

MENTAL HEALTH: IMPLEMENTATION OF THE SMHAT-1 TOOL TO SCREEN FOR
MENTAL HEALTH CONCERNS AMONG COLLEGIATE ATHLETES ATTENDING A
MIDWESTERN UNIVERSITY

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Chrisann Richter

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Chrisann Richter

The Supervisory Committee certifies that this *disquisition* complies with North Dakota
State University's regulations and meets the accepted standards for the degree of

DOCTOR OF NURSING PRACTICE

SUPERVISORY COMMITTEE:

Dr. Mykell Barnacle

Chair

Dr. Carrie Nelson

Dr. Shannon David

Dr. Allison Peltier

Approved:

April 18, 2024

Date

Dr. Mykell Barnacle

Department Chair

ABSTRACT

College athletes experience increased prevalence of anxiety, depression, sleep disorder, substance misuse, and eating disorders when compared to general college student population. When suffering from mental illness, signs and symptoms that elite, or professional athletes portray may mimic behaviors that are normative for dedicated athletes with demanding schedules and high-performance expectations. Early identification by athletic staff, coaches, and healthcare professionals is the key to facilitating early intervention. Routine screening for mental health has been proven effective in identifying athletes who are at risk for, or currently suffering from mental health disorders. Early identification, intervention and treatment offer athletes a better outcome.

The purpose of this project is to identify Division I college athletes who may be at risk for, or currently suffering from mental health illness. The mental health of the athletes was assessed over the duration of pre-season to mid-season of the indoor competitive sport season to determine if psychosocial distress is positively correlated with the progression of the sport season. The Sport Mental Health Assessment Tool 1 (SMHAT-1) was administered via Qualtrics survey to freshman, sophomore, junior, and senior track and field athletes at a Midwestern University pre- and mid-season to evaluate the trend in psychological well-being.

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LIST OF ABBREVIATIONS

SMHAT-1	Sport Mental Health Assessment Tool-1
MH	Mental Health
SA	Student Athlete
NCAA	National Collegiate Athletic Association
IOC	International Olympic Committee
PDSA	Plan Do Study Act
APA	American Psychiatric Association
WHO	World Health Organization
DSM-5	Diagnostic and Statistical Manual of Mental Disorders
ICD	International Classification of Diseases
NIMH	National Institute of Mental Health
ISSP	International Society for Sports Psychiatry
MT	Mental Toughness
NAMI	National Alliance on Mental Illness
CDC	Center of Disease Control
ACHA	American College Health Association
NIAAA	National Institute on Alcohol Abuse and Alcoholism
NIH	National Institute of Health
AT	Athletic Trainer
GM	Growth Mindset
NATA	National Athletic Training Association
APSQ	Athlete Psychological Strain Questionnaire
GAD	Generalized Anxiety Disorder

PHQ-9	Patient Health Questionnaire
CAGE-AID	Cutdown, Annoyed, Guilty, Eye-opener Adapted to Include Drugs
BEDA-Q	Brief Eating Disorder in Athletes Questionnaire
AUDIT-C	Alcohol Use Disorder Identification Test Consumption
ASSQ	Autism Spectrum Screening Questionnaire
PTSD	Post-Traumatic Stress Disorder

CHAPTER 1: INTRODUCTION

Background and Significance

Research has demonstrated that there is a growing prevalence of mental health (MH) disorders among elite athletes. Compared to non-athlete college students, student athletes (SA) experience increased rates of anxiety, depression, substance misuse, sleep disturbance, and eating disorders. The prevalence of depression among SA's is 15-25% and one in three experience anxiety (Leonelli, et al., 2022). Suffering from psychological distress can further lead to substance misuse, fatigue, unhealthy eating habits, and aggressive behaviors (De Souza, et al., 2021). Although SA's are at an increased risk for suffering from MH symptoms, the rates of suicide are lower when compared to the general college population. Findings from a retrospective cohort study performed in 2003-2012 indicated that suicide incidence among the National Collegiate Athletic Association (NCAA) athletes was 0.93/100,000 compared to 7.5/100,000 of the general college population (Rao, et al., 2015; Anchuri, et al., 2019). SA's face unique variables that factor into their physical and mental well-being. Risks specific to athletes include overtraining, injury, concussion, performance failure, and the type of sport (individual vs. team) participated in (Purcell, et al., 2019).

Despite suffering from MH symptoms, many SA's do not seek psychological help. A linear regression showed that athletes who reported having strong coping skills and less coach stigma portrayed supportive attitudes to seeking help compared to athletes who did not report having strong coping skills (Kroshus, 2017). Identifying MH concerns among college athletes remains difficult due to athletes denying or under reporting symptoms and fear of MH stigma (Leonelli, et al., 2022).

With increased awareness of MH disorder prevalence among college athletes, early identification is critical to facilitate intervention and treatment. MH does not only affect current athletes, but also former athletes. A study found that 26% of former athletes reported feelings of depression and anxiety (Gouttebarga, et al., 2019). The NCAA suggests athletes need a preparticipation physical exam as an opportunity to help with early detection of MH. The International Olympic Committee (IOC) also advises researchers to improve MH screening among elite athletes. In reviewing literature, a study assessing the MH of collegiate athletes found 71.8% of athletes scores were indicative of concerns for MH during preseason screening. This study also revealed that the presence of MH problems in the preseason directly connect with competitive season MH problems (Leonelli, et al., 2022). Although policies and procedures differ among college institutions, early identification and provision of the necessary resources on campus is necessary to support and lower the risk of MH issues among college athletes.

Problem Statement

College level athletes are a high-profile population for developing mental health concerns.

Purpose

The purpose of this quality improvement project is to implement the SMHAT-1 mental health screening tool during competitive pre-season and mid-season to identify collegiate athletes who are at risk for, or who are currently struggling with mental health disorders.

Objectives

Objective 1: Hold an educational session with the University's track and field student athletes prior to the start of their sport season.

Objective 2: Administer the SMHAT-1 tool to assess the mental health among Division I collegiate athletes participating in track and field events at a Midwest University before the start (pre-season) of their indoor competitive season and half-way through (mid-season) their competitive indoor season to evaluate for changes in mental health.

Objective 3: Disseminate mental health survey analysis findings with the University's track and field coaches and athletic staff.

CHAPTER 2: THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Chapter two discusses the application of the Health Promotion Model by Nola Pender and the Plan Do Study Act (PDSA) model to this research project. An extensive literature review conducted on MH risk factors, barriers, and common disorders among SAs is also included within chapter two. The literature review includes research studies that have assessed mental health literature among coaches, the importance of routinely screening athletes for MH concerns, and valid screening tools for recommended use.

Theoretical Framework

Health Promotion Model

The theoretical framework used to guide this health improvement project is the Health Promotion Model by Nola Pender. This model was created to assist nurses in promoting healthy lifestyle behaviors by first identifying and understanding determinants of health. The Health Promotion Model has three main components: individual characteristics and experiences, behavior-specific cognition and affect, and behavioral outcome (Pender, 2011).

Individual Characteristics and Experiences

In this component of the Health Promotion Model, prior health behaviors and personal factors (ex. age, race, ethnicity, etc.) that may influence an individual's health behaviors are identified (Pender, 2011). SA's experience unique stressors and risk factors, putting them at an increased risk for mental health concerns.

Behavior-Specific Cognitive and Affect

The second component of the Health Promotion Model includes perceived benefits and barriers to action, perceived self-efficacy, activity-related affect, interpersonal influences, situational influences, commitment to a plan of action, and immediate competing demands and

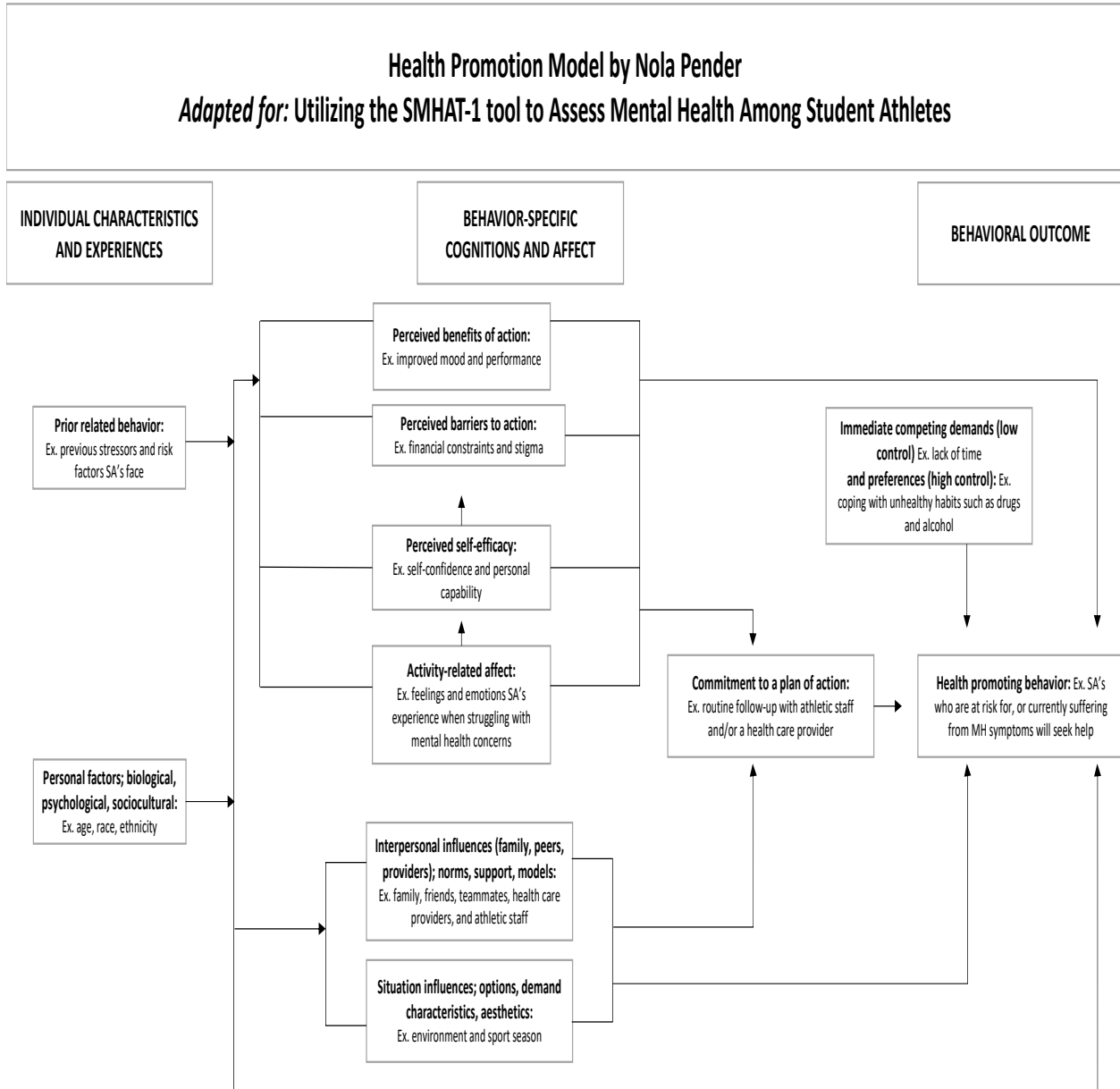
preferences (Pender, 2011). Benefits of action SA's may experience from seeking help for MH concerns include improved mood and performance. Barriers to action SA's may experience are financial constraints or stigma. Perceived self-efficacy, including self-confidence and personal capability, is what SA's need to have to seek professional help and have a successful outcome. Activity-related affects are the feelings and emotions SA's experience while struggling with MH signs and symptoms. These affects may lead to adverse effects such as substance abuse or suicide. Interpersonal influences include family, friends, teammates, health care providers and athletic staff. Support from these sources will help SA's seek professional help to address MH concerns. Situational influences, such as the environment or sport season impacts the MH of SA's. For example, a SA may experience worsening signs and symptoms of MH during the middle of their competitive sport season compared to the beginning or end of the sport season. Commitment to a plan of action is ideally determined by the SA, but routine follow-up by athletic staff (ex. athletic trainers and coaches) and health care professionals can assist SA's to seek help and form strategies to experience successful MH outcomes. The final component within behavior-specific cognitive and affect is immediate competing demands and preferences. Student athletes may feel it is easier to cope with MH symptoms in unhealthy ways (ex. drugs and alcohol) rather than facing barriers to seeking help. Lack of time within a school and training schedule may also be a competing demand.

Behavioral Outcome

Behavioral outcome is the final step within the Health Promotion Model and reflects health promoting behavior. The desired behavioral outcome is that all SA's who are at risk for, or currently suffering from MH symptoms, seek professional help.

Figure 1

Health Promotion Model: Adapted for Utilizing the SMHAT-1 Tool to Assess Mental Health Among Student Athletes



Note: Used with permission from Nola Pender, PhD, RN, FAAN. Copyright 1996. For permission to use this model please contact the University of Michigan School of Nursing or visit this link: <https://deepblue.lib.umich.edu/handle/2027.42/85351>.

Plan Do Study Act Model

The Plan Do Study Act (PDSA) Model is the model used to guide this project to improve MH among SA's. This model is used for problem-solving and uses four stages to improve or change a current process. The four stages included within this model are plan, do, study, and act (MNDH, 2022).

Plan

The first stage is planning. This includes forming a team of members who are knowledgeable about the research topic and can help provide an opportunity for improvement (MNDH, 2022). A project chair, graduate appointee, and two committee members have been chosen to help guide this project. The head coach of the University's track and field team, along with the head athletic trainer for the University's track and field team, helped with the implementation of this project.

Identifying the aim of the study is also included within the planning stage (MNDH, 2022). Three project objectives have been created to identify the goals of this health improvement project. These objectives include: Holding an educational session for the track and field SAs and athletic staff, assess the mental health among Division I collegiate athletes before participating in the start (pre-season) of their sport season and evaluate for changes in mental health half-way through (mid-season) their sport season to identify athletes who are at high risk for, or currently struggling with mental health issues, and disseminate mental health survey analysis findings with coaches and athletic staff to bring awareness to mental health signs and symptoms.

Identifying the current process is the third step within the planning stage (MNDH, 2022). This included collaborating with the University's Student Health Center health care providers

and the athletic trainer for the University's track and field team to identify the current process in assessing MH among SA's. Behavioral health screening tools currently used routinely (at least once a year) among SA's are PHQ-2, PHQ-9, and GAD-7.

Identifying the problem is the fourth component within the planning stage (MNDH, 2022). An in-depth review of literature was conducted prior to implementation of this project. A problem statement has also been created that clearly defines the problem that will be addressed within this health improvement project.

Identifying causes and alternatives is the final step within the planning stage (MNDH, 2022). Reviewing current research and literature helped to identify causes of MH among athletes. The implementation of the SMHAT-1 tool to assess MH among SA's is an alternative way to assess mental status of current athletes.

Do

The 'Do' stage includes implementation of the proposed project design and data collection (MNDH, 2022). This included administering the SMHAT-1 screening tool amongst the University's track and field SA's via Qualtrics survey. The tool was administered pre-competitive season and mid-competition season to assess for changes in MH among the athletes.

Study

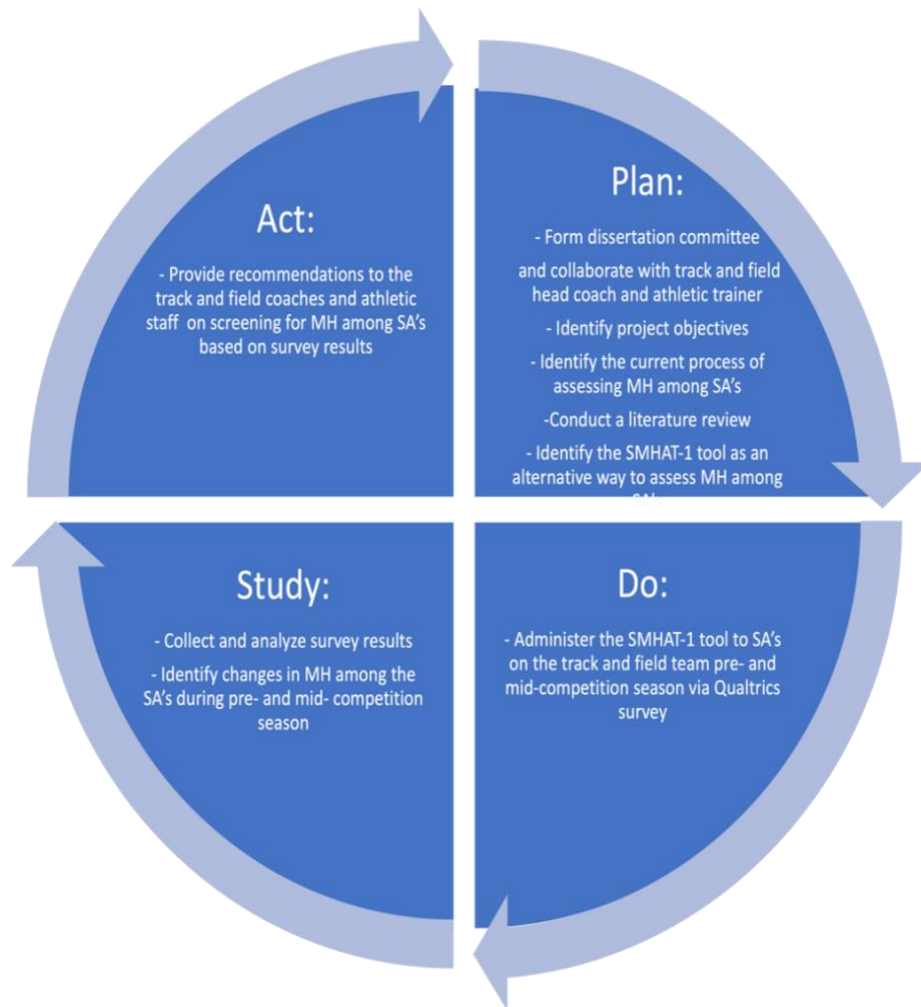
While keeping in mind the aim of the project, the results of the data collected are studied (MNDH, 2022). This step included identifying any changes of MH among the SA's during pre and mid competitive season. The data was analyzed for aggregate trends and patterns, as well as individual results.

Act

The fourth stage of the PDSA Model is reflecting on the plan and outcomes (MNDH, 2022). If results of the survey demonstrate the SMHAT-1 tool to be effective in identifying MH changes or concerns in SA's, it will be recommended to implement the SMHAT-1 into current practice. If results do not provide sufficient data supporting the validation of the SMHAT-1 tool, then continuation of the current practice tools will be recommended.

