TRAUMA-INFORMED PRACTICE AMONG EXERCISE PROFESSIONALS AS A DEVELOPING DETERMINANT OF EXERCISE BEHAVIOR FOR SURVIVORS OF SEXUAL ABUSE

by

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ABSTRACT

Physical activity and exercise fosters wellness in multiple dimensions of a person's health. For some survivors of sexual abuse, safety is a foundational aspect of exercise programming. Client-centered practice includes awareness of stress responses and the importance of interpersonal communication on health outcomes. It is helpful for fitness professionals to obtain the knowledge necessary to create safe provider-client relationships. Trauma-informed exercise professionals can prescribe exercises to survivors of abuse as part of safe and effective programming. Research addressing interpersonal barriers to exercise caused by exercise professionals' lack of trauma-informed instruction presents a gap in knowledge surrounding best practices. Before educating exercise professionals in trauma-informed practices for exercise instruction, current professional competencies must be measured.

Professionals who have experienced trauma or abuse may have unique understandings of the impact of trauma on exercise and may instruct exercise with greater sensitivity or trauma-awareness. The Sexual Abuse Assessment Tool [SAAT] was used to test exercise professionals' (N=61) competencies regarding training survivors of abuse. When controlling for job title, participant sex, and participant age, there was not a significant linear relationship between participants' own adverse childhood experiences [ACEs] scores and total SAAT scores. Professionals who practice physical therapy scored significantly lower on assessment items related to sexual abuse and health concerns when compared to personal trainers.

The SAAT was tested for internal consistency and validity. A correlation analysis was conducted to examine the relationship between the full scale and individual domains with the Trait Emotional Intelligence Questionnaire-Short Form [TEIQue-SF] and the Final 21-item Scale to Assess Staff Knowledge, Attitude, and Practice Related to Trauma-informed Care [TIC KAP]. Cronbach's alpha, alpha if item were removed, inter-item and item-total correlations were analyzed to ensure retained items were internally consistent. The proposed domain structure was tested using an exploratory factor analysis. Analyses from this study indicate that the SAAT is a reliable assessment tool ($\alpha = .87$) featuring five content domains. The proposed revised scale includes 41 items and is ready for the final stages of development. The SAAT is useful for assessing exercise professionals' competencies and sensitive practice when training and instructing survivors of sexual abuse.

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CHAPTER I: TRAUMA-INFORMED PRACTICE AS A DEVELOPING DETERMINANT OF EXERCISE BEHAVIOR FOR SURVIVORS OF SEXUAL ABUSE: A CRITICAL REVIEW OF LITERATURE

The purpose of this critical review of literature is to fully define, describe, and outline the components associated with sexual abuse as a social determinant of physical activity and exercise participation. Background and context will be established through a discussion of the social determinants of exercise. The focus will narrow to describe the way trauma (specifically sexual abuse) determines the decisions and experiences of exercise participation among survivors of abuse. Finally, the role exercise professionals play through best practices will be highlighted. This literature review serves as a descriptive foundation for the need to understand the current competencies of exercise professionals in this area before creating additional training opportunities.

Definitions, Guidelines, Measurements, and Assessments

Adverse Childhood Experiences

Adverse Childhood Experiences [ACEs] are socioeconomic traumas that occur in an individual's life before the age of 18. These traumas may be related to familial structure and characteristics, abuses, or neglect and are now well understood to contribute to health behaviors and outcomes in adulthood (National Council of Juvenile and Family Court Judges [NDJFCJ], 2006). To find an individual's ACE score, they complete a ten-item assessment tool based on the first 18 years of their life. Each one of the ten adverse experiences a person has survived translates to one point on their ACE score (NCJFCJ, 2006). Individuals with higher scores present with higher adverse childhood experiences.

One of the ten adverse experiences on the "Finding Your ACE Score" questionnaire relates to surviving sexual abuse. The presence of sexual abuse is addressed in question number three, "Did an adult or person at least five years older than you ever touch or fondle you or have you touch their body in a sexual way? or attempt or actually have oral, anal, or vaginal intercourse with you?" (NCJFCJ, 2006). This assessment tool was designed to indicate the presence of adverse experiences in childhood. Sexual abuse also occurs after the age of 18 or among same-aged peers in childhood. Sexual abuse, even that in childhood, may occur in ways not listed on the ACE questionnaire. One example of childhood sexual abuse not included in the question is being forced to watch pornographic material with an abuser. Because the ACE questionnaire does not encapsulate all sexual abuse, even in childhood, it should not be assumed that a person who does not indicate sexual abuse on that form has not experienced such abuse.

It is important to note the presence of disparity between genders when considering adverse experiences. Women are more likely to report having experienced sexual abuse in childhood (24.7%) when compared to men (16%) (Centers for Disease Control [CDC], 2020a). A direct dose-dependent response of additional adverse experiences during childhood adds to the impact of sexual abuse. Compared to men, women are less likely to report having zero to two ACEs but are more likely to report having three or more ACEs out of a possible score of ten (CDC, 2020a). On average, girls who survive one adverse childhood experience are more likely than boys to have been exposed to more types of disadvantageous socioeconomic traumas.

There is a dose-response relationship between childhood trauma and health risks. In 1998, Felitti et al. measured the dose-response relationship between childhood exposure to trauma and the number of present health risk factors and found a strong association. Health risk factors included smoking, severe obesity, physical inactivity, depressed mood, suicide attempts, alcoholism, any drug abuse, parental drug abuse, history of sexually transmitted infections, or $\geq$ 50 different sexual partners (Felitti et al., 1998). More than half (56%) of individuals who indicated zero exposure to adverse childhood experiences also indicated that they had zero risk factors (Felitti et al., 1998). Only 14% of individuals who indicated multiple exposures (four or more) also indicated that they had zero risk factors (Felitti et al., 1998). Researchers conveyed the succession of health impacts from adverse childhood experiences (Felitti et al., 1998). Once a person experiences such trauma, they may develop social, emotional, and cognitive impairments leading to risky health behavior (Felitti et al., 1998). High-risk health behaviors may ultimately produce disease, disability, social issues, or death (Felitti et al., 1998). Individuals with ACEs may experience greater interpersonal difficulties as adults (Poole et al., 2018). The specific implications of this dose-response between past trauma and current health in individuals is an undeniable issue in health and exercise promotion.

Adults who report more types of abuse occurring with greater frequency were more likely to be obese as adults. A greater likelihood of obesity among those who experienced greater incidences of abuse indicates a dose-response relationship between abuse and obesity (Campbell et al., 2016). Obesity is connected to a host of health complications, behaviorally, socially, and physically. Additionally, some resulting health behaviors and outcomes disproportionately affect women, such as increased incidences of

unplanned pregnancies (CDC, 2020a). Taken together, the impact of adverse childhood experiences may affect the health of women survivors of sexual abuse. These outcomes, directly and indirectly, affect various aspects of exercise participation.

Sexual Abuse

According to the Encyclopedia of Psychology (as cited by the American Psychological Association [APA]), "Sexual abuse is unwanted sexual activity, with perpetrators using force, making threats, or taking advantage of victims not able to give consent." Many times, victims of sexual abuse know the abuser (APA, 2020, para. 1). Approximately one in four girls and one in three women have experienced sexual abuse in their lifetime (CDC, 2020c). Most adult survivors of sexual abuse first experienced abuse during childhood. The prevalence of reported sexual abuse is lower among boys; however, one in thirteen boys has also experienced such abuses (CDC, 2020c). Sexual abuse in childhood can create both direct and indirect consequences in the lives of survivors (CDC, 2020c). Among the prolonged effects of sexual abuse are depression, increased risk of revictimization, chronic health concerns such as obesity, cardiovascular disease, and sexually transmitted infections (CDC, 2020c). Physical activity and exercise cannot directly impact the incidence or prevalence of sexual abuse. However, being physically active may improve holistic health outcomes associated with past trauma.

The impact of sexual trauma may intersect with other social constructs. Individuals who are women minorities in poverty, for example, may find that they experience more types of, or greater severity of, long term effects from abuse (West, 2002). Survivors of abuse are greatly personally impacted, but the impact of abuse on

society is not negligible. The financial costs associated with incidences and survivorship of sexual abuse in the United States [U.S.] register around $9.3 billion (CDC, 2020c). Potential costs may include unplanned pregnancies, drug misuse disorders or addictions, mental and physical health care, and legal costs (CDC, 2020c). Improving physical health, thus decreasing illness associated costs, is one role trauma-informed fitness professionals can fill.

Physical Activity and Exercise

Physical activity and exercise participation are health behaviors that impact multiple health outcomes across all populations. Looking at physically active behavior through the lens of social epidemiology provides the perspective that the social construction of an individual's life largely determines activity behavior choices (Berkman et al., 2014). Social determinants are the framework for an individual's selection of health behavior participation.

Physical Activity [PA] is defined as any energy expending movement using skeletal muscles (Liguori, 2021; World Health Organization [WHO], 2017). Examples of physical activity include cleaning, shopping, walking to one's car, playing with children, and performing daily active tasks (WHO, 2017). These are often typical activities of daily living [ADLs] for the general population. One form of PA is exercise. Exercise is planned, structured, repetitive, and purposeful physical activity (Liguori, 2021; WHO, 2017). Individuals perform exercises to increase at least one dimension of physical fitness (Liguori, 2021). Examples of exercise include participation in a group fitness class, walking or jogging for fitness, weight training, or stretching.

Physical activity participation provides undeniable health benefits. Regular participation reduces the risk of cardiorespiratory risk factors and events such as high blood pressure, stroke, and heart attack (WHO, 2017). Physical activity reduces the risk of some types of cancers, depressive symptoms, and the risk of falling, and increases bodily control (WHO, 2017). Physical activity does not cause a significant spike in energy expenditure like exercise, but individuals can use a considerable amount of energy over the course of the day (WHO, 2017). Energy expenditure from daily physical activity can greatly assist in weight maintenance and overall health.

Being fit through physical activity and exercise can promote wellness in multiple dimensions of a person's health. A person may benefit from increased physical stamina and disease protection as well as experiencing fewer symptoms from anxiety, emotional stress, or depression (Hales, 2018). In addition to physical benefits, active individuals often realize positive changes in social connections, improved concentration and creativity, lower medical costs, lower time-loss at work, and greater mind-body connection (Hales, 2018). These benefits of an active lifestyle may increase healthy habits and decrease health risks in their environment.

Measuring Fitness. There are multiple ways to measure physical fitness. Generally, fitness is the ability to meet regular physical demands, cope or recover from changes in physical stressors, and enjoy protection against disease and adverse health outcomes (Hales, 2018). Participation in a well-designed and varied exercise program will increase fitness levels in six primary areas (Liguori, 2021). Components of exercise include cardiorespiratory endurance, muscular strength, muscular endurance, flexibility,

body composition, and motor skill awareness and performance (Liguori, 2021; Powers & Dodd, 2020). Most physical activity and exercise bouts improve an individual's cardiorespiratory fitness level. These improvements include heart-lung function and cooperation (Liguori, 2021; Powers & Dodd, 2020). Having muscular strength allows a person to push, pull, or otherwise move against resistance, while muscular endurance enables this process to happen repeatedly (Powers & Dodd, 2020). People demonstrate flexibility when they can move their joints through full ranges of motion. Being flexible is essential not only for movement but also as a form of injury prevention (Powers & Dodd, 2020). Maintaining a healthy weight is important for good health. It is even more vital that a person has a healthy body composition (fat-to-lean mass ratio) (Powers & Dodd, 2020). A healthy body composition can be maintained or improved by regular physical activity and exercise (Powers & Dodd, 2020). Motor skill awareness is sometimes considered a by-product or indirect outcome of physical activity or exercise; however, it can most certainly be the focus of one's fitness routine. Motor awareness allows a person to maintain balance and move their body in a coordinated, controlled, and intended way (Powers & Dodd, 2020). The outcomes of physical activity participation are in great contrast to the outcomes associated with sedentary behavior.

Sedentary Behavior as a Risk Factor. Sedentary time, such as sitting, is now understood to be an independent risk factor for poor health outcomes. Greater amounts of sedentary behavior increased the risk of all-cause mortality, cardiovascular disease mortality, and the incidences of cardiovascular disease, cancer, and type II diabetes (Biswas et al., 2015). Some individuals participate in exercise and physical activity but still have many hours of sedentary activities in their daily routine (Donatelle, 2019).

Unfortunately, even in the presence of physical activity and exercise, a person who is sedentary (or seated) much of the time may still increase the chances of adverse health outcomes (Donatelle, 2019). Due to industrial and technological progress over previous decades, many individuals hold jobs that are more sedentary than the active jobs available to previous generations. Many individuals spend hours each day at computer desks or behind steering wheels, increasing their risk of poor health outcomes. Individuals with such careers may benefit from breaking up their day with small walks or stretch breaks in addition to regular exercise routines.

Exercise Requirements and Guidelines. Among the vast amounts of media attention and resources available for mass consumption, there remain four solid, well-understood components for exercise guidance and programming. The FITT principle provides a framework for exercise prescription by outlining exercise requirements for **F**requency, **I**ntensity, **T**ime (duration), and **T**ypes of exercise that need to be performed (Liguori, 2021; Swain, 2012). These components have the potential to impact each other. Participants who perform high-intensity activities may not need to exercise for as many minutes (time) as they would if exercising at a lower intensity (Liguori, 2021; Swain, 2012). The balance and interactions of these components of exercise are consequential. Some individuals may experience specific barriers or limitations in one or more component(s) of the FITT principle; however, modifications to exercise routines help meet individual needs (Liguori, 2021; Swain, 2012). Beginning exercisers or those who are rehabilitating from injury may require adjustments to the FITT model to obtain adequate exercise participation. Some exercisers may need to break sessions down into shorter, more frequent sessions (Liguori, 2021; Swain, 2012). Exercise professionals and

exercisers can measure and balance these components to establish and maintain healthful activity programs.

There are several ways to measure the intensity of exercise. For many exercisers, the talk test is an adequate method of determining intensity (Foster, 2018). An exerciser will feel their heart rate rise and experience labored breathing when using the talk test (Foster, 2018). At intense levels of exercise, this will result in the inability to talk comfortably or sing (Foster, 2018). If an exerciser prefers to measure intensity using self-reported difficulty, they may choose to rate physical exertion using the Borg Rating of Perceived Exertion [RPE] scale (Borg, 1990). The RPE scale allows exercisers to choose an exertion level between 6 – 20 to indicate exercise intensity (Borg, 1990). By recognizing their perceived exertion using this scale, exercisers may be able to estimate their heart rate. Newer models of perceived exertion scales elicit responses from 1 – 10 (Borg, 1990). With the popularity of heart rate monitors increasing, using heart rate to measure exercise intensity has become increasingly easier. Appropriate exercise intensity is typically based on the age, and sometimes sex, of the exerciser. Moderate exercise elicits a heart rate between 50 – 70 % of the participant's maximum heart rate [MHR] and 70 – 85% of MHR represents high intensity (or vigorous) exercise participation (American Heart Association [AHA], 2015). High-Intensity Interval Training [HIIT] may include various exercises to perform short bouts of high-intensity training, followed by short periods of recovery. Several high-intensity and interval training options are available in adult fitness classes or school physical education programs. Informally, kids on the playground may not realize they are performing a HIIT workout.

The importance of exercise during youth cannot be overstated. Youth (5 -17) should participate in 60 minutes or more moderate to intense physical activity every day. These activities should include muscle and bone loading activities and, when possible, children with disabilities should follow the same recommendations as typical children (WHO, 2017). Physical activity and exercise increase neuromuscular development and control, maintain healthy body weight, and increase muscular and skeletal health and strength (WHO, 2017). Youth who participate in physical activity may have increased confidence and academic attention (WHO, 2017). Active youth may also be more likely to participate in other healthy behaviors or avoid high-risk behaviors (WHO, 2017). High school youth who participate in sports have higher bone strength as adults (Ward et al., 2019). There is an undeniable positive impact of exercise on physical health and development in childhood and adolescence.

As adolescents transition to adulthood, physical activity remains essential. Adults (18 +) should participate in 150 minutes of moderate activity (or 75 minutes of intense exercise) weekly (WHO, 2017). The American College of Sports Medicine states that adults should participate in moderate intensity activity for 30 minutes five days a week or vigorous activity for 20 minutes a day 3 days a week (Liguori, 2021). Doing so will help to maintain or improve body composition (fat-to-lean mass), cardiorespiratory health and prevent some forms of injuries and cancers (WHO, 2017). Additional minutes of physical activity or exercise are likely to create further health status improvements (WHO, 2017). There is a dose-response relationship between activity and fitness outcomes (Liguori, 2021). Individuals who desire to improve their fitness levels may choose to participate in more minutes of weekly exercise than these minimum requirements. Official exercise and

physical activity guidelines refer to the activity volume, reflecting the intensity of, and time spent on, exercise. It is often better to spread out physical activity and exercise throughout the week (Swain, 2012). However, some individuals work better using guidelines that emphasize total volume instead of frequency and bout-specific recommendations (Liguori, 2021; Swain, 2012). Exercise professionals can assist clients in planning the program that suits their needs.

Epidemiological Assessment of Exercise in the United States. About one quarter (25.9%) of American adults do not participate in any active leisure activities regularly, and just over one half (50.9%) of American adults report meeting recommendations for cardiorespiratory exercise participation, with fewer (30.4%) achieving the recommendations for strengthening activities (Donatelle, 2019). Few American adults (20.5%) meet the recommendations for both (Donatelle, 2019). Only about one quarter (24%) of children (6 – 17) participate in the recommended amount of sixty minutes of activity each day (CDC, 2020b). The status of exercise participation in the U.S. is significantly lower than recommended levels.

It is common for Americans to enjoy some leisure activity, but much less common for them to participate in regular and consistent physical activity. While 72.7% of Americans participated in intentional physical activity (outside of daily living activities) at some point in 2018, only 19% of the U.S. population participated in daily physical activity, including recreation, leisure, exercise, and sports activities (Statistia, 2018). More physical activity participation is reported among males compared to females (Statistia, 2018). Active individuals reported that the reasons for participation in physical

activity include maintaining or increasing health, strength, endurance, or physique (Statistia, 2018). Walking for fitness remains a popular form of exercise, with over 110 million people in the U.S. participating (Statistia, 2018). Regarding the intensity of activities, 27% of Statistia respondents report being inactive, and 35.9 % report participating in active high-calorie exercises indicating high intensity. Of adults who participated in the recommended amount of exercise, 33.9% were college graduates, 23.9% attended college but did not finish, 16.6% completed high school, and 11.3% did not finish high school (Statistia, 2018). Exercise professionals should note these disparities as they move toward health and exercise promotion in their practices.

Exercise Professionals

Throughout this review, the term 'exercise professionals' is broadly defined as individuals who professionally prescribe exercise to clients. Many fields of study and specific job titles fall into this professional category. Some exercise professionals focus on community health and preventative work, and others are qualified to treat illness or injury. Scopes of practice differ among these careers, and each professional must obtain proper credentials for their role and practice.

Athletic Trainers. Athletic Trainers [AT] are healthcare professionals who work with physicians to provide care for clients. Athletic Trainers must have a college degree (National Athletic Trainer's Association [NATA], 2020). With additional applications, Athletic Trainers qualify to be mid-level health providers (NATA, 2020). Athletic Trainers are often responsible for athletic education and practice care associated with injury prevention, diagnosis, intervention, and rehabilitation (NATA, 2020).

Physical Therapists. Physical Therapists [PT or DPT] work in various settings to treat or prevent injuries and disabilities or help clients manage pain or improve daily functions (American Physical Therapy Association [APTA], 2020a). Physical therapy settings include hospitals, fitness facilities, and private practices (APTA, 2020a). Physical therapists must hold a doctor of physical therapy degree and be professionally licensed (APTA, 2020a).

Physical Therapist Assistants. Physical Therapist Assistants [PTA] work under the supervision of Physical Therapists. To become a PTA, you must graduate from an accredited program (two-year) and obtain licensure (APTA, 2020b).

Group Fitness Instructors. Group Fitness Instructors [GFI] are qualified to create safe and effective exercise programs in group settings for individuals who have been medically cleared to exercise. Motivational techniques, music, and rhythmic routines are often incorporated (Statistics, 2020). Requirements for certification differ by employer but typically include a minimum of a high school diploma, a current cardiopulmonary resuscitation [CPR] certification, and a professional certification obtained by a written or live skills exam. Dance instructors are held to different standards and requirements (Statistics, 2020).

Certified Personal Trainers. Certified Personal Trainers [CPT] are qualified to create safe and effective exercise programs for individuals who have been medically cleared to exercise. Certified Personal Trainers evaluate current fitness levels, postural imbalances, assist with basic nutrition, and support individual goal setting and achievements (Statistics, 2020). Both GFIs and CPTs most commonly work in recreation

facilities, gyms, or private studios. Neither are qualified to diagnose or treat clients as medical professionals or prescribe specific dietary or nutrition plans (Statistics, 2020).

