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The Effects of Sport and Physical Activity on Post-Traumatic Stress Disorder in Youth From Mass Trauma Populations

Sydney de Victoria-Michel
University of Northern Iowa

THE EFFECTS OF SPORT AND PHYSICAL ACTIVITY ON POST-TRAUMATIC STRESS DISORDER IN YOUTH FROM MASS TRAUMA POPULATIONS

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Sydney deVictoria-Michel

University of Northern Iowa

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Jessica Moon, Director, University Honors Program

Dedication

I dedicate this project to a young man whom I will never see again. After a trip to New Orleans in December of 2007 this man has been given the name Pink Jumpsuit Guy due to his attire. My introduction to this man was in a desolate wiped out area in the Lower Ninth Ward, where he lived in an abandoned home with his dog. Through the kindness of strangers we watched this scared youth open up within a couple of days, hoping to help us clean the area. My meeting with Pink Jumpsuit Guy opened up my eyes to those who are abandoned after mass traumas and has pushed me to create and finish this project.

I hope you are well. Thank you.

Acknowledgements

I would like to thank my thesis adviser, Dr. Windee Weiss, for all that she has done. Through putting up with my confusion and last minute deadlines, Dr. Weiss made this project the best it could be. She gave me freedom to create, while keeping me within the professional guidelines I was unable to fully understand. Without this woman in my life, I never would have walked down the road of sport psychology and ended up where I am today. Thank you, Dr. Weiss.

I cannot forget to thank Maggie Nuese for pushing me through to the end. Without her continual pressure and reminders I would be unable to comprehend the magnitude of what you have before you. Thank you.

The Effects of Sport and Physical Activity on Post-Traumatic Stress Disorder in Youth from Mass Trauma Populations.

Sydney deVictoria-Michel, University of Northern Iowa, Cedar Falls, Iowa, 50613.

This project will focus on the effects of exercise and sport on Post-Traumatic Stress Disorder (PTSD). PTSD can be debilitating to those who suffer, and incredibly confusing when children are involved. Feelings of rage, anger, depression and anxiety can render individuals incapable of normal day-to-day activities. Traditional treatment options offer individual and group therapy in which the patients simply share their feelings and experiences. Although there have been a vast number of studies and texts published on PTSD sufferers using treatment based on psychotherapy, there has been little done to document effects of exercise and physical activity on PTSD. Despite lacking data, it is possible to use physical activity to treat symptoms which have been researched separately from PTSD. Studies used to understand the significance of exercise on depression and anxiety can cross over to PTSD, while activities which are used in sport psychology to increase self-confidence can help individuals overcome fear and loss of control.

Information for this thesis has been gathered through a literary review of studies focused in PTSD, and exercise and sport psychology. The review is based within completed research on PTSD to outline symptoms and patterns of sufferers. During the analysis of studies it was important to focus on how reactions may differ between the type of trauma an individual experiences. The effects of mass trauma will be highlighted as a large scale of people are affected, calling for therapy which can reach a larger number of individuals. These timelines will make up the beginning of the thesis, followed by research of studies focused on current treatment options, taking careful notice of the benefits and risks of each. Emphasis will be placed on group therapy options as sport is an activity involving multiple individuals. While studying literature in this area, the student hopes to find the framework for group therapy programs currently in practice. The following section then accommodates the analysis of work within sport and exercise psychology. The research focuses on the use of exercise and physical activity as treatment for depression and other symptoms associated with PTSD. Through the review of such literature it will be possible to coordinate research in the impact of exercise on affects of PTSD. Finally, based on previous research and theory, a program is developed and outlined using sport therapy with PTSD. The recommended intervention will be structured around a theoretical mass trauma, working to benefit affected children. Such a program could then be implemented and improved upon. This literary analysis hopes to be a stepping stone for future research in PTSD treatment.

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Introduction

Every war, natural disaster, or human crime greatly increases the potential for individuals to suffer emotional trauma unfelt and misunderstood by the surrounding communities. The Vietnam War brought home soldiers who experienced symptoms known to many veterans, but not identified by the psychiatric world. After World War I the government and society worked to suppress what was once termed "shell shock". The government hoped to hide the ugly face of war, while citizens back home viewed those with "shell shock" as weak and cowardly (Coates, Rosenthal, & Schecter, 2003). Due to lack of research and knowledge, such symptoms often outlast the time frame of the initial event. Recurring feelings of anxiety, fear, and depression, which individuals felt after an incident of trauma and life-threatening distress, did not receive medical explanation until 1980 (NIH, 2009). These symptoms are now commonly associated with what the American Psychological Association terms Post-Traumatic Stress Disorder (PTSD).

Several treatment options are currently available for PTSD, ranging from individual treatment, to group therapy, or alternative therapies such as play. Although these options each have their benefits, none address all symptoms of PTSD on their own. Symptoms of PTSD include, as mentioned, depression, anxiety, and stress, all of which can benefit from physical activity and exercise (e.g., Fremont, & Craighead, 1987; Lutz, 2007). Anxiety has even been addressed through several interventions within the field of sport psychology (e.g., Hatzigeorgiadis., Zourbanos, Mpoumpaki, & Theodorakis, 2009). Additional criteria, such as self-esteem and moral development, can be addressed within sport psychology to help those at risk for, or suffering from, PTSD. Though these

connections exist, little research has been done to connect physical activity and exercise as beneficial to the recovery from PTSD. The purpose of this paper is to create an intervention program for youth at risk for PTSD from a mass trauma event. Information for this program will be gathered from existing studies on PTSD, current therapies, and sport psychology interventions for mood disorders and related problems.

Chapter I

Post-Traumatic Stress Disorder

The key to diagnosing PTSD stems from the condition's nature of recurring events and overwhelming fear of safety (APA, 2000). The National Institute of Mental Health (2009) describes PTSD as a panic disorder which develops after an individual survives a threatening event which endangered their life or the lives of others. Survivors experience "flashbacks or bad dreams, emotional numbness, intense guilt or worry, angry outburst, feeling 'on edge,'" and work to prevent thoughts or situations which hold connection to the event (p.1). Those suffering from PTSD are overcome by anxiety, depression, fear of people, places and articles related to the traumatic event, uncontrollable flashbacks, and a constant concern of one's safety. Individuals often lose the ability to identify emotions or connect affect to memories. This fear will often manifest itself in other emotions.

