



Research Article

Cognitive Behavioral Therapy and Aerobic Exercise for Survivors of Sexual Violence with Posttraumatic Stress Disorder: A Feasibility Study

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Abstract

Sexual violence is a significant and pervasive public health issue impacting women. Due to the high prevalence rate of posttraumatic stress disorder (PTSD) among this population, women who have experienced sexual assault may constitute the largest group of individuals suffering from PTSD in the United States. Although effective treatments for PTSD have been developed, survivors of sexual violence may be reluctant to seek formal treatment such as psychotherapy or pharmacotherapy and remission may be difficult to obtain using these interventions. Given that research supports the psychological benefits of aerobic exercise for reducing symptoms of depression and anxiety, which commonly co-occur with PTSD, aerobic exercise may also reduce symptoms of PTSD. We discuss a strategy to examine the impact and feasibility of incorporating an adjunct aerobic exercise intervention as a treatment for PTSD among women who experienced sexual violence. Fourteen participants received cognitive behavioral therapy (CBT) or CBT plus group aerobic exercise sessions (CBT+E). Feasibility was measured by participant retention and adherence. Acceptability was assessed using a questionnaire. The findings support that it is feasible to conduct a study to evaluate a package of interventions that include an evidence-based treatment for PTSD and aerobic exercise. The high rates of participant retention and satisfaction suggest that exercise is an acceptable intervention among this population. Our results indicate that a large, randomized controlled trial to explore the efficacy of aerobic exercise for the treatment of PTSD among adult women survivors of sexual violence would be safe and feasible. Methodological challenges in conducting this research as well as suggestions for further examination of exercise interventions with adult survivors of sexual violence are discussed.

Keywords

Cognitive behavioral therapy; Sexual assault; Rape; Posttraumatic Stress Disorder; Trauma

Introduction

Sexual violence is a significant and pervasive public health issue impacting women globally [1]. In the United States, nearly one in five women aged 18 or older have been raped, 1.3 million women have

been the victim of rape or attempted rape in the last 12 months, and 42% of women have experienced other forms of sexual violence during their lifetime [2]. Due to the high prevalence rate of posttraumatic stress disorder (PTSD) among this population [2], women who have experienced sexual assault may constitute the largest group of individuals suffering from PTSD in the United States [3]. Therefore, the development and exploration of effective treatments to meet the needs of survivors of sexual violence with PTSD is critical [3].

Treatments for PTSD

Multiple interventions have been found to be efficacious in the treatment of PTSD, including Cognitive-Behavioral Therapy (CBT) [4], Prolonged Exposure (PE) [3], Cognitive Processing Therapy (CPT) [5], Eye Movement Desensitization and Reprocessing (EMDR) [3], pharmacotherapy [6], and couples therapy [7]. However, survivors of trauma with PTSD may be reluctant to seek formal treatment [8]. Reasons for avoiding treatment may include feeling that symptoms will improve with time, viewing symptoms as a personal failure, and shame surrounding the traumatic experience(s) [8]. For those who choose to pursue treatment for PTSD, the average dropout rate is 20.5% from exposure treatments, 22.1% from CPT, 26.9% from a combination of exposure and other CBT techniques, and 18.9% from EMDR [9]. Furthermore, remission can be difficult to obtain with psychotherapy or pharmacotherapy alone [10]. Although much research has been conducted to examine the efficacy of various treatments for PTSD, all treatments have their limitations [8]. For example, there is limited efficacy for the use of evidence-based psychotropic medications for treatment-resistant PTSD [11].

Therefore, the creative integration of new theoretically grounded approaches that have been demonstrated to be helpful in treating other conditions has been encouraged in order to promote the development of improved treatments [8]. For example, preliminary evidence supports the use of yoga as an adjunct treatment for PTSD [10,12]. It may be that combining exercise interventions with evidence-based treatments for trauma would appeal to survivors of sexual violence who may otherwise choose not to seek formal treatment, or may improve treatment retention or outcomes. However, the integration of aerobic exercise and evidence-based treatments for PTSD among survivors of sexual violence has not yet been systematically evaluated.

Theory

Exercise paired with therapy may be particularly valuable, as Herman (1997) asserts that the initial stage of trauma recovery involves re-establishing safety by first regaining control of the body through activities such as exercise [13]. In fact, Herman (1997) recommends the use of "hard exercise" for trauma survivors to assist with managing stress [13]. However, we were unable to locate any literature empirically examining the use of exercise with survivors of sexual violence.