Figure 2

PDSA Model



Literature Review

Mental Health Disorder Prevalence Among Student Athletes

The American Psychiatric Association (APA) and the World Health Organization (WHO) define MH disorders as conditions that cause significant clinical distress or impairment and meet specific diagnostic criteria from professional references such as the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) or the International Classification of Diseases (ICD) (APA, 2013; WHO, 2018; Gouttebauge, et al., 2019). Although MH disorders are diagnosed by medical professionals, the topic of MH is not limited to purely medical definitions and encompasses various thoughts, feelings, and emotions. Feelings of hopelessness, sadness, depression, loneliness, anxiety, and anger all contribute to MH (Anchuri, et al., 2020). The National Institute of Mental Health (NIMH) states that any mental disorder, or disorders of behavior or emotion, is considered mental illness (NIMH, 2020).

Most MH disorders develop during adolescence and young adulthood. The NIMH estimates that 21% (1 in 5) of the U.S. population 18 years or older live with mental illness, and that MH is more prevalent among young adults ages 18-25 with a rate of 30.6% compared to adults ages 26-49 with a rate of 25.3% (NIMH, 2020). Mental illness should be addressed from a holistic approach considering physical, emotional, and spiritual health as factors that contribute to MH. The ability to manage stress and function in society relies heavily on an individual's mental well-being. Signs and symptoms of mental illness may manifest negative effects on an individual's behavior, thoughts, emotions, social relationships, occupation, and overall daily life (Gorczyński, et al., 2021).

MH disorders are becoming a worldwide concern and are being recognized as a leading cause of disease, not just among SAs, but among coaches as well (Herpen, 2022; Müller, El

Ansari, & El Ansari, 2022). In a cross-sectional study performed in Ireland, 350 sport coaches were asked to complete a survey assessing their mental health. The survey results yielded 34% of the participants reported personal history or experience with mental health, an alarming statistic (Duffy, Rooney, & Matthews, 2021). The global MH endemic is especially concerning among the SA population considering the unique challenges and expectations that they face.

Considering MH is a leading cause of disease burden, it is crucial that all athletes who are experiencing or at risk for developing mental illness receive appropriate care (Kroshus, 2017).

Although the concern for MH disorders is rising, there are simple methods to improve an individual's well-being. Research has shown that physical activity can have a positive impact on MH. There are more than 8 million students at the high school level and 500,000 students at the college level who participate in an organized sport function yearly (Kroshus, 2017). With the increased awareness of MH among SAs, lower depression scores were present among college students who participated in a team sport or identified themselves as an athlete compared to college students who had no participation in physical activity (Blanco, et al., 2008; Snedden, et al., 2019). Along with the physical activity component, the opportunity to form relationships and socialize with members of a team benefits MH. Higher mental health concerns were found in a study involving college students who were not considered athletes yet participated in regular physical activity or team sports (Snedden, et al., 2019). Despite the form (individual vs. team) or level of skill or competition, physical activity directly benefits MH.

Despite these findings, MH of collegiate athletes has been in the spotlight in recent years. There has been an increase in study of MH disorders and symptoms among this population (Gouttebauge, et al., 2019). The relationship between health behaviors and MH is important to note when addressing the college SA population considering the increased level of stress they

encounter (Martens, O'Connor, & Beck, 2006; De Souza, et al., 2021). Collegiate athletes encounter unique stressors when compared to their non-athlete peers as a result from having to balance the student and athlete role. It is known that MH conditions are present among fourteen percent of incoming NCAA Division I SAs (Sarac, Sarac, & Borchers, 2018; Young, Neil, Eberman, Armstrong, & Winkelmann, 2022) prior to beginning their college career. The prevalence of MH conditions is higher among elite athletes (current and former) when compared to the general public as a result from having to encounter stressors that are sport-specific (Arnold & Fletcher, 2012; Gouttebauge, et al., 2019). In a consensual qualitative research study assessing the MH among NCAA Division I SAs, it was found that pertinent contributors to MH concerns included difficulty with time management due to the demands of sport participation, present mental health conditions, and unanticipated injury (Young, Neil, Eberman, Armstrong, & Winkelmann, 2022).

Stressors and Risk Factors Specific to Student Athletes

NCAA Division I college SAs are considered elite athletes. SAs not only have to transition into their college sport environment, but also into a new living, social, and academic environment that undoubtedly affects their MH. Stressors include coaches' expectations, team conflict, injury, academic responsibility, and strict schedules (Young, Neil, Eberman, Armstrong, & Winkelmann, 2022). SAs also face new living environments, being distant from family, and increased responsibilities (Piko, 2000; El Ansari & Stock, 2010; Müller, El-Ansari, & El Ansari, 2022).

The adjustment into the college lifestyle and settling in along with the additional transition into a collegiate sport can certainly be a threat to the MH of SAs. A meta-analysis study found that anxiety, depression, poor sleep quality, and feelings of distress were prevalent

among current SAs. These findings may be explained by the stress of general life events interrelated with sport stress (Arnold & Fletcher, 2012; Engel, 1977; Gouttebauge, et al., 2019). The demands of being a SA can become a physical and mental strain. Balancing athletic and academic requirements put SA at a high risk for negative health outcomes (Dean & Rowan, 2014; Beasley, Hoffman, & Andelin, 2021).

SAs not only face sport-specific stressors, but also specific risk factors. Risk factors may differ based on the sport setting (team vs. individual), with individual sports posing a higher risk to mental wellness. Sport-related risk factors include overtraining, injury, and performance failure. Along with sport-specific risk factors, SAs also face general risk factors. These include adverse life events, impaired sleep, and lack of social support, which may have a negative impact on MH. Risk factors vary throughout an athlete's career. For example, supportive relationships with coaches and parents during the early developmental years of an athlete's career influences an athlete's mental well-being. As athletes excel in the professional phase of their career, training demands and environmental factors influence their mental well-being (Purcell, Gwyther, & Rice, 2019). Although SAs face sport-specific risk factors that may contribute to poor MH, with early identification and intervention, these risk factors may be modified to improve the athlete's overall mental and physical outcome.

Although SAs have numerous factors that impact their mental well-being, SAs also face unique barriers to seeking professional help in addressing MH concerns. Athlete specific barriers include fear of being viewed as weak or that seeking care will have a negative impact on their performance (Kroshus, 2017). With the increasing prevalence of MH among SAs, and the stigma that has been placed on seeking professional care, the International Society for Sports Psychiatry

(ISSP) has largely advocated for sports psychiatry to be incorporated into sports programs so that MH among SAs can be assessed and SAs can access treatment.

Reason to Screen for Mental Health Conditions in Student Athletes

There are concerns within sports psychology regarding the stigma society has placed on mental illness in sport and the lack of health promotion (ISSP, 1994 ; Gorczynski, et al., 2021). As defined by the APA, sports psychology is a specialty that addresses an athlete's overall well-being and optimal sport performance (APA, 2019). Sports psychology also addresses social and developmental sport-related issues and systemic issues that occur within a sport setting, whereas clinical psychology offers MH treatment and promotes well-being to any individual or groups that encounter mental illness or psychological distress (APA, 2019; Gorczynski, et al., 2021). Although the APA provides alternative definitions for sports psychology and clinical psychology, these specialties work together to improve MH among athletes.

Mental toughness (MT) among athletes is a MH component assessed by sports psychology. MT is defined as a psychological resource individuals utilize during challenging situations to improve performance (Beattie, et al., 2020; Bédard, et al., 2021). Recently, MT has earned increased attention in literature by considering the importance of MT during stressful situations and competitive achievement among athletes (Gucciardi, et al., 2015; Bédard, et al., 2021). Improving MH awareness and health literacy among athletes and team members may destigmatize MH in the sport setting and offer improved well-being of athletes. The first study performed and is believed to be the only study of this nature currently in research, found that MH interventions focused on MH literacy and resiliency implemented amongst adolescent male participants that were part of an organized nonelite sport had an effective outcome (Vella, et al., 2021).

MH has a direct relation to behavioral health. Tobacco use, sleep quality, physical activity, and utilizing MH services are often influenced by MH factors (Ridner, Newton, Staten, Crawford, & Hall, 2016; Snedden, et al., 2019). With the increased demands and expectations that influence MH among SAs throughout their career, research has indicated that SAs are considered a vulnerable population and are at an increased risk for taking part in risky behaviors. When compared to their non-athlete peers, college SAs are more likely to fall victim to physical, verbal, or sexual abuse, or be involved in a physical altercation, which contributes to a negative impact on MH, behavioral health, and overall quality of life (Charest, et al., 2021). Health-related behaviors that are formed over the college years are crucial in building a foundation of well-being that will continue into adulthood.

Assessing MH is a way to assess an individual's overall well-being (Snedden, et al., 2019). Therefore, routine MH screening should be performed among SAs. Research suggests that MH should be assessed at every routine physical check-up (Purcell, Gwyther, & Rice, 2019). Routine MH screening could offer early intervention and/or prevention of adverse effects from mental illness. Prevention of mental illness can be made possible by health promotion and disease prevention strategies, whereas the goal of early intervention is to intervene during the early stages of signs and symptoms of mental health disorders (Duffy, Rooney, & Matthews, 2021).

Current research supporting the increased prevalence of mental illness in college athletes should not only concern athletes, but also coaches, athletic staff, universities, and sport organizations. Recently, the NCAA has shed light upon this current and increasing issue. In doing so, the NCAA has written seven statements aimed at identifying, preventing, and treating MH issues in elite athletes. With this strategic approach, education and interventions will be

implemented on both an individual and systemic level to promote MH awareness and improve mental health literacy (Gorczyński, et al., 2021). Providing MH resources to both non-athlete college students and SAs can help promote MH awareness. The National Alliance on Mental Illness (NAMI) is a program that co-exists with other established MH programs on U.S. college campuses to educate and advocate for all college students who seek information regarding MH (NAMI, 2018; Snedden, et al., 2019).

By acknowledging MH concerns of SAs, the NCAA is putting forth effort to provide SAs and athletic staff with necessary resources to promote early identification and treatment of MH disorders. With means to provide necessary resources, universities have been highly encouraged to put into effect policy and procedures that offer identification of signs and symptoms of MH and a referral process for SAs with MH concerns to seek appropriate care from qualified health care professionals (Neil, et al., 2013; Young, Neil, Eberman, Armstrong, & Winkelmann, 2022). The NCAA has also created the Mental Health Best Practices in effort to facilitate interdependence between athletic departments and other on-campus services available to SA such as counseling centers, student health centers, and student affairs with hopes to improve MH (NCAA, 2017; Anchuri, et al., 2020).

Anxiety and Athletes

The college student population, despite their level of education, experience high levels of anxiety. One of the largest research studies regarding student stress assessed 18,000 students in Germany and found that 53% of the students reported excessive stress. Reasons for this included time constraints, pressure to perform, and feeling overwhelmed. If an individual is unable to cope with feelings of perceived stress, this may lead to poor academic performance, and lack of

motivation which in turn leads to lower productivity (Alsaleem, et al., 2021; Müller, El Ansari, & El Ansari, 2022).

While a majority of students experience stress, physical activity is a method shown to have a positive effect on lowering stress levels. Therefore, SAs may be at a slight advantage when coping with perceived stress. Research has found that participation in a sport can provide strong self-esteem, self-reliance, and individual accomplishments which may benefit an individual's overall well-being (Boone, et al., 2006; Armstrong, et al., 2009; Anchuri, et al., 2020).

While these personal traits may be perceived as protective measures against mental illness, they do not provide immunity for SAs. Concerns about MH among SAs or lack of MH services among the SA population should not be disregarded (Anchuri, et al., 2020). A meta-analysis analyzing MH in 5,555 elite athletes found that 19.6% of current elite athletes reported feelings of distress and 34% reported anxiety and depression (Gouttebarga, et al., 2019). Moreover, a study performed by Drew & Matthews (2019) found that 31% of SAs reported feelings of moderate to severe anxiety and depression (Drew & Matthews, 2019). Based on these research findings, providing MH awareness and education to SAs and athletic staff would be beneficial to lower levels of anxiety. Social support from coaches and teammates along with providing education on coping mechanisms against stress has been proven to lower anxiety in SAs (Young, Neil, Eberman, Armstrong, & Winkelmann, 2022).

Depression and Athletes

Anxiety and depression tend to intercorrelate when discussing mental health disorders. Based on findings from a global study conducted by the American College Health Association (ACHA), it was found that 40% of undergraduate students in the U.S. were severely depressed

(ACHA, 2017; Müller, El Ansari, & El Ansari, 2022). In a similar global study assessing the prevalence of depression, results found depressive symptoms in 19% of male students and 22% female students attending universities across 23 different countries (Steptoe, Tsuda, Tanaka, & Wardle, 2007; Müller, El Ansari, & El Ansari, 2022). While these results are concerning, it should be taken into consideration that studies are limited in accuracy due to participants self-reporting and the possibility of participants underreporting thoughts or feelings of depression. As a result, there is a chance that the overall percentage of individuals suffering from depression may be higher than what is reported.

While rates of depression are found to be high among college students in general, SAs may be at a higher risk for depression due to sport-specific stressors. As a result of increased workloads and strict scheduling demands, SAs may suffer from lack of social interaction and fewer personal growth experiences than non-athlete college students. In response, early identification of signs of psychological distress is critical even if symptoms are not self-reported by the athlete themselves (De Souza, et al., 2021).

One of the most serious consequences of unidentified and untreated depression is suicidal ideation and behaviors. According to the Center of Disease Control (CDC), in 2017 suicide was the 10th overall leading cause of death, and second leading cause of death in young adults (CDC, 2018; Anchury, et al., 2020). Research has found that suicide rates increase from adolescence into adulthood and that death by suicide among males is four times more likely than females, but females are more than twice as likely to attempt suicide (CDC, 2018; Anchuri, et al., 2020).

Attempted suicide by collegiate SAs is frequently associated with social difficulties (Anchuri, et al., 2020). A retrospective cohort study performed from 2003 to 2012 that assessed the incidence of suicide among NCAA members. Overall, the study found there were

0.93/100,000 SA suicides yearly compared to 7.5/100,000 suicides among non-athlete college students (Rao, et al., 2015; Anchuri, et al., 2020). Although these findings from a single study indicate suicide rates are higher among the general college student population compared to SAs, it is important to note prevalence of suicide among SAs is still of concern. Suicide is the fourth leading cause of death in the NCAA, with football being the leading sport with the highest number of suicides recorded (Rao, Asif, Drezner, Toresdahl & Harmon, 2015; Young, Neil, Eberman, Armstrong, & Winkelmann, 2022).

Common traits present among SAs such as mental toughness and resilience have not been proven to protect athletes against depression or other mental illness. Despite having these traits, the increased risk of SAs taking part in risky behaviors, competitive demands, and increased risk for injury place SAs at a similar risk to non-athlete students to suffer from MH disorders (Snedden, et al., 2019; Young, Neil, Eberman, Armstrong, & Winkelmann, 2022).

Substance Misuse and Athletes

Substance misuse among college athletes has been associated with poor MH (ex. depression). Research has found suicide among SAs is associated with binge-drinking and impulsivity (Dvorak, et al., 2013; Anchuri, 2020). Impulsivity in correlation with depressive mood is known to increase suicide proneness among SAs (Rao, et al., 2016; Anchuri, et al., 2020). In a meta-analysis study, 18.8% of elite athletes reported substance abuse, specifically alcohol misuse (Gouttebarga, et al., 2019).

Binge-drinking is one form of alcohol misuse and is found to be higher among SAs in correlation to their increased risk for taking part in risky behaviors. Binge-drinking is defined by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) as “a pattern of drinking alcohol that brings blood alcohol concentration to 0.08%” (NIAAA, 2020). Drinking five or

more alcoholic drinks for adult males and four or more for females in 120 minutes follows this pattern (NIAAA, 2020; Charest, et al., 2021).

Substance misuse is associated with adverse health behaviors and risks. Research found there is an increased likelihood of physical altercation, assault (physical & sexual), verbal threats, and stalking associated with SAs who consumed one to six alcoholic beverages compared to SA who did not drink (Charest, et al., 2021). A systematic review conducted in 2014 reports violence related to alcohol consumption was higher among sports groups compared to non-sport groups (Sonderlund, et al., 2014; Anchuri, et al., 2020). Social motives have been proven to be a strong predictor of substance misuse in college students in general (Ham & Hope, 2003; LaBrie, Hummer, & Pedersen, 2007; De Souza, et al., 2021).

Male and female SAs are at the same risk for partaking in risky behaviors including substance misuse. Female athletes reported that drinking often, but not binge-drinking, was used as a social act to feel a sense of belonging, blend in with their peers, and lower psychological distress (De Souza, et al., 2021). Results of a recent study assessing peer influence among NCAA SAs found that connectedness and social interaction within team membership and perceived self-image of athletes predicted prosocial and risky health behaviors (ex. illicit drug use & alcohol misuse) (Graupensperger, et al., 2018; Anchuri, et al., 2020). SAs may face serious consequences as a result of abusing substances. Despite the risk of losing scholarships, poor performance, and other negative outcomes specific to athletes that are associated with substance abuse, SAs use substances at higher rates than non-athlete college students (Neal, et al., 2013).

Substantial efforts should be made within university systems to address substance misuse among SAs. Perhaps addressing MH more robustly SAs can decrease rates of substance abuse.

Findings from a recent retrospective cross-sectional 8-year study (2011-2019) performed by the ACHA provides hope for improvement of MH conditions among the SA population. The study assessed whether MH among athletes has improved over the recent years. The study included 54,479 SAs along with 448,301 college students. Results found SAs were 4.4% to 16.3% more likely than non-athletes to receive MH information, specifically substance use (87.8% vs. 78.5%), eating disorders (42.9% vs. 33.6%), preventing violence (71.1% vs. 54.8%) and identifying signs of distress (55.4% vs. 46.4%) (Edwards, et al., 2021). In efforts to continue to improve MH among SAs and prevent substance abuse, athletic staff and other social services available to students should get involved. To aid athletes in abstaining from risky behaviors, counseling and courses offering time management, and coping skills should be made available to SAs (Gill, 2014; Beasley, Hoffman, & Andelin, 2021).

Sleep Disturbance and Athletes

Sleep disturbances have an impact on MH. One definition of sleep is a reversible unresponsive physical state where an individual is disengaged from their environment (Halson, 2014; Doherty, Madigan, Warrington, & Ellis, 2019). Sleep health can be defined as promotion of physical and mental well-being through sleep-awake patterns affected by an individual's social and environment demands. Components of good sleep health include alertness during awake hours, adequate duration and time of sleep hours, and satisfaction with sleep quality (Buysse, 2014; Doherty, Madigan, Warrington, & Ellis, 2019). Recommended sleep hours change over the human lifespan. The current recommendation for adolescents is eight to ten hours and seven to nine hours for adults (Hirshkowitz, et al., 2015; Doherty, Madigan, Warrington, & Ellis, 2019).

There are many individual, cultural, and environmental factors that influence sleep. An individual's chronotype is a genetic factor that affects the circadian rhythm categorizing them into morning, afternoon, and evening types (Rosenthal, et al., 2001; Doherty, Madigan, Warrington, & Ellis, 2019). Lifestyle behaviors such as caffeine intake, substance use, and poor sleep habits also have an impact on the circadian rhythm, resulting in an altered physiologic response (Golem, et al., 2014; Doherty, Madigan, Warrington, & Ellis, 2019). Negative physiologic response (ex. poor sleep) can lead to negative consequences. When deprived of sleep, decision making and moral judgement can be impaired (Charest, et al., 2021).