PTSD was not fully accepted as a disorder until it was included in diagnostic material, DSM-III, by the American Psychiatric Association (APA) in 1980 with response to Vietnam soldiers returning with extreme symptoms. Now the APA uses several criteria to assess the syndrome, outlined in the DSM-IV-TR. Six major categories addressed in this manual help to diagnose an individual with PTSD. These classifications are exposure, reexperiencing, avoidance, hyper arousal, duration, and clinical significance. To first consider the option of PTSD, an individual must have experienced a traumatic event (i.e., exposure). This event may have occurred on a large scale with several victims, or with only one victim. The response from this event must involve horror, helplessness, or intense fear. Differences arise in children victims as these

symptoms may instead be shown in disorganization or agitated behavior. Webb (2004a) also cites symptoms in youth showing a greater dependency on others, confusion in certain concepts of events, and loss of hope in their idea of guardians as saviors.

Second, the DSM-IV-TR states that individuals must reexperience or relive the traumatic event on several different occasions. This exposure will present itself in at least one of five ways: (1) memories of the event which are both disturbing in nature and a common occurrence, (2) disturbing dreams, (3) individuals appear to be reliving the event or feel as if it is happening to them, (4) significant psychological disturbance in relation to cues attached to event, and (5) extreme physiological disturbance occurs with exposure to event related cues. Children may convey differences in parts 1, 2, and 3 through trauma themed recreation, nightmares with no distinguishable content, or performances specific in traumatic aspects, respectively.

The third criterion is marked by a continuous avoidance of cues or reminders of the trauma, accompanied by a "numbing of general responsiveness" (APA, 2000, p. 468). The numbing must not have been a characteristic of the individual before the event. Avoidance must be manifested in at least three of seven ways: (1) individuals avoids psychological cues or discussion of event, (2) individuals work to avoid physical cues of the event, (3) recollection of certain aspects of trauma are difficult or impossible to recollect, (4) decreased interest or activity in endeavors which were once of interest, (5) sense of feeling apart from others, (6) limited range of emotions and inability to express them, and (7) loss of predictable future, or sense of shortened future.

Criterion four addresses symptoms of increased arousal which are continual in nature. A person suffering from PTSD must have at least two of five of the following:

(1) trouble either falling asleep or if sleeping, difficulty staying asleep, (2) unstable emotions or outbursts of anger, (3) more energy is required in concentration, (4) hypervigilance, and (5) startled responses are inflated.

The last two criteria pertain to time and significance of the symptoms previously mentioned. PTSD can only be diagnosed if the symptoms have been present for more than one month. If the symptoms are present for less than one month, then a diagnosis of Acute Stress Disorder (ASD) may be more accurate (Table 1). Finally, the disturbances must have a clinically significant effect or disruption in social life, work, or other areas deemed important by the individual. The cause of these symptoms can be depicted in several separate situations, but all must have threatened the life of the individual, or the lives of loved ones. These traumatic events come in several different types: anywhere from rape to fires, from terrorist attacks to tsunamis. These catastrophes can create victims out of a single person, or an entire community.

Table 1 – DSM-IV-TR Diagnositc Criteria for Acute Stress Disorder

The person has been exposed to a traumatic event in which both of the following were present:

(1) the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others
(2) the person's response involved intense fear, helplessness, or horror

B. Either while experiencing or after experiencing the distressing event, the individual has three (or more) of the following dissociative symptoms:

(1) a subjective sense of numbing, detachment, or absence of emotional responsiveness
(2) a reduction in awareness of his or her surroundings (e.g., "being in a daze")
(3) derealization
(4) depersonalization
(5) dissociative amnesia (i.e., inability to recall an important aspect of the trauma)

C. The traumatic event is persistently reexperienced in at least one of the following ways: recurrent images, thoughts, dreams, illusions, flashback episodes, or a sense of reliving the experience; or distress on exposure to reminders of the traumatic event.

D. Marked avoidance of stimuli that arouse recollections of the trauma (e.g., thoughts, feelings, conversations, activities, places, people).

E. Marked symptoms of anxiety or increased arousal (e.g., difficulty sleeping, irritability, poor concentration, hypervigilance, exaggerated startle response, motor restlessness).

F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning or impairs the individual's ability to pursue some necessary task, such as obtaining necessary assistance or mobilizing personal resources by telling family members about the traumatic experience.

G. The disturbance lasts for a minimum of 2 days and a maximum of 4 weeks and occurs within 4 weeks of the traumatic event.

H. The disturbance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition, is not better accounted for by Brief Psychotic Disorder, and is not merely an exacerbation of a preexisting Axis I or Axis II disorder.

(APA, 2000)

Chapter II

Mass Trauma

Several components have been identified to classify mass traumas, involving anywhere from a dozen to thousands, or perhaps millions, of individuals. Categories of trauma include Type I vs. Type II, proximity, exposure, nature of event, and cause of event. In type I mass trauma, the event was an unexpected singular occurrence which holds little rational fear of a repeated incident (Webb, 2004b). Most often these types of trauma are "freak" large scale accidents, such as the Buffalo plane crash in February, 2009, or natural disasters like Hurricane Katrina in 2005, or the Iowa floods of 2008. In each case the damage held small chance of reoccurring in the future at such a scale. Type II mass trauma differs from Type I in that recurrence is likely and highly plausible (Webb, 2004b). Perhaps the best example is that of the concentration camps during the Holocaust in the 1930s and 1940s when fear of selection and punishment from SS officers was active in everyday life.

Another component of mass trauma events refer to how close the individual was to the event, creating a link between proximity and the prevalence of PTSD symptoms. Most often proximity is mentioned in terms of distance, with those closer to the trauma possessing higher rates of PTSD than those further away; yet distance can be stated in emotional terms as well (Webb, 2004b). Emotional proximity connects individuals who are not directly exposed to the event to hold an emotional connection by knowing others who suffered.

Exposure can also be connected to proximity when determining severity and likelihood of PTSD within certain populations surrounding the trauma. When individuals

are closer to the event, exposure rates are likely to increase, whether the person is a direct victim or a witness to violence (Webb, 2004b). Pynoos and Nadar (1989) found that children who witnessed the abuse of their mothers' held symptoms similar to those of children who were abused themselves. Even without direct exposure to an event, witnessing such actions through other means can create risk for PTSD. Otto, Henin, Hirschfeld, Pollack, Biederman, and Rosenbaum (2007) followed media exposure with children and mothers after the terrorist attacks on September, 11, 2001. They found that children and other "vulnerable populations" were at risk for PTSD from simple media exposure to traumatic events.