Coaches. Coaching opportunities in athletics and recreation vary widely. Volunteer opportunities for recreational community leagues are plentiful. In contrast, most college and professional coaching positions are competitive and require education, skills, training, or special teams' competencies specific to the role. There is not one specific universal certification or requirement for coaches.

Trauma-informed Care

Experiencing trauma of any form has the potential to impact functioning in every dimension of a survivor's health. The Substance Abuse and Mental Health Services Administration [SAMHSA], as part of the U.S. Department of Health and Human Services, outlines the "4 R's" of Trauma-informed Care as being able to: **R**ealize the reach and impact of trauma, **R**ecognize the signs of trauma, **R**espond by creating policies and practices based on the knowledge of trauma, and **R**esist (or avoid) re-traumatization (The Substance Abuse and Mental Health Services Administration [SAMHSA], 2019). According to SAMHSA, the reach of Trauma-informed Care [TIC] touches potential training opportunities and models for organizational change, sensitivity in practice, and client empowerment in the provider-client relationship (SAMHSA, 2019). The establishment of exercise professionals' work within a trauma-informed framework is grounded in theory.

Theoretical Basis

Trauma-informed practice among exercise professionals is a new area of study. Understanding the foundation of this practice necessitates conceptual abstractions from multiple theories of health behavior. The theoretical framework includes interpersonal communication, the ecological model, and stress and coping theory.

Interpersonal Communication

Interpersonal communication is the idea or theory that elements (such as trust), can impact behavior change in any given relationship. The interpersonal communication theory incorporates relayed and received information regarding one's identity and relationship to other people or objects (Cushman & Florence, 1974). Trust is especially relevant in provider-client relationships where the degree of trust or security felt by a patient or client toward a health care provider can impact various health behaviors and health outcomes (Glanz et al., 2015). Practitioners' non-verbal communication, like smiling, can impact clients' disclosures regarding health, disease, and trauma (Duggan & Parrott, 2001). When clients disclose how past experiences or disease impact daily life, practitioners gain context and can accordingly adjust training and communication (Duggan & Parrott, 2001). Client-provider relationships exist within the context of social determinants and support (Berkman et al., 2014). The foundation for a client to have a meaningful relationship with a provider may be affected by seemingly unrelated factors such as socioeconomic status or abuse history.

Professionals who excel with interpersonal communication approach their practice by listening to clients' lived experiences and considering the whole person. Clients who feel known by practitioners are more adherent to treatment and

express higher quality of life than clients who do not feel known by their practitioners (Beach et al., 2006). Honest communication sets the stage for shared decision-making. Incorporating shared decisions is a practice based on the assumption that clients are experts in their lives (Glanz et al., 2015). Shared decision practice allows the provider space and trusted authority to provide information for clients to meet their goals and treat stated needs (Glanz et al., 2015). Exercise professionals who view clients as the experts of their own lives are well suited to incorporate an ecological perspective to practice.

Ecological Model

Ecological models and frameworks lay the foundation for understanding that various influences and environmental factors play roles in determining health behaviors. Multiple theories are often incorporated with an ecological model (Glanz et al., 2015). Social and physical determinants interact with each other creating new complexities (Berkman et al., 2014). Sometimes seemingly unrelated experiences or differences impact health behavior in unexpected or unknown ways (Glanz et al., 2015). The relationship between behavioral determinants creates a need to intervene in more than one area (Glanz et al., 2015). Thus, the ecological model compels health professionals to consider environmental factors as part of a behavioral change strategy (Stokols, 1992). Individuals make health decisions in the context of complex systems and opportunities as they experience life, disease, and trauma (Stokols, 1992).

Trauma-informed care stems from the conceptual frameworks provided by various theories (Yatchmenoff et al., 2017). The dimensions of health and recovery from trauma are often linked together and are so intertwined that they become hard to separate

(Van der Kolk, 2014). Healthfulness involves physical health, social wellbeing, and social cohesion (Stokols, 1992). It is important to look at each person through the lens of their present state and appearance and their life and abuse history (Glanz et al., 2015). Ecological models allow exercise professionals to observe several influencers of health and consider the importance of each when prescribing exercises to clients.

Stress and Coping Theory

The stress and coping theory provides a basis for understanding that all individuals cope with stress differently. People do not use the same mechanisms or follow the same timeline as others, even others who have experienced similar stressors (Glanz et al., 2015). Stress and strain are categorized as social or individual disruptions of balance in society or the body (Lazarus & Folkman, 1984). Stress can be viewed in the context of stimuli or responses (Lazarus & Folkman, 1984). Stress stimuli typically refer to imbalances created by the environment, illness, or trauma (Lazarus & Folkman, 1984). Whereas, stress responses are found in the human body and experience (Lazarus & Folkman, 1984). Stress and coping theory describes the way humans experience and respond to stressful stimuli in the context of their environment (Lazarus & Folkman, 1984).

The stress and coping theory is influential in understanding the necessity of TIC among health and fitness professionals. Disparities, social support, physiology, and coping styles all play into long term functional reliance and holistic health (Glanz et al., 2015). The stress and coping theory creates the framework for understanding that the amount and type of stress along with an individual's response to, and management of,

those stressors impact health (Lazarus & Folkman, 1984). Stress and coping theory has roots in the fight-or-flight response introduced by Cannon and demonstrates how adaptations to stress affect health (Cannon, 1932). This theory often applies to coping mechanisms and adaptations after childhood trauma, such as would be present in survivors of sexual abuse (Glanz et al., 2015; Van der Kolk, 2014). Exercise professionals who view clients with an understanding of stress and coping theory can individualize programs and create the best training regimens for each exerciser.

Conclusion of Theories

Theory that incorporates stress and coping within an ecological framework stressing the importance of interpersonal communication is needed to establish trauma-informed practice among exercise professionals. When practitioners understand that behavioral decisions are determined in an environment that includes stress stimuli, they may seek client-centered practices. Client-centered practice includes an awareness of stress responses and the importance of interpersonal communication on health outcomes. Solid foundational theoretical concepts highlight the need for survivors of abuse to be treated by trauma-informed professionals. Previously useful responses to trauma may surface during exercise or relationships of power-imbalance (such as exercise training). It is helpful for fitness professionals to obtain the knowledge and training necessary to create safe provider-client relationships. This literature review comprises the definitions and examination of components associated with sexual abuse as a determinant of physical activity and exercise and trauma-informed practice among exercise professionals.

Search Methodology

The critical review was conducted to examine the most recent literature describing trauma-informed practice and the roles of exercise professionals. The topic of trauma-informed practice among exercise professionals is pioneering in nature. Multiple theories, key terms, and study methodologies were regarded as relevant while searching for literature in this new area of study. Literature from textbooks (n = 5), evidence-based books (n = 2), and scholarly articles (n = 33) were reviewed and narrowed based on relevance to the practice of exercise professionals for discussion in this review. Search settings were set to include literature from 2010 or later, although some seminal pieces of work that contribute to the study area were also included. Key search terms included trauma-informed care [TIC], exercise behavior, exercise participation, survivors of sexual abuse, exercise professionals (and related titles), barriers to exercise, determinants, triggers and exercise, and adverse childhood experiences. Citation chaining (sometimes called the snowball method) was implemented to discover additional pieces of related work. Journals scoped and reviewed commonly held foci in the following areas: social services, sport, public health, trauma, youth services, and preventative medicine.

Social Determinants of Exercise and Physical Activity Participation

Researchers must identify the moderators and determinates of exercise participation for individuals and special populations before considering the impact of sexual abuse as a determinant of exercise participation. In doing so, researchers can explore trauma-informed practice among exercise professionals. Exercise behavior is determined not only by an individual's personal choice but also their background, skills, community, and resources (and the interactions of these factors). Often, individual decisions and behaviors are grounded in the construction of community and opportunities.

Intrapersonal and Interpersonal Determinants of Exercise Participation

Social epidemiology broadens the scope of contributing factors of health to include more than the direct causes of disease and health outcomes. Social factors impacting health include the holistic view of the construction of individuals' lives (Berkman et al., 2014). The construction of health consists of the built community, socioeconomic status, discrimination, social connectedness, education, and income (Berkman et al., 2014). Health factors in a person's life intersect in ways that protect against or increase various health outcomes (Berkman et al., 2014). Individuals who share risk factors don't always have identical health outcomes (Berkman et al., 2014). When behaviors and risk factors are widespread throughout a population, it is necessary to consider that behavioral determinants may interact in ways that foster the likelihood of participating in any given behavior (Berkman et al., 2014). Exercise professionals may

apply this understanding to client adherence and complexities of behavioral decisions regarding programming.

Sex and Gender as Determinants. Sex and gender impact activity participation. Vigorous activity participation is higher among boys compared to girls (Magalhães et al., 2017). During adolescence, physical activity participation decreases more for girls compared to boys. For some students, physical activity and sport are means to attain or maintain their ideal physique or body size (Magalhães et al., 2017). A physique-focus potentially determines the amount of, or type of, exercise for a student (Magalhães et al., 2017). Particular physiques are often desirable among different genders or cultural groups. Individuals will base activity decisions on the desired outcome of their efforts. Many women now desire to build muscle and strength, but there is still a population of women who don't prefer to bulk up or build mass. Societal influences, such as gender-related expectations, are examples of factors that may impact activity participation.

Discrimination as a Determinant. The idea of discrimination affecting health outcomes appears to be an indirect effect on a person's health. If a person cannot visit a doctor or join a health club due to gender or race, they will be less likely to receive necessary treatment or activity (Berkman et al., 2014). However, there are more direct factors at play. The reality of gene expression whereby individuals biologically embody experiences also exists (Berkman et al., 2014). These biological changes may interact with stress or societal discrimination and increase the toll on one's health behaviors or outcomes (Berkman et al., 2014). Behaviorally, this is important as stress levels and

hormone imbalances may impact health outcomes along with one's ability to fight fatigue or other factors that may affect activity levels.

Mental Illness as a Determinant. Mental illness and mood disorders have great potential to determine the health behaviors and outcomes of an individual. The impact of mental health on behavior holds true when considering depressive symptoms (and the treatment of, or medication for, depressive symptoms) and exercise participation (Glowacki et al., 2017). While most people report barriers to exercise, individuals with depression experience unique obstacles or combinations of obstacles (Glowacki et al., 2017). Examples of barriers that may intersect in the lives of individuals with depression may be feeling physically unwell (tired, bored, lethargic), lacking self-efficacy (feeling like they don't belong as athletes or are unable to perform exercises), mental barriers such as procrastination or lacking motivation, or hesitations, fears, or phobias concerning potential social interactions or physical injury (Glowacki et al., 2017). Useful experiences that help facilitate exercise among individuals with depression include well-regulated medication, strong social support, a desire or motivation to return to a previously well self, weight loss for health or appearance, and stress management (Glowacki et al., 2017). Individuals with depression can also benefit from choosing their exercises or having fitness programming personally tailored to meet specific needs (Glowacki et al., 2017). Mental illness is both a determinant of exercise participation and a condition that is potentially improved through regular exercise.

Biological Responses as Determinants. Social conditions (environment, poverty, malnutrition, abuse) impact people even once those states are no longer a part of their

lives. In addition to emotional or psychological effects that may impact health behaviors, a body of research emphasizing such experiences' biological effects exists (Berkman et al., 2014). Continued stress on the psyche or body can create changes in physiological processes and biological effects (Berkman et al., 2014). Rewired pathways can disrupt eating patterns, inflammation, disease outcomes, and overactive acute stress responses. In short, genes act differently in the context of social conditions (Berkman et al., 2014). Social conditions have the potential to manifest in interpersonal, intrapersonal, and organizational effects or domains.

Parental Educational Attainment as a Determinant. Students whose parents attained a high level of education are less likely to decrease physical activity during their teen years than students whose parents were not well-educated (Magalhães et al., 2017). Parental education disparity is one example of an indirect familial impact (Berkman et al., 2014). An individual certainly does not need to be highly educated to be active, nor do they need advantages that are only available to the well-educated. Still, a generational association between educational attainment and physical activity participation exists (Magalhães et al., 2017). A single link between education and activity has not been determined and likely doesn’t exist (Magalhães et al., 2017). Education can predict activity in numerous ways. There is a link between various education-levels and high earning careers (Magalhães et al., 2017). High income may facilitate residence in a safe neighborhood where children can play outside or the means to support expenses relating to extracurricular activities (Magalhães et al., 2017). Parental education intersects with other opportunities such as future educational attainment and occupation selection and employment status.

Occupation and Employment as Determinants. An individual's specific occupation is meaningful in predicting their daily activity levels. Occupation-based activity predictions are understandable as employed individuals have the potential to spend many (or sometimes most) of their waking hours on the job (Steeves et al., 2018). Compared to time spent with transportation, household tasks, or leisure time, a person's occupation accounts for the greatest variance in daily physical activity (Steeves et al., 2018). Highly active occupations, such as farming, groundskeeping, and construction work, create (and sometimes mandate) opportunities and space for high daily physical activity levels.

Occupations that are primarily computer or desk-based, such as legal work, limit a person's ability to move frequently throughout the workday. As with nearly all social determinants of health behaviors, other factors associated with the impact of occupations on activity (Steeves et al., 2018). One social factor indirectly associated with the impact of occupations on activity is gender. Gender indirectly affects physical activity related to profession because men make up the greatest proportion of highly active workers (Steeves et al., 2018). Gender and occupation both impact health status and intersect with employment status.

Employment (or unemployment) affects health both directly and indirectly. Health outcomes relating to posture associated with specific occupations [dental hygienists] or toxins in the workplace [coal miners] will directly affect individuals' risk factors for various health behaviors or outcomes (Berkman et al., 2014). However, the indirect impact may be even more significant. Indirect employment factors may include

schedule flexibility and time off, income, health care benefits, stress, maternity leave, and the meaningful and purposeful use of one's skills (Berkman et al., 2014). These factors illuminate the potential for differences in exercise behavior, physical therapy treatment, or health outcomes.

Income and Time Poverty as Determinants. Time limitations are a common barrier to exercise participation and adherence. Time poverty is a real, yet infrequently considered, time-related barrier. Venn and Strazdins (2017) note that not all individuals have the same control over (or demands on) their time. One social factor contributing to time poverty is women's roles as caregivers (Venn & Strazdins, 2017). Women are often expected to be (and desire to be) caregivers to both children and the elderly in their families. Caregiving roles contribute greatly to society and take time and energy. Caregiving duties have the potential to determine or, at minimum, impact the schedules of those who accept these responsibilities (Venn & Strazdins, 2017). Time scarcity (or time poverty) is a limiting factor to the habit of physical activity.

Low income is also associated with individuals who are more likely to be inactive, obese, and have multiple risk factors related to cardiovascular health (Briggs et al., 2019). The contribution of physical activity participation to health outcomes is not always direct. Health behaviors such as physical activity modify the relationship between an individual's socioeconomic class and related health outcomes (Petrovic et al., 2018). Physical activity's modifying effect means that physical activity promotion is useful in changing health outcomes associated with a low socioeconomic status (Petrovic et al., 2018). The combined impact of a person being both time-poor and financially poor can

increase inactivity by as much as 22% (Venn & Strazdins, 2017). Time poverty and financial poverty intersect as determinants of obesity.

Personal reasons for participating in physical activity vary but often include improving physical health or avoiding disease. Programs designed for a social setting or community are likely to include social engagement participation motivations (Galvim et al., 2019). Even when exercise professionals design physical activity and exercise programs to achieve social engagement, many participants dropout (Galvim et al., 2019). Dropout occurs in nearly all exercise programs across diverse populations. Work, health, time, and personal barriers are frequent causes of nonadherence or inconsistency (Galvim et al., 2019). Due to work and family obligations, younger adults sometimes experience higher dropout rates than their older peers (Galvim et al., 2019). High dropout rates due to familial obligations are not unavoidable, but absolutely must be considered as a real and impactful determinant of exercise participation.

Social Connections as Determinants. Individuals are affected by the social position and the perceived possibilities around them. Some students who desire to try a new sport or take private classes are more likely to feel that they can reasonably achieve or participate in those things (Wiltshire et al., 2019). Students who know others who have participated in similar events, may be more inclined to try-out and participate (Wiltshire et al., 2019). The opposite is true even when there is a strong athletic potential among students who do not benefit from high social standing or doubt that they have the resources or connections to participate (Wiltshire et al., 2019). A student who has never seen water polo or known a player is less likely to participate in water polo even if they

have the physical potential to excel in the sport (Wiltshire et al., 2019). Early sport introduction and representation matter to children considering their own opportunities.

Some sports are associated with certain socioeconomic statuses or behavior profiles. A student interested in acting out against authority may choose activities that they perceive to support a rebellious profile or stereotype (Wiltshire et al., 2019). Similarly, students in low socioeconomic populations may feel that some sports aren't for students like them (Wiltshire et al., 2019). Students in higher socioeconomic circles are more likely to associate sport and exercise with health as a personal responsibility or lifestyle choice (Wiltshire et al., 2019). Our social networks determine activity participation in both direct and indirect ways.

Social networks and social isolation affect an individual's health behaviors and outcomes in a variety of ways. It can be important to engage in fun forms of physical activity with those in one's network and to feel safe while doing so (Knapp & Hall, 2018). People encounter many different aspects of their social network daily and begin to associate norms with what they see displayed most frequently (Knapp & Hall, 2018). It takes time to adjust to feeling safe within a new setting when any element of a person's network changes (Knapp & Hall, 2018). A person who did not feel safe in their neighborhood, even after moving to an area considered safe, may not feel safe walking for fitness in their new setting (Knapp & Hall, 2018). A delay in perceived safety impedes behavior change and the effects that behavior has on health (Knapp & Hall, 2018). By intervening at the community level and changing social norms, health professionals may leverage social networks (and limit social isolation) as they work to

increase physical activity and other healthful behaviors (Knapp & Hall, 2018). Community-level changes in exercise must be viewed along with population-level determinants.

Organizational, Community, Cultural and Political Determinants of Exercise Participation

Physical inactivity is a population-level problem that requires a big picture strategy in the presence of individual behaviors and choices (WHO, 2017). It is often more constructive to create an environment that facilitates healthy decision making rather than attempting to change or control individuals' actions (Berkman et al., 2014). Health promoting environments can empower individuals to choose healthy behaviors in their individual lives. By improving an environment to foster healthful personal choices, health professionals can often avoid political polarization and disagreements regarding appropriate government or social control.

School Systems and Resources as Determinants. School systems are one example of a community institution that has great potential to affect health and physical activity. Higher education levels are associated with higher exercise participation and a lower likelihood of obesity (Matthew & Brodersen, 2018), along with increased cardiorespiratory fitness (Ombrellaro et al., 2018). Low education levels are associated with inactivity, obesity, and cardiovascular health risks (Briggs et al., 2019). Education acts as a moderator between the intention of exercise and the practice of being physically active (Schuz et al., 2017).

It is essential to understand that the organization of school systems and individual schools potentially impact health behaviors independently from any individual's educational attainment. Students' school system often dictates the frequency and quality of physical education and recess times and the availability of extracurricular sport options (Van Dyke et al., 2018). Disparities in the built environment are also present among school recreational facilities and equipment (Van Dyke et al., 2018). Schools with students from lower socioeconomic statuses have fewer blacktops and tracks (Van Dyke et al., 2018). Alternatively, schools with higher socioeconomic positions have fewer playgrounds (Van Dyke et al., 2018). While uncomfortable to consider, the organization of, and access associated with, public schools creates great disparities within and among populations.

Potential productive paths neutralize the negative impacts of school systems on health. By increasing physical activity through early interventions, it is possible to reduce health disparities among children raised in lower socioeconomic statuses (Vander Ploeg et al., 2014). Race representation within school communities appears to impact resource availability (Van Dyke et al., 2018). Students in majority-white schools are more likely to have parental support to promote physical activity and physical education than students in majority-minority schools (Van Dyke et al., 2018). These resources' availability is vital in determining student activity behavior, introducing sport, and developing neuromuscular skills (Magalhães et al., 2017). Sport participation in childhood acts as protection against decreased physical activity during the teen years (Magalhães et al., 2017). For many individuals, lifelong fitness begins in childhood. A variety of early exercise and sport introductions can have lifelong effects on both habits and abilities.

Population Health and Social Connections as Determinants. For many children, school is the origin for social relationships, networks, and capital (Berkman et al., 2014). These connections created within schools, families, churches, and neighborhoods play a vital role in determining health behaviors and outcomes (Berkman et al., 2014). Social capital is not always the first consideration of individual health. People who are connected to other individuals and resources in the community have high social capital (Berkman et al., 2014). Social capital is not always considered first when looking at a person's health. However, individuals with social capital have access to knowledge, skills, and high-quality information that may not be available to individuals who do not benefit from a network of highly resourced peers (Berkman et al., 2014). Social contagion is the idea that health behaviors and outcomes tend to be 'contagious' or spread throughout populations (Berkman et al., 2014). People who have peers with high obesity in their network may be more likely to become obese (Berkman et al., 2014). Exercise behavior and adherence are similarly affected by these social influences.