Rationale for the Feasibility Study

The psychological benefits of aerobic exercise for reducing symptoms of depression and anxiety are well recognized [14]. Since PTSD commonly co-occurs with depression and anxiety, aerobic exercise may also reduce symptoms of PTSD. In fact, preliminary

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studies have provided support for aerobic exercise as a treatment for PTSD as well as co-occurring anxiety and depression [15,16]. It has also been stated that traditional talk-based therapy focused on cognitions, emotions, and avoidance behaviors may neglect the physical, visceral, and body-based dimension of trauma [17]. Thus, aerobic exercise implemented in a systematic manner as an adjunct to therapy may be helpful to trauma survivors in processing these commonly neglected aspects of the trauma experience. Moreover, trauma survivors with co-occurring diagnoses are particularly resistant to first-line therapies and may benefit from programs that include multiple treatment modalities [8]. Therefore, this study sought to examine the impact and feasibility of implementing an adjunct aerobic exercise intervention for women presenting for services at a rape crisis center by comparing CBT to CBT and aerobic exercise (CBT+E) in the treatment of PTSD. It was hypothesized that aerobic exercise may be a safe and acceptable treatment for PTSD among women who are survivors of sexual violence.

Method

Participants

The participants in the final sample included 14 women between the ages of 30 and 62 who were voluntarily receiving outpatient treatment at a rape crisis center in a mid-sized Southeastern city. Eight women were adult survivors of childhood sexual abuse, three were survivors of rape as an adult, and three were survivors of both types of sexual violence. All participants self-identified as Caucasian. The mean age for the CBT treatment group was 45, which was not significantly different from the participants in the CBT+E treatment group ($M = 46$).

Measures

Clinician Administered PTSD Scale: The CAPS is a 30-item structured interview used to assess the frequency and intensity of 17 core DSM-IV PTSD symptoms [18]. The CAPS was utilized to make a current (past month) diagnosis of PTSD. It is considered the “gold standard” in PTSD assessment [19].

Physical Activity Readiness Questionnaire: The PAR-Q [20] consists of seven questions related to cardiovascular health and has been found to be effective in identifying individuals who need further screening prior to initiating physical activity, while not acting as a barrier to exercise. The PAR-Q was administered to assess participant’s readiness to begin an exercise program.

Posttraumatic Stress Checklist (PCL-S): The PCL-S is a 17-item self-report measure that corresponds to DSM-IV-TR [21] symptom criteria for a diagnosis of PTSD. The PCL-S has been shown to correlate highly with the CAPS [22].

Symptom Check List-90-Revised: The SCL-90-R [23] is a 90-item self-report measure of psychological distress. Questions are rated on 5-point scale, ranging from 0 (not at all) to 4 (extremely). The scale is comprised of 3 global indices and 9 subscales to assess somatization (SOM), obsessive-compulsive (O-C), interpersonal sensitivity (I-S), depression (DEP), anxiety (ANX), hostility (HOS), phobic anxiety (PHOB), paranoid ideation (PAR), and psychoticism (PSY). The inventory has demonstrated reliability and validity and provides a multidimensional symptom profile [23].

Procedure

Participant selection and requirements: Participants were

recruited via a flyer posted in the waiting room at the rape crisis center. To be included in the study, individuals interested in exercise were required to be in good physical health as measured by the PAR-Q or have a letter of clearance from their physician. Potential participants in both groups first completed an assessment to rule out current suicidal or psychotic behavior. Suicidal ideation and psychosis were assessed through a clinical interview to evaluate thoughts, plans, behaviors, and intent related to self-harm as well as the presence of delusions, hallucinations, or thought disorder. Participants then completed the CAPS. Individuals were required to obtain a score of at least 45 on the CAPS, indicating moderate PTSD, in order to be eligible. This decision was based on Orr’s (1997) finding that a total CAPS severity score of 45 “demonstrates the greatest concordance with physiological reactivity to script-driven imagery” [18] among women who are survivors of childhood sexual abuse. All fifteen individuals who expressed interest in participating were eligible and signed an Informed Consent Agreement.