Perhaps the most common aspect of any trauma is the nature of the trauma itself. The website for SaveDarfur has a section dedicated to the voices of genocide survivors who speak of their experiences and what they witnessed or heard, with little focus on what they are feeling now (SaveDarfur, 2007). When speaking to the horrors an individual can experience, it is often drawn directly to the events they witnessed. There will be differing reactions for those who witnessed death compared to those who were injured, lost family, or property. Weisaeth and Eitinger (1993) suggest these different events can be separated into three areas: danger traumas, loss traumas, and responsibility traumas. Danger traumas refer to occasions which created a threat to one's health. Loss traumas address the death of loved ones or witnessed deaths of strangers. Responsibility trauma concentrates on the psychological damage to an individual's confidence and belief in handling danger. Although these categories can easily overlap, each play a vital role in development of PTSD.

Mass traumas are also classified in regards to the cause of the event. There are two distinct causes: deliberate (i.e., caused by human actions) and random (i.e., the result of accidents or natural disasters). Examples of deliberate events include September 11th, the Holocaust, and Darfur, while random events involve hurricane Katrina in 2005, the Iowa floods in 2008, or mine collapses. While random events follow the symptoms addressed in the 2000 revision of the *Diagnostic and Statistical Manual of Mental Disorders* (heretofore labeled DSM-IV-TR), deliberate events, however, add problems of rage, confusion, and loss of hope in humanity (Webb 2004b).

Events on such a scale have been happening for years, in respect to war (i.e., WWI, Vietnam, Civil War), natural disasters (i.e., Mount Vesuvius in 79 A.D. and Katrina in 2005), genocide (i.e., Holocaust and Darfur), a mugging, or rape. Traumatic events are a precursor to development of PTSD in the surviving population, but can be either singular or large-scale mass traumas. The focus of this program will be on mass traumas as listed before because such disasters allow for greater commonality between groups, easier access to survivors, and the massive number of victims who need help.

Chapter III

Current Treatment

Help for individuals suffering PTSD can come in several ways, differing from traditional one-on-one counseling sessions, to drawing pictures or playing with toy figures in sand bins (Nader, 2004). Each option must adapt to individuals' needs over time, as the treatment process will change as each person begins to heal. These stages are outlined by Lebowitz, Harvey, and Herman (1993) in their Stages by Dimensions Model, which places healing in three separate stages while also taking into account eight features of psychological performance (which will be addressed later in this paper). These stages include an establishment of safety, memory recovery and proper mourning, and mending relationships which may have been disrupted by the trauma.

Stage one addresses the immediate need for safety an individual experiences after trauma (Harney & Harvey, 1999). The focus is not held directly to the events or losses that may have occurred because this may further exacerbate symptoms of PTSD (Young, Ruzek, & Ford, 1999). This concern for safety is addressed through assisting the survivor in taking care of their own body; in turn providing a psychological sense of control over one's environment. Aid can also be given by helping the individual create a safer home or living environment.

The next two stages, memory recovery and relationship repair, work together allowing survivors to assimilate their story of survival into their everyday life (Harney & Harvey, 1999). This is accomplished through therapy which gives individuals the chance to address memories of the trauma and aid in proper mourning. Once the survivor is able to pull together the full story of his or her survival and been given tools for grieving, the

next step is to repair relationships with others. Such affiliations may have been damaged by the event, or through symptoms of PTSD (i.e., avoidance of others, muted ability to express emotions). As previously stated, these stages allow the individual to include the trauma in their life, rather than allowing the event to be the only aspect of their life (Harney & Harvey, 1999).

Screening

When working with mass trauma populations an important task is to separate individuals who are at risk for PTSD from those who are not as interventions may be more effective for those who hold risk for PTSD or another stress disorder. Screening is as inexpensive way to complete this process when working in mass trauma populations and emergency situations because this tool saves time by giving questionnaires or interviews in a short amount of time. The Institute of Medicine (2006) lists screening tools which take anywhere from 10 minutes to one hour, depending on the scale or interview used. The process is less expensive than providing individual therapy with a psychiatrist to each survivor in effort to determine risk of PTSD. Screening is also less time consuming, which is important in allowing for treatment or intervention as soon as possible following trauma. Another benefit of screening is the ability for trained laypersons to be used in leading the planned interview or interpreting the results (Institute of Medicine, 2006).

With several screening processes available individuals must be aware of the outcomes measured by these tools. As they are implemented to determine existence of symptoms, some scales will focus on other areas as well. Where one program will

address symptom severity, others will also look for comorbidity, or may even be based on criteria for the International Criteria for Disease rather than the DSM-IV-TR. With this noted, one must understand the screening tool being used and what the process measures. One cannot assume that the report given is a satisfactory diagnosis, as most should not be used to replace a comprehensive interview with a trained professional (Institute of Medicine, 2006).

Even though screening is an incomplete diagnostic tool, the benefits in large trauma populations make the process an important addition to creating an intervention. The time saved by screening individuals with a quick, yet accurate, interview or self-report will allow the program to benefit those who need it the most. Not only does screening save time, but also screening relatively inexpensive thus allowing money to be directed to rebuilding communities or towards the intervention itself.

Individual Therapy

After initial screening, treatment can occur in one of several ways based upon a traditional path or more alternative therapies. Individual therapy consists of sessions with a trained professional, psychiatrist, psychotherapist, or counselor. The patient will work to overcome their disorder through one-on-one meetings with the counselor. Although these sessions will allow for personalized therapy, the patient may feel isolated in their symptoms or unable to connect their emotions to the event (Harney & Harvey, 1999). In cases of PTSD, importance is set in feeling a commonality between other survivors. This connection can be obtained through group therapy.

Group Therapy

Group therapy is the preferred treatment for PTSD, especially in mass trauma populations (Harney & Harvey, 1999). This form of therapy shares the cost-efficiency of screening by allowing several survivors to grow and heal together under the supervision of only one or two trained professionals, whereas individual treatment would only benefit one survivor over the same amount of time (Young, Ruzeck, & Ford, 1999). Commonality is another factor as those who suffer similar experiences are able to discover they are not isolated in their emotions and experiences. By pulling survivors together from similar events they are able to discover a sense of belonging in a safe environment. Through shared experiences and healing, group members are able to learn helpful processes from the modeling of others (Young, Ruzek, & Ford, 1999).

