARCH STRATEGY:

Terms used to guide Search Strategy:

- **P**atient/Client Group: Veterans, PTSD and mental illness.
- **I**ntervention (or Assessment): outdoor recreation, outward bound, outdoor adventure, nature-assisted therapy, adventure therapy and wilderness therapy
- **C**omparison: None.
- **O**utcome(s): Efficacy, impact

Databases and sites searched	Search Terms	Limits used	Relevant Articles Retrieved
CINAHL September 2011	"recreation" + "mental health" "anxiety" + "outdoor recreation"	None	Russoniello & Howard (2005)
Medline OVID September 2011	"veteran" + "outdoor" "veteran" + "treatment" + "PTSD"	None None	Hyer et al. (1996) Sayer et al. (2010)
Google Scholar October 2011	Hyer et al. (1996)- using this paper I found other papers that have cited, "hand searching" "outdoor adventure" + "mental health"	N/A	Annerstedt & Wahborg (2011) Kyriakopoulos (2011)

All of the search terms were tried in CINAHL and Medline OVID but either there were no results or the results did not meet the inclusion and exclusion criteria. These kinds of studies are not well catalogued and made the search for related articles very challenging.

INCLUSION and EXCLUSION CRITERIA

Inclusion:

- Articles that studied individuals with PTSD or
- Articles that studied individuals with depression or anxiety, which are symptoms commonly found in people with PTSD
- Articles that studied veterans with PTSD
- Articles that were available in full text
- Articles that were available in English
- Articles that used some kind of outdoor intervention

Exclusion:

- Articles published prior to 1995
- Articles based on expert opinions
- Theses and dissertations

RESULTS OF SEARCH

Five relevant studies were located and categorised as shown in Table 1 (based on Levels of Evidence, Centre for Evidence Based Medicine, 1998)

Table 1: Summary of Study Designs of Articles retrieved

Study Design/ Methodology of Articles Retrieved	Level	Number Located	Author (Year)
Systematic review of controlled and observational studies	I	1	Annerstedt&Wahrborg (2011)
2 group, non-randomized, case-control study	III	1	Hyer et al. (1996)
Report of expert committee; included data from a one group, non-random, pre-post test, unpublished study	V	1	Russoniello& Howard (2005)
Qualitative	N/A	1	Kyriakopoulos (2011)
Qualitative	N/A	1	Sayer et al. (2010)

BEST EVIDENCE

Nature-assisted therapy: systematic review of controlled and observational studies by Annerstedt & Wahrborg (2011) was identified as the 'best' evidence and selected for critical appraisal.

Reasons for selecting this study were:

- There is a lack of high-grade research that directly pertains to my question. This study contained the most current and comprehensive research available but on a broader scale.
- The findings were significant and showed possibilities for my population.
- It is a beneficial paper to read before conducting new research in this area.

SUMMARY OF BEST EVIDENCE

Table II: Description and appraisal of Nature-assisted therapy: systematic review of controlled and observational studies by Annerstedt & Wahrborg, 2011.

Aim/Objective of the Study/Systematic Review:

The purpose of this review was to summarize the results of previous research conducted on the viability of nature-assisted therapy (NAT) and find out the impact it has on various health outcomes. Due to the ambiguous nature of NAT, this review attempts to clarify and summarize what natural environments and activities are most helpful to health. Various patient populations, conditions, circumstances and medical conditions were also explored to determine which would benefit most from NAT.

Study Design:

Systematic review of controlled and observational studies.

Search strategy:

The literature search was conducted from September 2008 to May 2009. An electronic search in five databases (PubMed, Scopus, CSA Illumina, Agricola, Web of Science), and three specialist registers (Cochrane, CENTRAL, CRD) was completed as well as searching the AHTA (American Horticultural Therapy Association) website. Key words were used to conduct the search such as, outdoor recreation, mental health, PTSD, anxiety, hiking etc. These terms focused on specific elements of the population, condition, intervention (nature-assisted), and outcome (e.g. rehabilitation) were used to conduct the search. The bibliographies of the identified studies were inspected for other pertinent articles.