With increased stressors and workload demands, college students have a higher risk for sleep disturbances in general. Research found 12%-14% of college students report clinical symptoms of sleep disorders and up to 60% report poor quality of sleep (Charest, et al., 2021). Although the college student population in general reports high levels of sleep disturbance, SAs are at an even higher risk. Relevant data from a meta-analysis of ten studies on sleep disturbance among athletes included 4,782 elite athlete participants from various sports and found 26.4% of athletes reported symptoms of sleep disturbance (Gouttebauge, et al., 2019).

In accordance with higher physical and mental demands during the competitive season, sleep quality and quantity is especially important for SAs. Sleep has a positive effect on the immune, nervous, and endocrine systems, playing an important role in memory, learning, and the waking state, which can have a direct impact on recovery and performance in athletes (Doherty, Madigan, Warrington, & Ellis, 2019). As an important component of overall health in an athlete, sleep disturbances can lead to adverse events. The strongest predictor of injury specifically in adolescent athletes is obtaining less than eight hours of sleep (Milewski, 2014; Doherty, Madigan, Warrington, & Ellis, 2019).

When compared to non-athlete college students, SAs face unique challenges that impair sleep. Due to time-intensive training schedules, stress and anxiety related to pre-competition, and travel, college SAs are more likely to encounter sleep disturbance and deprivation than other college students (Leeder, et al., 2012; Charest, et al., 2021). Despite the environmental challenges, athletes may also face physical challenges that lead to impaired sleep. Muscle soreness caused by inflammation can disrupt sleep (Hauswirth, et al., 2014; Doherty, Madigan, Warrington, & Ellis, 2019).

Poor sleep hygiene puts an individual at risk for negative health outcomes. A cross-sectional study found that sleep disturbance may be the single risk factor for being involved in physical, verbal, or sexual assault (Charest, et al., 2021). Another study found that sleep disturbance was a main contributor toward aggressive and risky behavior including substance abuse, physical altercations, and risky sexual behavior (Gupta, et al., 2017; Charest, et al., 2021). The National Institute of Health (NIH) has specifically voiced concerns regarding sleep disturbance in the college student population and the increased risk it poses for alcohol consumption.

Sleep disturbance is correlated with MH disorders, most closely with depression. It is important to note that a cardinal sign of depression is sleep disturbance (Reardon, et al., 2019; Charest, et al., 2021). As a snowball effect, sleep disturbance and depression also put an individual at an increased risk of suicide. Sleep impairment is common among SAs and has a strong link to suicide. SAs who suffer from sleep impairment are four more times likely to experience suicide ideation when compared to SAs who do not suffer from sleep impairment (Young, Neil, Eberman, Armstrong, & Winkelmann (2022).

Eating Disorders and Athletes

Eating disorders are prevalent among SAs due to performance expectations, self-image, and sport-specific weight expectations. In the retrospective cross-sectional study that collected data from the ACHA over an 8-year period (2011-2019), found that both groups studied (athletes and non-athletes) reported low rates for receiving information on the impacts of eating disorders (Edwards, et al., 2021). Although eating disorders are more commonly heard of in female athletes, male athletes also experience body concerns which may lead to an eating disorder. NIMH estimates that approximately one million U.S. males suffer from eating disorders (Strother, et al, 2012; Gallagher, et al., 2021). Although there is suspected high prevalence of eating disorders in men, there is a lack of research on this topic due to stigma. Eating disorders are underdiagnosed and undertreated, specifically in male athletes due to athletic goals being a significant risk factor (Gallagher, et al., 2021).

Regardless of athlete status, research has found the prevalence of eating disorders among females is higher. In fact, females are twice more likely than males to experience an eating disorder (Neal, et al., 2013). Women are also more likely than men to report their symptoms. A study found that women were 3.74 more times likely than men to report their self-image is affected by their body weight. In the same study, women were twice more likely than men to report their peers including friends, family, teammates, coaches, made statements calling them fat and/or made suggestions they lose weight (Gallagher, et al., 2021). While females have higher reported rates of eating disorders, they are also more likely than men to identify their symptoms and seek clinical diagnosis and treatment (Sonneville & Lipson, 2018; Gallagher, et al., 2021).

Eating disorders are typically assessed among SAs by filling out a questionnaire, which can yield a gender-biased response. Based on gender experience, males and females have different thoughts of perceived self-body image. Gender directly affects both item and factor level responses on tools assessing the risk for eating disorders among athletes, but assessment tools can be altered to obtain risk score regardless of gender (Gallagher, et al., 2021).

Signs and symptoms of eating disorders differ from men and women. Men may portray external symptoms such as binge-drinking, anger, or irritability, whereas women typically encounter internal symptoms (ex. anxiety & depression). Eating pathology may also follow similar differences between male and females based on the pressure of maintaining body image (Needham & Hill, 2010; Gallagher, et al., 2021).

Although athletes in general are at risk for developing eating disorders, there are specific risk factors that apply to both males and females. Identified by research, a major risk factor for developing eating disorders among males is athletic goals, whereas young women involved in exercise are identified as a high-risk group (De Souza et al., 2014; Gallagher, et al., 2021). Sports requiring weight-based performance such as wrestling, running, and gymnastics among others put both male and female athletes at an equally elevated risk (Andersen, et al., 1995; Gallagher, et al., 2021). The best way to address eating disorders among SAs is to have nutritional support services readily available within the athletic community to meet the needs of athletes.

Help-Seeking Behavior by Student Athletes for Mental Health Concerns

Individuals experiencing stress address the situation with a certain coping mechanism. Coping strategies can vary from confrontation and problem solving to avoidance of the situation. Nonetheless, positive coping strategies, such as problem solving, are associated with more positive outcomes (Eisenberg, Golberstein & Gollust, 2007; Kroshus, 2017). When it comes to

sports, athletes who demonstrate positive coping skills may also have a more positive mental outlook on challenging situations. Rather than viewing challenges negatively, individuals in sports who have positive coping mechanisms may view challenges as an opportunity for growth and improvement, which also makes the athlete more likely to seek professional help when facing symptoms of mental health (Kroshus, 2017).

When it comes to help-seeking behavior, SAs may face more challenging barriers than non-athlete college students, including greater MH stigma when compared to non-athlete students and the perception that they will be less likely to perform well (Kaier, Johnson, & Strunk, 2015; Kroshus, 2017). This may be related to the stigma that athletes are viewed as ‘mentally tough.’ A recent systematic review analyses on health-seeking behaviors among SAs found stigma to be a large contributing barrier to athletes seeking clinical treatment for MH (Anchuri, et al., 2020). Along with social stigma, SAs also face barriers such as time restriction due to busy training schedules, fear of consequences for seeking MH treatment, and lack of knowledge of available resources. These existing barriers that impede SAs to seek appropriate treatment can have significant detrimental outcomes on an athlete’s well-being, performance (academic & athletic), and overall quality of life (Edwards, et al., 2021).

Resilience, mental toughness, and masculinity are all perceived mental components of athletes. Sport psychology defines resilience as a personal protectant behavior from potential negative outcomes of stress, whereas masculinity used as a definition in sport, is considered self-resilience and the ability to play through pain (Fletcher & Sarkar, 2013; Kroshus, 2017; Vella, et al., 2021). Athletes who conform to these beliefs are less likely to seek professional MH treatment (Steinfeldt, Steinfeldt, England, & Speight, 2009; Kroshus, 2017).

Although athletes face many barriers, being involved in a sport has been proven to facilitate positive coping skills through teamwork, self-reliance, and routine exposure to challenges. Positive psychological coping mechanisms may assist athletes in having a more positive attitude towards seeking professional help when experiencing psychological distress. Being a part of a sports team puts athletes at a higher risk of facing stressful challenges such as team conflict, injury, and competitive loss. Facing these challenges provides athletes with the opportunity to use different coping skills in response to social and environmental demands. It is possible that athletes who have been taught positive coping skills through their sport experience may be able to handle stressful situations and challenges in a positive approach, which may also help them to identify seeking professional mental health treatment as a supportive growth rather than viewing it as a failure (Kroshus, 2017).

Interventions should be implemented at universities to assist SAs in learning positive and healthy coping strategies and mental health prevention. Considering an athlete's compact schedule during competitive season, interventions such as a mental skills course could be implemented during off-season. A systematic review that assessed coping mechanisms among SAs found that athletes use both successful and unsuccessful coping mechanisms to cope with challenges unrelated to sport performance (Fogaca, 2021). Interventions and education provided to athletes on positive coping skills may offer a benefit for athletes coping skills both on and off the field. A study implemented an intervention to improve SA performance and MH by providing education on positive coping skills and increasing social support within the athletic environment. Study findings proved these interventions to have an improvement on both coping skills and anxiety among SAs. Providing methods to improve both MH and performance during

MH skills training sessions may also help athletes be more open-minded to MH interventions (Fogaca, 2021).

SAs may be more apt to approach their coaches, teammates, or athletic trainers (ATs) about MH concerns before they seek clinical professional psychological help. SAs have voiced concerns that MH providers on campus may not fully understand the barriers athletes face, such as performance pressure (Anchuri, et al., 2020). Thus, it is important for athletic staff and team members to be aware of available MH resources and offer social support. A quasi-experimental study assessed the mental health (depression, anxiety, & well-being) of 88 SAs belonging to five different sports teams of a U.S. university. The study implemented an intervention among the SAs, coaches, and team captains to improve mental skills on coping, performance, and stress. Results proved the intervention improved mental skills and decreased levels of anxiety among SAs (Fogaca, 2021). Social support from multidimensional levels can improve the overall well-being of SAs.

Along with social factors, personal factors also impact an athlete's willingness to seek help. Growth mindset (GM) is a personal factor that is found to be directly related to sport, academic, and social relationship outcomes. GM has also been proven to help individuals cope with stress and adapt to challenges. GM is an example of a mental skill that would be beneficial to educate SA on, along with positive self-talk, mindfulness, and relaxed breathing techniques (Fogaca, 2021).

Health literacy among SAs may impact their likelihood to seek professional help when experiencing MH illness. Health literacy is the ability to understand medical information. Increased levels of health literacy can facilitate improved health knowledge which results in decreased negative health behaviors and outcomes. A study conducted to assess health literacy

among SAs and non-athlete college students at DI, DII, and DIII NCAA universities found that there were lower levels of functional and communicative health literacy among SAs compared to their non-athlete peers. While this study showed low health literacy among SAs, it should be noted that NCAA DI athletes may be at a higher advantage compared to DII and DIII level athletes to receive access to health services which may overall improve health literacy among DI athletes (Beasley, Hoffman, & Andelin, 2021). Improving health literacy among SAs may overall improve their help-seeking behaviors. It is especially important for health care providers, coaches, and administrative staff to consider this relationship.

Although health status is important to SAs, a sport-first mindset often clouds an athlete's decision to willingly seek professional psychological help. A sport-first mindset can be defined as an athlete's belief that athletic performance and success trumps overall health and mental well-being (Moore et al., 2018; Beasley, Hoffman, & Andelin, 2021). In efforts to protect SAs, the NCAA mandates a 20 hour per week in-season limit for DI athletes. Despite these rules, SAs have reported spending up to 40 hours a week taking part in sport-related activities (Beasley, Hoffman, & Andelin, 2021). The support and services SAs seek out for psychological help may also feed into the sport-first mindset. Sport psychologists and performance coaches focus on enhancing an athlete's performance and clinical pathology, whereas social work and primary healthcare providers focus on a holistic approach with integrative clinical assessment and interventions (Dean & Rowan, 2014; Gant, et al., 2009; Beasley, Hoffman, & Andelin, 2021).

Some SAs may not be aware of how stress affects them. Being unaware of psychological concerns may result in a form of dysfunction which alters the athlete's well-being and may appear in the form of acting out nonverbally (Neal, et al., 2013). To assist athletes in identifying MH concerns, an individual approach may offer specific benefits compared to a group-based

approach. Programs focused on individual improvement can help athletes identify personal goals and obtain the necessary skills to achieve them (Purcell, Gwyther, & Rice, 2019). Individual ways to identify MH concerns and implement coping strategies may include journaling, physical exercise, deep breathing, self-care, healthy sleep habits, music therapy, and following a daily routine (Young, Neil, Eberman, Armstrong, & Winkelmann, 2022).

While the individual approach may be beneficial to some SAs, a team-based approach may be preferred by others. Team-based training should be specific to sport type and athletic level (junior vs. senior athletes). These programs should education athletes on MH risk factors, signs and symptoms of MH concerns, MH resources available, and psychological distress coping methods (Purcell, Gwyther, & Rice, 2019).

Internal and external social support groups are critical in helping guide help-seeking behavior among SAs. Internal support groups include individuals such as coaches, teammates, ATs, nutritionists, counselors, and sports psychologists, whereas external support groups consist of family, friends, and personal services. While SAs have reported these support groups to be helpful resources, NCAA institutions need to increase awareness of available resources on campus in hopes to decrease MH stigma and increase the utilization of health services by SAs (Young, Neil, Eberman, Armstrong, & Winkelmann, 2022).

Mental Health Literacy Among Coaches

One definition of health literacy defines it as “one’s ability to access, understand, critically assess, and apply health information in personal health decisions” (Chinn, 2011; Sorenson et al., 2012; Beasley, Hoffman, & Andelin, 2021). While another definition refers to health literacy as an individual’s personal knowledge and beliefs on MH that help recognize, manage, and prevent MH disorders (Jorm, 2012; Vella, et al., 2021). Assessing health literacy

among athletic staff including trainers and coaches may improve MH awareness and support among SAs.

SAs are more likely to seek psychological help in a non-stigmatized environment facilitated by coaches (Purcell, Gwyther, & Rice, 2019). Coaches have an authoritative role which has a large impact on SAs in general. Coaches are a key figure in creating a supportive athletic environment due to their role and responsibility of caring for and interacting with athletes, even more importantly for young athletes who build trusting relationships with their coaches. Therefore, a coach may be the first individual to whom SAs with MH concerns go to for guidance. It is encouraging that research shows an increasing recognition of the impact coaches have on adolescents MH by recognizing signs and symptoms of concern and encouraging a positive MH environment (Duffy, Rooney, & Matthews, 2021).

Research findings support coaches and trainers who are educated on signs of psychological distress in SAs are more comfortable addressing athletes about the need to seek help for treatment (Anchuri, et al., 2020). Coaches who are educated on MH and offer a supportive environment are recognized by SAs. Mental health literacy has been shown to be a key factor athletes consider prior to speaking to their coaches about personal MH concerns (Swann et al., 2018; Duffy, Rooney, & Matthews, 2021). One study found that athletes felt supported when their coach addressed MH in a group setting including their teammates (Young, Neil, Eberman, Armstrong, & Winkelmann, 2022). Quite possibly, coaches who have personal experiences with MH may offer a more understanding viewpoint on MH illness.

Coaches perceived sport-first mindset and expectations that athletes should have strong mental components of MT and resilience provide a harmful environment for SAs. A study that assessed MH support from coaches and staff among SAs found athletes reported both positive

and negative experiences. The negative experiences came from coaches who had outdated coaching techniques that included untrustworthy and disrespectful coaching characteristics, punishing athletes in the form of excessive exercise to improve motivation, and providing lack of support for athletes during injuries, making SAs less likely to seek MH help. Research has also found expectations coaches make such as startling line ups, rosters, body image, and performance expectations cause fear and anxiety among SAs (Young, Neil, Eberman, Armstrong, & Winkelmann, 2022).

Coaches with developed role efficacy may be more likely to be approached by SAs with MH concerns. Role efficacy is an “individuals’ confidence in his or her capabilities to carry out a particular task or behavior” (McAllister et al., 2007; Duffy, Rooney, & Matthews, 2021). Behaviors among coaches that are consistent with role efficacy include clear instruction, reinforcement, and portraying role model behaviors. These traits may help decrease perceived coach stigma and lower MH issues among SAs (Kroshus, 2017). A study assessing mental health literacy and role perceptions among coaches found that improving education, competence, and beliefs among coaches may encourage them to engage in supportive behaviors on MH issues (Duffy, Rooney, & Matthews, 2021).

Becoming culturally competent will help assist coaches to provide supportive measures against MH identification, prevention, and treatment. Being culturally competent includes awareness of an individual’s cultural, personal, and environmental factors (Gorczyński, et al., 2021). In order to improve MH among SAs, coaches, sport organizations, athletic staff, and MH providers need to portray culturally competent behaviors. Sport organizations are responsible for ensuring cultural competence among staff members and forming a process for providing MH resources and services to all athletes (Betancourt, et al., 2003; Gorczyński, et al., 2021).

Coaches and trainers encounter the most interactions with athletes, making them more likely to be the first to identify MH concerns in SAs. Problematic behaviors are often recognized by sports personnel due to regular interactions with SAs (De Souza, et al., 2021). As a result of being the first to recognize signs and symptoms, coaches and trainers are in a prime position to guide SAs to seek professional MH services (Anchuri, et al., 2020).

With ATs being one of the most likely athletic staff members to recognize early signs and symptoms of MH concerns, in 2013 the National Athletic Training Association (NATA) created a consensus statement regarding best practices for identifying and managing MH concerns among college SAs. This consensus statement creates an avenue for ATs to act as a resource and identify MH concerns among SAs by utilizing pre-participation physical exams and tactics to address MH in SAs who may be showing signs of distress (Neal, et al., 2015; Edwards, et al., 2021). The consensus statement created by the NATA was used as the foundation for the Mental Health Best Practice guidelines created by the NCAA in 2016 (Edwards, et al., 2021).

The most successful way to prevent, identify, and treat MH among SAs is to bring awareness to coaches, athletic staff, and other medical professionals (ex. clinical & sport psychologists). With a better understanding of risk factors (ex. sleep disturbance, substance abuse, and aggressive behaviors) that can evolve from MH illness in athletes, early identification by sports and professional personnel may offer better health outcomes for SAs and lower the prevalence of MH among athletes in general (De Souza, et al., 2021). A SA should be referred to professional help as soon as possible if they seek help from individual peers such as friends, family, coaches, or trainers. Sports medicine and MH professionals play a pertinent role in diagnosing MH disorders in a timely manner among SAs to ensure proper management and follow-up (Gouttebauge, et al., 2019).

To help destigmatize MH among SAs, coaches should speak more openly on the matter. Implementing health literacy programs on university campuses may assist athletic and organizational staff in creating an environment that supports MH and well-being of SAs (Purcell, Gwyther, & Rice, 2019). Additional programs and evaluations would be beneficial in understanding how to best support coaches in creating an environment that supports MH seeking behaviors from SAs, both directly and indirectly (Kroshus, 2017). Purcell, Gwyther, and Rice (2019) propose that a peer workforce approach may be beneficial in normalizing and promoting MH among SAs. An example of this would be the involvement of coaches and former athletes discussing experiences of MH concerns with current athletes.