Structure is necessary when working with survivor populations of any trauma or mood disorder, especially as individuals may experience feelings they were unprepared for or are unable to cope with. Even with the benefit of commonality groups must be given guidance when confusion, anxiety and fear are rampant. These feelings may not be felt in the same way by everyone present, and survivors may even recover at different rates allowing for separate stages of healing which require different modalities of therapy.

There are three different models of therapy which can be utilized at each level. First, the cognitive model, which matches the needs of survivors to create safety in their lives. The cognitive model operates under the assumption that trauma interrupts feelings of safety an individual may have had before the incident (Harney & Harvey, 1999). Second, behavioral models work to quell the survivor's response of fear and the length in

which a state of fear is present; if fear exists, safety is questioned. Both options work to reduce fear, anxiety, depression, and symptoms of avoidance as listed in the DSM-TR-IV. As safety is the main concern in the first stage, the models match goals of survivors with others in their group. Cognitive treatment takes focus away from the direct event while steering attentions toward emotions of the individual and how these emotions connect to PTSD. Although neither model requires group therapy, there is greater opportunity for learning techniques for safety within a group environment (Harney & Harvey, 1999).

Third, psychodynamic and interpersonal models are strongly group oriented, working to heal through the help of others (Harney & Harvey, 1999). While both options hold importance in presence of others, separate goals for each exist. Psychodynamic therapy works differently to facilitate in sharing emotions and exchanging the experiences of individuals (Roth, Dye, & Lebowitz, 1989). Because the second stage of the dimensions model addresses the recovery of memories, there is a clear call for psychodynamic therapy with individuals in this stage. In contrast, interpersonal models strive to create a connection between individuals after a trauma where relationships were thought hopeless (Alexander et al., 1989). This is important in the cases of intentional mass traumas in which humans were the cause of the event. Interpersonal group therapy fits the needs of individuals within the third stage of the dimensions model who work to rebuild relationships.

Although there are several benefits of group therapy, this treatment does not benefit everyone and may allow some of those suffering PTSD to slip through the cracks. The main hindrance is the assumption of a homogeneous group that experiences the same

symptoms at similar times with the same intensities. In reality, groups consist of survivors with varying degrees of symptoms; where one individual may be suicidal and lost in thoughts of their trauma, another may be anxious, or avoiding such cues altogether (Harney & Harvey, 1999). Certain programs may actively exclude persons who are openly suicidal for fear the individual will bring negative ideas to the group. When comparing group treatments between women who were sexually abused as children, Alexander and colleagues (1989) lost one member who became suicidal during group therapy and was later hospitalized. This exclusion may silence participants whose symptoms do not fit the trend of the group, allowing for little to no explanation for their perceived differences (Harney & Harvey, 1999). When these omissions are present there may be a critical need to incorporate individual therapy.

Most symptoms prevalent in children suffering from PTSD are absent from the DSM-TR-IV, possibly due to a decreased capability to fully express emotions (APA, 2000). Certain age groups may be unable to fully understand death or serious significant injuries (Hartley, 2004). This lack of communication can make application of traditional therapeutic models to the healing process difficult, allowing for alternative therapy, such as play therapy, or exercise and physical activity.

Play Therapy

Play therapy can consist of sand play, which uses sand bins and toy figures to express feelings or tell stories (e.g., Hartley, 2004; Webb, 2004b). Sand play allows for hands on activity that allows children to share experiences through figures when expressive words are difficult due to smaller vocabularies (Webb, 2004a). Drawing may

also be used as alternative therapy for the same reasons. Even if youth are not be able to fully explain their creation, the options of sand play and drawing give benefits in addressing feelings rather than ignoring them. For this reason there is importance in utilizing such options as a means to open up discussion on traumatic experiences, allowing survivors to participate and heal.

In 1991, a program was developed in Connecticut by two committees to address the need of therapeutic programs for families and youth. The nonprofit is known today as the Den for Grieving Kids and helps those suffering loss or major life stressors. In working with children The Den utilizes group therapy, drawing, and rules focused on the safety of the individuals. One such rule states that no one is allowed to throw objects, unless in a specific room, the "Volcano Room". This room allows individuals to vent frustration, anger, and rage in a healthy way, while being monitored by workers who may be able to work them through their feelings (Hartley, 2004). This exception addresses the symptom of anger which can stem from traumatic events. Rage and anger may be necessary symptoms to address when working with children coming from mass trauma populations, especially if the event was caused by deliberate actions. By applying a similar concept to an intervention program focused on sport and physical activity, staff can help individuals work through anger without injuring others.

Chapter IV

Sport and Exercise Psychology

Although there is an importance noted in employing cognitive therapy for those suffering mood disorders and PTSD, such treatment does not create optimal benefits. Fremont and Craighead (1987) found an exercise program was related to a larger decrease in self-reported depressive symptoms among people aged 19-62 years, compared to the use of individual cognitive therapy alone. When exercise and therapy were combined, decreases in depressive symptoms occurred, but the decrease followed a different pattern. When the two treatments were introduced separately, there was an immediate decline in depression, but the decrease of symptoms with an exercise and therapy regimen produced slower decreases at a steady almost uniform pace. At the end of the eighteen week treatment there was a slight increase in depression with singular exercise while cognitive therapy with exercise showed a continued decline. These findings show that while individual cognitive therapy may be less effective than exercise, this treatment plan should be considered in addition to physical activity for intervention programs with depressed individuals. Because depression is a major symptom of PTSD these findings could be used in developing an intervention for PTSD. There is a possibility to link the findings of Fremont and Craighead to other symptoms of PTSD (i.e., anxiety and stress).

Physical Activity and Mood Disorders

When addressing the symptoms of depression and anxiety in PTSD there is an opportunity to use associated studies from the fields of sport and exercise psychology in

planning an effective intervention. Although symptoms vary from depression, anxiety, stress, and rage, more work as been done with depression and anxiety in the area of sport and exercise psychology (e.g., Fremont & Craighead, 1987; Leedy, 2009; Taliaferro et al., 2009).

Positive outcomes for physical fitness are produced through adherence to four aspects of a work out regiment, known as the F.I.T.T. principle. First, the importance of frequency, referring to how many days a week an individual must exercise. Second, the principle of intensity, addressing how hard an individual must work during exercise sessions in order to gain results. Third, time addresses the how long one must work for any given activity. The last principle recognized in the F.I.T.T. formula is the type of exercise, whether one is using aerobic or anaerobic activity. Type helps to determine guidelines for frequency, intensity, and time, as each differs for aerobic versus anaerobic exercise. For overall physical fitness individuals, must work both aerobic and anaerobic systems, each having separate guidelines for frequency, intensity, and time (Corbin, Welk, Corbin, & Welk, 2008).