Treatment delivery: Each participant self-selected an 8-week treatment program consisting of bi-weekly CBT or bi-weekly CBT+E. Eight participants selected CBT+E and seven participants selected CBT. The lead author of this study, a Licensed Marriage and Family Therapist, provided the CBT sessions at the rape crisis center. A different provider, a female personal trainer certified through the National Exercise Trainers Association (NETA), facilitated the group exercise sessions. All exercise classes were conducted at the rape crisis center’s Therapeutic Activity Center (gym).

Exercise sessions: Exercise sessions were 40 minutes in duration and included five minutes of warm-up (stretches), followed by 30 minutes of aerobic exercise (circuit training), and then five minutes of cool down (walking). The circuit training sessions included full-body exercises such as squats and lunges for the lower body and bicep curls and tricep extensions for the upper body and were 30 seconds per exercise. Participants exercised at moderate intensity, maintaining 60% to 80% of their maximum heart rate during each exercise session, as measured by the trainer on four occasions at every session. Exercise sessions were offered four days per week, and the trainer recorded attendance at every exercise class.

CBT sessions: While participating in the exercise program, those in CBT+E also attended 50-minute bi-weekly therapy sessions. Specific CBT interventions, such as normalizing common reactions to trauma, providing psychoeducation on PTSD symptoms, teaching breathing retraining exercises, utilizing cognitive restructuring and thought stopping techniques, and guided self-dialogue, were delivered uniformly to each participant during the therapy sessions as outlined by Foa [24]. Participants selecting CBT alone received this same protocol of CBT sessions. Of those study participants who had engaged in prior treatment, none reported that their previous treatment included the delivery of specific CBT interventions.

Measures and incentives

At the conclusion of the study, all participants completed the CAPS, PCL-S, and SCL-90-R as well as a satisfaction questionnaire. Participants in both groups received a \$25 gift card and were entered into a prize drawing for one \$50 gift card following completion.

Data analysis

Means and standard deviations were calculated for all descriptive variables, and a repeated measures ANOVA with two levels for time

(pre-post) and two levels for group (CBT-CBT+E) was utilized to examine the outcome measures.

Results

The results were based on the 14 participants who completed their self-selected treatment program (CBT or CBT+E). The seven participants receiving CBT attended no fewer than three and no more than four therapy sessions, with an average of 3.7 therapy sessions attended during the course of the study. The seven participants receiving CBT+E attended no fewer than three and no more than four therapy sessions, with an average of 3.5 therapy sessions attended during the intervention. Additionally, participants in CBT+E completed between 12 and 19 exercise sessions, with a mean of 14.9 exercise sessions completed during the course of treatment. The two groups did not differ at pre-treatment with regard to any variable.

Participant Retention and Adherence

Participant retention was measured based upon adherence to and completion of the self-selected treatment protocol (CBT or CBT+E). Of the 15 participants enrolled in the study, one participant who elected participation in CBT+E dropped out of the study after one week due to fracturing her foot in a non-exercise related event. The remaining 14 participants demonstrated adherence to treatment and completed the outcome measures following the study.

Participant Satisfaction

Acceptability of the exercise intervention was assessed using a satisfaction questionnaire developed by the researchers. Feedback obtained from the satisfaction questionnaires was overwhelmingly positive. All of the participants in CBT+E (100%) reported satisfaction with both the exercise and therapy sessions. For example, one participant said, “The exercise is a major asset and I think should become a standardized part of the course of treatment. Positive effect, I feel so much better.” Another participant shared that she was, “Absolutely satisfied and thankful to be a part of the exercise sessions...I think that it helped profoundly – I think that I would have

needed more of my anxiety meds (prn) if I didn’t ‘work it out’ on the exercise floor.” Additionally, all participants in CBT (100%) reported satisfaction with the therapy sessions. One participant stated, “I was very satisfied with my therapy. I learned coping skills that have helped me a lot.” Another participant shared, “I would rate my experience with therapy as excellent. I would have no qualms recommending therapy to those with traumatic stress.”

PTSD Symptom Findings

Changes in PTSD symptoms are shown in Table 1. A significant main effect for time was observed for the CAPS ($F_{(1,12)} = 84.51, p < 0.001, \eta p^2 = 0.88$) and PCL-S ($F_{(1,12)} = 25.99, p < 0.001, \eta p^2 = 0.68$), indicating that all participants, on average, reported improvements. A non significant effect for group was observed for the CAPS and PCL-S as well as non significant effects for the group by time interaction (Table 1). Therefore, significant differences between the groups were not found. Statistically significant findings were not expected since the study was not adequately powered, and feasibility studies leave the evaluation of the outcome of interest to the main study.