Selection criteria:

The following types of studies were considered for review: Systematic reviews and meta-analyses of randomised controlled trials, randomised controlled trials, non-randomized intervention studies, observational studies and qualitative studies. Studies that met the inclusion criteria included the following:

- Reported results of a scientific intervention
- Based on NAT (as defined in the paper)
- Available via any of the databases or sources previously described
- Found using the key words
- Written (or translated) in English
- Including patient populations with a disease or in a well-defined state of poor health
- Published between 1980 and May 2009.

Studies were excluded for the following reasons:

- Solely concerned with health promotion or disease prevention
- Lacking quantitative or qualitative data on a defined population
- Vague populations (i.e. “older”, “inmates”, or “adolescents”)
- Based on just recreational activities within a mixed population
- Animal-assisted therapy interventions.

Studies were not excluded due to the age, nationality or gender of the populations in the study and no study-types were excluded. Disagreements as to whether or not to include an article were determined by consensus.

Quality assessment:

The Grades of Recommendation Assessment, Development and Evaluation (GRADE) system was used by both authors to assess the validity of the findings and the methodological quality of the included studies.

Studies included: 38 full-text documents were reviewed; three systematic reviews and meta-analyses, six randomised controlled trials, 12 non-randomised intervention trials, 14 observational studies, and four qualitative studies.

Interventions Investigated:

- **Horticulture therapy**- performing horticulture activities (i.e. gardening) in combination with psychotherapy
- **Wilderness therapy**- including adventure programmes, wilderness programs and Outward Bound programs sometimes in conjunction with group therapy, family therapy, peer enhancement, or cognitive-behavioural treatment.
- **Nature-assisted therapy with no further specification**- examples include, home-based exposure to nature, walking in a garden and viewing or spending time in a garden.

Outcome Measures:

- **Psychological outcomes:** wellbeing, quality of life, independency, emotional stability, mood, self-efficacy and agitation level.
- **Intellectual outcomes:** learning new skills, capacity to direct attention, communication, increased problem-solving, and school success.
- **Social outcomes:** family function, level of engagement, socialization, social competence and attitude.
- **Physiological and physical outcomes and outcomes dealing with recidivism:** stress level, stress arousal, vulnerability and resistance to addiction, rehospitalisation, and reoccurrence of disease.

Main Findings:

Evidence from some of the studies show that the use of NAT may have a significant impact on psychological, intellectual, social and physical outcomes in a variety of populations. In general, the higher grade research found the results to be positive but often with no significant difference as a result of the treatment. The average effect size reported within the three meta-analyses ranged from .18-.34. Within the moderate to low grade research 26 out of 29 cases reported health improvements. None of the interventions were associated with any kind of negative effects.

Original Authors' Conclusions:

This review provides a limited but reliable collection of evidence that supports the use of NAT as an effective resource for public health. Significant improvements in a variety of outcome measures were found in populations ranging from schizophrenia to obesity. The multitude of benefits found in this review show the importance of considering the use of nature as an important component in treating mental and physical conditions as well as the need for continued research of this topic.

Critical Appraisal:

Due to the ambiguity and multi-dimensional aspects of nature-assisted therapy, the previous research is often not very comprehensive or reproducible. The results also tend to be vague and it can be difficult to determine whether or not there was a significant difference found. The systematic review was thorough and well-conducted but due to the lack of high-level research available, its findings may not be completely valid or reliable.

Validity:

This review tried to adhere to the methods recommended by the Cochrane Handbook for Systematic Reviews of Interventions. However, due to the heterogeneous subject and poor cataloguing, "snow-balling" was also used to locate articles in order to find as much information as possible. The GRADE system was used to assess the validity of findings and the methodological quality of the studies included within the review. Publication bias, the tendency for more positive findings to be published, may have skewed the results as in any systematic review. Due to the broad and complex scope of the studies it was difficult to apply a prevention method for this bias. Because of the character of the outcomes, varied way that findings were presented and the diverse patient populations, it was not possible to determine an effect size or generalize the results.