Guidelines for each area of F.I.T.T. may change for marathon runners who would focus on aerobic fitness compared to weight lifters who have a strong focus on anaerobic resistance training. When focusing on weight training and muscle building frequency should be kept to two to three days a week with muscle overload intensity, and one to three sets of eight to twelve reps. Aerobic activity, however, can be at a frequency of three to six days, with a moderate to vigorous intensity and a minimum time of twenty minutes (Corbin et al., 2008). Studies investigated the use of F.I.T.T. guidelines to create beneficial outcomes in populations with mood disorders, most commonly depression and

anxiety (e.g., Chu, 2008; Pilu et al., 2009). These studies can be used as a starting block when creating an effective intervention program for youth with PTSD. By determining the building blocks of ideal time, preferred type of exercise, and desired intensity and frequency, an intervention program can be created.

Chu (20098) examined training intensity with sedentary women who suffer from depressive symptoms, as well as the effects of exercise on self-efficacy. Participants were randomly separated into three different groups, one control and two experimental. The control group was given a stretching exercise with one supervised session per week for ten weeks. Those in the experimental groups were randomly placed into either high intensity or low intensity units which met for one supervised session per week, with 3-4 more sessions prescribed to do on their own. Participants who exercised were to expend at least 1000 Kcal of energy each week over ten weeks. By controlling for energy expenditure results showed high and low intensities are both effective in reducing depressive symptoms.

Although both aerobic and anaerobic exercise have been shown to benefit overall physical fitness, comparisons should not be made to assume similar benefits with decreased depression or anxious moods. For an intervention program to work there must be an understanding of the effects of different types of exercise on the mind. Results from Chu (2008) also compared differences in self-efficacy across control and experimental groups. Although depression symptoms decreased with both types of exercise, a major finding was seen with a greater increase in depression coping self-efficacy in aerobic exercise groups than with the stretching group (Chu, 2008).

Driver and Ede (2009) studied the effects of physical activity on moods of individuals who suffered from a traumatic brain injury. Sixteen participants were used for the analysis and were randomly divided into a control group and an experimental group. Those in the control group took part in a vocational rehabilitation class while the experimental group received an aquatic activity program. Both groups met for eight weeks with 24 sessions total. Researchers found the aquatic program had a significant impact on tension, depression, anger, vigor, fatigue, and confusion with decreases in all areas.

Pilu et al. (2009) examined long term effects of physical activity on depressive symptoms in women ages 40 to 60 years with a diagnosis of Major Depressive Disorder, as set by the DSM-IV-TR. Thirty patients were selected for the study with twenty placed in a control group of pharmacological treatment only, and ten patients given pharmacological treatment with physical activity. The study lasted eight months and participants were evaluated every two months, with the first assessment obtained before the beginning of the program. Participants in the treatment group met two times a week for 60 minutes each and were given freedom to choose the exercise equipment they wanted to use. Results of the study found that patients in the physical activity and pharmacological treatment group had significantly decreased depressive symptoms compared to the pharmacological only group.

Physical fitness requires a minimum of twenty minutes of exercise or physical activity this time can be completed at separate times throughout the day. However, research has shown that continuous bouts of exercise are more beneficial for mood disorders. Research shows continuous activity of at least thirty minutes per day is more

beneficial for depressive and anxiety symptoms than intermittent activity split up throughout the day (Osei-Tutu & Campagna, 1998). These findings are important when determining time allotted for sport and physical activity in populations with PTSD who hold depression and anxiety as symptoms.

One reason researchers believe exercise works better in longer bouts is due to the "distraction hypothesis" (Lutz, 2007). The theory states that individuals suffering from mood disorders such as depression, anxiety, panic disorders, or stress may benefit from physical activity and exercise because the activity allows the person to forget about traumatic events or their disorders. As the individual works longer, there is more time to forget and focus on the task at hand. This ability to focus on the here and now can be addressed through sport psychology interventions based on concentration (i.e., imagery and self-talk).

Self-Imagery

Programs must help individuals cope with frustrations and anxieties stemming from traumatic events in structures both with and without physical activity. Survivors often feel helpless in their ability to function and perform tasks, decreasing self-efficacy and self-esteem. Self-efficacy refers to a person's belief in their ability to complete a specific task, while self-esteem addresses their broader sense of self and capabilities (Weinberg & Gould, 2007). Because survivors of traumatic events lose hope in their abilities, there is a decrease in self-efficacy with tasks associated to the trauma. For instance, a child who nearly drowned may feel he/she can never swim again. Part of the healing process through the intervention will be to increase self-confidence to allow the

individual to function more successfully. One way to accomplish this is through imagery.

Imagery uses the imagination of the individual to create game situations which are as close to real life as possible. Successful imagery utilizes color, sound, smell, touch, and taste, if applicable (Weinberg & Gould, 2007). Athletes can image specific tasks in their sport as a means of practice. Imagery can also be used outside of the sport context for everyday tasks or individuals suffering trauma for particular tasks. While soccer players may image a ten yard pass, a child who nearly drowns can image a successful swim through the shallow end. For the best results the task should be imaged in the correct color with the right smell and the sounds one could anticipate in the situation. More importantly, the image must have a positive outcome; in other words the swim should be executed as perfectly as possible, even if this does not reflect the individual's actual ability. Imaging the swim to involve anxiety and sinking is translated as practicing improper technique. Because imagery is a form of behavior modification, working to image a skill with incorrect form defeats proper behavior modification (Weinberg & Gould, 2007).

Moritz, Hall, Martin, and Vadocz (1996) examined sport confidence in relation to the type of imagery used by athletes. Using 57 elite competitive roller skaters, researchers first categorized the sample population into high confident and low confident athletes before evaluating imagery use. The first part of the study found imagery use is not specific enough to understand the difference between high confident and low confident athletes; the type of imagery used is important to understand. These types were divided into four classes; cognitive general, cognitive specific, motivation general-

mastery, and motivation general-arousal. Cognitive general and cognitive specific address sport task performance; cognitive general imagery, however, deals with game strategies, while cognitive specific focuses on perfect execution of the task. Motivational general-mastery imagery works to imagine focus and driving force through problems. Motivational general-arousal differs in that this imagery type works to prepare for the arousal, stress, and anxiety that come with sport performance to imagery of such situations. Moritz and colleagues found that high confident athletes were more apt to use motivational general-mastery and motivation general-arousal compared to athletes who hold low sport confidence. These image types were more influential than cognitive general and cognitive specific, suggesting that motivational general imagery holds more weight in building confidence.