An individual who does not have strong connections to a diverse group of well-resourced people is at risk of lacking the necessary support for success. A survivor of abuse who was controlled, removed from initiating and nurturing social connections, or restricted from educational opportunities may experience complicated setbacks (Berkman et al., 2014). Survivors may experience loneliness, or lack education, social capital, or quality resources that are beneficial for resilience, survival, successful coping, and healing (Berkman et al., 2014). Building connections within communities is encouraged and healthy. However, individuals who distance themselves from the pack of a community network saturated with unhealthy behaviors often benefit from the protection

of distance (Berkman et al., 2014). Recreation and fitness often occur in the context of community, accountability, and social norms.

Income Inequality as a Determinant. The experience of living in a community with unequal income distribution impacts all members of society's health. Poverty can, directly and indirectly, impact a person's health (Berkman et al., 2014). Being poor in an otherwise affluent society, or being rich in an otherwise poor society comes with unique consequences (Berkman et al., 2014). High earners may become so removed from the struggles of those in poverty that empathy and the felt need for subsidizing incomes and public services can degrade (Berkman et al., 2014). Some families who utilize homeschooling or private education options, or who are child-free, do not believe that they should pay taxes to support public schools (a service their families don't use). The implications of community-based funding cuts have the potential to be quite significant. Cutting funds for public education is unlikely to be beneficial for the community and population health (Berkman et al., 2014). Tax breaks for those who do not have children enrolled in public school, may produce underfunded school systems and fewer resources (Berkman et al., 2014). Regardless of personal household income, individuals in communities often experience better health outcomes if all members are financially thriving.

Living within a low-income community has the potential to negatively impact a person's health even if that individual earns a high income (Briggs et al., 2019). Greater income inequality is associated with lower exercise participation (Matthew & Brodersen, 2018). Researchers believe that fewer resources and less leisure time among a majority of

citizens reduce exercise participation among all citizens (Matthew & Brodersen, 2018). A low-socioeconomic community may not fund public luxuries like walkable areas or support businesses such as health food stores or fitness facilities even if some high earners reside in the community (Briggs et al., 2019). Similarly, if a community better suits high earners, residents with low socioeconomic statuses may not find affordable rates for fitness classes or race registrations (Briggs et al., 2019). Individuals with low incomes may have barriers concerning schedule flexibility or lack of support for other responsibilities like childcare (Briggs et al., 2019). Many fitness-related activities occur outside of fitness facilities. Even so, communities with few exercise facilities are more likely to have residents who are inactive, obese, or have at least five cardiovascular risk factors (Briggs et al., 2019). Income disparities can create negative health outcomes for everyone in a population.

Perceived Safety as a Determinant. Physical safety is a concern for potential exercisers. Perceived security is often a community-wide issue. Quality green space is useful for outdoor physical activity. Parks are intended to be used by community members for leisure, enjoyment, and recreation, but they are sometimes viewed as unsafe (Gidlow & Ellis, 2011). Some parks are known more for litter, neglected equipment, and drug-use than as clean and inviting ways to enjoy the outdoors (Gidlow & Ellis, 2011). Some potential exercisers comment that low lighting and visibility issues invoke fear and are deterrents to frequenting parks, especially at night (Gidlow & Ellis, 2011). Some parks are dark, isolated, or known for drug users' presence, illegal transactions, noise disturbances, murders, and other disorderly conduct (Gidlow & Ellis, 2011). These

characteristics may deter community members from feeling safe exercising in those spaces.

Disagreement exists among park patrons about whether increasing police presence would encourage or discourage healthful park usage and feelings of safety (Gidlow & Ellis, 2011). Community organizers may address these deterrents through policy, community-based change, and creating well-organized outdoor fitness classes or jogging clubs that encourage group fitness (Douglas et al., 2018). Public health professionals can work with community planners to impact the design of walkable environments. Intentional strategies in the built environment may promote physical activity and exercise and reduce toxic motor vehicle emissions and increase pedestrian safety (Sugiyama et al., 2019). Community-level changes impact health behaviors, and behaviors interact to change health outcomes.

Policy as a Determinant. Individual choices of health behaviors are often difficult to control through policy. Behavior control is often impractical and costly to enforce. Control is controversial in a country, such as the U.S., where citizens pride themselves on freedom, choice, and personal responsibility. Some unhealthy behaviors lend themselves to be steered, at least to an extent, by policies requiring inaction (such as prohibiting smoking in public areas). In contrast, physical activity and exercise oblige individuals to act, making them more difficult to legislate and enforce (Berkman et al., 2014). For that reason, government intervention for the promotion of physical activity often comes in the form of research, guidelines, initiatives, and campaigns (Berkman et al., 2014). Federal and state policy options may be limited. Conversations surrounding

private company policies and incentives, such as reduced insurance rates for active individuals, are becoming more popular.

It is vital to understand influential social factors leading to individual behavior choices determining health outcomes. Physical activity and exercise are prime examples of health behaviors that nearly every individual perceives as beneficial and health-promoting. However, interpersonal, intrapersonal, organizational, communal, cultural, and political factors all interact to shape individual health behavior choices and values.

Trauma

Present Effects of Past Trauma

"Being traumatized means continuing to organize your life as if the trauma were still going on – unchanged and immutable – as every new encounter or event is contaminated by the past" (Van der Kolk, 2014, p. 53). Survivors are often triggered in such ways that they experience past trauma as if it were happening in the present moment (Van der Kolk, 2014). Often, individuals who have been traumatized have narrowly focused and ingrained thought patterns (Van der Kolk, 2014). Thought patterns based in trauma create a visceral experience of past threats, even in mundane daily activities (Van der Kolk, 2014). The mismatch between a cognitive awareness of safety and a visceral reaction of threat can create dread, panic, or other undesirable reactions to seemingly benign activities (Van der Kolk, 2014). Past traumas create present concerns.

Physiological Responses of Trauma

An individual's central nervous system (CNS) is hardwired to elicit physiological responses to alert and protect. These responses are automatically created by associating

past threats with characteristics of current situations (Van der Kolk, 2014). A person's heart may begin to race when confronted by an authority figure (Van der Kolk, 2014). In an ideal partnership, the brain's neocortex and frontal lobe allow people to plan and reason through actions, imagine consequences of various actions, and identify possible choices and paths alongside emotional or visceral responses (Van der Kolk, 2014). People may become hard-wired to react viscerally when they are consistently required to practice survivorship in the absence of reason (Van der Kolk, 2014). They may have immature reasoning skills even into adulthood (Van der Kolk, 2014). Previously protective adaptations create present barriers to health advancement.

Hard-wired visceral patterns cause many survivors avoid situations where such triggers are likely to occur (Van der Kolk, 2014). In the context of physical activity, survivors of abuse may viscerally react to being approached or touched by an exercise professional (or any one of many other potential triggers) (Van der Kolk, 2014). A client's visceral reaction occurs without cognitive reasoning that the actions are will within professional norms for physical training (Van der Kolk, 2014). To a bystander (or a professional who is not trauma-aware), visceral reactions may appear harsh and threatening, like yelling or hitting, or may more closely resemble numbness or dissociation (Van der Kolk, 2014). Trauma-informed professionals realize that these responses do not occur because the client does not understand (cognitively) that there is no threat but that their body maintains a survivorship orientation (Van der Kolk, 2014). Survivorship responses have protected survivors of abuse in periods of real and frightening threats and are automatically called upon when similar situations and feelings arise (Van der Kolk, 2014). One consequence of protective behaviors is that survivors of

abuse may miss out on healthy activities such as physical therapy or fitness activities because of the reality of experiencing potential triggers.

Trauma and Numbness

Some survivors may react to triggers of past trauma with passionate outbursts or anger and others may appear to shut down or become numb. One consequence of functioning in a state of numbness through times of stress is that individuals in this pattern often have difficulty enjoying daily activities (Van der Kolk, 2014). Like drug tolerance, to feel or "come alive," these survivors must receive a high dose of stimuli (Van der Kolk, 2014). A need for thrill-seeking has the potential to limit a person's enjoyment of regular and consistent exercise.

Emotional numbness is only one concern. Another consideration when exploring trauma and numbness is that some survivors of abuse lose the ability to physically feel or experience sensations in their bodies (Van der Kolk, 2014). Client numbness has multiple implications for exercise professionals. What may be considered a lack of physical coordination (a characteristic common among survivors of abuse), survivors may have physiological reasons for poor performance (Van der Kolk, 2014). Physical scarring may contribute to exercise decisions for survivors who have been physically abused to the point of scarring or who cope through self-harm. Decisions based on physical scarring may be due to shame associated with others seeing the scars or due to physical discomfort or inhibited range of motion surrounding scar tissue.

Hormonal Considerations after Trauma

The human body produces hormones to stabilize functioning and maintain balance. During a threat, an individual's body produces stress hormones that allow that person to protect him or herself (Van der Kolk, 2014). Once the danger has ended, hormones rebalance (Van der Kolk, 2014). For a person who has been traumatized and who experiences chronic stress responses through post-traumatic stress disorder [PTSD], these hormones remain high and do not rebalance naturally (Van der Kolk, 2014). The body of an individual who has been traumatized stays in a state of readiness in case of another attack (Van der Kolk, 2014). Additionally, those who have survived traumatic experiences will often secrete very high levels of stress hormones in response to even minimally threatening experiences (Van der Kolk, 2014). Stress hormones may contribute to fluctuations in weight and mood and may impact (and be impacted by) physical activity and exercise behavior.

Trauma and Sleep Disturbances

The human body works as a whole functioning organism. In healthy individuals, coordinated bodily functions allow for balance and wellness. The importance of sleep creates a scenario that can quickly lead to dysfunction (Van der Kolk, 2014). A person who has been traumatized and is unable to sleep or eat due to stress or physiological responses, will undoubtedly feel that pain and be affected in other parts of the body (Van der Kolk, 2014). A client who experienced night terrors or hasn't consumed an appropriate caloric intake is unlikely to perform at a peak level.

Trauma and the Nervous System

The sympathetic nervous system [SNS] activates a person's protective fight, flight, or freeze responses (Van der Kolk, 2014). In partnership, the parasympathetic nervous system [PNS] allows individuals to remain calm or return to a state of calm after threats (Van der Kolk, 2014). In clinical practice and therapy, qualified psychotherapy professionals are well within their scope of practice to guide clients through the process of balancing the autonomic nervous system [ANS] and their responses (Duros & Crowley, 2014). Clients work through various therapeutic exercises that complement talk therapy methods (Duros & Crowley, 2014). Decisions concerning the speed of progression are agreed upon by both the therapist and the client (Duros & Crowley, 2014). To progress, clients must remain present in the activity and aware of their thoughts, feelings, and biological reactions. In contrast, clients' blind compliance is ill-advised (Duros & Crowley, 2014). In addition to being active decision-makers in their planned progress, clients often benefit from a planned safety strategy if they become overwhelmed.

Trauma-awareness highlights the complexity of individuals' experiences and reactions to interactions within the community and environment. Professionals can begin to identify, intervene in, and break patterns of these unhealthy coping mechanisms (Danielson & Saxena, 2019). Before intervening, professionals must better understand trauma as a determinant of exercise behavior.

Trauma as a Determinant of Exercise Behaviors

Researchers and professionals should consider survivors of trauma and their unique needs during treatment. Responses to trauma (such as the flight-or-fight response) are useful in stressful times (Barnes & Andrews, 2019). However, trauma responses can interfere with daily life (Barnes & Andrews, 2019). Otherwise safe experiences trigger emotions that survivors felt during the trauma. Barnes and Andrews (2019) state that survivors may avoid people or situations that resemble or trigger feelings from past trauma (Barnes & Andrews, 2019). Some people, environments, situations, or exercises may unintentionally trigger the same feelings survivors of abuse experienced during the trauma.

An ecological, or holistic, view is instrumental when considering individuals who have experienced trauma, such as young people living in care after being removed from their home environment. Traumas are often due to instability, abuse, or neglect. Several health dimensions and interactions can be understood and examined together (Bruce et al., 2019). The benefits of physical activity span many dimensions of a person's health. It is less common, yet essential, to reflect on the broad scope of potential barriers. Among these barriers may be physical factors (such as limited experience or physical deficits due to abuse), family factors (such as parental support), and difficulty establishing trustworthy interpersonal communication with care-givers or coaches (Bruce et al., 2019). Because individuals are unique, it is essential to consider the individual's experiences and (internal and external) factors, especially when abandonment or mistreatment has occurred.

Sexual Abuse as a Determinant of Exercise Behavior

Physical activity participation decreases over time among women who have experienced trauma. Low physical activity rates and post-traumatic stress symptoms may play into the development of chronic disease and impact long-term health outcomes among survivors of abuse (Winning et al., 2017). Other examples of domains that affect well-being after sexual abuse include prior access to health care, perceived safety, co-diagnoses such as with mental illness, associations and interpersonal relationships in cultures that support or shame survivors, and limited knowledge or misdiagnoses of symptoms by a health practitioner (Wadsworth et al., 2018). For survivors, protection and security (emotionally and physically) are foundational.

Survivors of abuse may factor perceived safety into their decisions to (or how to) participate in physical activity or exercise. The realm of perceived safety may include the location of training, type of movements, or people involved in exercise programming or participation (Smith-Marek et al., 2018). Some survivors of abuse may be less comfortable in a gym setting and may prefer to stay in or near their homes. Others may desire not to be isolated (Smith-Marek et al., 2018). Research supports that most survivors prefer exercising alone or in a small group (Smith-Marek et al., 2018). Other survivors may feel safer in non-isolated or group settings. One survivor of abuse shared the importance of lifting only an amount of weight she could throw in case of an attack (Smith-Marek et al., 2018). Restricting weights may limit her ability to progress through an exercise plan that rapidly increases resistance (Smith-Marek et al., 2018). Throughout the COVID-19 pandemic, masks are sometimes expected to be worn by exercisers or

trainers. This mandate or recommendation (useful for preventing the spread of a respiratory virus) may be a deterrent for exercisers who have survived abuse involving being choked, masked, or bound.

Potentially triggering effects are associated with the outcome of physical activity. Many exercisers desire the look of a firm or attractive physique (often a result of training). In contrast, some survivors of abuse believe that an attractive appearance may increase the likelihood of being seen as sexual objects, thus desiring to appear less fit (Smith-Marek et al., 2018). An individual's desire to be healthy may conflict with their need to feel protected.

Exercise allows a beneficial and challenging connection with one's body. The choice of types of activities may be different among survivors (Smith-Marek et al., 2018). For some survivors of sexual abuse, bodily awareness associated with physical movement (positions or increased heart or breathing rate) is triggering (Smith-Marek et al., 2018). Lower impact exercise may be more appropriate than other forms of exercise to avoid triggering physiological discomfort (Smith-Marek et al., 2018). Regardless of what an exerciser chooses, professionals must understand that the answer for one client's safety may not be the answer for others.

Sometimes the connection between sexual abuse and exercise behavior is not easily identifiable. Girls who are sexually abused drop out of school at a higher rate than girls who are not sexually abused (Van der Kolk, 2014). School absenteeism may not appear to be related to exercise participation; however, it can have such consequences. When a student drops out of school, they may no longer have access to, or need to,

participate in some forms of activities (Van der Kolk, 2014). Walking to school, recess, or outdoor free time before and after school, school-sponsored sports, intramurals or tournaments, and physical education class are no longer a part of their daily routine.

Trauma-informed Practice in Health Professions

Professionals and researchers alike are now acknowledging trauma as an integral determinant of health risk factors and incorporating trauma-informed care in public health practice. Van der Kolk (2014) suggests that trauma is an immediate public health issue. Fortunately, data is available to move forward and implement trauma-informed public health practices (Van der Kolk, 2014). Sexual abuse is a violation of boundaries. The source of sexual violations is often a person who is in control/power, someone who should be trustworthy, and someone who is in a relationship with the victim (Van der Kolk, 2014). It is not difficult to understand how emotions and responses that occurred during abuse re-surface in other relationships, especially one so closely tied to the control of one's body (Van der Kolk, 2014). It is vital to have a clear picture of practitioner-patient relationships. Equally important is gaining an understanding of how interpersonal communication may impact successful adherence to health behaviors (Schachter et al., 1999). Practitioners' trauma-informed communication is demonstrated through a greater awareness of survivors' needs (Schachter et al., 1999). Best professional practices mandate health care providers to be mindful of the multi-layered impact of trauma on health (Wadsworth et al., 2018).

Coping Techniques and Triggers

Survivors of abuse who experience PTSD symptoms may also experience maladaptive coping techniques. Coping techniques may include denial, disengagement, substance use or abuse, or self-blame (Ullman & Relyea, 2016). The reverse is also true. Researchers have observed that survivors with maladaptive coping techniques may also experience more post-traumatic stress symptoms (Ullman & Relyea, 2016). The interaction between post-traumatic stress syndrome and specific adverse social reactions such as blaming the victim of abuse is bi-directional (Ullman & Relyea, 2016). A bi-directional interaction suggests that survivors' networks (both social and professional) would benefit from being trained in appropriate care and sensitivity to survivors of sexual abuse.

Because abuse touches all dimensions of a person's health, all health professionals (in various disciplines) could benefit from being trauma-aware or trauma-informed. The importance of trauma-informed care is sometimes overlooked in fields where abuse is not always reported, such as dentistry (Raja et al., 2015). Dental professionals have an excellent opportunity to see a glimpse of the holistic health of each client. Dentists may see visible signs of trauma, but even more likely is that they will observe indirect signs and symptoms of poor health that may stem from abuse (Raja et al., 2015). Dental professionals may witness signs of drug abuse, smoking, eating disorders, sexually transmitted diseases, or self-harm habits such as cheek biting. Triggers associated with the dental practice may include the requirement to lay in a supine position, being touched, and being unable to talk or communicate clearly (Raja et

al., 2015). Hygienists and dentists may alleviate some of these triggers by using consent, 'tell-show-do' techniques, and being aware of non-verbal signs of heightened anxiety (Raja et al., 2015). It is outside of the scope of practice for many health professionals, such as dentists and exercise professionals, to provide therapy. However, it is well within professional practice to use sensitive methods while treating clients. Health professionals can provide appropriate resources and referrals to create safer experiences for clients who have experienced sexual abuse.

The same potential triggers and professional sensitivities identified in other health professions can be applied to exercise professionals. Exercisers are often in situations with professionals in power who instruct clients on body positioning. If trained, exercise professionals may learn to look for physical signs of abuse (bruising, etc.). They may become more aware of non-verbal cues of heightened anxiety in a client during exercise practices.

Power Imbalances

Therapies and programs exist to treat PTSD directly. Treating PTSD alone is not always productive as it does not exist independent from other experiences (Barnes & Andrews, 2019). In contrast, trauma-informed practice will often provide a solid framework for multi-disciplinary treatment providers to work within (Barnes & Andrews, 2019). Because many traumas are birthed in unequal relationships, it is important for all staff within a system to be aware of treatment needs as they help survivors (Barnes & Andrews, 2019). By emphasizing relational balance, health professionals can better serve survivors of abuse and pave the way for better health outcomes (Barnes & Andrews,

2019). An emphasis on a power-balance may be instrumental in rehabilitation-focused exercise instruction. Progress in physical therapy and rehab often depends on pushing through some degree of pain. Physical therapists who provide trauma-informed instruction can create a balanced professional relationship that empowers clients. A power-balance during physical therapy sessions fosters exercise adherence and progress.

Trauma-informed Systems

It is important to address the potential for trauma-informed interactions within all systems that touch an individual. Trauma-informed interactions include the biological systems, interpersonal relationships, social and work environments, and large-scale governing influencers such as the political environment and social norms. Interactions adjusted to consider abuse history potentially encourage resiliency and healthy behaviors (Danielson & Saxena, 2019). Exercise professionals typically desire a physical health outcome but must treat maladies, body composition, and cardiorespiratory fitness within the context of each client's personal history and interactions. If exercise professionals focus on eliminating unsafe interactions, empathy, adherence, and desired health outcomes can increase.

Abuse Disclosure

Sexual abuse disclosure and reporting are well-researched. Previously, sexual abuse disclosure was viewed and studied as a single event or occurrence (Alaggia et al., 2019). During disclosure, the survivor told another individual about the abusive situation (Alaggia et al., 2019). Professionals now understand disclosure as a process wherein an abusive history is shared with others over time using various communication means

(Alaggia et al., 2019). It is also now understood that multiple aspects of abuse, or effects of abuse, are expressed uniquely and are shared with different people over time (Alaggia et al., 2019). Sharing design demands an ecological perspective from both survivors and those with whom they interact (Alaggia et al., 2019). Survivors may not choose to disclose abuse to their exercise professionals. When survivors do disclose abuse, the full scope of the trauma (or its impact on the client) may remain unknown or limited.