Interventions for mental health literacy need to take place on both individual and organizational levels. A study involving elite athletes found that 65% of participating athletes reported feelings of support and positive experiences with coaches and athletic staff who encouraged MH support and services. Researchers view that to be a step in the right direction for improving mental health literacy in the SA population (Young, Neil, Eberman, Armstrong, & Winkelmann, 2022). Improving health literacy among coaches will improve their ability to identify MH concerns early, offer support, and refer SAs to the appropriate MH professionals for further evaluation and treatment (Duffy, Rooney, & Matthews, 2021).

Providing Mental Health Screening: SMHAT-1 Screening Tool

Assessing MH among SAs frequently throughout the competition period may be necessary in identifying early signs of MH concerns and facilitate treatment and prevent negative outcomes. The main limitation found in numerous research studies assessing MH among elite athletes was the use of multiple assessment tools that were not developed or validated specifically for athletes (Gouttebauge, et al., 2019). In response to the lack of validated MH

screening tools specific to the elite athlete population, the IOC created the SMHAT-1 screening tool. This tool was developed to facilitate early identification and promote help-seeking behaviors among elite athletes who are at risk for or currently experiencing MH symptoms. The tool was created to be used by coaches, athletic staff, and other health care professionals to assess MH among elite athletes. The goal of this tool is early identification of MH symptoms in elite athletes to facilitate a timely referral for athletes who need additional support and treatment (Gouttebauge, et al., 2021).

The tool should ideally be used multiple times throughout an athlete's competitive season to ensure early identification of MH concerns. Literature identifies the most critical time to screen athletes for MH concerns are the following: post injury/illness, pre and post competition period, transition into and out of sport career, after an adverse life event, and if there is suspicion for harassment or abuse (Purcell, Gwyther, & Rice, 2019; Gouttebauge, et al., 2021).

In an effort to create a MH screening tool specific to elite athletes, scientific literature was reviewed regarding mental illness in elite athletes assessing: MH viewpoints from current and former elite athletes, reviewing objectives, the approach of current screening tools and their content, and assessing the reliability and validity of assessment tools already being used in practice. Along with reviewing current literature, the IOC conducted systematic and narrative reviews on the prevalence, screening, diagnosis, and treatment of MH signs and disorders among elite athletes (Gouttebauge, et al., 2021).

During the creation of the SMHAT-1 tool, the IOC received input from numerous involved experts trained in MH. These participants have special skills, training, and experience with sports medicine, psychiatry and psychometrics, and elite sports who used preexisting MH screening and assessment tools used in elite sports to help form the SMHAT-1 tool. The

appropriateness of the SMHAT-1 tool was explored by sports medicine physicians, and reliability and validity of the tool was established after testing in professional football players (Gouttebauge, et al., 2021).

The SMHAT-1 tool involves three steps to assessing MH among elite athletes. These steps include (1) triage, (2) screening, and (3) reassessment and intervention. The triage step was created using an already existing validated screening tool: Athlete Psychological Strain Questionnaire (APSQ), whereas the screening step also consists of six existing validated screening tools: General Anxiety Disorder (GAD-7), Patient Health Questionnaire (PHQ-9), Cutdown, Annoyed, Guilty, Eye-opener Adapted to Include Drugs (CAGE-AID), Brief Eating Disorder in Athletes Questionnaire (BEDA-Q), Alcohol Use Disorder Identification Test Consumption (AUDIT-C) and Autism Spectrum Screening Questionnaire (ASSQ). Considering step two of the screening tool is used for clinical assessment of MH disorders, this portion of the SMHAT-1 tool must be conducted by licensed MH professionals. A positive response was noted, with 73% of the experts involved in the creation of the SMHAT-1, rated the screening tools included within the SMHAT-1 tool to be very appropriate (Gouttebauge, et al., 2021).

Step one identifies an athlete's score on the APSQ. The APSQ consists of ten brief self-reporting questions that help identify psychological stress in athletes. The questionnaire score ranges from 10-50, with a score >17 indicating a higher risk for experiencing psychological distress (Rice, et al., 2020; Gouttebauge, et al., 2021). The APSQ has been validated by a large sample size of elite male and female athletes and is undergoing further evaluation and validation among junior athletes (Purcell, Gwyther, & Rice, 2019).

Step two includes six assessment tools to clinically assess and differentiate MH risks and disorders. One of the most prevalent MH disorders among the general population is GAD with

current prevalence of 2.8% to 8.5% (Olfson, et al., 1997; Spitzer, Kroenke, Williams, & Lowe, 2006; Gouttebauge, et al., 2021). To best assess GAD in medical practice, the GAD-7 is a commonly used assessment tool. The tool is valid and efficient in screening for and assessing the severity of GAD in research and clinical practice. The GAD-7 assessment tool was found to have good reliability and validity with 89% sensitivity and 82% specificity after a study including 2740 adult patients was conducted in 15 primary care clinics in the U.S. from November of 2004 to June of 2005; the internal consistency of the assessment tool was excellent with a Cronbach alpha score of 0.92 which is indicative of good procedural validity (Spitzer, Kroenke, Williams, & Lowe, 2006; Gouttebauge, et al., 2021).

The second screening tool included in step two of the SMHAT-1 tool is the PHQ-9 which assesses the risk for depression among individuals. The PHQ-9 not only assess the risk for depression but also the severity of depression present among individuals by scoring nine criteria from the DSM-IV, making this screening tool useful in the clinical setting and for research. The tool assesses the severity of depression by the indicated scores of five (mild), ten (moderate), fifteen (moderately severe), and twenty (severe). Based on the mental health professional review of the PHQ-9, a score ≥ 10 had an 88% sensitivity and 88% specificity for major depression (Kroenke, Spitzer, & Williams, 2001; Gouttebauge, et al., 2021). Respectively, the PHQ-9 does not detect all MH disorders. Therefore, if clinicians suspect that an individual has false-negative PHQ-9 results, additional questions should be asked to further assess the individuals MH symptoms (Spitzer, Kroenke, & Williams, 1999; Gouttebauge, et al., 2021).

The CAGE-AID is the third screening tool used in step two of the SMHAT-1 to assess substance abuse among elite athletes. The CAGE questionnaire was adapted for use in the SMHAT-1 tool by removing the alcohol assessment component (assessed with the AUDIT-C

questionnaire) and including additional questions to identify which substance was used (Gouttebarga, et al., 2021). Research identifies the CAGE questionnaire to be a valid screening tool with 80-95% reliability. Despite the high reliability of the tool, its use for assessing less severe forms of substance use may not be appropriate due to poor result findings on studies that included college students, women, and pregnant women (Dhalla & Kopec, 2007).

Separate from substance use and abuse screening is the AUDIT-C screening form associated with step two of the SMHAT-1 tool. This screening tool is used solely to assess alcohol consumption among elite athletes. Risk drinking is defined as the consumption of >14 alcoholic drinks per week or >4 drinks in a single day for men, and >7 drinks per week or >3 drinks daily for women. The AUDIT-C is useful in screening for alcohol use disorders and risk of drinking. The AUDIT-C contains multiple cut points for both men and women. Which improves its specificity and sensitivity (Dawson, Grant, Stinson, & Zhou, 2006; Gouttebarga, et al., 2021). Overall, the use of the AUDIT-C screening tool is becoming more common for identifying alcohol risks, usage, disorders.

The BEDA-Q questionnaire is included within the second step of the SMHAT-1 to assess eating disorders among elite athletes. The early identification and treatment of eating disorders among athletes has been recognized by numerous sport organizations including the NCAA, IOC, and American College of Sports Medicine just to name a few. The BEDA-Q screening tool was developed in response to the need for additional research on eating disorder screening tools used specifically among elite athletes at different competitive levels. The initial study of the development and implementation of the BEDA-Q included female high school athlete participants. Results found a 95% confidence interval for identifying athletes with and without eating disorders and a 98% confidence interval in predicting new cases, indicating a good ability

to identify eating disorders in athletes (Martinson, et al., 2014). Limitations to using the BEDA-Q includes lack of research studies using this screening tool on male athletes, and lack of research studies using this screening tool specifically on elite athletes.

The sixth and final screening tool used in step two of the SMHAT-1 is the ASSQ. This screening tool is included to assess sleep quality among elite athletes. Sleep is a critical component in facilitating recovery from physical and mental demands of elite athletes, and research has found that elite athletes are at an increased risk for poor sleep quality (Samuels, 2009). Because of the increased prevalence of sleep disorders among elite athletes, it is crucial to identify signs and symptoms by using valid screening tools. Using reliable and valid screening questionnaires allows for early intervention if necessary and can also differentiate between individuals who may require education rather than interventions. The ASSQ was specifically designed to assess sleep disturbance and daytime dysfunction in athletes and provide interventions depending on severity and type of sleep disturbance issue (Samuels, James, Lawson, & Meeuwisse, 2016; Bender, Lawson, Werthner, & Samuels, 2018; Gouttebauge, et al., 2021). Research has found the ASSQ to have an 81% diagnostic sensitivity and 93% specificity. The ASSQ is easy to administer by athletic staff and is quick to complete for athletes. The psychometric properties of this tool strongly indicate the ASSQ can detect sleep disturbances that are clinically meaningful for elite athletes (Bender, Lawson, Werthner, & Samuels, 2018; Gouttebauge, et al., 2021). With routine screening for sleep disturbances, athletes may have improved overall MH and performance outcomes.

Although the SMHAT-1 tool is designed with validated and reliable screening tools to assess MH in elite athletes, there are limitations in using this tool that should be further assessed in research. These limitations include self-reported information, which may alter the accuracy of

independent athletes scores. Some of the validated screening tools within the SMHAT-1 tool have not been validated specifically on the athlete population. The triage portion of the SMHAT-1 is dependent upon the result score of the APSQ, which does not have a 100% rate of specificity or sensitivity. Finally, referrals to psychologists or psychiatrists may not always be possible. Because of these limitations, the IOC recommends further research studies should be conducted to validate the SMHAT-1 tool among athletes from multiple sports and cultures. The SMHAT-1 tool is the first version used to identify MH risks, symptoms, and disorders among elite athletes. Therefore, further research studies may help aid the IOC in revising the SMHAT-1 tool as needed for future use to continue to provide elite athletes with MH support (Gouttebauge, et al., 2021).

Summary and Research Gaps

There is an increased prevalence of MH risk factors and disorders among SAs. Despite these research findings, MH identification and treatment continues to be a concern among the SA population. Efforts to reduce MH symptoms, disorders, and stigma and increase MH awareness among athletes may increase help-seeking behaviors and improve competitive and academic performance as well as overall quality of life and well-being (Edwards, et al., 2021).

Normalizing MH and bringing awareness to this endemic needs to include improving mental HL among coaches, athletic staff members, and healthcare professionals.

With the increasing awareness of MH among elite athletes, multiple sports organizations are getting involved to provide better outcomes for athletes. The IOC in its most recent consensus statement provides an analysis of and recommendations for treatment of complex and highly prevalent MH disorders among elite athletes. The purpose of this consensus statement is to serve as a resource to help guide and improve clinical management of athletes by healthcare

professionals (Purcell, Gwyther, & Rice, 2019). Along with the IOC, the NCAA also has mental health best practice guidelines to promote MH awareness among collegiate athletes in the U.S.

Along with sport organizations, many colleges and universities worldwide have recognized the importance of prevention, early identification, and early treatment goals for MH disorders in athletes. In response to recognizing this important need, many campuses now offer MH services both on and off campus to proactively offer prevention measures for both SAs and non-athlete students (Edwards, et al. 2021). Hopefully in the near future, research will show an improvement in MH and help-seeking behaviors among SAs as a reflection of the increased number of policies, procedures, and guidelines in place to support athletes.

These prevention guidelines are necessary to aid in decreasing MH prevalence among elite athletes. Preventing strategies that have a multi-step approach reduce the development of MH symptoms and help minimize the impact or severity symptoms may have on an individual. The early identification and treatment stages assist in identifying MH concerns and preventing progression of symptoms. The continuing management and care stages aid individuals to recovery relapse prevention, usually involving MH professionals (Purcell, Gwyther, & Rice, 2019).

Recent research has found that nearly two-thirds of ATs employed at NCAA institutions follow a routine MH emergency policy. Of these MH policies, 100% required further evaluation of the patient or treatment regimen. 33% of the policies had a procedure in place for referring SAs who are identified at risk for developing MH symptoms, and 64% of the policies did not have a written procedure in place for managing SAs with active thoughts of suicide (Young, Neil, Eberman, Armstrong, & Winkelmann, 2022).

Although numerous recent studies examine the prevalence of MH disorders among SAs, there continues to be major gaps in help-seeking behaviors, delivery of services and treatment measures. Implementing creative and effective education measures for both SAs, administration staff, and athletic staff to early identify and intervene early with MH symptoms may help form a positive culture that acknowledges MH is equally as important as physical health. Good MH contributes to an athlete's overall performance, well-being, and quality of life (Purcell, Gwyther, & Rice, 2019). Implementing MH screening at recommended times throughout an athlete's competitive season along with addressing MH stigma from a top-down approach may offer early identification and treatment of MH concerns among SAs.

CHAPTER 3: METHODS

Overall Project Design

A quality improvement design was used to evaluate the feasibility and utility of assessing mental health concerns among SA's on the University's track and field team pre- and mid-competitive season. The track and field SA's, team coaches and athletic staff were invited to attend an educational session that provided information on the importance of screening for mental health. Baseline data was collected prior to the start of the 2023-2024 indoor track and field season. Follow-up data was collected during the mid-indoor 2023-2024 competitive season to assess for changes or new MH concerns among the athletes throughout the season. The same assessment tool and demographics were used for both the pre- and mid-season to evaluate MH concerns.

Implementation Plan

Prior to the start of the 2023-2024 indoor track and field season, SA's, team coaches and athletic staff were invited to attend an educational session that took place in August 2023 on the university's campus. The session offered information about the prevalence of MH issues among SA's and the importance of screening for MH concerns among SA's, resources available on and off campus to athletes and athletic staff, and an explanation of the SMHAT-1 screening tool.

Following the educational session, SA's were invited to complete the SMHAT-1 tool in the form of a Qualtrics survey for the collection of baseline data prior to the start of their indoor training season. The survey was distributed via email and by QR code. The athletes were given two weeks to complete the survey. The same Qualtrics survey was sent to SAs via email a second time in December of 2023 to collect follow-up data during the mid-competition season. Athletes were given the first two weeks of December 2023 to complete the final survey. Follow-

up emails were sent by an outside source four, seven, and fourteen days after the survey became available to the SA's as a reminder to complete the survey within the 14-day window if the SA desired to do so. Once the data was collected, the track and field coaches and athletic staff were invited to attend a final session where the survey results were presented in an aggregate form. This session was held on the university campus in January 2024.

Setting

The project was implemented at a large, land-grant university in the Midwest. The university is accredited by the Higher Learning Commission that focuses on students, land grants, and research. It offers nearly 250 academic programs and promotes advanced learning opportunities by offering master's, doctoral, and certificate degrees. The university is home to fourteen intercollegiate Division I sports teams affiliated with the NCAA and is partnered with local sponsors to offer 17 different sport facilities utilized by the university's athletic teams and the local community.

Sample/Recruitment

After IRB approval in August 2023, a convenience sample of track and field SA's were invited to participate in the project. SA's that participate in track and field events begin indoor season practice the first week of September. Competition events start as early as October. The indoor season intercorrelates with the outdoor season beginning in February. The outdoor season goes until May, although students who qualify for post-season competitions may compete into the month of June.

Track and field athletes on the 2023-2024 season roster were invited to complete the Qualtrics survey. This included 55 male and 61 female SA's. To meet inclusion criteria, athletes had to be currently enrolled as a student at the university. This includes freshmen, sophomore,

junior, and senior students. Athletes who were academically ineligible to participate in their sport were still invited to complete the survey. Athletes who were nursing an injury were encouraged to participate in the survey. Athletes who were already utilizing mental health resources were also invited to complete the survey. Exclusion criteria includes student athletes who are not a member of the track and field team.

Evidence-Based Project Interventions

An educational session was held on campus for the track and field SA's in August 2023. Information was provided via verbal presentation by the researcher. The session introduced the DNP dissertation project, SMHAT-1 screening tool, the importance of MH screening among SA's, and MH resources available to SA's both on and off campus were discussed at that time. A Qualtrics survey assessing MH among the athletes was made available post education session.

The first Qualtrics survey was distributed to the SA's via email and by QR code the last week of August 2023. Athletes who chose to complete the survey were prompted to answer ten questions in the first step of the assessment tool to assess the overall MH of the athlete within the last 30 days. These ten questions were answered on a scale 1-5. If the athlete scored <17, they will have completed the survey. If the score was >17, they were guided to complete step two of the evaluation tool which prompted the athlete to answer six sections of additional questions. The first section of step two included seven questions of the GAD-7 assessment tool to assess for anxiety symptoms over the last two weeks. The second section included nine questions from the PHQ-9 questionnaire assessing for depressive symptoms within the last two weeks. Both the first and second section questions were answered on a scale 0-3. The third section included five questions of the ASSQ assessment tool assessing for sleep disorders. The first two questions of section three were answered on a scale 0-4. Questions 3-5 were answered on a scale 0-3. The

fourth and fifth section included eight combined questions of the AUDIT-C and CAGE-AID that assessed the risk for substance abuse. The three questions of the AUDIT-C were answered on a scale 0-4. The four questions of the CAGE-AID were answered as yes or no. Each question answered 'yes' received one point. At the end of section five, the athlete was asked to identify which substance(s) had caused concern in their life by selecting the substance option(s) in the table provided within the survey. There were 21 substances provided in the table for the athlete to choose from. The sixth section included the BEDA-Q questionnaire which consisted of nine questions assessing for eating disorders. Questions 1-6 were answered as never, rarely, sometimes, often, usually, and always. The answer 'often' was worth one point, 'usually' was worth two points, and 'always' was worth three points. Questions seven and eight were answered as yes or no. Question nine answer options were 1-2 times, 3-5 times, and >5 times. In total, the athlete completed 38 additional questions within step two of the Qualtrics survey. If an athlete scored under threshold for all six sections in step two, it was recommended that the athlete continue to be closely monitored by athletic staff or a mental health professional and may repeat step one of the SMHAT-1 tool if there are concerns for a change in MH within that individual athlete. If an athlete scored above threshold for any of the six additional screening tools within step two, it was recommended that the athlete complete step three of the Qualtrics survey, be referred to a mental health professional, and form a treatment plan. Regardless of the athlete's score and number of sections completed, upon completion of the survey there was a final comment stating, "if you are experiencing thoughts of self-harm or suicide, it is highly recommended that you follow up with a health care professional or a member of the athletic staff".