Taking the findings of Moritz et al. (1996) possibilities arise to use imagery as a means to increase confidence in areas outside of sport. For survivors of mass trauma and those suffering from PTSD or ASD, motivation general-specific/arousal could be utilized within parts of life affected by the trauma. Holocaust survivors who fear showers, for example, may image themselves successfully working through their fear and completing the task. By gaining confidence within these tasks, survivors will hold more control over areas once deemed hopeless and unsafe. This safety works to accomplish stage one of the Stages by Dimensions Model (Lebowitz et al., 1993). As confidence increases the individual may even feel a sense of control over their safety.

Self-Talk

Sport psychologists implement several strategies for behavioral modification, one being the aforementioned imagery, and another popular tool, motivational and instructional self-talk. Self-talk is used to draw one's focus to a task in order to perform the task properly. Most often self-talk is utilized in the form of cue words or phrases that work to keep athletes from distraction, remind them of important steps in certain tasks, or take athletes out of a negative mind set (Weinberg & Gould, 2007). Such phrases are either motivational or instructional in nature with examples of motivational self-talk being "strong," "I can," "go," and instructional self-talk being modeled as "follow through," "shoulder," or "low." Using the phrase "I can" may push an athlete through a difficult point in training when continuing seems like too much work; thus the motivational nature. Instructional self-talk, such as "follow through," may be used as a reminder for specific steps in a technique. A basketball player may use this phrase to focus on following their shooting hand through a shot after the ball is released. By employing self-talk, individuals draw attention to the task at hand, working to increase focus and improve skills. Self-talk can even be utilized to improve self-confidence and decrease anxiety (Hatzigeorgiadis et al., 2009).

Hatzigeorgiadis et al. (2009) studied the influence of self-talk on self-confidence and anxiety in 72 competitive tennis players in regards to their performance of a forehand drive. Information was gathered over five sessions with a baseline trial for comparison data, three sessions for self-talk implementation, and a final assessment. Preliminary assessment examined stress levels of all participants as conditions were manipulated in an attempt to create stress comparable to that of an actual competition. Participants were

then divided into two randomly assigned groups: control and experimental. The control group was not given any instruction in self-talk, while the experimental group was trained in the use of self-talk over sessions two-four. Training sessions focused on the forehand swing, with the experimental group receiving motivational and instructional cues to practice and use. After the three training sessions were complete all participants were given a final assessment to gather data. The final session contained the same set up as the baseline, however, experimental and control groups were split during assessment.

Results showed the experimental group had an increase in self-confidence and performance, with a decrease in both cognitive and somatic anxiety. Further analysis found a positive relationship between task performance and self-confidence, meaning as self-confidence increased so did performance. There was no direct relationship, however, between task performance and cognitive or somatic anxiety. Even though no direct correlation was found between anxiety and performance there may still be a link between use of self-talk and decreases in anxiety. One explanation for changes in anxiety may be due to increases in self-confidence, which was not analyzed by Hatzigeorgiadis et al. (2009). Another important finding of the study shows that self-talk works for tasks requiring strength and endurance, as well as precision; whereas research previously believed motivational self-talk was beneficial for strength and endurance tasks only (Theodorkis, Weinberg, Natsis, Douma, & Kazakas, 2000). That self-talk benefits both tasks allows for decreased anxiety in performance involving strength, endurance, and precision.

The findings of Hatzigeorgiadis et al. (2009) allow for the use of self-talk in the proposed PTSD intervention program as an important tool for anxiety. Although the

previous study addressed tennis, and sport in general, adapting to the anxiety of survivors can be possible after discovering asks which are stressful to them. Referring back to the example of Holocaust survivors and a theoretical fear of showers, both motivational and instructional self-talk can be utilized to complete the task. Motivational self-talk may be shown as "I can" for working through the shower or "stop" for discontinuing fearful thoughts that interrupt the task. Instructional self-talk would focus on the steps of the shower if the task becomes difficult due to anxiety or fear of past experiences. Examples could be "step" to step into the shower and begin the task or "soap" to continue the task through feelings of anxiety. In regards to the intervention program there should be a list of example cues which participants can choose from for tasks related to physical activity or everyday events. Use of these cues will help to decrease somatic and cognitive anxiety and increase self-confidence (Hatzigeorgiadis et al., 2009) which may lead to an increased sense of safety required in the Stages by Dimensions Model (Lebowitz et al., 1993).

Moral Development

Traumatic experiences can provide examples of humans at their worst, with genocide, murder, rape, and war, all which impart horrible models of moral behavior. Due to this exposure there is a need to build moral character and correct moral reasoning. Moral development is a growing process which builds the ability of moral reasoning (the aptitude to decide right from wrong) within an individual. Because moral behavior comes from practice of moral reasoning, reasoning must be correct for adequate behavior to exist (Weinberg & Gould, 2007). There is a need to nurture proper moral development

and moral reasoning for youth survivors of mass trauma situations exposed to immoral behaviors. Determining acceptable moral behavior can be evaluated through Rest's (1984) model of the four components for such behavior. Part one addresses the ability of the individual to identify whether the problem is actually a moral dilemma; this is labeled as moral sensitivity. Second is moral reasoning, which refers to the judgment of right from wrong, followed by moral motivation which filters the information to decide how one should act. Fourth is moral behavior, relating to the course of action actually taken.

Moral action can then be assessed through Haan's (1977; Haan, Aerts, & Cooper, 1985) model for five levels of morality. Level one is externally controlled as the individual rationalizes that an action is moral as long as they are not caught. Level two works on the basis of an eye for an eye, understanding that consequences can occur from actions, but is still egocentric. Level three follows the "golden rule" while the individual begins to consider the social context of their actions. Level four considers external rules and regulations, where level five gains global perspectives and the individual does what is best for everyone involved. The hope is that persons operate at the fifth level of moral action through the four components of moral behavior (Rest, 1984).

Romance, Weiss, & Bockoven (1986) examined the effects of a prescribed moral development intervention program on 32 fifth-grade students through their physical education classes. Students were divided into a control group and an experimental group, while both received physical education curriculum for gymnastics, basketball, and physical fitness. The experimental group, however, received a moral development intervention in addition to physical education.