Health history forms used by exercise professionals do not typically contain information about a person's past abusive experiences. The absence of disclosed information is not particularly problematic. Even for most types of psychological or emotional therapies, practitioners do not need to know the details of past trauma (Van der Kolk, 2014). As research collectively grows to show that many survivors themselves don't wholly remember traumatic details or even more general experiences surrounding past abuse, professionals can understand that past trauma may be underreported among clients (Van der Kolk, 2014). Survivors' inability or unwillingness to disclose abuse to exercise professionals does not make the trauma any less real. The opportunity for exercise professionals to practice with sensitivity remains essential to success and adherence.

There is an imbalance between the body of knowledge surrounding barriers to disclosing abuse and literature surrounding the facilitators of disclosure (Alaggia et al., 2019). Researchers may tend to inquire about why survivors didn't report abuse rather than what made them feel safe enough to report the abuse and create practices based on those findings (Alaggia et al., 2019). Health and fitness professionals' practices include a

supportive program design and safe interpersonal communication that encourages disclosure appropriate for treatment and the provider-client relationship.

Best Practices for Fitness Professionals

Trained and credentialed psychologists, psychiatrists, and counselors who work with survivors of abuse, often find success in both eliciting physical responses and reacting to these post-traumatic responses in the context of various therapeutic contexts (Van der Kolk, 2014). Similarly, massage therapists, acupuncturists, and bodywork professionals may have appropriate training in these areas (Van der Kolk, 2014). Eliciting and responding to post-traumatic physical or emotional responses in the same way as trained therapists and counselors are inappropriate for most exercise professionals. What is appropriate is that exercise professionals understand that these physiological responses exist and are sometimes unintentionally elicited during exercise programming. Exercise professionals can respond to these events appropriately and stay within their scope of practice.

Survivors often have difficulty using language or expressing their emotions to another individual. The Broca's area's hindrance sometimes creates these language barriers during flashbacks of past trauma (Van der Kolk, 2014). Language barriers are relevant to sensitive practice in that exercise professionals cannot reasonably expect survivors to describe a feeling or trigger clearly (Van der Kolk, 2014). Exercise professionals must identify resistances as possible reactions to perceived threats and reroute their exercise prescription and delivery accordingly.

Exercise professionals are not trained psychotherapists and should not attempt to create therapeutic experiences or services. However, trauma-informed techniques can be used in professional practice for exercise professionals. A shared decision-making process concerning the type and intensity of exercises may be among the easiest to implement in the fitness setting. Several appropriate types of (or positions for) exercise can be included at various intensities in a prescription to meet the same goal.

Goal Setting

Clients are experts on their experiences and lives. Professionals working with survivors of trauma should understand that a survivor's solution may be viewed by others as a problem (Van der Kolk, 2014). For example, controlling one's weight is very likely connected to a protective factor. For some individuals, being overweight is the solution to being attractive or noticed (Van der Kolk, 2014). For others, underweight may signal to others that they are disciplined. Still others find that a preoccupation with extreme muscle mass displays strength. A health professional's attack of a survivor's solution may create a desire in the survivor to cease participation in health promoting behaviors.

Exercise professionals must understand that in appropriate practice, the client defines the problem and the goals, and the professional guides them through ways to meet those goals. A client-led practice does not mean that professionals support a client's desire to become underweight. Instead, exercise professionals' importance guiding the education and goal setting process for success without discounting the clients' genuine fears and perceptions is elevated. Instead of laying out goals for clients, exercise professionals should come equipped to lead clients through an empowering process that

allows them to identify what purpose they want exercise to serve in their lives and educate clients on healthy ways to realize those expectations.

Choosing a Professional

For some survivors of abuse, childhood was chaotic and unpredictable. Sometimes authority figures were loving and kind, and sometimes those same individuals brought pain and abuse (Van der Kolk, 2014). Sensitive practice may include predictable routines and exercise variety within a structured atmosphere.

Clients should have a say in who trains them whenever possible. Clients' decisions may surprise us as triggers come in various forms (appearance or stature, facial expressions, the sound of one's voice, smell, etc.). It is the best practice to allow clients to select their exercise professional (Van der Kolk, 2014). At minimum, if a client does not choose to attend the fitness class of a particular instructor or desires to switch trainers, professionals can realize that the decision is likely not intended to be insulting. Because many survivors have been abused by trusted individuals close to them, some may experience terror associated with the excitement or enjoyment of being with a person they now trust (Van der Kolk, 2014). To professionals working within healthy mindsets, it is hard to comprehend that a client with whom they have worked tirelessly to build trust suddenly is triggered by coming to sessions (Van der Kolk, 2014). Professionals must consider the genuine possibility that the client was once a child who expected to spend time with a loving parent but instead met abuse and pain in their encounter (Van der Kolk, 2014). Trusting relationships may be a trigger for individuals abused by loved ones.

Matyja and Stoj (2014) conclude that interpersonal communication affects the experiences clients have with physiotherapists (Matyja & Stój, 2014). Some of the experience is modifiable, such as having extended amounts of time with each patient (Matyja & Stój, 2014). Other aspects are not easily variable. A client who is more comfortable with a man physiotherapist than a woman or a physiotherapist who has had a long practice instead of a new or young professional, should be allowed to select a professional with whom they feel most comfortable (Matyja & Stój, 2014). For professionals, it can be uncomfortable for a client to choose a new group fitness instructor or personal trainer. Professionals should support such decisions as part of the effort to empower clients to use their voices and create meaningful care plans.

Regardless of trauma history, interpersonal communication is an essential factor in clients' relationships with personal trainers. Some clients may prefer a trainer of one gender over the other. Clients' reasons for trainer selections range from desiring shared experiences to avoiding a feeling of competition (Melton et al., 2011). Clients may choose a personal trainer who has accomplished goals similar to their own desired goals (such as weight loss) (Melton et al., 2011). A trainer who listens well and allows for program changes and deviations based on client needs is preferred (Melton et al., 2011). Professionalism and appropriate dress are effective interpersonal communication methods (Melton et al., 2011). Some exercise professionals may view these forms of interpersonal communication as general professionalism; however, the specific perspective from survivors of abuse are still essential to highlight.

Social support for survivors of abuse is an important protective factor against stress and trauma. More than just being in the presence of people, support needs to include the feeling of being seen and known (Van der Kolk, 2014). Staying within their scope of practice, exercise professionals can receive training and education to sensitively practice identifying and professionally responding to clients' emotional needs and triggers. These practices do not need to include past abuse knowledge or details and should not involve counsel or therapy unless otherwise credentialed.

Overcoming Triggers through Practice

The interpersonal communication between a physician and patient is essential for trauma-informed practice among health professionals. The way doctors communicate with patients often frames the way patients communicate about their health and perceived issues (Van der Kolk, 2014). It is within the purview of exercise professionals to concentrate on clients' physical bodies. In some professions (such as physical therapy), the practitioner is focused even more specifically on one particular injured body part (Van der Kolk, 2014). Survivors of abuse may internalize focused treatment as if the professional is more concerned with a body part than the person (Van der Kolk, 2014). The experience may feel dehumanizing or objectifying. When a doctor treats signs of stress as only a physiological problem to be solved, survivors often begin to focus on those problems as well (Van der Kolk, 2014). It would behoove professionals to allow clients the necessary space to discover the root of the health issue (Van der Kolk, 2014). Discovering the root of a health issue can be accomplished while staying within one's scope of exercise practice. In addition to prescribing exercises for a client who presents

with a stiff neck, it may be beneficial to suggest that the client consider the role of any other stressors in their lives (Van der Kolk, 2014). If details arise outside of one's scope-of-practice, the exercise professional should make an appropriate and professional referral.

Trained counselors and psychotherapists do not treat past abuse. Rather, counselors and mental health professionals treat the individual to cope with the effects of the abuse (Van der Kolk, 2014). The therapeutic process includes training the clients to realize the beginning, middle, and end of their traumatic experiences (Van der Kolk, 2014). Skilled therapy allows clients to begin viewing abuse as a past event instead of living in that trauma in the present (Van der Kolk, 2014). Potential implications for exercise professionals include incorporating mind-body activities (grounding practices) such as yoga or Pilates (with the understanding that some clients are not yet ready for such experiences) or emphases on guiding clients to notice the environment they are presently in (Van der Kolk, 2014). Grounding techniques are useful in the facilitation of safe exercise routines.

The potential for triggers related to abuse to occur in exercise or physical therapy sessions is plentiful. Some examples of triggers include the feeling of being treated as (or for) a body part, not as a whole person; the need for relaxation and compliance during passive movement or stretching exercises (where the physical therapist is moving the client's body); being in a closed room with a person who reminds the client of the abuser or having the feeling of being trapped; and the feeling of ultrasound jelly used during diagnosis (Schachter et al., 1999). Many typical components of physical therapy sessions

do not present issues for most clients. For survivors of abuse, however, typical practices may be triggering (Schachter et al., 1999). Physical therapists who are aware of triggers, who listen to clients, and are open to accommodating each client's unique needs within treatment plans are often viewed as safer by survivors of sexual abuse (Schachter et al., 1999). Professionals who listen to survivors' experiences and who step-back to look for potential triggers in their practice can predict some possible concerns and practice with greater sensitivity.

Specific professional practices used by fitness professionals that may trigger feelings of being controlled may include required activity, nutrition trackers, or unscheduled calls to check-in on client progress. Barnes and Andrews (2019) note that one positive aspect of TIC is "voice and choice," used to empower clients to be heard and choose the best treatment path along with their providers (Barnes & Andrews, 2019). A client-led choice may mean that a provider should refer the client to a different professional or empower the client to choose another professional (Barnes & Andrews, 2019). Empowering clients to choose favored professionals may be a luxury that is not practical for some. However, all practitioners can create an environment where clients may share some of their insight on the best means to intervention and treatment.

It is useful and appropriate for exercise professionals to provide space for clients to reflect on how they feel exercise sessions impact their lives. Clients' reflective practices do not need to be shared with the professional or with a group fitness class to be useful (Van der Kolk, 2014). Some exercisers gain feelings of strength, social connection, mastery, and regulation through exercise (Van der Kolk, 2014). Sometimes guiding

clients through a reflective cooldown period allows them to notice successes and increase intrinsic motivations for exercise participation. Professionals must consider that the mandate to close their eyes during reflective times can be triggering (Van der Kolk, 2014). Providing options during exercise programming is one way to limit triggering situations.

Fitness professionals may incorporate safety strategies into exercise plans as a standard practice, even in group settings. Examples of safety strategies may be announcing that members may take breaks, walk around the track, or be in control of indicating that they are ready for the next level of intensity during a passive stretching session. As with any respectful relationship, a client's "no" either verbally or through perceived resistance should be honored. If the client unwillingly complies under coercion or because of a perceived power imbalance, they are less likely to grow through the process and may, instead, be retraumatized.

Conclusion

Survivors of sexual abuse have the potential to experience exercise programming, participation, and physical fitness itself differently than individuals who do not have histories of abuse. Exercise professionals who are trauma-informed and practice within the context of professional sensitivity hold space for survivors to determine and voice their needs. Trauma-informed practice allows clients to partner with professionals to have control over their exercise programming and participation. Healthy client-professional partnerships present opportunities for long-term adherence and benefits from exercise.

CHAPTER II: THE RELATIONSHIP BETWEEN EXERCISE PROFESSIONALS' SAAT SCORES AND SELF-REPORTED ADVERSE CHILDHOOD EXPERIENCES [ACE] SCORES

Past trauma is a determinant of current health. Individuals who experience childhood trauma may develop social, emotional, and cognitive impairments leading to risky health behaviors (Felitti et al., 1998). High-risk health behaviors may lead to disease, disability, social issues, or death (Felitti et al., 1998). The specific implications of a dose-response between past trauma and current health risks such as obesity affect various aspects of exercise participation. Trauma of various types, including sexual abuse, affect the body (Van der Kolk, 2014) and the lived experience of exercise participation after abuse (Smith-Marek et al., 2018).

Past experiences affect present holistic health. Social determinants and individual components of a person's health intersect to protect against or increase the possibility of various health outcomes (Berkman et al., 2014). Life experiences, specifically adverse experiences like sexual abuse, impact personal health (Felitti et al., 1998). Protective responses, such as hyper-alertness, dissociation, and the "fight, flight, or freeze" responses to past trauma provide survivors with the ability to live through abuse (Barnes & Andrews, 2019). Trauma responses from past abuses are often carried into present, safe experiences and limit full participation in healthy life experiences, such as physical activity and exercise (Barnes & Andrews, 2019). Exercise professionals who are trauma-informed may be able to interact with survivors in uniquely health-promoting ways.

Trauma-informed care can be a part of all systems related to survivors' health. Interpersonal interactions associated with the facilitation of health services help to foster

continued care and adherence (Danielson & Saxena, 2019). Physical activity and exercise participation can be important components of total wellness for most individuals. Survivors of abuse may experience physical activity and exercise differently than individuals who have not experienced trauma (Smith-Marek et al., 2018). Trauma-informed professionals consider the multiple layers associated with wellness and care (Wadsworth et al., 2018). Health professionals who practice within trauma-informed systems can partner with clients who have survived abuse to prescribe and facilitate safe and effective exercise programs.

Exercise professionals who have experienced trauma or abuse may have unique understandings of the impact of trauma on exercise. Professionals who personally have traumatic backgrounds may practice with greater sensitivity or trauma-awareness. If tested for competencies regarding training survivors of abuse, exercise professionals with past trauma may score higher than exercise professionals without a personal history of trauma. The Sexual Abuse Assessment Tool [SAAT] was designed to assess exercise professionals' competencies regarding training women who have experienced sexual abuse (Claypool et al., 2017). Individuals with past abuse may score higher on competencies related to knowledge of abuse. It is expected that exercise professionals with more types of past trauma will score higher on the Sexual Abuse Assessment Tool [SAAT] than those with no or fewer traumatic experiences. However, adverse childhood experiences are predictors of emotional dysregulation and interpersonal difficulties (Poole et al., 2018) which may limit the extent of trauma-informed, sensitive practice among exercise professionals who report past trauma.

One tool commonly used to measure past traumatic experiences is a self-reported Adverse Childhood Experiences [ACEs] scale. To use the ACEs scale, individuals add one point to their score for each adverse childhood experience before age 18 (CDC, 2020a). An inverse dose-response between one's ACE score and his/her health outcomes indicates that a higher number of traumatic events in childhood are associated with lower health outcomes in adulthood (CDC, 2020a). Health disparities associated with trauma emphasize the need for competent exercise professionals who understand the complexities of training individuals who have survived abuse (Melton et al., 2011; Schachter et al., 1999). In this present study, the researcher tested the hypothesis that exercise professionals with higher ACE scores will score higher on the SAAT than exercise professionals with lower ACE scores.

Purpose of Research

The purpose of this study was to use data collected from the SAAT and ACEs scales to analyze the relationship between exercise professionals' number of personal adverse childhood experiences and their professional SAAT competency scores. Exercise professionals included in this present study include personal trainers, physical therapists (and assistants), athletic trainers, coaches, and group fitness instructors.

Research Question

Is there a positive correlation between professionals' personal ACEs scores and their SAAT scores?

Research Hypothesis

There is a positive correlation between professionals' personal ACEs scores and their SAAT scores.

Methods

Participants

Exercise professionals (18 + years) who primarily train adult clientele were sampled. The target population included, but was not limited to, personal trainers, group fitness instructors, physical therapists, athletic trainers, and coaches. Professionals who are under the age of eighteen or who primarily train youth clientele were excluded.

Data were collected from participants (N = 61) upon IRB approval (see Appendix H). Study participants were self-reported exercise professionals (18+ years of age) who prescribe exercise to adult clientele in full- or part-time work. Most participants identified their job titles as physical therapist or physical therapy assistant (31.7%), personal trainer (25.0%), or group fitness instructor (18.3%). Most participants were professionally licensed or certified (40.0%) or held national or state licenses (33.3%). More women (71.7%) participated then men (28.3%), and more identified as white, non-Hispanic (93.3%, 98.4%) than any other racial and ethnic groups. Participants from all age groups participated with most being 25 – 34 years (45.8%) or 35 – 44 years (25.4%) and nearly all worked in gyms and community centers, medical or rehab facilities, colleges and universities, or home and private practices (30.0%, 26.7%, 21.7%, 16.7%). More participants indicated that they were new professionals indicating a career of 0 – 10 years (43.10%) than other career lengths, and most have earned college degrees (bachelor's, 27.6%; master's 36.2%; or doctorates 25.9%). Participants indicated that they train both men and women (73.3%) across age groups. (Full demographics are shown in Table 1.)

Assessment Tools

Sexual Abuse Assessment Tool. The [SAAT] was designed to assess exercise professionals' competencies regarding training women who have experienced sexual abuse. Data collected using the SAAT will be useful to create training and educational opportunities for exercise professionals who desire to provide trauma-informed practice and the development of best practices for training members of this special population (survivors of abuse). Response options for the SAAT were presented on a Likert type, 4-point scale with a possible score total of 64 – 256 assuming all questions were answered by the participant (Claypool et al., 2017). A pilot study indicated that the mean score = 177 *SD* 14.77. (The SAAT can be found in Appendix B.)

Adverse Childhood Experiences. Adverse childhood experiences, such as abuse, were present in approximately 2/3 of individuals with ~ 1/5 experiencing three or more ACEs (CDC, 2020a). An inverse dose-response exists between more points on an ACE scale and a decrease in health outcomes (CDC, 2020a). Questions from a ten-question ACEs scale were administered along with the SAAT. These ten questions from the ACE scale were added at the end of the SAAT to determine if an individual's ACE score can be used to predict their competency to train survivors of sexual trauma. (The ACEs questionnaire can be found in Appendix D.)

Control Variables

Demographic information was collected with this survey [Appendix A]. Participants were asked to provide their age, race, ethnicity, sex, job title, educational attainment, professional credentials, years of practice, and work setting along with the

age and gender of their clients. Demographical data were collected to describe the sample and were considered as potential control variables in regression analyses. Participants' job titles, sex, and age were included in analyses as control variables. Descriptive demographical data are reported and were used to identify a descriptive foundation for future studies.

Procedures

Following Middle Tennessee State University's IRB approval [Appendix H], the link to access the SAAT for Exercise Professionals survey was distributed via email, messaging, and social media to personal and professional contacts of the primary investigator and with consideration of professional and educational organizations that employ, certify, credential, and/or educate exercise professionals. Recruitment efforts were targeted at obtaining certified professionals, but non-certified professionals were permitted to participate. Recruitment messages were sent out to certifying agencies (4), campus recreation centers (20), college athletic groups (11), PTA programs (8), social media posts or contacts (8), university faculty groups (34), health research groups (19), physical therapy practices (14), individuals (60), and gyms and community centers (58). Follow-up contacts were made when appropriate. Recipients were asked to share study information with others in their personal, professional, and academic circles. After questions verifying consent and potential risks of participation in this survey [Appendix G], participants were asked demographic questions [Appendix A], and completed the SAAT [Appendix B] and the ACEs questionnaire [Appendix D] within a larger combined Qualtrics survey.

Data Analysis Plan

Data Cleaning

All analyses were performed using SPSS v 27 software. SAAT items 2, 3, 4, 7, 31, 32, 34, 36, 38, 40, 42, 45, 46, 48, 49, 51, 56, 59, 61, 62, and 63 were reverse scored. Data were cleaned before analyses. Data collected from participants who self-identified as exercise professionals and completed a minimum of 70% of the survey questions with response times longer than 10 minutes were analyzed. Data from participants who did not complete at least 70% of the survey were deleted. Results for participants who responded in fewer than ten minutes were deleted to avoid potential straight-lining or random response selection (Groves et al., 2009). For domain or scale-specific data, scores were used for participants who completed the entire domain or scale. For ACEs scores, missing data (two of 610 possible data entries) were calculated as zero.

Data Analysis

Participants' SAAT scores and self-reported ACEs were analyzed using multiple linear regression. Job title, participant sex, and participant age were used as controlling independent variables. Correlations between each of the SAAT's five content domains and ACE scores were also analyzed. (Full results are presented in Tables 3 – 8.)

Results

Descriptive Analysis

Participants' ACE Scores. Participants (N = 61) reported number of ACEs as zero (n = 25, 41.00%), one (n = 11, 18.00%), two (n = 6, 9.80%), three (n = 10, 16.40%),

four (*n* = 2, 3.3%), five (*n* = 4, 6.60%), six (*n* = 2, 3.3%), and eight (*n* = 1, 1.6%). Participants' ACEs scores ranged from zero to eight with a mean score of 1.66 (*SD* = 1.94). The adverse experience of childhood sexual abuse was reported in eight (13.10%) of participants. (Additional demographics can be seen in Table 1.)