Interpretation of Results:

The results were mixed for my specific population. The only study reviewed within this paper that directly measured the effect NAT has on PTSD found that the intervention did not produce significant results. However, a portion of the studies reported significant positive results when measuring outcomes that are common challenges among veterans with PTSD including, improved social interactions, decreased depression, anxiety and increased self-efficacy. It is not possible to determine whether or not these findings are transferrable to the population that I am specifically interested in but it does point to the need for more research.

Summary/Conclusion:

The systematic review findings cannot be easily summarized due to the wide variety of nature-assisted therapies being utilized with a mixture of patient populations. However none of the therapies were found to have any contraindications and the use of a nature-assisted therapy were generally found to be most effective when paired with more traditional therapies. This systematic review does not conclude that outdoor recreation could decrease PTSD symptoms in veterans but it does suggest that pairing some kind of nature-assisted therapy with counselling services could be beneficial especially when treating secondary symptoms of PTSD.

Table III: Characteristics of included studies

	Intervention investigated	Comparison intervention	Outcomes used	Findings
Effects of outward bound experience as an adjunct to inpatient PTSD treatment of war vets. (Hyer et al., 1996)	5-day outward bound experience combined with typical inpatient PTSD treatment.	Typical inpatient PTSD treatment only.	Mississippi scale, IOE, HAM-D, HAM-A, SCL-90, GSI, LOC, state trait anxiety scale	Positive but non-significant improvements in primary symptoms of PTSD.
The prescription of recreational activity in mental health promotion and disease prevention. (Russoniello & Howard, 2005)	Weekly recreational activity paired with didactic and skill building sessions	None.	Child Post Traumatic Stress-Reaction Index and Kid Cope	Reduced PTSD symptoms 6.6 percent ($p < .001$) and significantly changed eight of 15 coping strategies in a positive direction ($p < .05$).
Reintegration problems and treatment interests among Iraq and Afghanistan combat veterans receiving VA medical care. (Sayer et al., 2010)	Non- intervention questionnaire to determine the kinds of reintegration problems veterans are having, as well as looking at associations between these problems and PTSD.	None.	Social relations, productivity, community involvement, perceived meaning in life, self-care, leisure activities, 12-item Short-Form Health Survey, Primary Care PTSD Screen and Two-Item Conjoint Screen	40% perceived some to extreme overall difficulty in reintegrating and 41% had probable PTSD (N=754). More veterans with probably PTSD reported more reintegration problems.
How individuals with self-reported anxiety and depression experienced a combination of individual counselling with an adventurous outdoor experience. (Kyriakopoulos, 2011)	Combining individual therapy with an adventurous outdoor activity.	None.	Interpretative Phenomenological Analysis	Participants perceived both parts of the intervention as equally beneficial.

IMPLICATIONS FOR PRACTICE, EDUCATION and FUTURE RESEARCH

Practice: Even though veterans primarily use VA services there are many different community involvement programs that OT's could be involved in and make a difference. When working with war veterans, who have PTSD, to help them reintegrate into civilian life it is important to understand all of the barriers they may face. While occupational therapists are experts when it comes to breaking down barriers to allow engagement in the occupations that one needs, wants and is expected to do, this clientele may benefit more from co-treating with counselling services because not all

of the obstacles they face can be seen. Participating in outdoor recreation, if it is a valued occupation of the veteran is a viable therapeutic tool and may aid in the process of reintegration. Nevertheless, at this point no significant impacts on the primary symptoms of PTSD have been found.

Education: Due to the high number of combat veterans who are estimated to have PTSD it is important that occupational therapists understand the symptoms of this diagnosis and how it impairs function. With or without a PTSD diagnosis, combat veterans may face challenges ranging from controlling anger, social relations, productivity problems to increased alcohol and drug use. Education needs to be focused on how engagement in activities, such as outdoor recreation, can make a difference in areas of depression, anxiety, self-efficacy and social interactions.