Researchers created an eight week program using five strategies: built-in dilemma/dialogue, built-in dilemma/problem solve, create your own game, two cultures, and the listening bench. Built-in dilemmas required games with dilemmas incorporated into them in which students then participated in dialogue about the dilemmas and their affects, or worked together to solve the problem. Students also created their own game based on three rules: (1) Everyone has fun, (2) everyone participates, and (3) everyone has a chance for success. The strategy of two cultures included one game presented with either a built-in dilemma or no dilemma at all. Students were to play both games and then discuss the differences. The last strategy involved dialogue between individuals who were involved in moral conflict. If students became involved in such conflict, they were to sit on the designated listening bench and discuss the problem amongst themselves until a resolution has been agreed upon.

At the end of the eight week period researchers found no significant difference in athletic ability for gymnastics, basketball, and physical fitness in both groups. There were, however, significant differences in moral reasoning, with the experimental group scoring higher than the control group. More importantly, moral reasoning was found to increase in the realm of both sport and everyday life, showing an intervention in one area can affect reasoning ability in many aspects of life. These findings show that an intervention designed for youth suffering from PTSD can help participants reason more efficiently both within the program and without.

Chapter V

Intervention Program

Before creating an intervention program for youth suffering from mass trauma, there must be an event from which to draw guidelines. For the purpose of this paper the event will be theoretical in place and cause. With this stated, the trauma created is an earthquake outside of a metropolitan area in which mass panic led to immoral actions such as looting, murder, and a common disregard for human life outside of close relationships. Several neighborhoods were destroyed, but most citizens were able to relocate to areas within thirty minutes of their home.

There are several components that must be considered when creating an intervention program for PTSD in youth from mass trauma populations. Age group must be acknowledged when implementing an intervention program for youth. Though youth can include all from infants to late teenagers, mass trauma can allow for a large at risk population within these ranges. For the purposes of the intervention, age limits will be implemented to permit a tolerable group size. Because the trauma used for this intervention is theoretical, age limit is difficult to set as different traumas may place certain age groups at more risk than others. Age limit for the theoretical trauma will be 8-15 years. A group of 50 youth will participate with a staff to participant ratio of one to five for cost efficiency and greater opportunities to benefit everyone involved. Due to the large number of staff required, many will be volunteers who have undergone training.

Before beginning the intervention, the selection process must be presented to decide who would benefit most from such a program. As mentioned earlier in this paper the selection process will be based on cost efficient screening. Staff will be trained in

proper techniques for giving the assessment to ensure accuracy and save time. Screening will be administered within two to four weeks of the mass trauma event because of the time frame of symptoms and onset of PTSD.

Once screening has been completed, children and parents will be notified of the results and sent an invitation to the program dependant on the outcome of the screening. The intervention program may be able to begin as soon as one week after invitations are given to parents, assuming a swift response, setting a start date from three to five weeks post event. Sport psychology interventions previously mentioned in this paper lasted for as little as eight weeks (Romance et al., 1986) and as long as 18 weeks (Fremont & Craighead, 1987) while still showing positive results. Programs for youth suffering from PTSD appear to be based more on the needs of the individual with no exact time frame. Due to the relatively large number of youth participants, cost, and time needed for benefits within other interventions, a time frame will be set on eight weeks.

With an eight week program there must be a change in layout to avoid boredom and a lack of interest from participants. Thus, the course is divided into two week brackets each containing separate goals aside from the proposed structure of physical activity and sport. Before goals are developed, participants will be introduced to the program and take part in activities to meet everyone and begin to create a sense of safety and trust. This introduction contains obstacle courses and other activities that require teamwork and communication. The program and purpose and expectations of participation will be explained to the individuals during the first group meeting.

The proposed program will meet five days per weeks with each day lasting three-four hours. During the first hour, participants will be involved in group therapy based on

age groups. Group therapy will be every day to speak about emotions, their connection to PTSD and grief, and the intervention and goals of the week. After group therapy, participants then have one hour devoted to physical activity or sport. All activities hold focus on the main goals for that point in the intervention and staff will be work with individuals to ensure safety. The activities chosen for this period must allow for as much movement as possible. Examples include capture the flag, tag, dare base, soccer, or basketball. Although sixty minutes is assigned for physical activity there will be time for rest, allowing for a goal of increased heart rate for thirty minutes or more.

After the period of physical activity, there is an hour dedicated to play therapy, consisting of sand play, art, or dress up and drama. At this time all age groups will be allowed to come together so that participants can help those outside of their group. This can be useful with brainstorming ways to help everyone and experiencing a flow of ideas between groups. Time assigned for play therapy will also be used for individual therapy on the second and fourth day of the week.

Weeks 1 and 2

The first day of the program allows participants and staff to introduce themselves and participants will be introduced to the program and its purpose. The purpose of the program is based on rules focused on and utilized by Gibbons, Ebbeck, and Weiss (1995), which are respect, equal opportunity, and self-control. The need for safety of all individuals will also be included in the purpose of the program, as safety is of number one concern for survivors so soon after the event (Lebowitz et al., 1993). This is addressed in Table 2 with physical (e.g., no hitting) and psychological safety (e.g., no

yelling or swearing). Because anger is a concern when dealing with PTSD there must be a means to vent such feelings while keeping everyone else safe. In light of the "Volcano Room" utilized by the Den for Grieving Kids (Hartley, 2004), there will be an aptly named "Stomp Room" which employs a similar purpose. Children will be allowed to enter the room with a staff member to throw objects, hit padded walls or a punching bag, and yell if needed (so long as children outside of room cannot understand what is being said). The child may yell and speak with the staff, or stay silent; there is no pressure to talk things out when in the "Stomp Room."

Table 2 – Rules

Respect others – Listen and give productive feedback
Everyone gets a turn
Everyone has fun
Help others – If you cannot help, then bring them to someone who can
Work out conflicts on listening bench
No hitting
No yelling or swearing
No throwing objects – Unless in Stomp Room with staff
Do not touch blood – Any injuries or blood must be reported to staff

Youth will be split into three age groups: ages 8-10, 11-13, and 14-15. Each age group works together for most of the day, only coming together towards the end of the day for alternative therapy. Within these groups, staff will review rules as they may more aptly apply to certain ages and use the first day of group therapy to understand respect and what this means to the participants. There is the opportunity for participants to add rules that may make them feel safer, allowing more control over their environment. After group therapy there will be time for physical activity, which for the first day, will be

focused on getting to know other participants and gain a sense of safety. A list of possible activities based on trust and communication are listed in Table 3. Some games should not be played until a sense of acceptance and trust is felt within all members because the games work to exclude an individual in order to discuss how the exclusion felt. Staff may allow youth to choose the activity or staff can assign one for them.