Table 1
Participant Descriptives (N = 61)

Participant Descriptives	*n*	Valid %
Participant Job Title		
Group Fitness Instructor	11	18.30%
Personal Trainer	15	25.00%
Coach	4	6.70%
Physical Therapist or PT Assistant	19	31.70%
Athletic Trainer	4	6.70%
Other Job Title	7	11.70%
Professional Setting		
Gym or Community Center	18	30.00%
Medical or Rehab	16	26.70%
College or University	13	21.70%
Home or Private	10	16.70%
Other Locations	3	5.00%
Education (Highest Level Completed)		
High School	6	10.30%
Bachelor's Degree	16	27.60%
Master's Degree	21	36.20%
Doctorate (Terminal)	15	25.90%
Professional Credentials		
Professional License	24	40.00%
National or State License	20	33.30%
Specialty Certifications	3	5.00%
Other	3	5.00%
Multiple Credentials	6	10.00%
Not Certified	4	6.70%
Professional Experience (in years)		
0 – 5	25	43.10%
6 – 10	14	24.10%
11 – 15	9	15.50%
16 – 20	2	3.40%
> 20	8	13.80%
Sex		
Male	17	28.30%
Female	43	71.70%
Race		
White	56	93.30%
Black or African American	2	3.30%
Bi-Racial/Multi-Racial	1	1.70%
Ethnicity		
Hispanic	1	1.60%
Not Hispanic	60	98.4%
Sex of Clientele		
Women	16	26.70%
Both Men and Women	44	72.10%
Age of Clientele (in years)		
18 – 25	10	16.70%
26 – 55	16	26.70%
55 +	12	20.00%
Multiple Age Groups	22	36.70%

Participants' scores for the SAAT ranged from 180-242 with a mean of 207.31 (*SD* 13.01). The mean score for the total scale is higher than the pilot study of 177 (*SD* 14.77). The potential range of scores for the SAAT are 64 – 256 (Claypool et al., 2017). The full presentation of participant scores for the total scale and each content domain can be seen in Table 2.)

Table 2
SAAT Scores

Score	*N**	Mean (SD)	Range
SAAT	55	207.31 (13.01)	180-242
Domain 1	61	22.87 (2.33)	16-27
Domain 2	59	37.75 (4.34)	27-47
Domain 3	58	37.34 (3.82)	30-44
Domain 4	60	34.48 (3.24)	26-43
Domain 5	56	74.95 (4.65)	64-84

Note: Scores for participants who completed entire scale or domain.

Regression Analysis

Full SAAT Scale. To test the hypothesized positive relationship between ACEs scores and SAAT scores, data were analyzed using multiple linear regression. When controlling for job title, participant sex, and participant age using block entry method, there was not a significant linear relationship between ACEs scores and SAAT scores, $F(6,47) = 1.14$, $p = .23$, $R^2_{adj} = .04$. (See Table 3.)

Table 3

Multiple Regression of ACE Scores onto SAAT Scores (N = 55)

Variable	*B*	*SE*	β	*t*	*p*
Constant	212.41	4.57		-1.17	< .001
ACEs	0.94	1.02	0.14	0.92	.36
Job Title					
Group Exercise	-3.79	5.44	-0.11	-.70	.49
DPT/PTA	-8.86	4.93	-0.32	-1.80	.08
Other	-1.03	5.08	-0.03	-.20	.84
Personal Trainer	(reference)				
Sex					
Male	-5.31	4.21	-0.18	-1.26	.21
Female	(reference)				
Age					
18-34	-3.75	3.69	0.15	-1.02	.31
35+	(reference)				

$R^2_{adj} = .04$

SAAT [Domain 1] Background Knowledge and Attitudes Toward Sexual Abuse and Extent of Sexual Abuse. To test the relationship between ACEs scores and participants' scores for Domain 1, data were analyzed using multiple linear regression. When controlling for job title, participant sex, and participant age using block entry method, there was not a significant linear relationship between ACEs scores and Domain 1 scores, $F(6,52) = 0.45$, $p = .84$, $R^2_{adj} = -.06$. (See Table 4.)

Table 4

Multiple Regression of ACEs onto SAAT Domain 1 Scores (N = 61)

Variable	*B*	*SE*	β	*t*	*p*
Constant	23.39	.82		28.54	<.001
ACEs	-.11	.18	-.09	-.62	.54
Job Title					
Group Exercise	-.06	1.03	-.01	-.06	.95
DPT/PTA	-1.22	0.88	-.24	-1.39	.17
Other	-.51	0.90	-.10	-.57	.57
Personal Trainer	(reference)				
Sex					
Male	0.32	0.72	.06	.44	.66
Female	(reference)				
Age					
18-34	0.17	0.68	.04	.25	.80
35+	(reference)				

$R^2 = .05$ $R^2_{adj} = -06$

SAAT [Domain 2] Sexual Abuse and Health Concerns. To test the relationship between ACEs scores and participants' scores for Domain 2, data were analyzed using multiple linear regression. When examining the relationship between ACEs on SAAT scores, ACEs score is a significant predictor of Domain 2 scores, $F(1,57) = 5.24$, $p = .03$, $R^2_{adj} = .07$.

ACEs scores were a significant predictor of Domain 2 scores when controlling for the effect of job title, $F(4,53) = 2.83$, $p = .03$, $R^2_{adj} = .11$. Compared to personal trainers, physical therapists and physical therapy assistants scored -3.90 points lower on Domain 2. An individual's ACE score becomes a stronger predictor of SAAT performance when

considering the effect of age with younger participants scoring 1.55 points lower, on average, than older participants. (See Table 5.)

Table 5
Multiple Regression of ACEs onto SAAT Domain 2 Scores (N = 59)

Variable	*B*	*SE*	β	*t*	*p*
Model 1					
Constant	36.67	0.72		50.87	<.001
ACEs	0.64	0.28	0.29	2.29	.03
Model 2					
Constant	39.05	1.18		33.01	<.001
ACEs	0.35	0.29	0.16	1.20	.23
Job Title					
Group Exercise	-1.91	1.60	-0.18	-1.20	.24
DPT/PTA	-3.90	1.45	-0.43	-2.68	.01
Other	-1.78	1.50	-0.18	-1.19	.24
Personal Trainer	(reference)				
Model 3					
Constant	37.22	.83		44.63	<.001
ACEs	.67	.30	.30	2.27	.03
Age Bracket					
Age (18 – 34)	-.1.55	1.14	-.18	-1.36	.18
Age (35 +)	(reference)				

Model 1 R^2 = .08, R^2_{adj} = .07, ***Model 2*** R^2 = .18, R^2_{adj} = .11, ***Model 3*** R^2 =.10, R^2_{adj} = .06

SAAT [Domain 3] Barriers to Exercise Among Women Who Have Experienced Sexual Abuse. To test the relationship between ACEs scores and participants' scores for Domain 3, data were analyzed using multiple linear regression.

When controlling for job title, participant sex, and participant age using block entry method, there was a marginally significant linear relationship between ACEs scores and Domain 3 scores, $F(6,49) = 1.93$, $p = .09$, $R^2_{adj} = .09$. (See Table 6.)

Table 6
Multiple Regression of ACEs onto SAAT Domain 3 Scores (N =58)

Variable	*B*	*SE*	β	*t*	*p*
Constant	38.18	1.26		30.27	<.001
ACEs	0.23	0.28	.12	.82	.42
Job Title					
Group Exercise	-1.00	1.55	-.10	-.64	.52
DPT/PTA	-1.67	1.36	-.21	-1.23	.23
Other	1.75	1.41	.20	1.24	.22
Personal Trainer	(reference)				
Sex					
Male	-1.52	1.13	-18	-1.35	.18
Female	(reference)				
Age					
18-34	1.10	1.05	-15	1.05	.30
35+	(reference)				

$R^2 = .09$, $R^2_{adj} = .09$

SAAT [Domain 4] Environmental and Interpersonal Emotional Triggers in Exercise Settings and During Exercise Programming. To test the relationship between ACEs scores and participants' scores for Domain 4, data were analyzed using multiple linear regression. When controlling for job title, participant sex, and participant age using block entry method, there was not a significant linear relationship between ACEs scores and Domain 4 scores, $F(6,51) = 0.66$, $p = .68$, $R^2_{adj} = -.04$. (See Table 7.)

Table 7

Multiple Regression of ACEs onto SAAT Domain 4 Scores (N = 60)

Variable	*B*	*SE*	β	*t*	*p*
Constant	34.90	1.13		30.77	<.001
ACEs	0.33	0.25	.20	1.31	.20
Job Title					
Group Exercise	-0.04	1.40	-.01	-.03	.98
DPT/PTA	-0.08	1.22	-.01	-.07	.95
Other	-1.25	1.23	-.17	-.1.02	.31
Personal Trainer	(reference)				
Sex					
Male	-1.01	1.01	-.14	-1.00	.32
Female	(reference)				
Age					
18-34	-0.86	0.93	-.13	-.93	.36
35+	(reference)				

R^2=*.07*, R^2_{adj} = -04

SAAT [Domain 5] Sensitive Behaviors of the Exercise Professional. To test the relationship between ACEs scores and participants' scores for Domain 5, data were analyzed using multiple linear regression. When controlling for job title, participant sex, and participant age using block entry method, there was not a significant linear relationship between ACEs scores and Domain 5 scores, $F(6,48) = .70$, $p = .65$, $R^2_{adj} = -.03$. (See Table 8.)

Table 8

Multiple Regression of ACEs onto SAAT Domain 5 Scores (N = 56)

Variable	*B*	*SE*	β	*t*	*p*
Constant	75.61	1.69		44.65	<.001
ACEs	0.09	0.38	0.04	0.23	.82
Job Title					
Group Exercise	-0.34	2.03	-0.03	-0.17	.87
DPT/PTA	-1.48	1.84	-0.15	-0.80	.43
Other	1.23	1.87	0.11	0.66	.51
Personal Trainer	(reference)				
Sex					
Male	-1.98	1.57	-0.19	-1.26	.21
Female	(reference)				
Age					
18-34	-0.12	1.38	-0.02	-0.09	.93
35+	(reference)				

R^2=*.08*, R^2_{adj} = -03

Discussion

It was hypothesized that exercise professionals with a history of personal trauma would score better (higher) on the SAAT than professionals without a traumatic background. The hypothesized statement that there is a positive correlation between professionals' personal ACEs scores and their SAAT scores is not supported by data analyses in this study. There was not a positive correlation between professionals' personal ACEs scores and their full SAAT scores. Overall, exercise professionals' ACEs scores were not strong predictors of SAAT scores or scores on specific content domains. Adverse childhood experiences are known predictors of interpersonal difficulties in adulthood (Poole et al., 2018). Even with personal past traumatic experiences, survivors

of abuse who are limited in the areas of interpersonal communication may not score differently on the SAAT than individuals who have not personally experienced childhood traumas.

One exception to the finding that ACEs were not strong predictors of SAAT scores was found when analyzing SAAT [Domain 2] Sexual Abuse and Health Concerns with consideration of job titles. Physical therapists and physical therapy assistants scored significantly lower on Domain 2 when compared to personal trainers. One potential reason for lower Domain 2 scores among physical therapists (and assistants) when compared to personal trainers may be that professional practices and education of physical therapy include focused treatments for specific injuries or rehabilitation (APTA, 2020a). Professionals in the highly-skilled and specialized area of exercise through physical therapy may be less focused on holistic or community health when compared to personal trainers. Physical therapists (and assistants) may not be as knowledgeable as personal trainers concerning trauma's impact on the presentation of poor health outcomes. This may mean that content related to sexual abuse and health concerns is a potential educational gap in physical therapy programs. To better determine the effect of education or specific job duties among professionals who practice physical therapy with survivors of abuse, a larger sample of data should be collected from physical therapists and physical therapy assistants.

Limitations

Data collected from the sample population ($N = 61$) is insufficient to be generalizable to all exercise professionals. Knowing that the survey was designed to

assess trauma-informed competencies and practices may have prompted some participants to consider answers through a new lens that is not representative of their typical behaviors or knowledge. All data was self-reported and the sample population was not randomized. No demographics, including credentials or professional status were verified. When reporting results, the researcher assumed that all participants answered honestly. The SAAT is not a fully validated assessment tool and reliability has not yet been verified.

Future Directions

Variations in the impact of prediction of ACEs on the SAAT score may be explained by the participant's age bracket. Conducting this same study with a greater sample population would clarify the potential interaction between ACEs scores and participant age bracket on SAAT performance. Future researchers may explore a potential interaction between ACEs score and participant's age bracket on SAAT performance. Future research should include larger samples representing exercise professionals with all job titles to further examine training and job-related differences in SAAT performance. The SAAT scale needs to be tested for reliability and be fully validated. Future research directions include repeating this study with a larger sample size and creating a final, validated version of the SAAT.

CHAPTER III: PSYCHOMETRICS OF THE SAAT – ITEM ANALYSIS, VALIDITY, RELIABILITY, AND FACTOR ANALYSIS

Sexual abuse (non-consensual sexual advances or contact) affects approximately one-in-four girls and one-in-thirteen boys (APA, 2020). Surviving sexual abuse shapes the way individuals experience the world. These lived experiences may be altered by the physical changes trauma creates (Van der Kolk, 2014). The physical responses and changes rooted in abusive episodes may include the effects of sexually transmitted diseases, sleep disturbances, or self-induced harm in response to trauma. Additional responses to the experience of abuse may consist of the misplaced use of coping strategies (such as tightening of muscles) as survivors continue to live with a felt need to protect themselves (Schachter et al., 1999) or survivors' discomfort working with exercise professionals (Melton et al., 2011; Smith-Marek et al., 2018). There are health consequences, such as depression, obesity, and cardiovascular disease, associated with past trauma (CDC, 2020c). Physical activity and exercise may improve or lessen the impact of poor health outcomes associated with past trauma while elevating mood and reducing stress (WHO, 2017). Physical activity and exercise are important components of total wellness and healthy trauma survivorship.

Exercise professionals such as personal trainers, group fitness instructors, physical therapists, athletic trainers, and coaches play important roles in health promotion, fitness gains, sport performance, and physical rehabilitation. Exercise professionals work in various settings and have differing levels of education and expertise, but all connect with and impact individuals who seek better health through exercise instruction. Trauma-informed exercise professionals may be able to prescribe

exercises to survivors of abuse as part of safe and effective programming. Research addressing interpersonal barriers to exercise caused by exercise professionals' lack of trauma-informed instruction presents a gap in knowledge surrounding best practices. Before educating exercise professionals in trauma-informed practices for exercise instruction, current professional competencies must be measured using a fully validated assessment tool.

Purpose of Research

The Sexual Abuse Assessment Tool [SAAT] was developed with the intent to assess exercise professionals' competencies when working with survivors of sexual abuse (Claypool et al., 2017). The purpose of this study is to further advance the SAAT by testing this assessment tool for internal consistency and validity.

Methods

Participants

Upon IRB approval [Appendix H] exercise professionals (18 + years) who primarily train adult clientele participated in this study (N = 92). Potential job titles included, but were not limited to, personal trainer, group fitness instructor, physical therapist, athletic trainer, and coach. Professionals who were under the age of eighteen or who primarily train youth clientele were excluded.

Most participants identified their job titles as group fitness instructor or personal trainer (59.6%). Most participants were professionally licensed or certified (95.6%). More females (77.8%) participated then males (22.2%), and more identified as white,

non-Hispanic (92.3%, 95.7%) than any other racial or ethnic groups. Nearly all participants worked in gyms and community centers, medical or rehab facilities, colleges and universities, or home and private practices (43.3%, 17.8%, 16.7%, 16.7%). More participants indicated that they were newer professionals indicating a career of 0 – 5 years (42%) than any other career length, and most have earned college degrees (bachelor's, 34.5%; master's 34.5%; or doctorates 19.5%). Participants indicated that they train both men and women (57.8%) across age groups. No participants only trained men. (Full demographics and SAAT scores are presented in Table 9.)

Table 9: Participant Descriptives and SAAT Scores

Participant Characteristics (N=92)

Participant Descriptives	***n***	**Valid %**	***M (SE)***
Participant Job Title			
Group Fitness Instructor or Personal Trainer	53	59.60%	208.89 (2.01)
DPT and PTA	20	18.00%	200.94 (2.71)
Other Job Title	16	22.50%	210.62 (3.53)
Professional Setting			
Gym or Community Center	39	43.30%	210.39 (2.47)
Medical or Rehab Facility	16	17.80%	202.93 (3.67)
College or University	15	16.70%	209.15 (3.70)
Private Practice	15	16.70%	202.27 (2.76)
Other Setting	5	5.60%	206.50 (6.89)
Professional Credentials			
Not Credentialed	4	4.30%	-
Credentialed	86	93.50%	214.33 (5.70)
Race			
White	84	92.30%	207.03 (1.61)
Black or African American	5	5.50%	206.00 (6.33)
Bi-Racial/Multi-Racial	1	1.10%	-
Prefer not to Answer	1	1.10%	-
Sex			
Male	20	21.70%	204.73 (3.22)
Female	70	76.10%	207.69 (1.72)
Participant Age (years)			
18-24	5	5.60%	-
25-34	42	47.20%	212.80 (3.64)
35-44	23	25.80%	208.71 (2.24)
45-54	9	10.10%	204.45 (3.14)
55-64	8	9.00%	208.14 (4.32)
65+	2	2.20%	-
Professional Experience (in years)			
0-5	37	42.00%	210.18 (1.94)
6-10	26	29.50%	207.36 (3.39)
11-15	13	14.80%	203.00 (3.57)
16- 20	3	3.40%	-
20+	9	10.20%	203.71 (4.85)
Education (Highest Level Completed)			
High School	10	11.50%	201.50 (3.53)
Bachelor's Degree	30	34.50%	207.16 (2.88)
Master's Degree	30	34.50%	211.46 (2.73)
Doctorate (Terminal)	17	19.50%	203.27 (2.89)

Note: M = mean; SE = standard error; -- = estimate missing due to small sample size

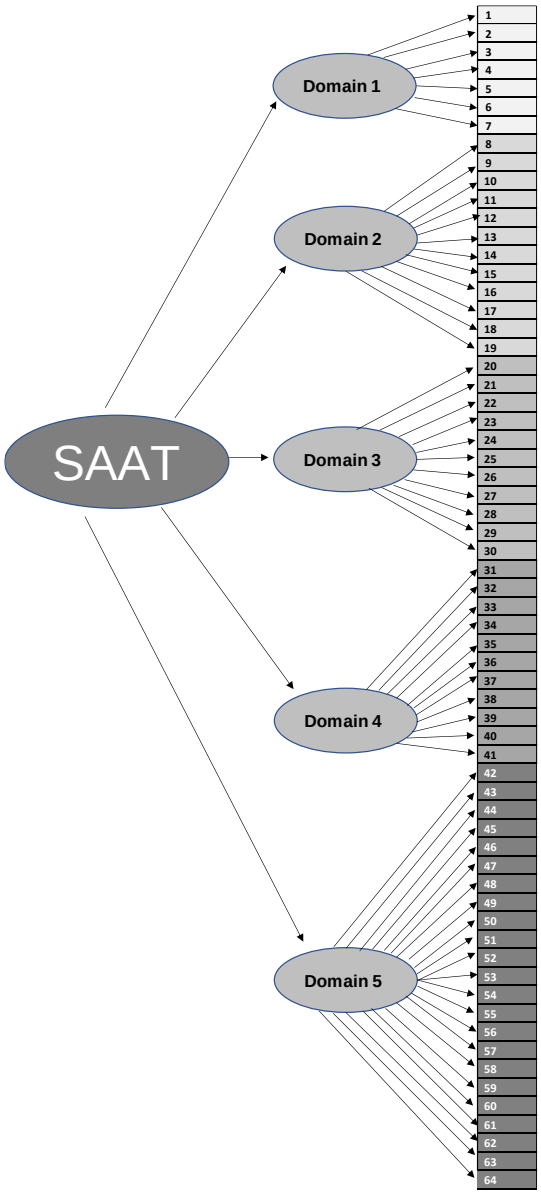
Assessment Tools

Sexual Abuse Assessment Tool [SAAT]. The [SAAT] was designed to assess exercise professionals' competencies regarding training women who have experienced sexual abuse. The primary researcher initially created SAAT assessment items to address five domains (Claypool et al., 2017):

1. Background Knowledge and Attitudes Toward Sexual Abuse and Extent of Sexual Abuse
2. Sexual Abuse and Health Concerns
3. Barriers to Exercise Among Women Who Have Experienced Sexual Abuse
4. Environmental and Interpersonal Emotional Triggers in Exercise Settings and During Exercise Programming
5. Sensitive Behaviors of the Exercise Professional

Multiple assessment items were written to assess each domain. (See Figure 1.) Assessment items were created by an exercise professional (expert) after a review of the literature. Subject matter experts assessed item content, and the scale was revised prior to pilot testing (Claypool et al., 2017). After initial survey development the SAAT included 64 assessment items [Appendix B].