Step three within the Qualtrics survey included four additional sections to further assess the risk for specific MH disorders based on scoring from step one and two. The first section included six questions assessing for symptoms of ADHD. These six questions could be answered as never, rarely, sometimes, often, and very often. The second section included 18 questions assessing the risk for bipolar disorder. These 18 questions were answered as yes or no. The third section included eight questions assessing for post-traumatic stress disorder (PTSD). Seven of these questions were answered as yes or no. One question when assessing for PTSD could be answered as inside, outside, or both. The fourth section included nine questions assessing the risk for a gambling addiction. These questions were answered as never, sometimes, most of the time, and almost always. The fifth section contained 16 questions assessing for psychosis. These questions were answered as true or false. For every question answered as ‘true’, the athlete was prompted to give another answer of none, mild, moderate, or severe. In total, the SA will have answered 57 additional questions in the third step of the survey. As previously stated, if an athlete is prompted to complete step three of the Qualtrics survey, it is highly recommended they seek care from a mental health specialist for close follow-up.

The same Qualtrics survey was redistributed via email to the track and field SAs who agreed to complete the mid-season survey and meet inclusion criteria by mid-indoor competition season. The timeframe for the second survey to be completed was the first two weeks of December 2023. The significance of the second survey was to evaluate for a change in MH among the SA’s from pre-season to mid-season of indoor competition. Once the pre- and mid-season surveys had been completed, the results were analyzed and disseminated to the University’s track and field coaches and athletic trainer in an aggregated form. The results of the project were presented to the athletic staff via verbal presentation. The final results determined

the recommendation to use the SMHAT-1 tool to assess MH in SA's attending the university in future sport seasons.

Evaluation/Outcomes/Data Analysis

The outcome of this quality improvement project was determinant on the results of the pre-season and mid-season surveys. After holding an educational session with the SA's in August 2023 to provide information on the importance of this project, the goal was that 100% of the SA's who met eligible requirements would participate in the Qualtrics surveys. Assessing for change in MH among SA's when comparing pre-season survey results to mid-season survey results helped guide future recommendations on using the SMHAT-1 tool in athletics.

Once the results of both surveys were collected, the results were analyzed by the researcher. The recommendation to use the SMHAT-1 tool to assess for MH changes in SAs throughout the sport season was to be determined by project findings. Recommendations considered were administering the screening tool pre-season, mid-season, post-season, after injury or adverse life event, or if other concerns arise based on an athletes change in behavior.

Figure 3

OAE Table

Objectives	Activities	Evaluation
Hold an educational session with the University's track and field student athletes prior to the start of their sport season.	Hold an education session for track and field student athletes with PowerPoint presentation.	All track and field student athletes will participate in the Qualtrics survey
Administer the SMHAT-1 tool to assess the mental health among Division I collegiate athletes participating in track and field events at a Midwest University before the start (pre-season) of their indoor competitive season and half-way through (mid-season) their competitive indoor season to evaluate for changes in mental health.	Administer Qualtrics survey via email to all track and field student athlete's pre- and mid-indoor season.	Results of Qualtrics survey
Disseminate mental health survey analysis findings with the University's track and field coaches and athletic staff.	Disseminate Qualtrics survey results to the University's track and field coaches and athletic staff via email.	Ongoing study, athletic staff may opt to utilize SMHAT-1 screening tool in future sport seasons.

Figure 4

Logic Model

Project Goals: Identify Division 1 college athletes on the track and field team who are at risk for or currently experiencing MH symptoms, provide on-campus MH resources to student athletes, and bring awareness to coaches and athletic staff.				
Objective One: Introduce the importance of mental health screening to the University’s track and field student athletes prior to the start of the indoor season.				
Objective Two: Administer the SMHAT-1 tool to assess the mental health among Division I collegiate athletes participating in track and field events at a Midwest University before the start (pre-season) of their indoor competitive season and half-way through (mid-season) their competitive indoor season to evaluate for changes in mental health.				
Objective Three: Disseminate mental health survey analysis findings with the University’s track and field coaches and athletic staff.				
Inputs	Activities	Outputs	Outcomes	
			Short	Medium/Long
<ul style="list-style-type: none"> ▪ IRB approval ▪ Education/Implementation ▪ The University’s Student Health Services ▪ The University’s counseling center ▪ Qualtrics tool and support staff ▪ DNP committee ▪ track and field student athletes ▪ track and field coaches/athletic trainer/athletic staff ▪ SMHAT-1 Tool ▪ Evidence-based best practice/guidelines related to MH screening in athletes ▪ DNP student 	Collaboration with track and field team for research collection Recruit student athletes to complete survey Develop presentation content Offer educational session via PowerPoint presentation on MH for student athletes, coaches, and athletic staff Develop and implement Qualtrics survey that mirrors the questions on the SMHAT-1 tool Collect and report mental health concerns/symptoms Disseminate research findings in an aggregated form to coaches and athletic staff to identify and improve MH among student athletes	<ul style="list-style-type: none"> ▪ Completed Qualtrics survey (pre- and mid-sports season) ▪ Communication through Zoom, phone, email between coaches/AT’s/project committee/Qualtrics expert/providers from counseling & student health center ▪ Completion of PowerPoint Presentation for Track and Field team prior to administering Qualtrics survey ▪ Completion of disseminated research findings to athletic staff ▪ SA’s, coaches, and athletic staff are aware of prevalence of MH among SA’s, know s/s to identify, and know resources for referral ▪ Improvement of MH awareness through PDSA & health promotion model 	<ul style="list-style-type: none"> ▪ Improved overall MH in student athletes on the University’s track and field team ▪ Improved MH awareness in SA’s and athletic staff ▪ Enhanced educational opportunities and increased competency for athletic staff ▪ Increased knowledge of on-campus MH resources for SA’s and athletic staff 	<ul style="list-style-type: none"> ▪ Develop a network of MH resources supported by ongoing relationships between the University’s athletic staff, counseling center, and student health center ▪ Implement the use of the SMHAT-1 screening tool within the athletic community to screen for MH among collegiate athletes ▪ Increase overall mental health of student athletes ▪ Increase MH awareness among coaches and athletic staff ▪ Increase confidence among coaches and athletic staff to identify MH concerns/signs/symptoms in student athletes ▪ Increase confidence among coaches and athletic staff to identify appropriate on-campus resources to refer SA’s struggling with mental health ▪ Earlier detection of MH conditions among SA’s ▪ Improved MH outcomes among SA’s

Conclusion

This project was guided by the steps of theoretical frameworks. The Health Promotion Model takes into consideration individual characteristics and experiences of individual SA's. It helps identify possible benefits, barriers, and influences SA's face when seeking help for MH concerns. By using this framework, the goal is that SA's who may be struggling with MH will seek help. The PDSA model was also used to implement this project. By following the steps within this model, a problem has been identified, a dissertation committee team has been formed, project objectives have been identified, and an extensive literature review has been conducted on the topic. The project was implemented August 2023. The results of the pre- and mid-season Qualtrics surveys were analyzed and recommendations on using the SMHAT-1 tool for future MH evaluation among SA's were determined. The overall goal of this project is early identification of MH concerns among SA's to facilitate appropriate treatment plan, referral, and follow-up.

CHAPTER 4: RESULTS

To measure objective one, track and field student athletes attended an educational session on campus after practice prior to the start of their competitive season. The researcher served as the spokesperson at the session and provided information to introduce the dissertation project, common mental health disorders among student athletes and the importance of mental health screening among Division I student athletes. After the session was complete, the student athletes completed the Qualtrics survey.

To determine the outcome for objective two, the SMHAT-1 tool was administered in the form of a Qualtrics survey both pre-season and mid-season to the track and field student athletes. The pre-season survey was administered to explore baseline mental health among the student athletes. The mid-season survey was administered to assess for any changes in mental health throughout the course of the competitive season. The results of the surveys were determined by the numerical value each student athlete scored on screening forms. Both surveys also included demographic information (see Appendix E for survey).

To measure objective three, the pre- and mid-season survey analysis findings were disseminated in an aggregate form to the University's track and field coaches and athletic trainer. The session was held on the University's campus. The athletic staff were invited to ask questions about the project and include any recommendations for future projects using the SMHAT-1 tool.

Table 1*Demographics of Participants*

Sample Demographics	Pre-season (n = 56)		Mid-season (n = 32)	
Gender				
Male	20	35.7%	9	28.1%
Female	36	64.3%	23	71.9%
Level of education				
Freshman	25	44.6%	11	34.4%
Sophomore	13	23.2%	10	31.3%
Junior	6	10.7%	3	9.4%
Senior	12	21.4%	8	25%
Currently injured	9	16.1%	4	12.5%
Currently academically ineligible to participate in the sport	4	7.1%	1	3.1%
Currently receiving MH treatment	2	3.6%	0	0%
Currently utilizing MH resources	0	0%	0	0%

Table 2*SAs Who Scored Above Threshold*

	Pre-season (n = 56)		Mid-season (n = 32)	
APSQ- Psychological strain score >17	22	39.3%	16	50%
PHQ-9- Depression	3	5.4%	2	6.3%
GAD-7- Anxiety	5	8.9%	3	9.4%
ASSQ- sleep disorder	8	14.3%	9	28.1%
AUDIT-C- Alcohol consumption	7	10.7%	4	12.5%
CAGE-AID- Substance abuse	1	1.8%	0	0%
BEDA-Q- eating disorder	13	23.2%	8	25%

Table 3*Statistics of SAs Who Completed Both Pre- and Mid-season Surveys*

Sample Demographics	Mean	(n = 20)	
Gender			
Male		5	25%
Female		15	75%
Level of Education			
Freshman		6	30%
Sophomore		6	30%
Junior		2	10%
Senior		6	30%
Currently Injured			
Currently academically ineligible to participate in the sport			
Currently receiving MH treatment			
Currently utilizing MH resources			
Results of SA Scores Above Threshold			
APSQ- Psychological strain score >17		9	45%
<i>Pre-season</i>	5.10		
<i>Mid-season</i>	8.85		
PHQ-9- Depression		0	0%
<i>Pre-season</i>	1.10		
<i>Mid-season</i>	1.95		
GAD-7- Anxiety		2	10%
<i>Pre-season</i>	1.75		
<i>Mid-season</i>	2.25		
ASSQ- sleep disorder		5	25%
<i>Pre-season</i>	1.25		
<i>Mid-season</i>	2.90		
AUDIT-C- Alcohol consumption		3	15%
<i>Pre-season</i>	0.80		
<i>Mid-season</i>	0.90		
CAGE-AID- Substance abuse		0	0%
<i>Pre-season</i>	0.00		
<i>Mid-season</i>	0.00		
BEDA-Q- eating disorder		7	35%
<i>Pre-season</i>	1.40		
<i>Mid-season</i>	2.90		

Pre-season and Mid-season Psychological Measure Findings

Psychological Strain

Psychological strain increased from pre-season to mid-season survey results. Findings support 39% (22 out of 56) of student athletes scored at or above 17 on step one of the SMHAT-1 screening tool, the APSQ. Out of the 22 student athletes that scored at or above 17, there were nine freshman, seven sophomores, three juniors, and three senior students. Of the 22 students that scored at or above 17, there were 14 females and eight male students. Out of the 22 students, five students scored above threshold for one category, five students scored above threshold in two separate categories (ex. depression and anxiety), five students scored above threshold for three separate categories, two students scored above threshold for four separate categories, and two students scored above threshold for six separate categories. Out of the 22 students that scored at or above 17 on the APSQ, three students scored below threshold for all additional screening forms.

Mid-season results found that 50% (16 out of 32) of student athletes scored at or above 17 on the APSQ form. Out of the 16 student athletes that scored at or above 17, there were seven freshman, five sophomores, two juniors, and two senior students. Of these 16 students, 13 were females and three male students. Out of the 16 students, six students scored above threshold for one category, six students scored above threshold in two separate categories, one student scored above threshold in three separate categories, and two students scored above threshold for five separate categories. Out of the 16 students that scored at or above 17 on the APSQ, one student scored below threshold for all additional screening forms.

There were 20 student athletes who completed both the pre- and mid-season surveys. Out of these 20 students, four students scored greater than 17 on the APSQ questionnaire on both

surveys. Mid-season results found that three out of the four students had increased scores on the APSQ. One of the four students answered 'yes' to currently being injured. All four students scored above threshold in different categories on the mid-season survey when compared to the pre-season survey (ex. a student may have scored above threshold for depression on the pre-season survey but scored above threshold for sleep disorder on the mid-season survey and below threshold for depression).

Out of the 20 student athletes who took both surveys, there were four students who scored less than 17 on the pre-season APSQ but scored greater than 17 on the mid-season APSQ. One of these students answered 'yes' to being academically ineligible on the pre-season survey only. Another student answered 'yes' to being academically ineligible on the mid-season survey only.

Depression

PHQ-9 scoring was not significantly different from pre-season to mid-season. The pre-season survey results found 5.4% (three of 56) students scored above threshold, meeting criteria for moderate depression. Mid-season survey results found 6.3% (two of 32) student athletes scored above threshold for depression. One of these students met criteria for moderate depression and one student met criteria for severe depression. The student who met criteria for severe depression was a female and a junior in college.

Anxiety

Anxiety was not significantly different among student athletes from pre-season to mid-season. GAD-7 scoring results on the pre-season survey were 8.9% (five of 56) student athletes scored above threshold for anxiety. Four students met criteria for moderate anxiety and one student met criteria for severe anxiety. The student who met criteria for severe anxiety was a

male and a sophomore in college. The Mid-season survey findings were 9.4% (three of 32) student athletes scored above threshold for anxiety. Two students met criteria for moderate anxiety and one student met criteria for severe anxiety. The student who met criteria for severe anxiety was a female and a freshman in college.

Sleep Disturbance

There were no significant changes in sleep disorder findings when comparing pre-season and mid-season results. The pre-season survey found 14.3% (eight of 56) student athletes scored above threshold for sleep disorder. All eight of these athletes scored above threshold in multiple other categories. Mid-season survey results found 28.1% (nine of 32) student athletes scored above threshold for sleep disorder. Eight of these athletes scored above threshold in multiple other categories.

Out of 20 student athletes who took both the pre- and mid-season surveys, there were three students who met criteria for sleep disorder. All three students scored below threshold for sleep disorder on the pre-season ASSQ but scored above threshold on the mid-season ASSQ. All three student athletes were females.

Alcohol Misuse

Results of the pre-season and mid-season AUDIT-C questionnaire found no significant changes. The pre-season survey results found 10.7% (seven of 56) student athletes scored above threshold for alcohol abuse. Five of these seven athletes also scored above threshold in eating disorder. The mid-season survey results found 12.5% (four of 32) students scored above threshold for alcohol abuse. Two of these four athletes also scored above threshold for sleep disorder.

Drug Use

There were no significant findings on the pre-season results when compared to mid-season results. Pre-season survey results found 1.8% (one of 56) student athletes scored above threshold for drug misuse. This one student listed stimulants-nicotine and cannabis-synthetics (k2, spice) as concerns in their life within the last three months. Mid-season results found zero students scored above threshold for drug misuse.

Disordered Eating

There were no clinically significant findings for eating disorders on the pre- and mid-survey results. Pre-season results found 23.2% (13 of 56) student athletes scored above threshold for eating disorder. Mid-season survey results found 25% (eight of 32) students above threshold for eating disorder. Out of 20 student athletes who completed both the pre- and mid-season surveys, there were three students who scored above threshold for eating disorder on mid-season survey only. One of these students also answered 'yes' to being academically ineligible. All three of these students were females.

Additional Screening Tools

The pre- and mid-season Qualtrics surveys included questions from additional screening tools found on the athletes form 3 of the SMHAT-1 tool. These additional screening tools assess for ADHD, bipolar disorder, PTSD, gambling addiction, and psychosis. Psychosis was unable to be assessed among the student athletes on both the pre- and mid-season surveys due to 13 questions not available on the Qualtrics survey. Both the pre- and mid-season survey results found zero students met criteria for gambling addiction.

There are no clinically significant changes from pre-season to mid-season results when screening for ADHD. Pre-season survey results found 10.7% (six of 56) student athletes had

symptoms highly consistent with ADHD by scoring greater than four on screening seven. Five of these students scored above threshold in multiple screening questionnaires. Mid-season survey results found 12.5% (four of 32) students scored greater than four on screening seven. Three of these athletes scored above threshold on multiple screening questionnaires.

There are no significant findings from pre-season to mid-season results on bipolar disorder screening. Results from the pre-season survey found 7.1% (four of 56) student athletes met criteria for bipolar disorder. All four students scored above threshold in multiple screening questionnaires. Mid-season survey results found 3.1% (one of 32) students met criteria for bipolar disorder.

Pre- and mid-season PTSD results were similar. Pre-season found 1.8% (one of 56) students who met criteria for PTSD. This one student answered 'yes' to having experienced a traumatic event in the past. Mid-season survey results found 3.1% (one of 32) students who met criteria for PTSD. This student answered 'yes' to having experienced a traumatic event in the past.

CHAPTER 5: DISCUSSION AND RECOMMENDATIONS

Summary

Student athletes on the track and field team from a large Midwestern university completed a pre-season and mid-season Qualtrics survey to assess their psychological strain prior to the competitive sport season and again halfway through (mid-season) their competitive sport season. Their MH was assessed by the numeric value each student scored on the screening forms. There were 56 out of a total of 116 SAs on the track and field team roster that completed the pre-season survey. On the pre-season survey, 22 out of 56 students scored greater than 17 on form one, the APSQ. These findings conclude that 39.3% of the athletes on the track and field team were experiencing high psychological strain prior to the start of their competitive season. A majority of these athletes were females and freshman in college. The SAs who scored greater than or equal to 17 on the APSQ were prompted to answer form two, relevant screening forms for depression, anxiety, disordered eating, alcohol misuse, drug abuse, sleep disorder, gambling, ADHD, PTSD, and bipolar disorder. Out of the 22 SAs who completed form two, 17 athletes scored above threshold on more than one screening form (ex. anxiety and depression).

Other findings from the pre-season survey include nearly half (four out of nine) of the students who answered 'yes' to currently being injured scored greater than 17 on the APSQ, indicating injury in sport may be directly linked to an increase in psychological strain among SAs. Four athletes answered 'yes' to being currently academically ineligible, all four students scored below 17 on form one. This may be indicative that academic eligibility may not put psychological strain on SAs. Two students answered 'yes' to currently receiving MH treatment, both students scored less than 17 on the APSQ which is indicative for low psychological strain.

Lastly, all students who completed the pre-season survey answered ‘no’ to currently utilizing MH resources (ex. student health services, counseling services, psychologist, etc.).

Findings from the mid-season survey were gathered from the results of the 32 out of a total of 116 SAs on the track and field team roster that completed the survey. Although there were fewer students who completed the mid-season survey, 16 out of 32 students (50%) scored above 17 on the APSQ, indicating higher psychological strain on SAs during mid-competition season. Comparable to the pre-season survey, a majority of the athletes who scored high on the mid-season APSQ were female students and freshman in college. Nine out of 16 students who scored high on the APSQ also scored above threshold on more than one screening form, putting them at risk for more than one MH disorder.

Other significant findings from the mid-season survey results include three out of four students who answered ‘yes’ to being currently injured scored greater than 17 on the APSQ. Again, this indicates that injury in sport may be directly linked to increased psychological strain. One student answered ‘yes’ to currently being academically ineligible to participate in sport, this student also scored greater than 17 on the APSQ. Surprisingly, zero students answered ‘yes’ to currently receiving MH treatment and zero students answered ‘yes’ to utilizing MH resources.