Additional Symptom Findings

Changes in scores on the SCL-90-R are shown in Table 1. Repeated measures ANOVAs were conducted for each of the three global indices of the SCL-90-R, including the Global Symptom Index (GSI; designed to measure global symptoms of distress), Positive Symptom Total (PST; measuring the number of self-reported symptoms), and Positive Symptom Distress Index (PSDI; measuring the intensity of reported symptoms). Significant main effects for time ($F_{(1,12)} = 22.79, p < 0.001, \eta p^2 = 0.66$) were found for the GSI, with non-significant effects for group and for the group by time interaction. A significant main effect for time was found for the PST ($F_{(1,12)} = 20.05, p = 0.001, \eta p^2 = 0.63$), with non-significant effects for group and for the group by time interaction. Significant main effects for time ($F_{(1,12)} = 14.13, p = 0.003, \eta p^2 = 0.54$) were also found for the PSDI, with non-significant effects for group and for the group by time interaction (Table 1). Again, statistically significant findings were not anticipated in this feasibility study.

Table 1: CAPS, PCL-S, and SCL-90-R Outcome Variables across Time for CBT and CBT+E

Outcome Measure	Mean Score (SD)		Time (within)		Group (between)		Time x Group Interaction	
	CBT	CBT+E	df (1, 12)		df (1, 12)		df (1, 12)	
			F	p	F	p	F	p
CAPS			84.51	<0.001	0.00	0.981	1.74	0.21
Pre-treatment	83.00 (24.30)	86.86 (21.89)						
Post-treatment	58.29 (27.06)	53.86 (14.52)						
PCL-S			25.99	<0.001	0.02	0.891	1.64	0.22
Pre-treatment	63.00 (15.64)	65.29 (7.87)						
Post-treatment	53.00 (21.17)	48.57 (12.48)						
SCL-90 GSI			22.79	<0.001	0.15	0.705	0.54	0.48
Pre-treatment	2.09 (0.97)	2.01 (0.67)						
Post-treatment	1.62 (0.98)	1.37 (0.58)						
SCL-90 PST			20.05	0.001	0.10	0.760	0.02	0.88
Pre-treatment	190.71(90.53)	177.29 (55.92)						
Post Treatment	136.29(80.52)	126.43(57.93)						
SCL-90 PSDI			14.13	0.003	0.26	0.620	0.03	0.88
Pre-treatment	2.61 (0.75)	2.43 (0.42)						
Post-treatment	2.10 (0.75)	1.96 (0.50)						

SD= Standard Deviation. CAPS=Clinician-Administered PTSD Scale. PCL-S=PTSD Checklist - Specific Version. GSI=Global Severity Index. PST=Post Symptom Total. PSDI=Positive Symptom Distress Index

Discussion

Despite the existence of effective pharmacological and psychotherapies for PTSD, many survivors of sexual violence avoid current treatments or do not obtain the relief they are seeking from these interventions for a variety of reasons. We hypothesized that because aerobic exercise has been found to be helpful for treating depression and anxiety, this form of exercise may be a safe and acceptable treatment for PTSD among women survivors of sexual violence. We found that participants were amenable to aerobic exercise as an adjunct treatment for PTSD as evidenced by the extremely high rates of retention (93%) and satisfaction (100%). Given the ongoing stressors that participants in both treatment groups were experiencing, their adherence to treatment is reflective of their motivation and provides support for the value of offering both interventions.

For this feasibility study, we recruited a Certified Personal Trainer to develop an aerobic exercise intervention for women with little or no prior experience with aerobic exercise. None of the participants in the study reported engaging in aerobic exercise at the time of recruitment to the study. However, all of the participants were able to complete the circuit training intervention using standard modifications suggested by the instructor as needed. One participant, who fractured her foot in a non-exercise related event, withdrew from the study after one week. This participant explained that this event rendered her unable to drive and that she did not have assistance with transportation to the rape crisis center.

Feasibility Studies

Feasibility studies are important pieces of research that are conducted to evaluate the considerations necessary to developing a main study. In particular, it has been recommended that feasibility studies be completed prior to a main study when evaluating a package of interventions [25] and to examine the applicability of interventions in “real-world” settings [26]. Although feasibility studies examine parameters, such as participant adherence and satisfaction, feasibility studies leave the evaluation of the outcomes of interest to the main study [25].