Figure 1 Hypothesized Original Model – SAAT



Domain 1: Background Knowledge and Attitudes Toward Sexual Abuse and Extent of Sexual Abuse

Domain 2: Sexual Abuse and Health Concerns

Domain 3: Barriers to Exercise Among Women Who Have Experienced Sexual Abuse

Domain 4: Environmental and Interpersonal Emotional Triggers in Exercise Settings and During Exercise Programming

Domain 5: Sensitive Behaviors of the Exercise Professional

Researchers can create training and educational opportunities for exercise professionals who desire to provide trauma-informed practice from data collected using the SAAT. Collected data are useful for the development of best practices for training members of this special population (survivors of abuse). Response options for the SAAT are presented on a Likert type, 4-point scale. Possible scores for complete assessments range from 64 – 256 assuming that all questions were answered (Claypool et al., 2017). The pilot study indicated that the mean score = 177 *SD* 14.77.

The Trait Emotional Intelligence Questionnaire-Short Form [TEIQue-SF].

The TEIQue-SF is a thirty-question self-assessment tool to measure the construct of emotional intelligence [Appendix E]. The TEIQue-SF is an abbreviated assessment intended to expeditiously measure fifteen emotional intelligence facets (Cooper & Petrides, 2010). Potential TEIQue-SF scores range from 30 – 210 points with higher values considered to be better. Psychometric analyses show that TEIQUE-SF assessment items are good discriminators of emotional intelligence (Cooper & Petrides, 2010). Respondents of the TEIQue-SF use a Likert-type scale to select their perception of social-emotional experiences (Cooper & Petrides, 2010). Emotional intelligence is associated with social skills and may contribute to trauma-informed practice through interpersonal communication. Theoretically, exercise professionals' TEIQue-SF scores will positively correlate with SAAT scores. Questions from the thirty-question TEIQue-SF were administered along with the SAAT to test convergent validity. A positive directional correlation between exercise professionals' SAAT scores and TEIQue-SF scores will support scale validity (Groves et al., 2009).

The Final 21-item Scale to Assess Staff Knowledge, Attitude, and Practice Related to Trauma-informed Care [TIC KAP]. The TIC KAP [Appendix F] is a validated tool used to measure pediatric health care workers' trauma-informed knowledge, attitudes, and practice competencies (King et al., 2019). Potential TIC KAP scores range from 0 – 84 points with higher values considered to be better. Psychometric scale analyses for the TIC KAP development included content validity, construct validity, reliability measures, and factor analysis (King et al., 2019). Theoretically, exercise professionals' TIC KAP scores will positively correlate with SAAT scores. Questions from the TIC KAP were administered along with the SAAT to test convergent validity. A positive directional correlation between exercise professionals' SAAT scores and TIC KAP scores will support scale validity (King et al., 2019).

Procedures

Following Middle Tennessee State University's IRB approval [Appendix H], the SAAT was distributed via email, messaging, and social media to personal and professional contacts of the primary investigator and with consideration of professional and educational organizations that employ, certify, credential, and/or educate exercise professionals. Recruitment efforts were targeted at obtaining certified professionals, but non-certified professionals were permitted to participate. Recruitment messages were sent out to certifying agencies (4), campus recreation centers (20), college athletic groups (11), PTA programs (8), social media posts or contacts (8), university faculty groups (34), health research groups (19), physical therapy practices (14), individuals (60), and gyms and community centers (58). After questions verifying consent and potential risks

of participation in this survey [Appendix G], participants were asked demographic questions [Appendix A] completed the SAAT [Appendix B], TEIQue-SF [Appendix E], and TIC KAP [Appendix F] as one combined Qualtrics survey.

Data Analysis Plan

Results were analyzed using SPSS v. 27 software. SAAT items 2, 3, 4, 7, 31, 32, 34, 36, 38, 40, 42, 45, 46, 48, 49, 51, 56, 59, 61, 62, and 63 were reverse scored. Descriptive statistics (including mean and standard deviation) for each item were analyzed and reported. TEIQue-SF items 2. 4, 5, 7, 8, 10, 12, 13, 14, 16, 18, 22, 25, 26, and 28 were reverse scored (Cooper & Petrides, 2010).

Data Cleaning

Data were cleaned following the procedures modeled in the pilot study. Data collected from participants who self-identified as exercise professionals and completed a minimum of 70% of the survey questions were analyzed. Data from participants who did not complete at least 70% of the survey were deleted. Results for participants who respond in fewer than ten minutes were deleted to avoid potential straight-lining or random response selection (Groves et al., 2009). The SAAT scale remained unchanged between the pilot study and this current study. While identifying information was not collected and pilot participants were not strictly excluded, participant recruitment foci differed between the pilot and the current study. To increase sample size, reliability analyses included combined participant data from the pilot study and this current study (N = 92). Validity analyses including the use of the TEIQue – SF and the TIC KAP

included only participants from this current study (N = 57). For each scoring total, only results from participants who completed the entire scale or domain are reported.

Data Analysis

Reliability

Cronbach's alpha and factor analysis were used to re-assess internal consistency and factor loading as a larger scale follow up to the pilot study. An assessment of item-total correlations, alpha if item removed, and factor loadings were used to determine item-to-scale fit and arrive at a proposed, revised SAAT scale [Appendix C].

Construct Validity

To evaluate the convergent validity of the SAAT domains and scale, a Pearson correlation analysis was conducted to examine the relationship between the full scale and each individual domain with the TEIQue-SF [Appendix E] and the TIC KAP [Appendix F].

Results

Participant Scores (Full SAAT and Domains)

Scoring for the 64-item SAAT has a possible range of 64 – 256 points, with higher point values considered to be better scores (Claypool et al., 2017). Participants (N = 81) who completed the entire SAAT earned scores ranging from 171 – 242. Scores for each domain were also calculated and are presented in Table 10.

Table 10 SAAT and Domain Scores

Assessment	*N*	Possible Range	Achieved Range	*M (SD)*
Total SAAT Scale	81	64 - 256	171 - 242	207.04 (13.53)
Domain 1	92	7 - 28	16 - 27	22.61 (2.36)
Domain 2	90	12 - 48	27 - 47	37.66 (4.41)
Domain 3	87	11 - 44	23 - 44	37.15 (4.40)
Domain 4	91	11 - 44	26 - 43	34.48 (3.27)
Domain 5	84	23 - 92	64 - 84	74.65 (4.87)

Note: *N* = Number of Participants M = mean; SD = standard deviation

Domain 1: Background Knowledge and Attitudes Toward Sexual Abuse and Extent of Sexual Abuse

Domain 2: Sexual Abuse and Health Concerns

Domain 3: Barriers to Exercise Among Women Who Have Experienced Sexual Abuse

Domain 4: Environmental and Interpersonal Emotional Triggers in Exercise Settings and During Exercise Programming

Domain 5: Sensitive Behaviors of the Exercise Professional

Construct Validity (Full SAAT and Domains)

TIC KAP. Data were analyzed using bivariate correlation. The SAAT full scale and TIC KAP present significant correlation [$r(50) = .520$, $p < .001$]. Domain areas 1 (Background Knowledge and Attitudes Toward Sexual Abuse and Extent of Sexual Abuse), 2 (Sexual Abuse and Health Concerns) 3 (Barriers to Exercise Among Women Who Have Experienced Sexual Abuse), and 5 (Sensitive Behaviors of the Exercise Professional) were also significantly correlated with TIC KAP. (See Table 11 for details.)

Table 11 Correlation between TIC KAP, Full SAAT, and Domains

Scale	r	*N*	*p*
SAAT	.52**	52	< .001
Domain1	.30*	57	.03
Domain2	.38**	56	.004
Domain3	.55**	55	< .001
Domain4	0.17	57	.20
Domain5	.32*	53	.02

Notes: *N* = Number of Participants r = Pearson's Correlation p = significant, *significant at 0.05, **significant at 0.01

SAAT: Sexual Abuse Assessment Tool

Domain 1: Background Knowledge and Attitudes Toward Sexual Abuse and Extent of Sexual Abuse

Domain 2: Sexual Abuse and Health Concerns

Domain 3: Barriers to Exercise Among Women Who Have Experienced Sexual Abuse

Domain 4: Environmental and Interpersonal Emotional Triggers in Exercise Settings and During Exercise Programming

Domain 5: Sensitive Behaviors of the Exercise Professional

TEIQue-SF. Data were analyzed using bivariate correlation. The SAAT full scale and TEIQue-SF were not significantly correlated [$r(50) = .113$, $p = .43$]. Domain area 3 (Barriers to Exercise Among Women Who Have Experienced Sexual Abuse) did significantly correlate with TEIQue-SF [$r(52) = .34$, $p = .01$]. (See Table 12 for details.)

Table 12 Correlation between TEIQue-SF, Full SAAT, and Domains

Scale	*r*	*N*	*p*
SAAT	.11	52	.43
Domain1	-.03	57	.84
Domain2	.20	55	.15
Domain3	.34*	54	.01
Domain4	-.21	56	.12
Domain5	.03	53	.83

Notes: *N* = Number of Participants r = Pearson's Correlation p = significant, *significant at 0.05

SAAT: Sexual Abuse Assessment Tool

Domain 1: Background Knowledge and Attitudes Toward Sexual Abuse and Extent of Sexual Abuse

Domain 2: Sexual Abuse and Health Concerns

Domain 3: Barriers to Exercise Among Women Who Have Experienced Sexual Abuse

Domain 4: Environmental and Interpersonal Emotional Triggers in Exercise Settings and During Exercise Programming

Domain 5: Sensitive Behaviors of the Exercise Professional

SAAT Full Scale Results

Cronbach's alpha, alpha if item were removed, inter-item and item-total correlations were analyzed to ensure retained SAAT items were internally consistent (Boateng et al., 2018). Reliability results for the original scale and domains are presented in Table 13. After evaluating data, twenty-three items were deleted for the proposed revised version of the SAAT [Appendix C]. The sample size was not large enough to report factor analyses data for the full SAAT scale.

Table 13 (Total SAAT)

Item level descriptive statistics, item-total correlations, α if item (N=82)

Item	*M (SD)*	Corrected Item-Total Correlation	α If Removed
1	3.15 (0.85)	.10	.85
2 R	3.47 (0.61)	.48	.84
3 R	2.41 (0.91)	.18	.84
4 R	3.41 (0.07)	.05	.85
5	3.78 (0.50)	.34	.84
6	3.37 (0.56)	.31	.84
7 R	3.13 (0.86)	.18	.84
8	2.30 (0.80)	.43	.84
9	2.46 (0.76)	.41	.84
10	3.07 (0.79)	.42	.84
11	3.33 (0.61)	.59	.84
12	3.40 (0.52)	.46	.84
13	3.40 (0.56)	.35	.84
14	3.74 (0.44)	.41	.84
15	2.93 (0.65)	.17	.84
16	3.67 (0.55)	.31	.84
17	3.54 (0.57)	.42	.84
18	3.06 (0.66)	.34	.84
19	3.01 (0.64)	.24	.84
20	3.35 (0.62)	.51	.84
21	3.41 (0.57)	.51	.84
22	3.33 (0.69)	.51	.84
23	3.69 (0.52)	.57	.84
24	2.93 (0.74)	.40	.84
25	3.41 (0.61)	.41	.84
26	3.62 (0.52)	.53	.84
27	3.57 (0.57)	.49	.84
28	3.47 (0.61)	.43	.84
29	3.21 (0.74)	.34	.84
30	3.30 (0.70)	.41	.84
31 R	1.83 (0.93)	-.05	.85
32 R	2.31 (0.78)	.01	.85
33	3.83 (0.50)	.24	.84
34 R	3.31 (0.85)	.21	.84
35	3.42 (0.77)	.52	.84
36 R	3.46 (0.70)	.30	.84

Item	*M (SD)*	Corrected Item-Total Correlation	α If Removed
37	3.75 (0.46)	.20	.84
38 R	3.36 (0.78)	.28	.84
39	3.30 (0.64)	.52	.84
40 R	2.49 (0.90)	-.01	.85
41	3.37 (0.62)	.48	.84
42 R	3.49 (0.65)	.46	.84
43	3.56 (0.71)	-.06	.85
44	3.85 (0.45)	.14	.84
45 R	3.30 (0.98)	.26	.84
46 R	1.57 (0.63)	-.16	.85
47	3.46 (0.55)	.43	.84
48 R	3.25 (0.81)	.27	.84
49 R	2.84 (0.87)	.21	.84
50	3.93 (0.26)	.23	.84
51 R	3.79 (0.56)	.35	.84
52	3.60 (0.69)	.00	.85
53	3.44 (0.72)	.41	.84
54	3.44 (0.76)	.10	.85
55	3.81 (0.39)	.26	.84
56 R	1.63 (0.68)	.03	.85
57	3.41 (0.52)	-.01	.85
58	3.46 (0.61)	.05	.85
59 R	2.77 (0.84)	.24	.84
60	3.60 (0.63)	.03	.85
61 R	2.69 (1.09)	.05	.85
62 R	2.73 (1.14)	.15	.85
63 R	3.41 (0.83)	.23	.84
64	3.77 (0.51)	.11	.84

Note: R = Item was reverse scored
Items 1 – 7 reflect Domain 1
Items 8 – 9 reflect Domain 2
Items 20 – 30 reflect Domain 3
Items 31 – 41 reflect Domain 4
Items 42 – 64 reflect Domain 5

SAAT Domain 1 (Background Knowledge and Attitudes Toward Sexual Abuse and Extent of Sexual Abuse) Results

Cronbach's alpha, alpha if item were removed, inter-item and item-total correlations were analyzed to ensure retained items from Domain 1 were internally consistent (Boateng et al., 2018). Reliability results for the original scale and domains are presented in Table 14. After evaluating data, two items from Domain 1 will be deleted for the proposed revised version of the SAAT [Appendix C]. The proposed domain structure was tested using an exploratory factor analysis. Based on the item-value cut off and visual inspection of the scree plot the domain contained one factor. Based on factor loadings, items (1 and 4) did not load well and were removed in sequence before arriving at a proposed, revised scale.

Table 14 (Domain 1)
Item level descriptive statistics, item-total correlations, α if item removed (N=92)

Item	*M (SD)*	Corrected Item-Total Correlation	Communality	α if Removed	Factor Loadings
1	3.15 (0.85)	-.05	.01	.47	-.12
2 R	3.47 (0.60)	.33	.50	.26	.71
3 R	2.35 (0.92)	.19	.13	.32	.36
4 R	3.40 (0.71)	.18	.02	.33	.14
5	3.75 (0.57)	.25	.09	.30	.30
6	3.37 (0.55)	.25	.18	.31	.43
7 R	3.12 (0.85)	.13	.11	.36	.33

Note: R = Item was reverse scored

SAAT Domain 2 (Sexual Abuse and Health Concerns) Results

Cronbach's alpha, alpha if item were removed, inter-item and item-total correlations were analyzed to ensure retained items from Domain 2 were internally consistent (Boateng et al., 2018). Reliability results for the original scale and domains are presented in Table 15. After evaluating data, one item from Domain 2 will be deleted for the proposed revised version of the SAAT [Appendix C]. The proposed domain structure was tested using an exploratory factor analysis. Based on the item-value cut off and visual inspection of the scree plot the domain contained one factor. Based on factor loadings, one item (15) did not load well and was removed before arriving at a proposed, revised scale.

Table 15 (Domain 2)
Item level descriptive statistics, item-total correlations, α if item removed (N=90)

Item	*M (SD)*	Corrected Item-Total Correlation	Communality	α if Removed	Factor Loadings
8	2.29 (0.80)	.61	.51	.79	.71
9	2.44 (0.75)	.58	.47	.79	.68
10	3.07 (0.75)	.55	.45	.79	.67
11	3.33 (0.60)	.59	.50	.79	.71
12	3.39 (0.51)	.57	.38	.79	.61
13	3.40 (0.56)	.36	.15	.81	.38
14	3.71 (0.53)	.56	.13	.81	.36
15	2.92 (0.64)	.31	.10	.81	.31
16	3.62 (0.57)	.40	.15	.81	.39
17	3.52 (0.59)	.45	.20	.80	.45
18	2.99 (0.68)	.34	.23	.80	.47
19	2.97 (.066)	.24	.13	.81	.36

SAAT Domain 3 (Barriers to Exercise Among Women Who Have Experienced Sexual Abuse) Results

Cronbach's alpha, alpha if item were removed, inter-item and item-total correlations were analyzed to ensure retained items from Domain 3 were internally consistent (Boateng et al., 2018). Reliability results for the original scale and domains are presented in Table 16. After evaluating data, two items from Domain 3 will be deleted for the proposed revised version of the SAAT [Appendix C]. The proposed domain structure was tested using an exploratory factor analysis. Based on the item-value cut off and visual inspection of the scree plot the domain contained one factor. Based on factor loadings, items (24 and 29) did not load well and were removed in sequence before arriving at a proposed, revised scale.

Table 16 (Domain 3)
Item level descriptive statistics, item-total correlations, α if item removed (N=87)

Item	*M (SD)*	Corrected Item-Total Correlation	Communality	α if Removed	Factor Loadings
20	3.32 (0.62)	.55	.38	.84	.62
21	3.39 (0.56)	.60	.47	.84	.68
22	3.32 (0.67)	.66	.53	.83	.73
23	3.69 (0.51)	.54	.41	.84	.64
24	2.91 (0.74)	.31	.11	.86	.33
25	3.38 (0.62)	.52	.32	.84	.57
26	3.62 (0.51)	.61	.48	.84	.69
27	3.56 (0.56)	.61	.46	.84	.68
28	3.47 (0.61)	.53	.32	.84	.57
29	3.20 (0.75)	.55	.30	.84	.54
30	3.29 (0.70)	.60	.32	.84	.57

SAAT Domain 4 (Environmental and Interpersonal Emotional Triggers in Exercise Settings and During Exercise Programming) Results

Cronbach's alpha, alpha if item were removed, inter-item and item-total correlations were analyzed to ensure retained items from Domain 4 were internally consistent (Boateng et al., 2018). Reliability results for the original scale and domains are presented in Table 17. After evaluating data, three items from Domain 4 will be deleted for the proposed revised version of the SAAT [Appendix C]. The proposed domain structure was tested using an exploratory factor analysis. Based on the item-value cut off and visual inspection of the scree plot the domain contained one factor. Based on factor loadings, items (34, 37, and 40) did not load well and were removed before arriving at a proposed, revised scale.

Table 17 (Domain 4)
Item level descriptive statistics, item-total correlations, α if item removed (N=91)

Item	*M (SD)*	Corrected Item-Total Correlation	Communality	α if Removed	Factor Loadings
31 R	1.89 (0.98)	.01	.43	.53	-.25
32 R	2.33 (0.78)	.01	.34	.52	-.23
33	3.81 (0.56)	.14	.30	.47	.46
34 R	3.33 (0.83)	.25	.07	.44	.17
35	3.40 (0.80)	.35	.76	.41	.90
36 R	3.45 (0.69)	.34	.14	.41	.21
37	3.76 (0.46)	-.06	.04	.51	.01
38 R	3.36 (0.75)	.27	.10	.44	.27
39	3.29 (0.62)	.35	.48	.42	.67
40 R	2.49 (0.86)	.09	.04	.50	.08
41	3.37 (0.63)	.47	.54	.39	.68

Note: R = Item was reverse scored

SAAT Domain 5 (Sensitive Behaviors of the Exercise Professional) Results

Cronbach's alpha, alpha if item were removed, inter-item and item-total correlations were analyzed to ensure retained items from Domain 5 were internally consistent (Boateng et al., 2018). Reliability results for the original scale and domains are presented in Table 18. After evaluating data, fifteen items from Domain 5 will be deleted for the proposed revised version of the SAAT [Appendix C]. The proposed domain structure was tested using an exploratory factor analysis. Based on the item-value cut off and visual inspection of the scree plot the domain contained one factor. Based on factor loadings, items (44, 52, 43, 54, 58, 57, 46, 60, 61, 64, 55, 62, 50, 53, and 56) did not load well and were removed in sequence before arriving at a proposed, revised scale.