Table 3 – Communication Games	
Get to know each other	After trust is gained
All Together Now Rescue Island Screaming, Blaring, Screeching Blind Water Bomb Blind Grabs Caterpillar Walk Blanket Fold Gordian Knot Meter Stick	Group and Outsider Balloon Trip Solidarity Eating in a Tree Double Roll Espionage

After introduction to the program, focus will be on implementation of a moral development program. The intervention for moral development is based upon rules and findings of Romance et al. (1986), allowing participant leadership and minimal staff contribution. The goal is for youth to create a healthy moral environment in which they create activities and rules while also enforcing such rules. Participants must still follow three basic guidelines set by Romance et al. (1986) which are (1) everyone participates, (2) everyone has a chance for success, and (3) everyone has fun. Staff will give a list of games to choose from, or select a sport for the youth to play. Once a game or sport is selected, the participants will choose teams and create the rules and guidelines while staff ensures they follow the three basic rules of the intervention. If problems arise then staff

members direct individuals to an area designated as the "listening bench" nearby in which participants solve the problems amongst themselves. Following the work of Romance et al. (1986) the intervention will give youth stronger moral reasoning and sensitivity to those who are less skilled. This is important in building a sense of community within the participants and enabling skills that can be used outside of the program.

Weeks 3 and 4

After the initial two weeks, main goals of the program begin to focus on the skill of self-talk in order to improve task performance and increase self-esteem. Implementation of self-talk will utilize group therapy for introduction and upkeep, while physical activity will allow for practice of the skill. Individual therapy will also be used to personalize the cue word or phrase for each participant. Participants will be asked to use both instructional and motivational self-talk throughout the program. Self-talk is to be introduced in group therapy on the first day of week three by explaining the concept and giving example phrases.

Staff members are to lead by asking for specific tasks which participants have a hard time completing or would like to improve on. These tasks should be centered on effects from the trauma, but may also be for sports or other activities as well if the individual is not ready to address the traumatic event. Participants will share their difficulties with the group to ensure a sense of community and build trust with others. Through this process the other participants can then give the individual ideas for cue words or phrases. Returning to the example of a child who nearly drowned, staff can

suggest the phrase "I can" or "go". Participants will then choose a cue and share it with staff and group members. Peers and workers can then remind the individual of their cue word and help them to use the phrase correctly. Youth should choose more than one phrase or choose a phrase that can be used for multiple tasks both related to and outside of trauma to maximize benefits.

After initial introduction, staff will ensure use of cue word during physical activity by asking participants to say their cue out loud for the first week. If youth are having problems remembering their cue, saying the cue before beginning a task, or are changing their cue, staff can address the problem early. Participants will be allowed to change cues if they are not working or are too difficult. Youth may also choose to say their phrase quietly in cases where the task becomes embarrassing or with self-talk or when other problems arise. If the task is too sensitive for youth to share during group, they may choose a cue during individual therapy, but should still be spoken out loud during physical activity. When entering week four, participants can begin to internalize cues, with fewer reminders from staff. Workers still need to address the use of cues during group, individual therapy, and physical activity to ensure usage. Time can be spent during group to discuss problems that may arise during the entirety of the program.

Weeks 5 and 6

As weeks five and six begin, the main goal changes to focus on successful imagery. Imagery will be introduced during group therapy, just as self-talk was, but will require more than one day to ensure accuracy and success of images. The first day will be spent explaining imagery, with practice sessions of guided imagery. Participants are

to be given the assignment of continual practice at home, but should focus on images unrelated to trauma. Because PTSD and ASD involve reliving the traumatic event (APA, 2000), staff should begin sessions with tasks based on physical activity and sport, or other familiar events to avoid agitation and anxiety. If participants wish to address trauma related tasks, this should be dealt with during individual sessions so as not to panic other participants who are not ready for such memories.

After two to three days of introduction, staff can instruct participants to begin using imagery during supervised physical activity and sport. Youth will be given time prior to activities and games to practice imaging a successful shot on goal during soccer or proper technique for escape during capture the flag. Staff can ask participants to talk them through the image as participants practice to ensure success and correct dimensions (color, sound, smell, etc.) of the image. Although the main goal of weeks five and six is imagery, staff should still be reminding participants to continue using self-talk and moral development intervention.

Weeks 7 and 8

The last two weeks of the proposed program will consist of skill maintenance and preparation for the program to come to a close. Maintenance consists of reminding youth to use imagery and self-talk while utilizing the moral development intervention and therapy sessions. Staff will help the youth with any problems they encounter through the last two weeks and individualized packets are created for participants with information on proper imagery, self-talk, moral development, and physical activity guidelines. The packet will allow youth to refresh their memories on individual goals and give them ideas

on how to transfer the knowledge to other uses. Parents will also benefit from the booklet as this will give them insight into the program and what progress their children have made. Preparation for the end of the program will happen by cutting the program down to four days for week seven, and then three days during week eight. Gradual decrease of the intervention should give youth a chance to adjust to family life during the week, while being able to discuss problems of adaptation during group and individual therapy.

Conclusion

Mass traumas, such as the Holocaust, Darfur, or floods, can affect thousands or millions of people, with a percentage of them at risk for vast emotional trauma. PTSD will affect approximately 9% of people exposed to a traumatic event, leaving 5.2 million people between the ages of 18-54 suffering in any given year (APA Health Center, 2005). Although several therapies and interventions exist today (e.g. group, individual, debriefing, etc), there is still a room for improvement as singular treatment does not cover all symptoms or needs (e.g. sense of community). Possibilities also exist to use physical activity and exercise as an intervention or treatment for PTSD and arising symptoms. Analyzing literature in current PTSD treatment as well as sport and exercise psychology has given background to the prescribed intervention for a theoretical mass trauma event.

One must note that the intervention described is only theoretical and has not yet been tested. The next step in research will be to implement the program for a similar population and examine the effects on participants. Possible tests examine rates of PTSD, anxiety, and depression in comparison to a control group of children who did not participate in the program. Because the intervention also addressed self-talk, imagery, and moral development, testing could be conducted to compare use, success, and self-esteem to a control group. The eight week intervention exists with the intention to decrease risk for PTSD, ASD, and related symptoms. Through the combination of group, individual, play therapy, and physical activity possibility exists to distract youth from experienced trauma and allow for healing to begin.

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