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CLINICAL UTILITY OF THE SUBSTANCE USE ITEMS OF THE SPORT INTERFERENCE CHECKLIST IN COLLEGIATE ATHLETES

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A dissertation submitted in partial fulfillment
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Abstract

Collegiate sports are growing in popularity (National Collegiate Athletic Association, 2022) and pressure to perform (van Raalte & Posteher, 2019); leading to difficulties in collegiate athletes' mental health (Rice et al., 2016), particularly in regard to increased substance use (Wilson et al., 2021). Current literature demonstrates that existing substance use assessments are most likely not answered truthfully by athletes (van den Berg et al., 2018), are not applicable to real-world contexts, can be intrusive, and are expensive to administer. In the current study, psychometric properties of items from a self-report measure of substance use interference with sport training and competition were examined in a sample of collegiate athletes. The intraclass correlation coefficient for one-week test-retest reliability of scores on this measure demonstrated good reliability (ICC = .74, 95% CI [.57, .85], $p < .001$). Pearson correlation coefficients indicated statistically significant positive relationships between SIC Substance Use Item scores and a measure of mental health symptomology (i.e., Symptom Checklist – 90 – R; $r = .255$, $n = 280$, $p < .001$) and a psychometrically validated measure of substance use frequency (i.e., Timeline Follow-Back; $r = .255$, $n = 74$, $p = .014$). An independent samples *t*-test suggested there was marginally no statistically significant difference in scores for the experimental items between athletes who were diagnosed with a current substance use disorder as compared to athletes who were not ($M = 1.48$, $SD = .58$; $t\ (35.15) = -1.43$, $p = .08$, one-tailed). Results preliminarily support reliability and validity of the experimental measure (i.e., coined the Sport Interference Checklist's Substance Use screen) for use in collegiate athletes, suggesting clinical utility for providers wanting to screen the impact of substance use in collegiate athletes.

Keywords: athlete mental health, athlete substance use, substance use assessment

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Chapter 1

Literature Review

Collegiate sport participation has been steadily increasing throughout the years, as evidenced by the number of student-athletes who participated in a National Collegiate Athletic Association (NCAA) sponsored sport in the 1981-1982 season (231,445) compared to the 2020-2021 season (527,729; National Collegiate Athletic Association, 2022b). This indicates that the number of student-athletes participating in an NCAA-sponsored sport has almost doubled within the past 40 years. This increase is most likely due to multiple factors, such as increased exposure and popularity of college sports in the general public (i.e., television and social media streaming time), conference realignments, and increased revenue for universities, leading to increased investment into college sports by the institutions providing the ability to take on more student-athletes for each team and offering improved facilities leading to higher desirability (Hoffer & Pincin, 2016).

The recent passing of federal law granting NCAA student-athletes the ability to earn money using their "name, image, and likeness" (Brutlag Hosick, 2021) is another contributing factor to the popularity of collegiate sports (Ryan et al., 2018). The ability for athletes to profit from their athletic abilities and their abilities to promote themselves will likely continue this upward trend in popularity; however, these factors will also continue to exacerbate the already challenging environment student-athletes are in and increase the demands placed on them (Ryan et al., 2018).

Additional stressors such as the COVID-19 pandemic impacted many aspects of life, including sports participation and the ability to perform at the highest level (McLellan et al., 2022). COVID-19 has affected athletes' mental health and led to experiences of stress, anxiety,

depression, trauma, and many other emotional difficulties due to the uncertainties around the ability to practice and compete, restriction of practice time, and isolation when contracting the virus, indicating a significant impact on athletes' physiological and psychological capacities (McLellan et al., 2022; Mehrsafar et al., 2020; Reardon et al., 2021).

Understanding sport participation and its impact on athletes' mental health is complicated, as indicated by conflicting research in the literature. Some studies suggest athletes evidence lower or about the same level of mental health or psychiatric symptomology as non-athletes (Armstrong et al., 2015; Donohue et al., 2007). While other studies, such as a meta-analysis conducted by Gorczynski and colleagues (2017), investigated the difference in reporting depressive symptoms between athletes and non-athletes. Results indicated that athletes were determined to evidence similar or higher risk of suffering from psychiatric issues compared to their non-athlete peers (Gorczynski et al., 2017; Gulliver et al., 2015; Martens et al., 2006; Rice et al., 2016; Sundgot-Borgen & Torstveit, 2004). Factors such as age, gender, sport, level of competition, and being in-season or off-season have been reported to impact their mental health (Kegelaers et al., 2022). Additionally, the stigma around mental health in athletes and the belief that admitting mental health difficulties equals weakness contribute to the potential non-reporting of symptoms in athletes and are likely to underestimate the mental health impacts athletes experience (Wahto et al., 2016).