Methodological Challenges

The purpose of this study was to make a necessary initial examination of the use of aerobic exercise as an adjunct treatment for PTSD. The final sample for this feasibility study included 14 women, with seven participants in each treatment group. Participants were allowed to self-select either CBT or CBT+E. The decision not

to randomize participants in this small feasibility study reflects an emphasis on both a naturalistic treatment environment and clinical trauma practice. This process was viewed as a reflection of how treatment would be conducted in the community, making it more applicable to rape crisis centers and other outpatient settings. Additionally, it is common for feasibility studies to be uncontrolled [25].

Three of the seven participants who elected to participate in CBT reported engaging in aerobic exercise during the course of the study (including using the treadmill and elliptical machine), with two of these participants reporting engagement in occasional aerobic exercise and one reporting engaging regularly in aerobic exercise. However, none of these individuals reported engaging in any aerobic exercise prior to enrolling in the study. This unanticipated finding may complicate the results of a main study, but it also provides further evidence for the interest in the use of aerobic exercise as an intervention among women who are survivors of sexual violence.

Limitations

This feasibility study has multiple limitations. The primary limitation is the small number of participants ($n=14$), although small samples are not uncommon among feasibility studies [27]. In an effort to be trauma-informed and also reflective of the challenges that would arise in “real-world” settings, this study allowed participants to self-select participation in either CBT or CBT+E instead of utilizing randomized sampling. Therefore, there may be differences between those who chose to participate in the exercise treatment and those who did not. For example, six of seven participants who selected CBT and three of seven participants who selected CBT+E were prescribed psychotropic medications at the time of the study (Tables 2 and Table 3).

Additionally, since the examination of exercise as a treatment for PTSD is rather novel and with little literature to guide the formulation and delivery of exercise interventions, a mixed methods approach that included collecting and analyzing qualitative data would have allowed for a more in-depth examination of the complexities associated with this area of research among this population. This method would have provided an opportunity for participants to explain why they chose to participate in exercise or why they did not and also why some began to exercise after enrolling in the study although they did not choose to be a part of the CBT+E treatment group and had not been engaging in any type of exercise prior to the study.

Furthermore, this study elected to not include an “exercise only” control group. This decision was based on clinical trauma practice, as many trauma survivors, particularly those who have experienced

Table 2: Summary of General Description of Participants in CBT.

Pp	Age	Diagnoses	Psychotropic Medications
1	42	PTSD, Chronic OCD	Prozac™ 80 mg, Wellbutrin™ 3000 mg, Risperdal™ 2 mg, Klonopin™ 1 mg, prn
2	55	PTSD, Chronic; DD, NOS	None
3	30	PTSD, Chronic MDD, Severe, with Psychotic Features, Provisional Psychotic Disorder, NOS	Abilify™ 5 mg
4	50	PTSD, Chronic MDD, Recurrent, Moderate	Celexa™ 40 mg, Remeron™ 45 mg Xanax™ .5 mg, prn
5	45	PTSD, Chronic; DD, NOS	Celexa™ 20 mg, Seroquel™ 50 mg
6	34	PTSD, Chronic; DD, NOS Polysubstance Dependence, in Early Full Remission	Zoloft™ 200 mg, Seroquel™ 50 mg BuSpar™ 10 mg, Vistaril™ 50 mg
7	62	PTSD, Chronic; DD, NOS	Zoloft™ 100 mg, Risperdal™ .25 mg

Summary data represents each participant's status at pre-treatment. CBT=Cognitive Behavioral Therapy, Pp=Participant, PTSD=Posttraumatic Stress Disorder, OCD=Obsessive Compulsive Disorder, MDD=Major Depressive Disorder, DD, NOS=Depressive Disorder, NOS, NOS=Not Otherwise Specified