Comparing pre-season and mid-season results directly was poor due to a small sample size. There were 20 students who completed both the pre- and mid-season surveys. Of these 20 students, four (20%) scored less than 17 on the pre-season APSQ but scored above 17 on the mid-season APSQ, which may indicate that psychological strain is increased during mid-competition season. Three of the four students scored above threshold for sleep disorder on the mid-season survey only. Also, three of the four students scored above threshold for eating disorder on the mid-season survey only.

Discussion

Objective one was met by the attendance of the track and field team SAs at the educational session and the delivery of information regarding the dissertation project, common MH concerns among SAs, and mental health screening. The SAs were receptive to this information and received a hand-out with local MH resources. The SAs demonstrated their understanding of the importance of the project by completing the pre-season survey after the session had ended. Out of 116 total student athletes on the track and field roster, 48.3% (56 out of 116) students completed the pre-season survey, and 27.6% (32 out of 116) students completed the mid-season survey.

Objective two was met by the delivery of the surveys to the track and field athletes both pre- and mid-season and their response effort. The surveys were distributed to examine the psychological well-being of the SAs pre-competitive season and mid-season to identify if MH concerns rise over the course of the sport season. Resulted findings from objective two support the American College of Sports Medicine statistic; 35% of professional athletes suffer from MH disorders such as anxiety, depression, burnout, and eating disorders (ACSM, 2021). Results from this project found prior to the start of the competitive season, 39.3% (22 out of 56) SAs scored above threshold on the APSQ. On the mid-season survey, 50% (16 out of 32) SAs scored above threshold on the APSQ. Athletes who face psychological strain are at an increased risk for developing other mental health concerns.

Direct results comparison between pre- and mid-season surveys is weak considering the small sample size. There were 20 SAs who completed both the pre- and mid-season surveys, offering limited comparable results. Significant findings from these results alone were that four athletes who scored below threshold for psychological strain on the pre-season survey, scored

above threshold for psychological strain on the mid-season survey as evidence from their scores on the APSQ. This change amounts to 20% of the SAs during mid-season reporting increased psychological strain. These statistics are supported by Purcell, Gwyther, & Rice (2019) who explain that as athletes excel in the professional phase of their career, training demands and environmental factors influence their mental well-being.

Objective three was met by the attendance of the University's track and field athletic trainer and coaches during the delivery of survey results by the researcher. Members of the athletic staff were receptive to the project results and expressed gratitude for shedding light on the concern for mental well-being among the athletes. The response of the athletic staff is significant, considering SAs may be more apt to approach their coaches, teammates, or athletic trainers (ATs) about MH concerns before they seek clinical professional psychological help (Anchuri, et al., 2020).

Recommendations

Results from this project suggest further assessment of mental health among SAs over the course of their sport season may be warranted. Although there are no statistically significant changes in findings when comparing results from the pre- and mid-season survey screening forms, the small sample size made statistical analysis challenging. While not statistically significant, mental health assessment among elite SAs remains an important point of awareness. Athletic staff and primary healthcare providers should understand that many factors play a role in the mental well-being of an athlete, including performance success, academic success, self-image, team relationships, injury, adverse life events, and others. Schools affiliated with the NCAA should continue to abide by the NCAA constitution that mandates the reinforcement of physical and mental health within the athletic department by ensuring access to appropriate

resources that facilitate open engagement with respect to physical and mental health (NCAA, 2022). Offering a mental skills course among athletes may be beneficial in aiding SAs to identify thoughts of poor mental health and improve coping skills.

Screening for mental health among SAs should continue to be completed by athletic trainers, coaches, sports medicine providers, primary providers, and providers within the student health center on campus. It is important for individuals in these roles to understand that screening SAs for mental health concerns can be done any time throughout the sport season and that students may demonstrate increased risk for different mental health concerns throughout the season. The SMHAT-1 tool can help determine if an SA is at risk for mental health concerns specific to athletes by having the SA fill out form one on the screening tool. This tool can be administered on the sidelines, within the athletic department, or in a healthcare provider's office. The university's athletic staff should continue to discuss and provide mental health resources on orientation day for all athletes.

Regarding future projects, it may be beneficial for a graduate student in an athletic training program or in the DNP program to perform a similar project to further assess the validation of the SMHAT-1 tool. Over the course of this project, the track and field team's athletic trainer was a key player in communication and facilitating implementation of this project and served as a direct connection to the SAs. Overall, the project site offered a large heterogenous sample size.

Dissemination

Project findings were disseminated in aggregate form to the university's track and field coaches and athletic trainer. The researcher presented the results to the athletic staff via in-person presentation and paper handouts. The session was held on the university's campus.

The project was presented via poster presentation at the 2023 North Dakota Nurse Practitioner Association pharmacology conference. The IOC is encouraging more research to be completed utilizing the SMHAT-1 tool to assess mental health symptoms among athletes. There is a plan to submit this research project with associated findings to the IOC for review and possible publication through the IOC.

Strengths and Limitations

The results of this project should be interpreted with caution as several limitations exist. The IOC recommends using the SMHAT-1 tool throughout the course of an athlete's career and sport season. This is the first study completed disseminating the SMHAT-1 tool in a survey form and only during pre-season and mid-season. The pre-season responses equated to 48.3% with a significant decrease in responses for the mid-season survey, resulting in 27.6% of student athletes completing the survey. Normative findings were not available for most measures, considering the small sample size. The small sample size also equated to fewer athletes to fully assess.

This project was implemented solely with a track and field team; thus, the results may not be applicable to all student athletes of other sport teams. Ideally, comparing the project results to athletes of the same or different sports would provide more meaningful interpretation of the result findings. Participation retention for the mid-season survey may have been affected by the researcher not presenting in-person, and only announcing open dates for the mid-season survey via email. Considering students were experiencing higher academic and sport demands with finals week and scheduled competitions during the open dates of the mid-season survey, this may be evidence of lower response rates as well. Self-report bias also needs to be taken into consideration as a limitation within the student athlete population. Despite these limitations,

valuable data assessing mental health symptoms among athletes during the pre- and mid-competition season were collected. The SMHAT-1 tool was successfully distributed via Qualtrics survey form.

Conclusion

Considering the unique stressors athletes face, they are at an increased risk for mental health concerns. Nurse practitioners play a key role in assessing for and identifying mental health symptoms among patient populations in the United States. NPs working in primary care, student health, mental health, and sports medicine should consider administering the SMHAT-1 as a screening tool to assess for mental health symptoms among athletes. Bringing awareness to and encouraging the use of the SMHAT-1 tool, may assist NP providers in detecting early signs of mental health symptoms in athletes. NPs are encouraged to consider administering the SMHAT-1 tool to elite athletes with a previous history and/or known risk factors for mental health concerns pre-sport season. SMHAT-1 tool screening should also be considered among elite athletes after an adverse life event such as injury or death of a loved one. Universal application of this tool may not be a great use of time for athletic staff and primary care providers. Utilizing the SMHAT-1 tool in primary practice would offer early identification of mental health symptoms, facilitate early treatment plans, and improve student athlete outcomes.

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APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL



08/23/2023

Dr. Mykell M Barnacle
Nursing

Re: IRB Determination of Exempt Human Subjects Research:
Protocol #IRB0004870, "MENTAL HEALTH: IMPLEMENTATION OF THE SMHAT-1 TOOL TO SCREEN FOR MENTAL HEALTH CONCERNS AMONG COLLEGIATE ATHLETES ATTENDING A MIDWESTERN UNIVERSITY"

NDSU Co-investigator(s) and research team:

- Mykell M Barnacle
- Chrisann Marie Richter
- Carrie Ann Nelson
- Shannon Lyn David Misialek
- Allison Evelyn Peltier

Approval Date: 08/23/2023

Expiration Date: 08/22/2024

Study site(s): North Dakota State University

Funding Source:

The above referenced human subjects research project has been determined exempt (category 1,2) in accordance with federal regulations (Code of Federal Regulations, Title 45, Part 46, *Protection of Human Subjects*).

Please also note the following:

- The study must be conducted as described in the approved protocol.
- Changes to this protocol must be approved prior to initiating, unless the changes are necessary to eliminate an immediate hazard to subjects.
- Promptly report adverse events, unanticipated problems involving risks to subjects or others, or protocol deviations related to this project.

Thank you for your cooperation with NDSU IRB procedures. Best wishes for a successful study.

NDSU has an approved FederalWide Assurance with the Department of Health and Human Services: FWA00002439.

APPENDIX B: PERMISSION TO USE SMHAT-1 TOOL

7/21/23, 2:02 PM

Mail - Richter, Chrisann - Outlook

International Olympic Committee Re: Permission to use the SMHAT-1 tool for a doctoral dissertation project

Olympics Support <contact@support.olympic.org>

Fri 7/21/2023 1:51 PM

To:Richter, Chrisann <chrisann.m.richter@ndsu.edu>

Hualan Jiang (International Olympic Committee)

21 Jul 2023, 2:51pm GMT-4

Dear Chrisann Richter,

Thank you for contacting the IOC.

Please be aware that this tool is accessible to the public and can be used by anyone.

Kind regards from the support team at Olympics.



International Olympic Committee

Maison Olympique, 1007 Lausanne, Switzerland

This message is intended solely for the use of the addressee(s) named herein and contains confidential information. Any distribution, copying, disclosure or modification of this message and of any attachment is strictly prohibited without the prior approval of the IOC. If you have received this e-mail by mistake, please advise the sender immediately and destroy this message and any attachment, including any printout thereof, without retaining a copy.

APPENDIX C: IOC SMHAT-1 TOOL

SMHAT-1

The International Olympic Committee Sport Mental Health Assessment Tool 1
DEVELOPED BY THE IOC MENTAL HEALTH WORKING GROUP



Athlete's name: _____ Athlete's ID number: _____

What is the SMHAT-1

The International Olympic Committee (IOC) Sport Mental Health Assessment Tool 1 (SMHAT-1) is a standardized assessment tool aiming to identify at an early stage elite athletes (defined as professional, Olympic, Paralympic and collegiate level; 16 and older) potentially at risk for or already experiencing mental health symptoms and disorders, in order to facilitate timely referral of those in need to adequate support and/or treatment.

Who should use the SMHAT-1

The SMHAT-1 can be used by sports medicine physicians and other licensed/registered health professionals, but the clinical assessment (and related management) within the SMHAT-1 (see step 3b) should be conducted by sports medicine physicians and/or licensed/registered mental health professionals. If you are not a sports medicine physician or other licensed/registered health professional, please use the IOC Sport Mental Health Recognition Tool 1 (SMHRT-1). Physical therapists or athletic trainers working with a sports medicine physician can use the SMHAT-1 but any guidance or intervention should remain the responsibility of their sports medicine physician.

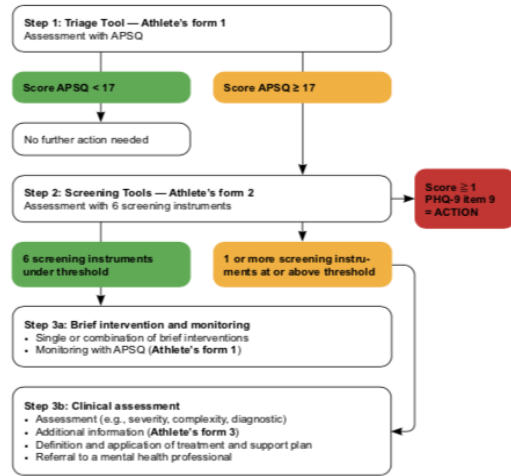
To use this paper version of the SMHAT-1, please print it single-sided. The SMHAT-1 in its current form can be freely copied for distribution to individuals, teams, groups and organizations. Any revision requires the specific approval by the IOC MHWG while any translation should be reported to the IOC MHWG. The SMHAT-1 should not be re-branded or sold for commercial gain. Further information about the development of the SMHAT-1 and related screening tools (including psychometric properties) is presented in the corresponding publication of the British Journal of Sports Medicine.

Why use the SMHAT-1

Mental health symptoms and disorders are prevalent among active and former elite athletes. Mental health disorders are typically defined as conditions causing clinically significant distress or impairment that meet certain diagnostic criteria, such as in the Diagnostic and Statistical Manual of Mental Disorders 5th edition (DSM-5) or the International Classification of Diseases 10th revision (ICD-10), whereas mental health symptoms are self-reported, may be significant but do not occur in a pattern meeting specific diagnostic criteria and do not necessarily cause significant distress or functional impairment.

When to use the SMHAT-1

The SMHAT-1 should be ideally embedded within the pre-competition period (i.e., a few weeks after the start of sport training), as well as within the mid- and end-season period. The SMHAT-1 should also ideally be used when any significant event for athletes occurs such as injury, illness, surgery, unexplained performance concern, after a major competition, end of competitive cycle, suspected harassment/abuse, adverse life event and transitioning out of sport.



Step 1. Triage tool for mental health symptoms and disorders

ACTION: For this step, you need to refer to the Athlete's form 1. Complete the following.

Calculate the total score by summing up the answers on the 10 items Total Score

Total score 10 – 16 >>> No further action needed	
Total score 17 – 50 >>> The athlete should complete the Athlete's form 2. Once the Athlete's form 2 is completed, proceed to step 2	

Step 2. Screening tools for mental health symptoms and disorders

ACTION: For this step, you need to refer to the Athlete's form 2. Complete the following.

Screening 1 (anxiety) Calculate the total score by summing up the answers on the 7 items Total Score	Screening 4 (alcohol misuse) Calculate the total score by summing up the answers on the 3 items Total Score
Screening 2 (depression) Calculate the total score by summing up the answers on the 9 items Total Score Note the score ('0', '1', '2' or '3') of the athlete on item 9 Score	Screening 5 (drug(s) use) Calculate the total score by summing up the answers on the 4 items Total Score Note which drug(s) caused concerns or problems for the athlete Drug(s)
Screening 3 (sleep disturbance) Calculate the total score by summing up the answers on the 5 items. Total Score	Screening 6 (disordered eating) Calculate the total score by summing up the answers on the first 6 items Total Score

Summary table about step 2 (screening)

● **ACTION:** Refer to all scores previously calculated and complete the summary table; note the screening scores and tick the appropriate box

	Total score	Under threshold	At or above threshold
Anxiety (screening 1)		0-9 <input type="checkbox"/>	≥10 <input type="checkbox"/>
Depression (screening 2)		0-9 <input type="checkbox"/>	≥10 <input type="checkbox"/>
Depression item 9 (screening 2)		0 <input type="checkbox"/>	≥1 <input type="checkbox"/>
Sleep disturbance (screening 3)		0-7 <input type="checkbox"/>	≥8 <input type="checkbox"/>
Alcohol misuse (screening 4)		Men 0-3; <input type="checkbox"/> Women 0-2 <input type="checkbox"/>	Men ≥4; <input type="checkbox"/> Women ≥3 <input type="checkbox"/>
Drug(s) misuse (screening 5)		0-1 <input type="checkbox"/>	≥2 <input type="checkbox"/>
Disordered eating (screening 6)		0-3 <input type="checkbox"/>	≥4 <input type="checkbox"/>

Anxiety: score 5-9 = mild; score 10-14 = moderate; score ≥15 = severe

Depression: score 5-9 = mild; score 10-14 = moderate; score 15-19 = moderately severe; score ≥20 = severe

Sleep disturbance: score 5-7 = mild; score 8-10 = moderate; score ≥11 = severe

Box ticked for depression item 9 >>> Take immediate action to ensure safety of the athlete.

All screening scores under threshold >>> Proceed to step 3a

One or more screening scores at or above threshold >>> Proceed to step 3b

Step 3a. Brief intervention and monitoring

3

● **ACTION:** Refer the athlete to a single intervention or combination of brief interventions such as psychoeducation, mindfulness, meditation, mental skills training, or stress control.

● **ACTION:** After the completion of brief intervention(s), the athlete should be re-assessed with the triage tool (Athlete's form 1), and further action taken as follows:

Total score 0 – 16 >>> No further action needed

Total score 17 – 50 >>> The athlete must proceed into step 3b

Step 3b. Clinical assessment and management

This step should be completed by a sport medicine physician or a licensed/registered mental health professional. The objective of this step is to conduct a comprehensive clinical assessment in order to identify important problems/diagnoses and create a management/intervention plan.

● **ACTION:** Review and interpret the triage and screening scores and conduct a clinical assessment in order to obtain additional information. Inquire about a history of and/or current presence of harassment/abuse within or outside of sports.

● **ACTION:** Your comprehensive assessment should consider the following:

Severity

Severity refers to the likelihood of an identified clinical problem significantly compromising the athlete's health and wellbeing, for instance, by causing severe functional impairments, markedly disturbed behaviors and/or risk to self or others (e.g., suicidal/homicidal intent, significant self-neglect, or electrolyte abnormalities in eating disorders would be considered high severity).

Complexity

Complexity refers to comorbid mental health and other medical conditions (e.g., alcohol use disorder and anxiety, depression and diabetes mellitus, or any mental health disorder and significant musculoskeletal injury) and/or significant sport (e.g., performance concerns, career dissatisfaction) or non-sport (e.g., relationship or financial problems, bereavement) stressors. Note that being successful can also be a major life event leading to unexpected stresses.

Diagnostic uncertainty

Diagnostic uncertainty refers to any doubt about diagnosis. Examples include differentiating a high level of sport-related physical activity from over-activity found in hypomania and ADHD, functional performance-related eating from eating disorders, or depression from bipolar disorder.

Treatment non-response

Treatment non-response refers to when the initial treating clinician has implemented one or two treatment cycles with no response or a partial response.

3

● **ACTION:** Note the most significant problem(s) of the athlete in the following table (column 'problem') and complete the table by ticking the appropriate box(es) if applicable.

Problem	Severity	Complexity	Diagnostic uncertainty	Treatment non-response
Problem 1				
Problem 2				
Problem 3				

In cases that are neither severe, complex, diagnostically uncertain nor non-responsive to treatment >>> Treatment/support can be provided by a sports medicine / primary care physician, referring then to the International Olympic Committee consensus statement on mental health in elite athletes for guidance

In cases of diagnostic uncertainty or when further information might be useful >>> Consider whether one or more additional screening tools should be completed by the athlete. If relevant, use the Athlete's form 3: screening 7 for attention-deficit hyperactivity disorder, screening 8 for bipolar disorder, screening 9 for post-traumatic stress disorder, screening 10 for gambling, screening 11 for psychosis. For the calculation of total score(s) and related interpretation, please refer to the last section of this form.

In cases that are severe, complex, diagnostically uncertain even after any appropriate additional screening and/or non-responsive to treatment >>> Athletes should be referred to a mental health professional (e.g., clinical psychologist or psychiatrist).

Additional screening tools for mental health symptoms and disorders

● **ACTION:** For this, you need to refer to the Athlete's form 3. Complete the following.