Table 18 (Domain 5)

Item level descriptive statistics, item-total correlations, α if item removed (N=84)

Item	*M (SD)*	Corrected Item-Total Correlation	Communality	α if Removed	Factor Loadings
42 R	3.46 (0.70)	.34	.22	.47	.47
43	3.57 (0.70)	-.18	.03	.55	-.18
44	3.86 (0.44)	.12	.02	.51	.12
45 R	3.21 (1.03)	.41	.30	.44	.55
46 R	1.57 (0.63)	-.08	.00	.53	-.03
47	3.45 (0.55)	.20	.08	.50	.28
48 R	3.24 (0.82)	.42	.38	.45	.62
49 R	2.82 (0.87)	.21	.10	.49	.31
50	3.93 (0.26)	.26	.02	.50	.13
51 R	3.77 (0.59)	.24	.10	.49	.32
52	3.60 (0.68)	-.01	.00	.52	-.03
53	3.46 90.72)	.28	.06	.48	.23
54	3.45 (0.75)	-.04	.00	.53	-.06
55	3.81 (0.40)	.18	.01	.50	.12
56 R	1.62 (0.67)	.09	.02	.51	.13
57	3.40 (0.54)	-.03	.02	.53	-.12
58	3.43 (0.63)	-.02	.00	.53	.03
59 R	2.75 (0.83)	.34	.34	.46	.58
60	3.61 (0.62)	.04	.00	.52	-.02
61 R	2.71 (1.09)	.12	.02	.51	.14
62 R	2.75 (1.13)	.15	.04	.51	.21
63 R	3.40 (0.84)	.26	.28	.78	.53
64	3.76 (0.51)	.17	.02	.50	.15

Note: R = Item was reverse scored

Discussion

For some survivors of abuse, exercise participation and instruction from exercise professionals may be triggering and, therefore, avoided (Schachter et al., 1999; Smith-Marek et al., 2018). Exercise professionals who practice trauma-informed instruction may provide safe and effective exercise programming for survivors of abuse. This

sensitive instruction provides space for survivors of abuse to experience fitness and sport performance gains, physical rehabilitation, and enjoyable recreation.

The aim here was to further develop the Sexual Abuse Assessment Tool [SAAT] by measuring internal consistency and validity. Analyses from this present study provide evidence that the SAAT displays convergent validity through a significant correlation with the TIC KAP. The proposed revised version of the SAAT appears to be a reliable evaluative tool ($\alpha \sim .87$) that assesses trauma-informed practice among exercise professionals. Content from items deleted from the SAAT may present information that remains useful for teaching purposes but is not necessary for measuring competencies and sensitive practice.

Limitations

Data collected from the sample population (N =92) is insufficient to be generalizable to all exercise professionals. Knowing that the survey was designed to assess trauma-informed competencies and practices may have prompted some participants to consider answers through a new lens that is not representative of their typical behaviors or knowledge. All data was self-reported and the sample population was not randomized. No demographics, including credentials or professional status, were verified. Because literature is limited in trauma-informed care among exercise professionals, no information associated with potential scales to demonstrate convergent validity was available. The TEIQue-SF and TIC KAP were used based on theory and in the absence of strong literature in this area.

Future Directions

Analyses from this study provide evidence that the SAAT is now ready for the final stages of development. Assessment items that did not load well were removed before arriving at a proposed, revised scale. The proposed revised SAAT includes 41 items and five domains [Appendix C]. Future researchers should administer the revised scale to a larger sample group as part of a full scale validation study. Once the SAAT is finalized, a scoring scale should be created. Future results will be useful for the creation of educational and training content for exercise professionals.

CHAPTER IV: SUMMARY OF DISSERTATION

Past trauma, including sexual abuse, is a determinant of exercise participation. A traumatic violation of boundaries by a person in power can impact relationships and activity choices, including decisions surrounding exercise behaviors and professionals (Schachter et al., 1999). For various reasons, clients who desire exercise training or physical rehabilitation may not disclose any or all forms of past abuse, or how those past traumas present daily, to the exercise professionals with whom they work (Alaggia et al., 2019). Exercise professionals who practice with trauma-awareness can prescribe and facilitate exercises with sensitivity to create safe and effective exercise programming even when past abuses have not been disclosed.

Adverse Childhood Experiences [ACEs] are disadvantageous events or traumas that occur in an individual's life before the age of 18 (CDC, 2020). Childhood traumas can affect health behaviors and outcomes (Danielson & Saxena, 2019) and interpersonal communication (Poole et al., 2018). Past abusive episodes have the potential to affect everyone differently. Exercise professionals who have experienced abuse themselves may be more aware of potential triggers or sensitive practices related to exercise programming. However, because stresses associated with past trauma and the coping skills used to combat those stressors affect survivors differently (Lazarus & Folkman, 1984), some professionals with past abuses may lack the interpersonal communication skills needed to practice with professional competencies in the area of trauma-informed exercise programming (Poole et al., 2018).

The Sexual Abuse Assessment Tool [SAAT] was created to assess the competencies of exercise professionals as they work with survivors of sexual abuse (Claypool et al., 2017). The SAAT is a 64-item assessment that contains five main content domains (Background Knowledge and Attitudes Toward Sexual Abuse and Extent of Sexual Abuse, Sexual Abuse and Health Concerns, Barriers to Exercise Among Women Who Have Experienced Sexual Abuse, Environmental and Interpersonal Emotional Triggers in Exercise Settings and During Exercise Programming, and Sensitive Behaviors of the Exercise Professional (Claypool et al., 2017). To determine a potential link between exercise professionals' personal number of ACEs and their SAAT performance, the two assessments were administered together to exercise professionals (group fitness instructors, personal trainers, physical therapists and assistants, coaches, and athletic trainers). Multiple linear regression analyses show no significant linear regression between ACEs scores and SAAT scores except for domain-specific SAAT scores related to sexual abuse and health concerns. Analysis of ACEs scores and domain-specific scores show that physical therapists and assistants scored significantly lower in content pertaining to sexual abuse and health concerns when compared to personal trainers.

The results of this research study did not support the hypothesis that exercise professionals' personal ACEs scores are predictive of higher total SAAT scores. However, data from the present analysis did show a likely effect of job title on SAAT performance, especially competencies related to sexual abuse and health concerns. There exists a gap in the literature related to the presence of ACEs among specific exercise or health professionals; however, it is established that past trauma is a determinant of

educational attainment (both personal and parental), and thus career options (Berkman et al., 2014). Physical therapists and physical therapy assistants may have higher levels of education and more specialized training but fewer or different personal traumas than other exercise professionals such as personal trainers, group fitness instructors, coaches, or athletic trainers (APTA, 2020). Survivors of abuse have highlighted the importance of being treated as a whole person in physical therapy sessions not just as, or for, an injured body part (Schachter et al., 1999). The specific expertise of physical therapists for rehabilitation after injuries or surgeries may present unique challenges in sensitive practice compared to professionals who train apparently healthy, or non-injured, clientele. The combined impact of past traumas on educational attainment, career advancement, and SAAT scores should be further examined across groups with a larger sample.

Future research opportunities related to ACEs and the professional competencies measured by the SAAT are vast. Total scores from the ACEs self-assessment scale, reflective of all ten forms of childhood trauma, were used as the independent variable for regression analyses. It is possible that specific traumas, for example, childhood sexual abuse, may individually be predictive of SAAT performance even though total scores were not. Similarly, it may be the case that a categorical number of ACEs may predict SAAT performance. Results from this study show that eight (13.10%) participants indicated experiencing childhood sexual abuse. A small sample of physical therapists and assistants (n = 19) scored lower on assessment items pertaining to sexual abuse and health concerns when compared to personal trainers (n = 15). Further examinations of the effects of job title and the role of professional education and training are relevant to this

line of inquiry. Due to the small sample size, research areas pertaining to types of ACEs or specific job titles were beyond the scope of this present study.

The SAAT was created in 2017 and has not yet been fully validated (Claypool et al., 2017). Research toward the advancement and continued development of the SAAT was addressed through this research. Compared to the pilot study with a mean score = 177 *SD* 14.77, exercise professionals' SAAT scores in this study were higher with a mean score = 207.04 *SD* 13.53. A higher mean score associated with a larger sample size indicates the importance of finalizing the development of the SAAT with a larger scale study.

To assess construct validity, two additional scales were used to measure convergent validity. The Trait Emotional Intelligence Questionnaire – Short Form [TEIQue-SF] and the Final 21-item Scale to Assess Staff Knowledge, Attitude, and Practice Related to Trauma-informed Care [TIC KAP] were administered with the SAAT in the validation study [Appendices B, E, and F]. The TEIQue-SF and TIC KAP were used to determine if exercise professionals' emotional intelligence (Cooper & Petrides, 2010) and knowledge of trauma-informed care related to other health professions (King et al., 2019) produced similar results to SAAT performance. Overall, exercise professionals who scored well on the TIC KAP also performed well on the SAAT; however, positive correlations were not found when analyzing the TEIQue-SF and the SAAT. The TEIQue-SF and one SAAT content domain-specific to barriers to exercise among women who have experienced sexual abuse did produce evidence of correlation and was the exception to the overall finding that results from the two scales were not

correlated. Exercise professionals with high emotional intelligence may still require training specific to trauma-informed care to be professionally competent when training survivors of sexual abuse.

To further advance the SAAT, internal consistency and factor loading were assessed using Cronbach's alpha and factor analysis. Item-total correlations, alpha if item removed, and factor loadings were analyzed to inform SAAT revisions. Twenty-three items were removed one at a time based on their factor loadings within each content domain. Reverse-scored assessment items did not perform as well as items with agreement as an ideal response. The initial 64-item SAAT scale [Appendix B] was revised to a new proposed version [Appendix C]. Preliminary data analyses of the proposed, revised version of the SAAT show evidence that it is a reliable tool ($\alpha \sim .87$) appropriate for assessing trauma-informed competencies and practices among exercise professionals.

A full validation study of the proposed revised SAAT remains necessary. The 41-item proposed, revised version of the SAAT should be administered to exercise professionals, and reliability and validity analyses should be repeated. Once a fully validated, reliable version of the SAAT has been finalized, it will be useful to assess the competencies of exercise professionals as they work with survivors of past sexual abuse.

Data collected with the fully validated, reliable version of the SAAT and the initial domains, competencies, and descriptors document (Claypool et al., 2017) may be used to create multiple educational and training opportunities. Data collected from large samples of personal trainers, group fitness instructors, physical therapists, physical

therapy assistants, athletic trainers, and coaches are expected to highlight essential differences in trauma-informed competencies across groups. Performance differences can inform the development of educational and training opportunities specific to each professional scope of practice. Opportunities for advancing professional education and development include university instruction, continued professional education certifications or credits, and public service and training options.

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APPENDICES

Appendix A: Demographic Questions

Demographics

Are you an exercise professional?
(For this study, an exercise professional is an individual who teaches or prescribes physical exercises to adults as through either part or full time employment. Exercises may be related to, but are not limited to, to fitness, sport, rehab, physical therapy, or recreation.)

Yes
No

Which of the following best describes your role as an exercise professional?

Group Fitness Instructor (any format also including dance/studio work)
Personal Trainer
Coach (Sport)
Physical Therapist/Assistant to Physical Therapist
Athletic Trainer
Other

Which of the following best describes your professional credentials/oversight?

Professionally Licensed or Certified (ACSM-CPT, NCCA, OCS, ATC, ACE Certified, etc.)
National or State Licensed or Certified (MD, PT, etc.)
Specialty Certification (Barre, CrossFit, etc.)
Other (Please Specify)
I have more than one of these credentials.
I am not certified.

In what setting do you most frequently work as an exercise professional?

Gym or Community Center
Medical Facility or Rehab Center
College or University
Adult Sport League (any level not associated with a college or university)
Home/Private Practice/Residential Group Home
Other

What best describes the highest level of education you have <u>completed</u>?

High School or Equivalency Program
Bachelor's Degree
Master's Degree
Doctorate or Equivalent Terminal Degree

How many years have you been an exercise professional?

0 – 5 years
6 – 10 years
11 – 15 years
16 – 20 years
More than 20 years

The majority of my clients are _____.

Men
Women
Both Men and Women

The majority of my clients are _____.

18 – 25 years old
26 – 55 years old
55+ years old
from multiple or all age groups

How old are you (in years)?

18 – 24
25 – 34
35 – 44
45 – 54
55 – 64
65 or older

What was your biological sex at birth?

Male
Female
Intersex
Prefer Not to Answer

Which of the following best describes your race?

White
Asian
American Indian or Alaska Native
Native Hawaiian or Pacific Islander
Bi-Racial/Multi-Racial
I do not know/ Prefer not to answer

Are you Hispanic/Latino?

Yes
No
I do not know/Prefer not to answer

Appendix B: The Sexual Abuse Assessment Tool [SAAT]

SEXUAL ABUSE ASSESSMENT TOOL (SAAT)

Response Anchors for Items 1-47 are:			
Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree

1. Sexual abuse is more likely to be experienced by females compared to males.*

2. Sexual abuse is more likely to occur between two strangers compared to persons who know and are familiar with each other. (R)

3. If a survivor is willing to speak up, legal protection and assistance are available for all forms of unwanted sexual experiences (rape, abuse, harassment, etc.). (R)

4. Most health history forms contain questions regarding potential psychological and/or emotional barriers to exercise that are related to sexual abuse. (R)*

5. The percentage of sexual abuse cases is difficult to pinpoint because not all sexual abuse cases are reported.

6. Definitions of and laws surrounding sexual abuse differ among states; therefore, making it difficult to accurately estimate the amount of cases.

7. If a client does not disclose past sexual abuse to her exercise trainer, the trainer should assume that abuse has not occurred. (R)

8. Women who have experienced sexual abuse are more likely to be obese compared to those who have not been abused sexually.

9. History of severe sexual abuse is related to an increased risk for central (or abdominal) obesity.

10. Obesity in women who have experienced sexual abuse may be linked to physiological (physical) factors altered as a result of traumatic experiences.

11. Obesity in women who have experienced sexual abuse may be related to emotional responses to the trauma of their abusive situation(s).

12. Stress associated with past sexual abuse may be expressed as binge eating disorder or general overeating.

13. Neurological changes related to sexual abuse may be associated with poor social relationships.

14. Neurological changes related to sexual abuse can lead to depression.

15. Neurological changes associated with sexual abuse can alter glucose metabolism.*

16. Adolescents who have a family or personal history of sexual abuse are more likely to experience higher rates of anxiety compared to adolescents who have not experienced these forms of sexual abuse.

17. Adolescents who have a family or personal history of sexual abuse are more likely to experience thoughts and acts of suicide compared to adolescents who have not experienced these forms of sexual abuse.

18. The severity of anorexia nervosa is greater among individuals who have experienced sexual abuse.

19. Clients who exercise excessively (or who experience anger or great disappointment if a workout is missed) may be showing signs of underlying anxiety related to having experienced past sexual abuse.

20. Physical scarring caused by previous sexual abuse in women may create barriers to exercise.

21. Complications from sexually transmitted diseases, such as rashes or side effects from medications, may create physiological (physical) barriers to exercise in women who have experienced sexual abuse.

22. Effects of malnourishment, such as low bone density, may create physiological (physical) barriers to exercise in women who have experienced sexual abuse.

23. Sleep disturbances associated with past sexual abuse, such as night terrors or post-traumatic stress disorder, may negatively impact exercise performance.

24. Youth who experience sexual abuse at home are less likely to engage in lifelong exercise and sport activities compared to youth who live in homes where sexual abuse is not present.*

25. Clothing worn during exercise, such as swimwear, tight-fitting attire, or clothes that allow skin to show, may create an emotional barrier to exercise participation among women who have experienced sexual abuse.

26. In order to hide self-inflicted physical scarring, a woman who has experienced sexual abuse may resist participating in physical activity and exercise that require swimwear or clothes that allow skin to show.

27. Women who have been sexually abused may experience emotional barriers to exercise if they wear swimwear or clothes that are tight fitting or that expose skin.

28. Abusers may attempt to control the body weight or appearance of their victims by restricting their availability to food and nourishment.

29. Abusers may attempt to control the body weight or appearance of their victims by encouraging overeating by the individuals being abused.*

30. Abusers may attempt to control the body weight or appearance of their victims by discouraging exercise participation by the persons being abused.

31. An exercise professional should tell clients how much pain or discomfort they should feel during a given exercise movement. (R)

32. If a woman discloses that she has experienced sexual abuse, she should be assigned a female trainer to make her feel more comfortable. (R)

33. An exercise professional should always request permission to touch a client.

34. Once a trusting relationship is established, exercise professionals do not need to request permission to touch their clients. (R)*

35. Any type of physical activity may trigger memories or emotions from past sexual abuse.

36. If clients who have experienced sexual abuse feel emotionally uncomfortable performing a particular exercise or physical movement, they are likely to be forthcoming (openly share) about why they feel uncomfortable. (R)

37. An exercise professional should be open to changing a client's exercise plan if the client says (s)he does not like one or more of the exercises.*

38. If clients who have been abused sexually feel physically uncomfortable performing a given exercise or physical movement, they are likely to explain why they feel uncomfortable. (R)

39. Underlying emotions related to past sexual abuse may be triggered by exercising in a facility or complex.

40. Being able to change clothes in sex-specific fitness and gym facilities removes emotional barriers to exercise for women who have experienced past sexual abuse. (R)*

41. Involuntary physical responses tied to past sexual abuse may negatively affect exercise performance.

42. There is nothing that an exercise professional can do to show sensitivity about past sexual abuse if a client does not disclose the abuse. (R)

43. Exercise professionals should display a professional focus on physical health.*

44. Exercise professionals should encourage clients to find a healthy emotional support system.*

45. Exercise professionals should display a professional focus on a client's physique and physical attractiveness. (R)

46. Exercise professionals who display sensitive practice will help by verbalizing how a client's body should feel when performing a given exercise. (R)*

47. Clients who have experienced sexual abuse may disconnect or appear as though they are not paying attention or become unaware of their bodies when a movement triggers a traumatic memory.

Response Anchors for Items 48- 64 are:
Very Inappropriate Sometimes Inappropriate Sometimes Appropriate Very Appropriate

After you describe how to perform a new exercise, you notice that your female client tenses her muscles as she moves toward the starting position, but does not say anything. How should you respond to this situation?

Select the degree to which you believe each response is appropriate.

48. You should encourage your client by commenting on the improvements you've seen in her body shape. (R)

49. You should ask your client to look in the mirror to check her own form even if she expresses some hesitation in doing so. (R)

50. You should offer your client a comparable modification of the exercise and allow her to choose which form of the exercise she prefers.*

You have been working with a client for two months. She has appeared to be uncooperative at times, even though she seems to really want to lose weight. As your client finishes up with an exercise set, you place your hand on her lower back to remind her to use proper form. In response, your client abruptly stops exercising, even though you believe she could have easily completed the set. How should you respond to this situation?

Select the degree to which you believe each response is appropriate.

51. You should tell your client to finish the exercise set, while continuing to help her maintain correct body form by keeping your hand on (or near) her back. (R)

52. You should provide her with additional room by standing a little farther away from her and use verbal cuing only if her form begins to deteriorate.*

53. When meeting with a client, an exercise professional allows her to sit wherever she wants to, rather than direct her to a particular seat in the office. This behavior is _____.*

54. During an initial office meeting with a new female client, she constantly looks over her shoulder, gazes out the window, and seems distracted and disinterested. The exercise professional asks the client if she would feel comfortable moving the meeting to an open table at the front of the facility. How appropriate is this action?*

A new female client walks into your fitness class. How appropriate are the following next steps?

55. Invite your client to set up her exercise equipment where she feels most comfortable.*

56. Offer to set up her exercise equipment in a space where she can clearly see you during the training session. (R)*

While working with a client on an exercise machine, she begins to stare past the machine; her mind appears to be somewhere else. She continues exercising, but seems disconnected from her surroundings and forgets how many repetitions she has completed. How appropriate are the following next steps?

57. You should evaluate your client to see if she is feeling okay since she seems overly distracted and unfocused during her workout.*

58. You should state your client's name and allow her to stop exercising. If the exercise session is continued, ask if she would rather perform a different (comparable) exercise.*

59. You should ask your client to stop exercising and help her off the exercise machine so that you can adjust the resistance. (R)

A female client confides in you that her husband has sexually abused her and her 14-year-old son and that she has never admitted this to anyone else before. How should you respond to your client's remarks?

Select the degree to which you believe each response is appropriate.

60. Offer her information about local resources and inform local authorities of your client's statement regarding her son.*

61. Respect her privacy and withhold sharing this information with others. (R)*

62. Offer to talk your client through her feelings and provide counsel whenever she is ready to share more information about the incident. (R)*

A new member in your group fitness class sometimes fails to participate in certain exercises, even though she appears to be strong enough to participate. How should you respond to this situation?

Select the degree to which you believe each response is appropriate.

63. Remind this member that "sticking to the program" is the only way for results to occur. (R)

64. Provide this member with modifications for the exercise movement.*

(R) Indicates question responses should be reverse scored.
* Indicates item removed during revision.