Although athletes may become successful in sports while evidencing mental health disorders (Kanters, 2000), these complications usually aggravate or initiate their participation in sports (Rice et al., 2016). Common mental health disorders reported by athletes, including NCAA student-athletes, are substance, mood, anxiety, panic, and eating disorders (Brown et al., 2014; Gorczynski et al., 2017; Gulliver et al., 2015; Schaal et al., 2011). Gulliver et al. (2015)

found that 46% of athletes were likely to evidence general psychological distress, depression, generalized anxiety, social anxiety, panic disorder, or eating disorder symptoms. Which is slightly higher than the general student body; 36 % of college-aged students reported experiencing mental health symptomology (Oswalt et al., 2020).

Therefore, in recent years, high-profile athletes have come to the forefront, sharing their struggles with mental health issues, and through advocacy are calling for greater support and resources for the improvement of mental health difficulties in athletes (Meister & Lavanchy, 2021). Consequently, mental health symptomology has become a focus for many professional and amateur sports governing bodies, resulting in policy changes and an increase in programming and resources for athletes dealing with mental health concerns (Brown et al., 2014; Brutlag Hosick, 2019). A more specific area of concern under the broader scope of athletes' mental health is substance use (Rice et al., 2016).

Substance Use in Athletes

As discussed, the sports environment influences significant risks for mental health problems (Rice et al., 2016) due, in part, to the increased pressure to perform, which can ultimately lead to overtraining, burnout, and sports injuries (Schaal et al., 2011). Studies suggest that athletes frequently rely on substance use as a coping mechanism to manage the pressure to perform, reduce physical pain experienced because of overtraining and injuries, and attempt to deal with symptoms of emotional disturbances (Knettel et al., 2021; National Collegiate Athletic Association, 2018).

Relatively high rates of substance use, most often including alcohol, marijuana, and hard drugs, have been indicated among collegiate athletes (Donohue et al., 2018; Green et al., 2001; McDuff & Baron, 2005). Substance use can negatively impact athletic performance and lead to

or exacerbate mental health disorders (Wilson et al., 2021). Additionally, there is a risk for athletes to become addicted to the substances they are consuming, which can lead to detrimental outcomes in their sports careers and continue into their life after sports (Stull et al., 2021).

University and sports organizations are taking measures to address substance use in athletes changing policies and rules, providing educational resources, and offering counseling services to assist in athletes' understanding of the impacts of substance use and to promote the overall well-being of the athlete and the individual as they transition out of their sport (Brown et al., 2014). However, changes in university policy around the country have historically had little impact on decreasing alcohol and illicit drug consumption rates in collegiate students (West & Graham, 2005).

Alcohol use

According to the National Survey on Drug Use and Health, at least 3.1 million young adults in the general population between 18 and 25 years old were diagnosed with an alcohol use disorder in 2019 (McCance-Katz, 2020). Alcohol is the most frequently abused substance by collegiate athletes (Martens et al., 2006; Reardon & Factor, 2010). The NCAA reported that 77% of student-athletes consumed alcohol in the past 12 months, with 36% drinking weekly and 2% drinking daily (National Collegiate Athletic Association, 2018). Research indicated that as student-athletes become more involved with sports, alcohol consumption increases (Cadigan et al., 2013; Martens et al., 2006), and athletes report more negative consequences as a function of alcohol use than their non-athlete peers (Martens et al., 2006).

Alcohol use varies between different groups of athletes. For instance, there are differences in the rate and severity of alcohol use when comparing sports. Specific sports cultures can influence the severity of alcohol use, indicating higher rates in sports such as ice

hockey (93%) and lacrosse (88%), as compared to other sports such as football (72%) and basketball (68%; National Collegiate Athletic Association, 2018). Other studies suggest that team sports, which have an emphasis on the team aspect and team socialization, have higher rates of alcohol use and binge drinking as compared to individual sports emphasizing individual performance (Brenner & Swanik, 2007).

Previous literature consistently suggests that male athletes (92.3%) report higher consumption of alcohol as compared to female athletes (84%; Knettel et al., 2021). However, other data suggest equal or even greater consumption of alcohol for female athletes as compared to male athletes, such as data from the NCAA (male 76.2%; female 78.5%; National Collegiate Athletic Association, 2018).

Collegiate athletes demonstrate ethnic and racial differences in alcohol use and binge drinking. White athletes consistently report the highest prevalence of alcohol use and binge drinking as compared to any other racial and ethnic identity (83%), while Black NCAA student-athletes report the lowest alcohol use (59%; National Collegiate Athletic Association, 2018). Other racial and ethnic data represented Asian (72%), Hispanic or Latino (71%), Native Hawaiian or Pacific Islander (67%), and Multiracial (78%; National Collegiate Athletic Association, 2018). These numbers are supported by other studies investigating differences in alcohol use for varying racial and ethnic identities in athletes and the general population (Khan et al., 2014; Zamboanga et al., 2021).