Table 3: Summary of General Description of Participants in CBT+E

Pp	Age	Diagnoses	Psychotropic Medications
1	59	PTSD	Cymbalta™ 90 mg
		MDD, Recurrent	Trazodone™ 150 mg, Klonopin™ 0.5 mg prn
2	53	PTSD	Wellbutrin™ XL 300 mg, Xanax™ 0.5 mg,
		MDD, Single Episode	Remeron™ 30 mg
3	31	PTSD, Chronic	None
		Alcohol Dependence, Provisional	
4	44	PTSD, Chronic	None
5	43	PTSD, Chronic	None
6	54	PTSD, Chronic	Prozac™ 40 mg
		MDD, Recurrent	BuSpar™ 10 mg
		Alcohol Abuse in Sustained Full Remission	
7	41	PTSD, Chronic	Non-Adherent

Summary data represents each participant's status at pre-treatment. CBT+E=Cognitive Behavioral Therapy plus group aerobic exercise sessions, Pp=Participant, PTSD=Posttraumatic Stress Disorder, MDD=Major Depressive Disorder

complex trauma, may experience difficulty with the physical and bodily sensations that arise during aerobic exercise [17]. Thus, it was viewed that this initial examination of the use of aerobic exercise with survivors of sexual violence should be paired with therapy to assist participants with processing the sensations and emotions they experienced during exercise as needed. In fact, some participants referenced such experiences in their post-treatment questionnaire. One participant stated, "I will say there was a couple of times I got emotional and tearful during the exercising. I guess that was just part of the process, which was beneficial to be able to release those emotions and continue to move forward with the healing process." Although this choice not to include an exercise only control group made it impossible to determine the effect of exercise individually or when paired with CBT, this was not a goal of this feasibility study.

Also, the therapist's adherence to the delivery of CBT was not formally assessed. Since the lead researcher was also in the role of delivering the therapeutic interventions, it is possible that a social desirability or expectancy bias differentially influenced the assessments completed by participants in both the CBT and CBT+E treatment groups. Nonetheless, it was viewed as preferable for the lead researcher to deliver the CBT sessions because of her extensive clinical experience with the target population and the partnership that she had developed with the targeted community (survivors of sexual violence and the rape crisis center).

All of the women who participated in this study experienced multiple potentially traumatic life events; therefore, their PTSD symptoms may not be due solely to their sexual trauma history. Furthermore, the high rate of re-victimization among survivors of sexual violence makes isolating experiences of sexual violence challenging. Finally, since this study was designed to examine the effects of exercise on symptoms of PTSD among women voluntarily seeking outpatient treatment at a rape crisis center, participants included survivors of various types of sexual violence, including childhood sexual abuse, incest, and rape as an adult.

Our results may not be generalizable to male trauma survivors, child and adolescent survivors, or individuals undergoing treatment at an inpatient treatment facility. Notably, all of the participants in

the study were Caucasian, and this was also a significant limitation. For the reasons described above, it is important to use caution when interpreting these results. Nevertheless, the improvements reported by those in CBT+E suggest that it would be safe and feasible to evaluate an aerobic exercise program as part of the treatment delivery for survivors of sexual violence with PTSD.

Suggestions for Future Research

Since survivors of sexual violence have experienced an extreme violation of trust, they may be less likely to trust becoming involved in a study, particularly one that includes random assignment to groups as well as researchers and interventions unknown to them. Studies examining the use of aerobic exercise as a treatment for survivors of sexual violence may be most successful if they incorporate rape crisis center staff and clinicians who have earned the trust of trauma survivors over time, in the research process. Therefore, enhanced research/clinical partnerships may be both necessary and valuable for this area of research.

Conclusions

The goal of this study was to examine the impact and feasibility of implementing an adjunct aerobic exercise intervention among a sample of women presenting for services at a rape crisis center. The study suggests that it would be both safe and feasible to include aerobic exercise interventions as an adjunct treatment for women survivors of sexual violence with PTSD, even when the women have not been previously engaged in aerobic exercise. Those who elected to participate in CBT+E voiced satisfaction with the exercise intervention and also noted that the program motivated them to continue to exercise on their own following completion of the study. The high rates of participant retention, adherence, and satisfaction suggest that a large trial is feasible. Further research using large randomized controlled trials to examine PTSD symptoms, as well as common co-occurring symptoms, using measures such as the CAPS, PCL-S, and SCL-90-R, will need to be conducted in order to examine the efficacy of incorporating an exercise intervention into the standard treatment delivery for survivors of sexual violence. Results suggest that further research is warranted in order to determine if exercise interventions offer additional benefits related to outcome, satisfaction, and retention beyond that which can be gained from evidence-based treatment approaches such as CBT.

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