Appendix C: Proposed Revised Version of the SAAT

SEXUAL ABUSE ASSESSMENT TOOL (SAAT)

Response Anchors for Items 1-47 are:			
Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree

1. Sexual abuse is more likely to occur between two strangers compared to persons who know and are familiar with each other. (R)

2. If a survivor is willing to speak up, legal protection and assistance are available for all forms of unwanted sexual experiences (rape, abuse, harassment, etc.). (R)

3. The percentage of sexual abuse cases is difficult to pinpoint because not all sexual abuse cases are reported.

4. Definitions of and laws surrounding sexual abuse differ among states; therefore, making it difficult to accurately estimate the amount of cases.

5. If a client does not disclose past sexual abuse to her exercise trainer, the trainer should assume that abuse has not occurred. (R)

6. Women who have experienced sexual abuse are more likely to be obese compared to those who have not been abused sexually.

7. History of severe sexual abuse is related to an increased risk for central (or abdominal) obesity.

8. Obesity in women who have experienced sexual abuse may be linked to physiological (physical) factors altered as a result of traumatic experiences.

9. Obesity in women who have experienced sexual abuse may be related to emotional responses to the trauma of their abusive situation(s).

10. Stress associated with past sexual abuse may be expressed as binge eating disorder or general overeating.

11. Neurological changes related to sexual abuse may be associated with poor social relationships.

12. Neurological changes related to sexual abuse can lead to depression.

13. Adolescents who have a family or personal history of sexual abuse are more likely to experience higher rates of anxiety compared to adolescents who have not experienced these forms of sexual abuse.

14. Adolescents who have a family or personal history of sexual abuse are more likely to experience thoughts and acts of suicide compared to adolescents who have not experienced these forms of sexual abuse.

15. The severity of anorexia nervosa is greater among individuals who have experienced sexual abuse.

16. Clients who exercise excessively (or who experience anger or great disappointment if a workout is missed) may be showing signs of underlying anxiety related to having experienced past sexual abuse.

17. Physical scarring caused by previous sexual abuse in women may create barriers to exercise.

18. Complications from sexually transmitted diseases, such as rashes or side effects from medications, may create physiological (physical) barriers to exercise in women who have experienced sexual abuse.

19. Effects of malnourishment, such as low bone density, may create physiological (physical) barriers to exercise in women who have experienced sexual abuse.

20. Sleep disturbances associated with past sexual abuse, such as night terrors or post-traumatic stress disorder, may negatively impact exercise performance.

21. Clothing worn during exercise, such as swimwear, tight-fitting attire, or clothes that allow skin to show, may create an emotional barrier to exercise participation among women who have experienced sexual abuse.

22. In order to hide self-inflicted physical scarring, a woman who has experienced sexual abuse may resist participating in physical activity and exercise that require swimwear or clothes that allow skin to show.

23. Women who have been sexually abused may experience emotional barriers to exercise if they wear swimwear or clothes that are tight fitting or that expose skin.

24. Abusers may attempt to control the body weight or appearance of their victims by restricting their availability to food and nourishment.

25. Abusers may attempt to control the body weight or appearance of their victims by discouraging exercise participation by the persons being abused.

26. An exercise professional should tell clients how much pain or discomfort they should feel during a given exercise movement. (R)

27. If a woman discloses that she has experienced sexual abuse, she should be assigned a female trainer to make her feel more comfortable. (R)

28. An exercise professional should always request permission to touch a client.

29. Any type of physical activity may trigger memories or emotions from past sexual abuse.

30. If clients who have experienced sexual abuse feel emotionally uncomfortable performing a particular exercise or physical movement, they are likely to be forthcoming (openly share) about why they feel uncomfortable. (R)

31. If clients who have been abused sexually feel physically uncomfortable performing a given exercise or physical movement, they are likely to explain why they feel uncomfortable. (R)

32. Underlying emotions related to past sexual abuse may be triggered by exercising in a facility or complex.

33. Involuntary physical responses tied to past sexual abuse may negatively affect exercise performance.

34. There is nothing that an exercise professional can do to show sensitivity about past sexual abuse if a client does not disclose the abuse. (R)

35. Exercise professionals should display a professional focus on a client's physique and physical attractiveness. (R)

36. Clients who have experienced sexual abuse may disconnect or appear as though they are not paying attention or become unaware of their bodies when a movement triggers a traumatic memory.

Response Anchors for Items 48- 64 are:
Very Inappropriate Sometimes Inappropriate Sometimes Appropriate Very Appropriate

After you describe how to perform a new exercise, you notice that your female client tenses her muscles as she moves toward the starting position, but does not say anything. How should you respond to this situation?

Select the degree to which you believe each response is appropriate.

37. You should encourage your client by commenting on the improvements you've seen in her body shape. (R)

38. You should ask your client to look in the mirror to check her own form even if she expresses some hesitation in doing so. (R)

You have been working with a client for two months. She has appeared to be uncooperative at times, even though she seems to really want to lose weight. As your client finishes up with an exercise set, you place your hand on her lower back to remind her to use proper form. In response, your client abruptly stops exercising, even though you believe she could have easily completed the set. How should you respond to this situation?

Select the degree to which you believe this response is appropriate.

39. You should tell your client to finish the exercise set, while continuing to help her maintain correct body form by keeping your hand on (or near) her back. (R)

While working with a client on an exercise machine, she begins to stare past the machine; her mind appears to be somewhere else. She continues exercising, but seems disconnected from her surroundings and forgets how many repetitions she has completed. How appropriate is the following next step?

40. You should ask your client to stop exercising and help her off the exercise machine so that you can adjust the resistance. (R)

A new member in your group fitness class sometimes fails to participate in certain exercises, even though she appears to be strong enough to participate. How should you respond to this situation?

Select the degree to which you believe this response is appropriate.

41. Remind this member that "sticking to the program" is the only way for results to occur. (R)

Note: R = Item was reverse scored
Items 1 - 5 reflect Domain 1 (on revised scale)
Items 6 - 16 reflect Domain 2 (on revised scale)
Items 17 - 25 reflect Domain 3 (on revised scale)
Items 26 - 33 reflect Domain 4 (on revised scale)
Items 34 - 41 reflect Domain 5 (on revised scale)

Appendix D: Adverse Childhood Experiences Questionnaire [ACEs]

ACEs QUESTIONNAIRE

Response Anchors:
Yes No

Prior to your 18th birthday:

1. Did a parent or other adult in the household often or very often… Swear at you, insult you, put you down, or humiliate you? or Act in a way that made you afraid that you might be physically hurt? (Yes, No)

2. Did a parent or other adult in the household often or very often… Push, grab, slap, or throw something at you? or Ever hit you so hard that you had marks or were injured? (Yes, No)

3. Did an adult or person at least 5 years older than you ever… Touch or fondle you or have you touch their body in a sexual way? or Attempt or actually have oral, anal, or vaginal intercourse with you? (Yes, No)

4. Did you often or very often feel that … No one in your family loved you or thought you were important or special? or Your family didn't look out for each other, feel close to each other, or support each other? (Yes, No)

5. Did you often or very often feel that … You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? or Your parents were too drunk or high to take care of you or take you to the doctor if you needed it? (Yes, No)

6. Were your parents ever separated or divorced? (Yes, No)

7. Was your mother or stepmother:
   Often or very often pushed, grabbed, slapped, or had something thrown at her? or Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard? or Ever repeatedly hit over at least a few minutes or threatened with a gun or knife? (Yes, No)

8. Did you live with anyone who was a problem drinker or alcoholic, or who used street drugs? (Yes, No)

9. Was a household member depressed or mentally ill, or did a household member attempt suicide? (Yes, No)

10. Did a household member go to prison? (Yes, No)

Appendix E: Trait Emotional Intelligence Questionnaire Short Form [TEIQue-SF]

TEIQue-SF

Response Anchors:						
Completely Disagree (1)	2	3	4	5	6	Completely Agree (7)

1. Expressing my emotions with words is not a problem for me.

2. I often find it difficult to see things from another person's viewpoint. (R)

3. On the whole, I'm a highly motivated person.

4. I usually find it difficult to regulate my emotions. (R)

5. I generally don't find life enjoyable. (R)

6. I can deal effectively with people.

7. I tend to change my mind frequently. (R)

8. Many times, I can't figure out what emotion I'm feeling. (R)

9. I feel that I have a number of good qualities.

10. I often find it difficult to stand up for my rights. (R)

11. I'm usually able to influence the way other people feel.

12. On the whole, I have a gloomy perspective on most things. (R)

13. Those close to me often complain that I don't treat them right. (R)

14. I often find it difficult to adjust my life according to the circumstances. (R)

15. On the whole, I'm able to deal with stress.

16. I often find it difficult to show my affection to those close to me. (R)

17. I'm normally able to "get into someone's shoes" and experience their emotions.

18. I normally find it difficult to keep myself motivated. (R)

19. I'm usually able to find ways to control my emotions when I want to.

20. On the whole, I'm pleased with my life.

21. I would describe myself as a good negotiator.

22. I tend to get involved in things I later wish I could get out of. (R)

23. I often pause and think about my feelings.

24. I believe I'm full of personal strengths.

25. I tend to "back down" even if I know I'm right. (R)

26. I don't seem to have any power at all over other people's feelings. (R)

27. I generally believe that things will work out fine in my life.

28. I find it difficult to bond well even with those close to me. (R)

29. Generally, I'm able to adapt to new environments.

30. Others admire me for being relaxed.

(R) Indicates question responses should be reverse scored.

Appendix F: The Final 21-item Scale to Assess Staff Knowledge, Attitude, and Practice Related to Trauma-informed Care, 21-item KAP [TIC KAP]

TIC KAP

Response anchors:				
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

1. Exposure to trauma is common.

2. Trauma affects physical, emotional, and mental well-being.

3. Substance abuse issues can be indicative [characteristic or suggestive] of past traumatic experiences or adverse childhood experiences.

4. There is a connection between mental health issues and past traumatic experiences or adverse childhood experiences.

5. Distrusting behavior can be indicative [characteristic or suggestive] of past traumatic experiences or adverse childhood experiences.

6. Retraumatization [being traumatized or causing trauma again] can occur unintentionally.

7. Recovery from trauma is possible.

8. Paths to healing/recovery from trauma are different for everyone.

9. People are experts in their own healing/recovery from trauma.

10. Informed choice is essential in healing/recovery from trauma.

11. Trauma-informed practice is essential for working effectively with patients and their families.

12. I have a comprehensive understanding of trauma-informed practice.

13. I believe in and support the principles of trauma-informed practice.

14. I share my expertise and collaborate effectively with colleagues regarding the use of trauma-informed practice. 15. I would like to receive more training on trauma-informed practice.

16. I maintain transparency in all interactions with patients.

17. I offer patients choices and respect their decisions.

18. I help patients and peers to recognize their own strengths.

19. I inform all patients of my actions before I perform them.

20. My interaction with each patient is unique and tailored to their specific needs.

21. I practice self-care (taking care of my own needs and well-being).

Appendix G: Electronic Consent Block

The following information is provided to inform you about the research project in which you have been invited to participate. Please read this disclosure and feel free to ask any questions. The investigators must answer all of your questions and please save this page as a PDF for future reference.

- Your participation in this research study is voluntary.
- You are also free to withdraw from this study at any time without loss of any benefits.

For additional information on your rights as a participant in this study, please contact the Middle Tennessee State University (MTSU) Office of Compliance (Tel 615-494-8918 or send your emails to irb_information@mtsu.edu. (URL: http://www.mtsu.edu/irb)**.**

Please read the following and respond to the consent questions in the bottom if you wish to enroll in this study.

Purpose: This research project is designed to further develop the Sexual Abuse Assessment Tool. Data collection will be used to ensure that this survey tool is valid and reliable and will allow researchers to provide predictions and report descriptive data.

Description: Participants in this study will be asked to complete a survey.

Duration: The whole activity should take < 30 minutes.

Participants: You qualify to participate in this pilot survey study if you are 18 years old or older and are an exercise professional. (For this study an exercise professional is defined as any professional who prescribes exercises to adults as part of their occupation. Examples are (but not limited to) physical therapists, personal trainers, athletic trainers, coaches, and group fitness instructors. Once, you take this survey, you will not be able to take it again.

Here are your rights as a participant: Your participation in this research is voluntary. To participate in this survey, select the best answer choice for each question. You may skip any item that you don't want to answer, and you may stop the survey at any time. If you stop the survey early and it remains incomplete over time, the answers you already provided will be recorded. If you leave an item blank by either not clicking or entering a response, you may be warned that you missed one, just in case it was an accident, but you can continue the study without entering a response. Some items (such as consent) may require a response to accurately present the survey.

Risks & Discomforts: Participation in this survey includes no risk greater than those ordinarily encountered in daily life. As part of this survey, participants will be asked to answer questions regarding the presence of individual adverse childhood experiences from their own personal histories. While the sensitive topic of adverse experiences, including sexual abuse, is mentioned (and emotional triggers can occur at any time), at no time will participants be asked about details of their own abuse history or be provided with descriptions of abusive situations. Time spent on the survey will be the main cost of participation.

Benefits: There are no direct benefits to you. While advancing the profession and learning about current professional research are the biggest benefit for participants, many may also find that they become more mindful of sensitive exercise practices just by taking the survey which may create awareness of this understudied population and may positively impact professional practices.

Identifiable Information: You will not be asked to provide identifiable personal information.

Compensation: There is no compensation for participating in this study.

The IRB approval details are as follows:
• Title: Trauma-informed practice among exercise professionals as a developing determinant of exercise behavior for survivors of sexual abuse.
• Investigator: Rebecca Claypool
• Faculty Advisor: Dr. Bethany Wrye
• Protocol ID: 21-1092 2q Approval: 01/19/2021 Expiration: 06/30/2022

Confidentiality: All efforts, within reason, will be made to keep your personal information private but total privacy cannot be promised. Your information may be shared with MTSU or the government, such as the Middle Tennessee State University Institutional Review Board, Federal Government Office for Human Research Protections, if you or someone else is in danger or if we are required to do so by law.

Contact Information: If you should have any questions about this research study or possibly injury, please feel free to contact Rebecca Claypool at rec4n@mtmail.mtsu.edu or Bethany Wrye at bethany.wrye@mtsu.edu. To contact the MTSU Office of compliance via telephone, call (615-494-8918) email (compliance@mtsu.edu). This contact information will be presented again at the end of the experiment.

You are not required to do anything further if you decide not to enroll in this study. Just quit your browser. Please complete the response section below if you wish to learn more or you wish to part take in this study.

Response anchors for questions 1 - 4:

Yes No

1. I have read this informed consent document pertaining to the above identified research.
2. The research procedures to be conducted are clear to me.
3. I confirm that I am 18 years or older.
4. I am aware of the potential risks of this study.

Response anchors for question 5:

Yes. I consent No. I do not consent.

5. By clicking below, I affirm that I freely and voluntarily choose to participate in this study. I understand I can withdraw from the study at any time without facing any consequences.

Appendix H: IRB Approval

IRB
INSTITUTIONAL REVIEW BOARD
Office of Research Compliance,
010A Sam Ingram Building,
2269 Middle Tennessee Blvd
Murfreesboro, TN 37129
FWA: 00005331/IRB Regn.. 0003571

MIDDLE TENNESSEE STATE UNIVERSITY

IRBN007 – EXEMPTION DETERMINATION NOTICE

Tuesday, January 19, 2021

Protocol Title	***Trauma-informed practice among exercise professionals as a developing determinant of exercise behavior for survivors of sexual abuse***
Protocol ID	**21-1092 2q**
Principal Investigator	**Rebecca Claypool** (Student)
Faculty Advisor	Bethany Wrye
Co-Investigators	Angie Bowman
Investigator Email(s)	*rec4n@mtmail.mtsu.edu; bethany.wrye@mtsu.edu*
Department/Affiliation	Health and Human Performance

Dear Investigator(s),

The above identified research proposal has been reviewed by the MTSU Institutional Review Board (IRB) through the **EXEMPT** review mechanism under 45 CFR 46.101(b)(2) within the research category ***(2) Educational Tests, surveys, interviews or observations of public behavior*** *(Qualtrics Survey)*. A summary of the IRB action and other particulars of this protocol are shown below:

IRB Action	**EXEMPT from furhter IRB review*** **
Date of Expiration	**6/30/2022** *Date of Approval:* **1/19/21** *Recent Amendment:* NONE
Sample Size	ONE THOUSAND (1,000)
Participant Pool	**Healthy adults (18 or older) - Exercise Professionals**
Exceptions	Online consent followed by internet-based survey using Qualtrics is permitted (Qualtrics links on file).
Type of Interaction	☒ Virtual/Remote/Online Interview/survey ☐ In person or physical– Mandatory COVID-19 Management (refer next page)
Mandatory Restrictions	**1. All restrictions for exemption apply.** **2. The participants must be 18 years or older.** **3. Mandatory ACTIVE informed consent. Identifiable information including, names, addresses, voice/video data, must not be obtained.** **4. NOT approved for in-person data collection.**
Approved IRB Templates	*IRB Templates:* Online Informed Consent *Non-MTSU Templates*: Recruitment email and other recruitment scripts
Research Inducement	NONE
Comments	NONE

***Although this exemption determination allows above defined protocol from further IRB review, such as continuing review, MTSU IRB will continue to give regulatory oversight to ensure compliance.

Summary of the Post-approval Requirements: The PI and FA must read and abide by the post-approval conditions (Refer "*Quick Links*" in the bottom):

- ***Final Report:*** The Faculty Advisor (FA) is responsible for submitting a final report to close-out this protocol before **6/30/2022**; if more time is needed to complete the data collection, the FA must request an extension by email. REMINDERS WILL NOT BE SENT. **Failure to close-out (or request extension) may result in penalties** including cancellation of the data collected using this protocol or withholding student diploma.
- ***Protocol Amendments***: IRB approval must be obtained for all types of amendments, such as:
  - Addition/removal of subject population and sample size.
  - Change in investigators.
  - Changes to the research sites – appropriate permission letter(s) from may be needed.
  - Alternation to funding.
  - Amendments must be clearly described in an addendum request form submitted by the FA.
  - The proposed change must be consistent with the approved protocol and they must comply with exemption requirements.
- ***Reporting Adverse Events:*** Research-related injuries to the participants and other events , such as, deviations & misconduct, must be reported within 48 hours of such events to compliance@mtsu.edu.
- ***Research Participant Compensation:*** Compensation for research participation must be awarded as proposed in Chapter 6 of the Exempt protocol. The documentation of the monetary compensation must Appendix J and MUST NOT include protocol details when reporting to the MTSU Business Office.
- ***COVID-19:*** Regardless whether this study poses a threat to the participants or not, refer to the COVID-19 Management section for important information for the FA.

COVID-19 Management:
The FA must enforce social distancing guidelines and other practices to avoid viral exposure to the participants and other workers when physical contact with the subjects is made during the study.

- The study must be stopped if a participant or an investigator should test positive for COVID-19 within 14 days of the research interaction. This must be reported to the IRB as an "adverse event."
- The FA must enforce the MTSU's "Return-to-work" questionnaire found in Pipeline must be filled and signed by the investigators on the day of the research interaction prior to physical contact.
- PPE must be worn if the participant would be within 6 feet from the each other or with an investigator.
- Physical surfaces that will come in contact with the participants must be sanitized between use
- **FA's Responsibility:** The FA is given the administrative authority to make emergency changes to protect the wellbeing of the participants and student researchers during the COVID-19 pandemic. However, the FA must notify the IRB after such changes have been made. The IRB will audit the changes at a later date and the PI will be instructed to carryout remedial measures if needed.

Post-approval Protocol Amendments:
The current MTSU IRB policies allow the investigators to implement minor and significant amendments that would not result in the cancellation of the protocol's eligibility for exemption. ***Only THREE procedural amendments will be entertained per year*** *(changes like addition/removal of research personnel are not restricted by this rule).*

Date	Amendment(s)	IRB Comments
NONE	NONE.	NONE

Post-approval IRB Actions:
The following actions are done subsequent to the approval of this protocol on request by the PI or on recommendation by the IRB or by both.

Date	IRB Action(s)	IRB Comments
NONE	NONE.	NONE

Mandatory Data Storage Requirement:
All research-related records (signed consent forms, investigator training and etc.) must be retained by the PI or the faculty advisor (if the PI is a student) at the secure location mentioned in the protocol application. The data must be stored for at least three (3) years after the study is closed. Additionally, the Tennessee

State data retention requirement may apply (*refer "Quick Links" below for policy 129*). Subsequently, the data may be destroyed in a manner that maintains confidentiality and anonymity of the research subjects. **The IRB reserves the right to modify/update the approval criteria or change/cancel the terms listed in this notice**. Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board
Middle Tennessee State University

Quick Links:

- Post-approval Responsibilities: http://www.mtsu.edu/irb/FAQ/PostApprovalResponsibilities.php
- Exemption Procedures: https://mtsu.edu/irb/ExemptPaperWork.php
- MTSU Policy 129: Records retention & Disposal: https://www.mtsu.edu/policies/general/129.php