Comparing collegiate athletes in their consumption of alcohol and their year in college, freshmen reported the lowest amount of alcohol use, with 69.6%, and demonstrated an increase in alcohol use with more seniority on the team (77% sophomores, 81.6 % juniors, and 86.0% seniors; National Collegiate Athletic Association, 2018). The increase in substance use from

freshmen to senior year might be caused by multiple factors, such as reaching the legal drinking age resulting in easier access to alcohol, and more senior student-athletes wanting to exert their leadership and seniority by showing that they can drink more alcohol (Tomon & Ting, 2010). Furthermore, excessive alcohol use at younger ages might also lead to an increase in tolerance and therefore lead to dependence and, ultimately, addiction, causing higher rates of alcohol use in more senior student-athletes (Marshall, 2014).

Other differences in alcohol use that are important to investigate are between the athlete types (i.e., NCAA, club, intramural). Though there are limited studies examining the differences in alcohol use between NCAA, club, and intramural sports athletes, alcohol use in NCAA athletes is lower than in club and intramural sports athletes (Barry et al., 2015). Other studies investigating the differences between NCAA Division I, II, and III athletes support a similar argument that alcohol use increases with lower levels of competitiveness (National Collegiate Athletic Association, 2018)

College athletes are exposed to a unique environment in their academic, social, and sport-related activities that may predispose them to excessive alcohol intake (Andes et al., 2012; Zhou et al., 2016), especially when compared to their non-athlete peers (Lisha & Sussman, 2010; Mastroleo et al., 2013). There is a significant positive relationship between sport involvement and alcohol use among adolescents and young adults (Kwan et al., 2014; Lisha & Sussman, 2010). Some factors for the increased consumption of alcohol in the sports environment include the sensation-seeking characteristics of athletes, team culture or traditions around alcohol use, and wins being celebrated with parties involving alcohol (Parisi et al., 2019; Pitts et al., 2019; Tomon & Ting, 2010).

Binge drinking is defined by the Centers for Disease Control and Prevention (CDC; Centers for Disease Control and Prevention, 2022) as consuming five or more drinks on one occasion for men and four or more drinks on one occasion for women. Binge drinking, specifically, is a significant problem among collegiate athletes (Green et al., 2014; Kwan et al., 2014) due to many reasons; however, perhaps most significantly due to intense practice and competition schedules. The latter theory supports the contention that athletes are less likely to use alcohol during practice days and the sports season, so they are motivated to binge drink outside of practice or competition (Yusko et al., 2008, Brenner & Swanik, 2007).

There are many negative consequences related to alcohol consumption in athletes, such as alcohol-related injury, academic impacts resulting in lower GPAs, operating motor vehicles after drinking, having unprotected and unplanned sexual intercourse, crime, decreasing central nervous system functioning, motor skills, and performance during practice and competition (Barry et al., 2015; Brenner et al., 2014; El-Sayed et al., 2005; Leichliter et al., 1998; Parisi et al., 2019; Shirreffs & Maughan, 2006). Most of these factors will have a significant impact on the athlete's ability to perform at the highest level and could potentially impact the athlete's ability to participate in their sport (Barry et al., 2015; Brenner et al., 2014; El-Sayed et al., 2005; Leichliter et al., 1998; Parisi et al., 2019; Shirreffs & Maughan, 2006). Injury, GPA, and involvement with the law could result in the early cessation of the season or career, trigger ineligibility status, or remove the athlete from the team or university (Brenner et al., 2014; Leichliter et al., 1998).

Marijuana use

Information derived from the 2019 National Survey of Drug Use and Health indicates that approximately 2 million individuals between 18 to 25 years of age suffer from marijuana abuse or dependence in the United States (McCance-Katz, 2020). Buckman et al. (2011) reported

that the prevalence of marijuana use is 37% among male athletes and 25% among female athletes. While the NCAA and member institutions frequently test for marijuana use, this substance is often overlooked, underreported (Harcourt et al., 2012), and likely to increase usage among athletes (Wen et al., 2019).

Prevalence rates of marijuana use differ by sport. Athletes are more likely to use marijuana if they are part of a sport that puts a significant amount of physical strain on them, such as football and gymnastics (Ware et al., 2018). A recent National Collegiate Athletic Association survey (2018) reported the highest use of marijuana by male lacrosse players (50%) and female lacrosse players (34%).

Male athletes report higher rates of marijuana use compared to female athletes (26.3% for men, 22.3% for women; Nation Collegiate Athletic Association, 2018). Differences between male and female athletes are likely due to male athletes being more likely to engage in risk-taking behaviors as compared to female athletes (Buckman et al., 2011).