Future Research: Future research and evaluation on the impact outdoor recreation has on PTSD symptoms should use the framework provided by the Medical Research Council for complex interventions to provide more conformity among studies. It would also be important to use valid and reliable tools to assess changes in both the primary and secondary symptoms. Much of the previous research has been concerned with the primary symptoms but all of the change has been seen and recorded anecdotally in the secondary symptoms. In all of the research that was assessed, the clients were never given a choice in the kind of outdoor recreational activity that they would participate in. Investigating the possibility that one outdoor recreational activity may have different benefits than another and how the subjects feel about the activity prior to the study and how those feelings may impact change could be valuable to implement in future research.

References

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CAT Grading Criteria: Overall Score 19/20

4.0 3.7 3.3 3.0 2.7 2.3 2.0 1.7 1.3 1.0 0.0
 A A- B+ B B- C+ C C- D+ D F

Rating	Weight	Objective
4 3 2 1 0	20%	Clinical scenario, Clinical question, Summary/key findings, Bottom line <ul style="list-style-type: none"> sections are clear, succinct, and comprehensive <i>Writing style wanders a little but your point is clear.</i>
4 3 2 1 0 3.5	10%	Search strategy, PICO, Inclusion/exclusion <ul style="list-style-type: none"> Search terms listed are comprehensive and accurate Databases/sites are easily identifiable and comprehensive Inclusion/exclusion criteria are relevant, clear, and comprehensive <i>Give some additional information regarding your search to be as clear as possible.</i>
4 3 2 1 0	20%	Results of Search <ul style="list-style-type: none"> Summary of information retrieved is comprehensive and accurate Research article reflects highest level of evidence available Reasons for selection are comprehensive and accurate Sufficient details from studies' results are included and accurate Details from studies' are accurate Irrelevant information is not included <i>Excellent variety of studies, well represented. Some with positive results to help support your premise.</i>
4 3 2 1 0	20%	Best evidence <ul style="list-style-type: none"> Rationale for selection of best evidence is identified Appraisal of study is accurate and comprehensive <i>Huge study! Articulate summary of best evidence.</i>
4 3 2 1 0	20%	Implications for practice, education and future research <ul style="list-style-type: none"> Realistic and exclusively based on information/results of appraised study <i>Reasonable considerations for each area.</i>
4 3 2 1 0 2.5	10%	References <ul style="list-style-type: none"> Reference list is complete Reference list is in APA format Grammar/spelling/punctuation are correct Guidelines followed regarding format of paper <i>Comments above re writing style, spacing, formatting, font size, etc.</i>

- 4** Exceeds expectations. Fully addresses the stated objective(s) and reflects a high level of achievement. Generally, to receive a rating of a 4 for a specific objective, the demonstration of the objective has to be outstanding and exceptional and only minor recommendations would be made. A rating of 4 means that performance is above expectations.
- 3** Meets expectations. The stated objective(s) is/are essentially met but depth or breadth may be limited or inconsistent. May need some re-working but overall, objective is met. Generally, a rating of 3 means the objective meets expectations. Demonstration of the objective is good but some recommendations for improvement are still possible. A rating of 3 means that performance meets expectations.

- 2** Below expectations. Writing needs improvement to meet expectations for stated objective(s). Objective(s) may only be superficially addressed and additional work is required to fully demonstrate and meet expectations. A rating of 2 means that demonstration of the objective did not meet expectations and requires major improvement. Recommendations for further professional development are required to meet expectations. A rating of 2 means that performance is not meeting expectations.
- 1** Does not meet expectations. Writing needs substantial improvement. Objective(s) clearly is/are not met. Missing major components of the objective and/or is poorly organized. Requires substantial work to fully demonstrate and meet expectations. A rating of 1 means that performance is significantly below expectations.
- 0** Did not complete objective or performance does not warrant any credit.