Screening 7 (attention-deficit/hyperactivity disorder)

Calculate the total score by summing up the answers on the 6 items

Total Score

Score ≥ 4 = symptoms highly consistent with ADHD

Screening 8 (bipolar disorder)

Calculate the total score by summing up the answers on item 1

Total score

Note the score of item 2

Score

Note the score of item 3

Score

Possible bipolar disorder if total score ≥ 7 AND item 2 = 1 AND item 3 = 1

Screening 9 (post-traumatic stress disorder)

Calculate the total score by summing up the answers on the 5 items

Total Score

Cut-off of 3 = sensitivity of 0.95 & specificity of 0.85; cut-off of 4 = sensitivity of 0.83 & specificity of 0.91

Screening 10 (gambling)

Calculate the total score by summing up the answers on the 9 items

Total Score

Score 0 = non-problem gambling; score 1-2 = low level of problems with few or no identified negative consequences; score 3-7 = moderate level of problems leading to some negative consequences; score ≥ 8 = problem gambling with negative consequences and a possible loss of control

Screening 11 (psychosis)

Calculate the total score by summing up the answers on the 16 items

Total Score

Score ≥ 6 = at risk for psychosis

SMHAT-1

The International Olympic Committee Sport Mental Health Assessment Tool 1
DEVELOPED BY THE IOC MENTAL HEALTH WORKING GROUP



Athlete's name: _____ Athlete's ID number: _____

ATHLETE'S FORM 1

1

These questions concern how you have been feeling over the past 30 days. Please circle the answer that best represents how you have been.

	None of the time	A little of the time	Some of the time	Most of the time	All of the time
1. It was difficult to be around teammates	1	2	3	4	5
2. I found it difficult to do what I needed to do	1	2	3	4	5
3. I was less motivated	1	2	3	4	5
4. I was irritable, angry or aggressive	1	2	3	4	5
5. I could not stop worrying about injury or my performance	1	2	3	4	5
6. I found training more stressful	1	2	3	4	5
7. I found it hard to cope with selection pressures	1	2	3	4	5
8. I worried about life after sport	1	2	3	4	5
9. I needed alcohol or other substances to relax	1	2	3	4	5
10. I took unusual risks off-field	1	2	3	4	5

Athlete's form 1: page 1 of 1

SMHAT-1

The International Olympic Committee Sport Mental Health Assessment Tool 1
DEVELOPED BY THE IOC MENTAL HEALTH WORKING GROUP



2

ATHLETE'S FORM 2

Screening 1

The following questions relate to feeling anxious or stressed. Over the last 2 weeks, how often have you been bothered by the following problems? Please circle the answer that best represents how you have been.

	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious, or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it's hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

Screening 2

The following questions relate to feeling depressed, sad or blue. Over the past 2 weeks, how often have you been bothered by any of the following problems? Please circle the answer that best represents how you have been.

	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed or hopeless	0	1	2	3
3. Trouble falling asleep, staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself - or that you're a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or, the opposite - being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

Screening 3

The following questions relate to your sleep habits. Please circle the best answer which you think represents your typical sleep habits over the recent past.

1. During the recent past, how many hours of actual sleep did you get at night? (This may be different than the number of hours you spent in bed.)

5 to 6 hours	4
6 to 7 hours	3
7 to 8 hours	2
8 to 9 hours	1
more than 9 hours	0

Athlete's form 2: page 1 of 3

2

2. How satisfied / dissatisfied are you with the quality of your sleep?

very satisfied	0
somewhat satisfied	1
neither satisfied nor dissatisfied	2
somewhat dissatisfied	3
very dissatisfied	4

3. During the recent past, how long has it usually taken you to fall asleep each night?

15 minutes or less	0
16 – 30 minutes	1
31 – 60 minutes	2
longer than 60 minutes	3

4. How often do you have trouble staying asleep?

never	0
once or twice per week	1
three or four times per week	2
five to seven days per week	3

5. During the recent past, how often have you taken medicine to help you sleep (prescribed or over-the-counter)?

never	0
once or twice per week	1
three or four times per week	2
five to seven times per week	3

Screening 4

The following questions are about alcohol use. Please respond to each question by circling the number from '0' to '4' that represents your alcohol use.

1. How often do you have a drink containing alcohol?

Never	0
Monthly or less	1
2-4 times a month	2
2-3 times a week	3
4 or more times a week	4

2. How many standard drinks containing alcohol do you have on a typical day when you drink?

1 to 2	0
3 to 4	1
5 to 6	2
7 to 9	3
10 or more	4

3. How often do you have six or more drinks on one occasion?

Never	0
Less than monthly	1
Monthly	2
Weekly	3
Daily or almost daily	4

Athlete's form 2: page 2 of 3

Screening 5

The following questions are about drug(s) use in the last 3 months. Please respond to each question by circling 'yes' or 'no'. When thinking about drug use consider legal ones like caffeine or nicotine, illicit/illegal drugs (including cannabis even if legal in your state/country) and prescription medications used in ways other than prescribed (i.e., higher dosages; different ways of taking them, i.e., crushing/sniffing, injecting). Do NOT include alcohol in these responses.

	Yes	No
1. In the last three months, have you felt you should cut down or stop using drugs?	1	0
2. In the last three months, has anyone annoyed you or gotten on your nerves by telling you to cut down or stop using drugs?	1	0
3. In the last three months, have you felt guilty or bad about how much you use drugs?	1	0
4. In the last three months, have you been waking up wanting to use drugs?	1	0

In the last 3 months, which drug(s) or substance(s) listed below caused concerns or problems in your life? Concerns may include drug-related stress, depression, insomnia, financial strain, relationship conflict, heavy use/overdose, cravings, withdrawal, blackouts, flashbacks, fights, arrests, missed work, and/or medical problems like hepatitis, seizures or weight loss. Please circle all that apply.

None	Stimulants-nicotine	Hallucinogens (LSD; mushrooms)
Cannabis-marijuana	Stimulants-powder cocaine	Inhalants (volatile solvents)
Cannabis-oil	Stimulants-crack cocaine	Opioids-heroin
Cannabis-edibles	Stimulants-methamphetamine (meth)	Opioids-opium
Cannabis-synthetics (K2; Spice)	Stimulants-methylphenidate (ADD/ADHD medication)	Opioids-pain medications (e.g. oxycodone, hydrocodone)
Club Drugs (MDMA-ecstasy; GHB)	Stimulants-amphetamine salts (ADD/ADHD medication)	Synthetic Cathinones (bath salts)
Stimulants-caffeine	Dissociative Drugs (Ketamine; PCP)	Other (specify)

Screening 6

The following questions are related to your eating habits and your thoughts about food, eating, your weight and your body image. Over the past 2 weeks, how often have you been bothered by any of the following problems? Please circle the answer that best represents how you have been.

	Always	Usually	Often	Sometimes	Rarely	Never
1. I feel extremely guilty after overeating	3	2	1	0	0	0
2. I am preoccupied with the desire to be thinner	3	2	1	0	0	0
3. I think that my stomach is too big	3	2	1	0	0	0
4. I feel satisfied with the shape of my body	0	0	0	1	2	3
5. My parents have expected excellence of me	3	2	1	0	0	0
6. As a child, I tried very hard to avoid disappointing my parents and teachers	3	2	1	0	0	0
7. Are you trying to lose weight now?					Yes	No
8. Have you tried to lose weight?					Yes	No
9. If yes, how many times have you tried to lose weight?			1-2 times		3-5 times	>5 times

SMHAT-1

The International Olympic Committee Sport Mental Health Assessment Tool 1
DEVELOPED BY THE IOC MENTAL HEALTH WORKING GROUP



ATHLETE'S FORM 3

3

Screening 7

Please circle the answer that best describes how you have felt and conducted yourself over the past 6 months.

	Never	Rarely	Sometimes	Often	Very often
1. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?	0	0	1	1	1
2. How often do you have difficulty getting things in order when you have to do a task that requires organization?	0	0	1	1	1
3. How often do you have problems remembering appointments or obligations?	0	0	1	1	1
4. When you have a task that requires a lot of thought, how often do you avoid or delay getting started?	0	0	0	1	1
5. How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?	0	0	0	1	1
6. How often do you feel overly active and compelled to do things, like you were driven by a motor?	0	0	0	1	1

Screening 8

Please respond to each question by circling 'yes' or 'no'.

	Yes	No
1. Has there ever been a period of time when you were not your usual self and...		
...you felt so good or so hyper that other people thought you were not your normal self or you were so hyper that you got into trouble?	1	0
...you were so irritable that you shouted at people or started fights or arguments?	1	0
...you felt much more self-confident than usual?	1	0
...you got much less sleep than usual and found you didn't really miss it?	1	0
...you were much more talkative or spoke faster than usual?	1	0
...thoughts raced through your head or you couldn't slow your mind down?	1	0
...you were so easily distracted by things around you that you had trouble concentrating or staying on track?	1	0
...you had much more energy than usual?	1	0
...you were much more active or did many more things than usual?	1	0
...you were much more social or outgoing than usual, for example, you telephoned friends in the middle of the night?	1	0
...you were much more interested in sex than usual?	1	0
...you did things that were unusual for you or that other people might have thought were excessive, foolish, or risky?	1	0
...spending money got you or your family in trouble?	1	0
2. If you checked YES to more than one of the above, have several of these ever happened during the same period of time? Please check 1 response only.	1	0
3. How much of a problem did any of these cause you — like being able to work; having family, money, or legal troubles; getting into arguments or fights? Please check 1 response only.		
	No problem=0	Minor problem=0
	Moderate problem=1	Serious problem=1
4. Have any of your blood relatives (ie, children, siblings, parents, grandparents, aunts, uncles) had manic-depressive illness or bipolar disorder?	Yes	No
5. Has a health professional ever told you that you have manic-depressive illness or bipolar disorder?	Yes	No

Athlete's form 3: page 1 of 3

3

Screening 9

Sometimes things happen to people that are unusually or especially frightening, horrible, or traumatic. For example, a serious accident or fire, a physical or sexual assault or abuse, an earthquake or flood, a war, seeing someone be killed or seriously injured, or having a loved one die through homicide or suicide.

Please respond to the following question by circling 'yes' or 'no'.

Have you ever experienced this kind of an event?	Yes	No	
If yes, did the event occur inside or outside of sport?	Inside	Outside	Both

If you have not experienced one or more of these events, then stop here with Screening 9 and please go to Screening 10.

If you have experienced an event or events like this, please circle your answer to the following 5 questions.

	Yes	No
In the past month, have you had nightmares about the event(s) or thought about the event(s) when you did not want to?	1	0
In the past month, have you tried hard not to think about the event(s) or went out of your way to avoid situations that reminded you of the event(s)?	1	0
In the past month, have you been constantly on guard, watchful, or easily startled?	1	0
In the past month, have you felt numb or detached from people, activities, or your surroundings?	1	0
In the past month, have you felt guilty or unable to stop blaming yourself or others for the event(s) or any problems the events may have caused?	1	0

Screening 10

Please circle the answer that best represents how you have been feeling towards gambling in the last 12 months.

	Never	Sometimes	Most of the time	Almost always
1. Have you bet more than you could really afford to lose?	0	1	2	3
2. Have you needed to gamble with larger amounts of money to get the same feeling of excitement?	0	1	2	3
3. When you gambled, did you go back another day to try to win back the money you lost?	0	1	2	3
4. Have you borrowed money or sold anything to get money to gamble?	0	1	2	3
5. Have you felt that you might have a problem with gambling?	0	1	2	3
6. Has gambling caused you any health problems, including stress or anxiety?	0	1	2	3
7. Have people criticized your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true?	0	1	2	3
8. Has gambling caused any financial problems for you or your household?	0	1	2	3
9. Have you felt guilty about the way you gamble or what happens when you gamble?	0	1	2	3

Screening 11

Please circle the answer that best represents how you are feeling.

		If TRUE: how much distress did you experience?			
		None	Mild	Moderate	Severe
1. I feel uninterested in the things I used to enjoy.	True <input type="checkbox"/> False <input type="checkbox"/>	0	1	2	3
2. I often seem to live through events exactly as they happened before (déjà vu).	True <input type="checkbox"/> False <input type="checkbox"/>	0	1	2	3
3. I sometimes smell or taste things that other people can't smell or taste.	True <input type="checkbox"/> False <input type="checkbox"/>	0	1	2	3

Athlete's form 3: page 2 of 3

		None	Mild	Moderate	Severe
4. I often hear unusual sounds like banging, clicking, hissing, clapping or ringing in my ears.	True <input type="checkbox"/> False <input type="checkbox"/>	0	1	2	3
		None	Mild	Moderate	Severe
5. I have been confused at times whether something I experienced was real or imaginary.	True <input type="checkbox"/> False <input type="checkbox"/>	0	1	2	3
		None	Mild	Moderate	Severe
6. When I look at a person, or look at myself in a mirror, I have seen the face change right before my eyes.	True <input type="checkbox"/> False <input type="checkbox"/>	0	1	2	3
		None	Mild	Moderate	Severe
7. I get extremely anxious when meeting people for the first time.	True <input type="checkbox"/> False <input type="checkbox"/>	0	1	2	3
		None	Mild	Moderate	Severe
8. I have seen things that other people apparently can't see.	True <input type="checkbox"/> False <input type="checkbox"/>	0	1	2	3
		None	Mild	Moderate	Severe
9. My thoughts are sometimes so strong that I can almost hear them.	True <input type="checkbox"/> False <input type="checkbox"/>	0	1	2	3
		None	Mild	Moderate	Severe
10. I sometimes see special meanings in advertisements, shop windows, or in the way things are arranged around me.	True <input type="checkbox"/> False <input type="checkbox"/>	0	1	2	3
		None	Mild	Moderate	Severe
11. Sometimes I have felt that I'm not in control of my own ideas or thoughts.	True <input type="checkbox"/> False <input type="checkbox"/>	0	1	2	3
		None	Mild	Moderate	Severe
12. Sometimes I feel suddenly distracted by distant sounds that I am not normally aware of.	True <input type="checkbox"/> False <input type="checkbox"/>	0	1	2	3
		None	Mild	Moderate	Severe
13. I have heard things other people can't hear like voices of people whispering or talking.	True <input type="checkbox"/> False <input type="checkbox"/>	0	1	2	3
		None	Mild	Moderate	Severe
14. I often feel that others have it in for me.	True <input type="checkbox"/> False <input type="checkbox"/>	0	1	2	3
		None	Mild	Moderate	Severe
15. I have had the sense that some person or force is around me, even though I could not see anyone.	True <input type="checkbox"/> False <input type="checkbox"/>	0	1	2	3
		None	Mild	Moderate	Severe
16. I feel that parts of my body have changed in some way, or that parts of my body are working differently than before.	True <input type="checkbox"/> False <input type="checkbox"/>	0	1	2	3

APPENDIX D: PERMISSION TO USE HEALTH PROMOTION MODEL

2/24/23, 10:33 AM

Mail - Richter, Chrisann - Outlook

Re: Permission to use Health Promotion Model

Nola Pender <npender@umich.edu>

Fri 2/24/2023 10:25 AM

To: Richter, Chrisann <chrisann.m.richter@ndsu.edu>

 1 attachments (23 KB)

HEALTH PROMOTION MODEL WEBSITES.odt;

Dear Chrisann:

You have my permission to use the Health Promotion Model in your work and in resultant publications. I wish you success. Please see the attachment for all the information we have on the Model and Instruments.

Sincerely,

Nola Pender

APPENDIX E: QUALTRICS SURVEY

SMHAT-1 Qualtrics Survey

Start of Block: Demographic Questions:

Please write the first two letters of your mothers maiden name and the last two digits of your phone number.

First two letters of your mother's maiden name (1)

The last two digits of your phone number (2)

Please choose from the following:

Male (1)

Female (2)

Prefer not to say (3)

What is your current level of education?

Freshman (1)

Sophomore (2)

Junior (3)

Senior (4)

Are you currently injured?

No (1)

Yes (2)

Are you currently academically eligible to participate in your sport season?

No (1)

Yes (2)

Are you currently receiving treatment for mental health concerns?

No (1)

Yes (2)

Are you currently utilizing mental health resources (ex. psychologist, student health services, counseling services, etc.) ?

No (1)

Yes (2)

Display This Question:

If Are you currently utilizing mental health resources (ex. psychologist, student health services, coun = Yes

If yes, please choose from one or more of the following resources:

- Student health services on campus (1)
 - Student counseling center on campus (2)
 - psychologist (3)
 - primary care provider (4)
 - coaches/athletic trainers (5)
 - Other (6)
-

These questions concern how you have been feeling over the past 30 days:

It was difficult to be around teammates:

- None of the time (1)
 - A little of the time (2)
 - Some of the time (3)
 - Most of the time (4)
 - All of the time (5)
-

I found it difficult to do what I needed to do:

- None of the time (1)
 - A little of the time (2)
 - Some of the time (3)
 - Most of the time (4)
 - All of the time (5)
-

I was less motivated:

- None of the time (1)
 - A little of the time (2)
 - Some of the time (3)
 - Most of the time (4)
 - All of the time (5)
-

I was irritable, angry or aggressive:

- None of the time (1)
- A little of the time (2)
- Some of the time (3)
- Most of the time (4)
- All of the time (5)

I could not stop worrying about injury or my performance:

- None of the time (1)
 - A little of the time (2)
 - Some of the time (3)
 - Most of the time (4)
 - All of the time (5)
-

I found training more stressful:

- None of the time (1)
 - A little of the time (2)
 - Some of the time (3)
 - Most of the time (4)
 - All of the time (5)
-

I found it hard to cope with selection pressures:

- None of the time (1)
 - A little of the time (2)
 - Some of the time (3)
 - Most of the time (4)
 - All of the time (5)
-

I worried about life after sport:

- None of the time (1)
 - A little of the time (2)
 - Some of the time (3)
 - Most of the time (4)
 - All of the time (5)
-

I needed alcohol or other substances to relax:

- None of the time (1)
- A little of the time (2)
- Some of the time (3)
- Most of the time (4)
- All of the time (5)

I took unusual risks off-field:

- None of the time (1)
- A little of the time (2)
- Some of the time (3)
- Most of the time (4)
- All of the time (5)

End of Block: Demographic Questions:

Start of Block: Block 1

The following questions relate to feeling anxious or stressed. Over the last 2 weeks, how often have you been bothered by the following problems? Please choose the answer that best represents how you have been.

Feeling nervous, anxious, or on edge:

- Not at all (1)
 - Several days (2)
 - More than half the days (3)
 - Nearly every day (4)
-

Not being able to stop or control worrying:

- Not at all (1)
 - Several days (2)
 - More than half the days (3)
 - Nearly every day (4)
-

Worrying too much about different things:

- Not at all (1)
 - Several days (2)
 - More than half the days (3)
 - Nearly every day (4)
-

Trouble relaxing:

- Not at all (1)
 - Several days (2)
 - More than half the days (3)
 - Nearly every day (4)
-

Being so restless that it's hard to sit still:

- Not at all (1)
 - Several days (2)
 - More than half the days (3)
 - Nearly every day (4)
-

Becoming easily annoyed or irritable:

- Not at all (1)
 - Several days (2)
 - More than half the days (3)
 - Nearly every day (4)
-

Feeling afraid as if something awful might happen:

- Not at all (1)
- Several days (2)
- More than half the days (3)
- Nearly every day (4)

End of Block: Block 1

Start of Block: Block 2

The following questions relate to feeling depressed, sad or blue. Over the past 2 weeks, how often have you been bothered by any of the following problems? Please choose the answer that best represents how you have been.

Little interest or pleasure in doing things:

- Not at all (1)
 - Several days (2)
 - More than half the days (3)
 - Nearly every day (4)
-

Feeling down, depressed or hopeless:

- Not at all (1)
 - Several days (2)
 - More than half the days (3)
 - Nearly every day (4)
-

Trouble falling asleep, staying asleep, or sleeping too much:

- Not at all (1)
 - Several days (2)
 - More than half the days (3)
 - Nearly every day (4)
-

Feeling tired or having little energy:

- Not at all (1)
 - Several days (2)
 - More than half the days (3)
 - Nearly every day (4)
-

Poor appetite or overeating:

- Not at all (1)
 - Several days (2)
 - More than half the days (3)
 - Nearly every day (4)
-

Feeling bad about yourself - or that you're a failure or have let yourself or your family down:

- Not at all (1)
 - Several days (2)
 - More than half the days (3)
 - Nearly every day (4)
-

Trouble concentrating on things, such as reading the newspaper or watching television:

- Not at all (1)
 - Several days (2)
 - More than half the days (3)
 - Nearly every day (4)
-

Moving or speaking so slowly that other people could have noticed. Or, the opposite - being so fidgety or restless that you have been moving around a lot more than usual:

- Not at all (1)
 - Several days (2)
 - More than half the days (3)
 - Nearly every day (4)
-

Thoughts that you would be better off dead or of hurting yourself in some way:

- Not at all (1)
- Several days (2)
- More than half the days (3)
- Nearly every day (4)

End of Block: Block 2

Start of Block: Block 3

The following questions relate to your sleep habits. Please choose the best answer which you think represents your typical sleep habits over the recent past.

During the recent past, how many hours of actual sleep did you get at night? (This may be different than the number of hours you spent in bed.)

- 5 to 6 hours (1)
 - 6 to 7 hours (2)
 - 7 to 8 hours (3)
 - 8 to 9 hours (4)
 - more than 9 hours (5)
-

How satisfied / dissatisfied are you with the quality of your sleep?

- Very dissatisfied (1)
 - Somewhat dissatisfied (2)
 - Neither satisfied nor dissatisfied (3)
 - Somewhat satisfied (4)
 - Very satisfied (5)
-

During the recent past, how long has it usually taken you to fall asleep each night?

- 15 minutes or less (1)
 - 16-30 minutes (2)
 - 31-60 minutes (3)
 - Longer than 60 minutes (4)
-

How often do you have trouble staying asleep?

- Never (1)
 - once or twice per week (2)
 - three or four times per week (3)
 - five to seven days per week (4)
-

During the recent past, how often have you taken medicine to help you sleep (prescribed or over-the-counter)?

- Never (1)
- once or twice per week (2)
- three or four times per week (3)
- five to seven days per week (4)

End of Block: Block 3

Start of Block: Block 4

The following questions are about alcohol use.

How often do you have a drink containing alcohol?

- Never (1)
 - Monthly or less (2)
 - 2-4 times a month (3)
 - 2-3 times a week (4)
 - 4 or more times a week (5)
-

How many standard drinks containing alcohol do you have on a typical day when you drink?

- 1 to 2 (1)
 - 3 to 4 (2)
 - 5 to 6 (3)
 - 7 to 9 (4)
 - 10 or more (5)
-

How often do you have six or more drinks on one occasion?

- Never (1)
- Less than monthly (2)
- monthly (3)
- weekly (4)
- daily or almost daily (5)

End of Block: Block 4

Start of Block: Block 5

The following questions are about drug(s) use in the last 3 months. When thinking about drug use consider legal ones like caffeine or nicotine, illicit/illegal drugs (including cannabis even if legal in your state/country) and prescription medications used in ways other than prescribed (i.e., higher dosages; different ways of taking them, i.e., crushing/sniffing, injecting). Do NOT include alcohol in these responses.

In the last three months, have you felt you should cut down or stop using drugs?

- Yes (1)
- No (2)

In the last three months, has anyone annoyed you or gotten on your nerves by telling you to cut down or stop using drugs?

Yes (1)

No (2)

In the last three months, have you felt guilty or bad about how much you use drugs?

Yes (1)

No (2)

In the last three months, have you been waking up wanting to use drugs?

Yes (1)

No (2)

In the last 3 months, which drug(s) or substance(s) listed below caused concerns or problems in your life? Concerns may include drug-related stress, depression, insomnia, financial strain, relationship conflict, heavy use/overdose, cravings, withdrawal, blackouts, flashbacks, fights,

arrests, missed work, and/or medical problems like hepatitis, seizures or weight loss. Please select all that apply.

- None (1)
- Stimulants-Nicotine (2)
- hallucinogens (ex. LSD, mushrooms) (3)
- Cannabis-marijuana (4)
- Stimulants-powder cocaine (5)
- inhalants (volatile solvents) (6)
- Cannabis-oil (7)
- Stimulants- crack cocaine (8)
- opioids-heroin (9)
- cannabis-edibles (10)
- stimulants-methamphetamine (meth) (11)
- opioids-opium (12)
- cannabis-synthetics (K2, spice) (13)
- stimulants-methylphenidate (ADD/ADHD medication) (14)
- opioids-pain medications (ex. oxycodone, hydrocodone) (15)
- club drugs (MDMA-ectasy, GHB) (16)
- stimulants-amphetamine salts (ADD/ADHD medication) (17)

- synthetic Cathinones (bath salts) (18)
 - stimulants-caffeine (19)
 - dissociative drugs (ketamine, PCP) (20)
 - Other (specify) (21)
-

End of Block: Block 5

Start of Block: Block 6

The following questions are related to your eating habits and your thoughts about food, eating, your weight and your body image. Over the past 2 weeks, how often have you been bothered by any of the following problems?

I feel extremely guilty after overeating:

- Always (1)
 - Usually (2)
 - Often (3)
 - Sometimes (4)
 - Rarely (5)
 - Never (6)
-

I am preoccupied with the desire to be thinner:

- Always (1)
 - Usually (2)
 - Often (3)
 - Sometimes (4)
 - Rarely (5)
 - Never (6)
-

I think that my stomach is too big:

- Always (1)
 - Usually (2)
 - Often (3)
 - Sometimes (4)
 - Rarely (5)
 - Never (6)
-

I feel satisfied with the shape of my body:

- Always (1)
 - Usually (2)
 - Often (3)
 - Sometimes (4)
 - Rarely (5)
 - Never (6)
-

My parents have expected excellence of me:

- Always (1)
 - Usually (2)
 - Often (3)
 - Sometimes (4)
 - Rarely (5)
 - Never (6)
-

As a child, I tried very hard to avoid disappointing my parents and teachers:

- Always (1)
 - Usually (2)
 - Often (3)
 - Sometimes (4)
 - Rarely (5)
 - Never (6)
-

Are you trying to lose weight?:

- No (1)
 - Yes (2)
-

Have you tried to lose weight?

- No (1)
- Yes (2)

Skip To: End of Block If Have you tried to lose weight? = No

If yes, how many times have you tried to lose weight?

- 1 to 2 times (1)
- 3 to 5 times (2)
- >5 times (3)

End of Block: Block 6

Start of Block: Block 7

Please circle the answer that best describes how you have felt and conducted yourself over the past 6 months.

How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?

- Never (1)
 - Rarely (2)
 - Sometimes (3)
 - Often (4)
 - Very Often (5)
-

How often do you have difficulty getting things in order when you have to do a task that requires organization?

- Never (1)
 - Rarely (2)
 - Sometimes (3)
 - Often (4)
 - Very Often (5)
-

How often do you have problems remembering appointments or obligations?

- Never (1)
 - Rarely (2)
 - Sometimes (3)
 - Often (4)
 - Very Often (5)
-

When you have a task that requires a lot of thought, how often do you avoid or delay getting started?

- Never (1)
 - Rarely (2)
 - Sometimes (3)
 - Often (4)
 - Very Often (5)
-

How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?

- Never (1)
 - Rarely (2)
 - Sometimes (3)
 - Often (4)
 - Very Often (5)
-

How often do you feel overly active and compelled to do things, like you were driven by a motor?

- Never (1)
- Rarely (2)
- Sometimes (3)
- Often (4)
- Very Often (5)

End of Block: Block 7

Start of Block: Block 8

Has there ever been a period of time when you were not your usual self and you felt so good or so hyper that other people thought you were not your normal self or you were so hyper that you got into trouble?

- Yes (1)
 - No (2)
-

Has there ever been a period of time when you were not your usual self and you were so irritable that you shouted at people or started fights or arguments?

- Yes (1)
 - No (2)
-

Has there ever been a period of time when you were not your usual self and you felt much more self-confident than usual?

Yes (1)

No (2)

Has there ever been a period of time when you were not your usual self and you got much less sleep than usual and found you didn't really miss it?

Yes (1)

No (2)

Has there ever been a period of time when you were not your usual self and you were much more talkative or spoke faster than usual?

Yes (1)

No (2)

Has there ever been a period of time when you were not your usual self and your thoughts raced through your head or you couldn't slow your mind down?

Yes (1)

No (2)

Has there ever been a period of time when you were not your usual self and you were so easily distracted by things around you that you had trouble concentrating or staying on track?

Yes (1)

No (2)

Has there ever been a period of time when you were not your usual self and you had much more energy than usual?

Yes (1)

No (2)

Has there ever been a period of time when you were not your usual self and you were much more active or did many more things than usual?

Yes (1)

No (2)

Page Break

Has there ever been a period of time when you were not your usual self and you were much more social or outgoing than usual, for example, you telephoned friends in the middle of the night?

Yes (1)

No (2)

Has there ever been a period of time when you were not your usual self and you were much more interested in sex than usual?

Yes (1)

No (2)

Has there ever been a period of time when you were not your usual self and you did things that were unusual for you or that other people might have thought were excessive, foolish, or risky?

Yes (1)

No (2)

Has there ever been a period of time when you were not your usual self and spending money got you or your family in trouble?

Yes (1)

No (2)

If you checked YES to more than one of the above, have several of these ever happened during the same period of time?

- Yes (1)
 - No (2)
 - N/A (3)
-

How much of a problem did any of these cause you — like being able to work; having family, money, or legal troubles; getting into arguments or fights?

- No problem (1)
 - Minor problem (2)
 - Moderate problem (3)
 - Serious problem (4)
-

Have any of your blood relatives (ie, children, siblings, parents, grandparents, aunts, uncles) had manic-depressive illness or bipolar disorder?

- Yes (1)
 - No (2)
-

Has a health professional ever told you that you have manic-depressive illness or bipolar disorder?

- Yes (1)
- No (2)

End of Block: Block 8

Start of Block: Block 9

Sometimes things happen to people that are unusually or especially frightening, horrible, or traumatic. For example, a serious accident or fire, a physical or sexual assault or abuse, an earthquake or flood, a war, seeing someone be killed or seriously injured, or having a loved one die through homicide or suicide.

Have you ever experienced this kind of an event?

No (1)

Yes (2)

Skip To: End of Block If Sometimes things happen to people that are unusually or especially frightening, horrible, or traumatic = No

If yes, did the event occur inside or outside of sport?

Inside (1)

Outside (2)

Both (3)

In the past month, have you had nightmares about the event(s) or thought about the event(s) when you did not want to?

Yes (1)

No (2)

In the past month, have you tried hard not to think about the event(s) or went out of your way to avoid situations that reminded you of the event(s)?

Yes (1)

No (2)

In the past month, have you been constantly on guard, watchful, or easily startled?

Yes (1)

No (2)

In the past month, have you felt numb or detached from people, activities, or your surroundings?

Yes (1)

No (2)

In the past month, have you felt guilty or unable to stop blaming yourself or others for the event(s) or any problems the events may have caused?

Yes (1)

No (2)

End of Block: Block 9

Start of Block: Block 10

Please choose the answer that best represents how you have been feeling towards gambling in the last 12 months.

Have you bet more than you could really afford to lose?

Never (1)

Sometimes (2)

Most of the time (3)

Almost always (4)

Have you needed to gamble with larger amounts of money to get the same feeling of excitement?

- Never (1)
 - Sometimes (2)
 - Most of the time (3)
 - Almost always (4)
-

When you gambled, did you go back another day to try to win back the money you lost?

- Never (1)
 - Sometimes (2)
 - Most of the time (3)
 - Almost always (4)
-

Have you borrowed money or sold anything to get money to gamble?

- Never (1)
 - Sometimes (2)
 - Most of the time (3)
 - Almost always (4)
-

Have you felt that you might have a problem with gambling?

- Never (1)
 - Sometimes (2)
 - Most of the time (3)
 - Almost always (4)
-

Has gambling caused you any health problems, including stress or anxiety?

- Never (1)
 - Sometimes (2)
 - Most of the time (3)
 - Almost always (4)
-

Have people criticized your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true?

- Never (1)
 - Sometimes (2)
 - Most of the time (3)
 - Almost always (4)
-

Has gambling caused any financial problems for you or your household?

- Never (1)
 - Sometimes (2)
 - Most of the time (3)
 - Almost always (4)
-

Have you felt guilty about the way you gamble or what happens when you gamble?

- Never (1)
- Sometimes (2)
- Most of the time (3)
- Almost always (4)

End of Block: Block 10

Start of Block: Block 11

Please choose the answer that best represents how you are feeling.

I feel uninterested in the things I used to enjoy:

- True (1)
- False (2)

Skip To: Q98 If Please choose the answer that best represents how you are feeling. I feel uninterested in the thi... = False

If TRUE: how much distress did you experience?

- None (1)
 - Mild (2)
 - Moderate (3)
 - Severe (4)
-

I often seem to live through events exactly as they happened before (déjà vu):

- True (1)
- False (2)

Skip To: Q100 If I often seem to live through events exactly as they happened before (déjà vu): = False

If TRUE: how much distress did you experience?

- None (1)
 - Mild (2)
 - Moderate (3)
 - Severe (4)
-

I sometimes smell or taste things that other people can't smell or taste:

- True (1)
- False (2)

Skip To: End of Block If I sometimes smell or taste things that other people can't smell or taste: = False

If TRUE: how much distress did you experience?

- None (1)
- Mild (2)
- Moderate (3)
- Severe (4)

End of Block: Block 11

APPENDIX F: MENTAL HEALTH FIRST AID TRAINING CERTIFICATE

Chrisann Richter

has completed the course and is now certified in

Adult
Mental Health First Aid USA

and has been trained to provide initial help to someone experiencing a mental health or substance use challenge.



Chuck Ingoglia
President & CEO
National Council for Mental Wellbeing

This course is eligible for 7.5 contact hours of continuing education credit.



**Mental Health
FIRST AID**

from NATIONAL COUNCIL FOR
MENTAL WELLBEING

National Council for Mental Wellbeing operates Mental Health First Aid in the USA. The National Council for Mental Wellbeing and the Missouri Department of Mental Health founded Mental Health First Aid USA.

This certificate became **effective** on:

03/01/2023

Date: _____

This certificate **expires**:

3 yr from effective date

Date: _____

APPENDIX G: EXECUTIVE SUMMARY

Executive Summary

Introduction

College athletes experience increased prevalence of anxiety, depression, sleep disorder, substance misuse, and eating disorders when compared to general college student population. When suffering from mental illness, signs and symptoms that professional athletes portray may mimic behaviors that are normative for dedicated athletes with demanding schedules and high-performance expectations. Routine screening for mental health has been proven effective in identifying athletes who are at risk for, or currently suffering from mental health disorders. Early identification by athletic staff, coaches, and healthcare professionals is the key to facilitating early intervention and treatment to offer athletes a better outcome.

Purpose

The purpose of this project was to identify Division I college athletes who may be at risk for, or currently suffering from mental health illness. The mental health of the athletes was assessed over the duration of their sport season to determine if psychosocial distress is positively correlated with the progression of the sport season. The Sport Mental Health Assessment Tool 1 (SMHAT-1) was administered to freshman, sophomore, junior, and senior track and field athletes at a Midwestern University pre- and mid-competitive sport season to evaluate the trend in psychological well-being.

Project Design

An extensive literature review was conducted on MH risk factors, barriers, and common disorders among student athletes. This health improvement project was also guided by the Health Promotion Model by Nola Pender and the Plan Do Study Act (PDSA) model. Track and field

athletes were invited to attend an education session offered by the researcher. Information provided at this session included an introduction of the dissertation project, common mental health disorders among student athletes and the importance of mental health screening among Division I student athletes. Post educational session, 112 track and field student athletes were invited to complete the SMHAT-1 tool in the form of a Qualtrics survey both pre-season and again during mid-season to the track and field student athletes. The pre-season survey was administered to explore baseline mental health among the student athletes. The mid-season survey was administered to assess for any changes in mental health throughout the course of the competitive season. The results of the surveys were determined by the numerical value each student athlete scored on screening forms. Both surveys also included demographic information. The survey analysis findings were then disseminated in an aggregate form to the University's track and field coaches and athletic trainer.

Results and Conclusions

Out of 112 athletes on the 2023-2024 roster, 56 athletes completed the pre-season survey, and 32 athletes completed the mid-season survey. Psychological strain increased from pre-season to mid-season survey results. Findings from the pre-season survey support 39% (22 out of 56) of student athletes scored at or above 17 on the Athlete Psychological Strain Questionnaire (APSQ) screening tool and 50% (16 out of 32) of student athletes scored at or above 17 on the APSQ form on the mid-season survey. There were 20 students who completed both the pre- and mid-season surveys. Out of these 20 students, there were four students who scored less than 17 on the pre-season APSQ but scored greater than 17 on the mid-season APSQ. There were no significant findings on the pre-season survey when compared to the mid-season survey results for anxiety, depression, sleep disturbance, alcohol misuse, drug use, or disordered eating. The majority of

student athletes who completed the surveys were female and in freshman year. No students answered 'yes' to utilizing mental health resources.

Recommendations

Results from this project suggest further assessment of mental health among student athletes over the course of their sport season may be warranted. While not statistically significant, mental health assessment among student athletes remains an important point of awareness. Encouraging the use of the SMHAT-1 tool may assist athletic staff, coaches, and primary providers in detecting early signs of mental health symptoms in athletes. Administering the SMHAT-1 tool to elite athletes with a previous history and/or known risk factors for mental health concerns pre-sport season should be considered. SMHAT-1 tool screening should also be considered among elite athletes after an adverse life event. Universal application of this tool may not be a great use of time for athletic staff and primary care providers. Screening for mental health among student athletes should continue to be completed by athletic trainers, coaches, sports medicine providers, primary providers, and providers within the student health center on campus to offer early identification of mental health symptoms, facilitate early treatment plans, and improve student athlete outcomes.