Furthermore, there are no differences in marijuana use when comparing demographic variables such as race and ethnicity, and year in school. The National Collegiate Athletic Association (2007) reported that marijuana use prevalence for athletes is 26% for White, 20% for Black, 25% for Asian or Asian American, 24% for Hispanic or Latino, 24% for Native Hawaiian or Pacific Islander, and 28% for Multiracial. Specific to academic standing, freshmen report 23.9% marijuana use, sophomores 25.9%, juniors 24.8%, and seniors 24.2% (National Collegiate Athletics Association, 2007).

There are no studies comparing marijuana use between NCAA, club, and intramural athletes. However, the NCAA (2018) examined student-athletes' marijuana use from all three divisions. Results from data collected in 2017 suggest that marijuana use decreased with the

increase in competition level from Division III (32.6 %) and Division II (21.5 %) to Division I (17.7 %; National Collegiate Athletic Association, 2018). These findings might support the idea that university club and intramural athletes might report higher levels of marijuana use as compared to NCAA athletes.

Reasons for marijuana use in athletes are somewhat unknown in the literature; however, some studies suggest that coping with athletic pressures, dealing with anxiety, managing pain, and assisting in traumatic brain injury recovery are reasons for athletes to use marijuana (Ware et al., 2018). High-risk sports have an increased prevalence of marijuana use and report less use of marijuana due to performance-enhancing properties as compared with use due to social reasons (Ware et al., 2018). A survey conducted by the National Collegiate Athletic Association (2018) indicated that 77 % of NCAA athletes who self-reported marijuana use, use it for social reasons, 26 % use it to assist with sleep, 22% use it to cope with symptoms of anxiety and depression, 19 % use it for pain management, and 16 % use marijuana for other reasons.

Several adverse side effects may occur consequent to marijuana use, which is a psychoactive drug. Specifically, the chemical delta-9-tetrahydrocannabinol (THC) that is in marijuana has impacts on athletes that can be detrimental to their performance and well-being (Stull et al., 2021). Decreased performance and increased danger in sports, including reduced reaction time and coordination and inaccurate perception (Brown et al., 2014), have significant consequences for athletes, especially from sports such as gymnastics, sprinters, or softball players that require precision in motor control and fast reflexes.

Furthermore, marijuana use can pose risks to overall health, which could be detrimental to sports performance. Smoking marijuana can lead to respiratory issues, including lung cancer, while the ingestion of marijuana can cause gastrointestinal distress and impair cognitive

functioning, which is vital to athletic performance (Stull et al., 2021). Other consequences of marijuana use, besides its impact on athletic performance or well-being, include potential legal consequences and disqualification from competition (Buckman et al., 2011). Many states are legalizing recreational marijuana use, and sports organizations continue to prohibit the use of marijuana. Therefore, athletes testing positive for THC during a drug test might face suspensions and fines. In some cases, athletes will face disqualification from competition for an extended period of time, which can have serious implications for the athlete's athletic career and future academic or professional goals (National Collegiate Athletic Association, 2022b).

Hard drug use

Hard drugs include illicit or non-prescribed drugs other than marijuana and alcohol and are common in the general population among individuals between the ages of 18 to 25 years. According to the National Survey on Drug Use and Health (McCance-Katz, 2020), 1,800,000 individuals in the United States misused prescription pain relievers; 540,000 misused cocaine; 275,000 misused methamphetamines; 2,000,000 misused prescription stimulants, and 87,000 misused heroin.

Seven- and one-half percent of collegiate athletes use stimulant drugs (Gallucci & Martin, 2015). Lifetime cocaine use in athletes is 12.5%, hallucinogen use is 15.5%, methamphetamines is 28.8%, and illicit prescription drug use is 22.8% (Yusko et al., 2008). Lifetime use of steroids for nonmedical purposes is higher among collegiate athletes than non-athlete counterparts (McCabe et al., 2007). In 2017, NCAA student-athletes were surveyed across all three divisions. The detected hard drugs included cocaine (3.8 %), amphetamines (1.5 %), anabolic steroids (0.4 %), ecstasy/molly (1.8 %), heroin (0.1 %), human growth hormones (2.2 %), LSD (1.7 %), and methamphetamine (0.2 %; National Collegiate Athletic Association,

2018). Additionally, 7.5% of student-athletes reported the use of ADHD stimulants without a prescription, and 2.9% reported the use of narcotic pain medication without a prescription (National Collegiate Athletic Association, 2018).

Hard drug use frequency and severity are also associated with the type of sport played. Of all NCAA sport types, athletes who play lacrosse report the highest rates of cocaine use (men, 22 %; women, 6%) and amphetamine use (men, 6.7 %; women, 1.9 %), while men's wrestling, women's soccer, and women's tennis reported the highest anabolic steroid use (1.9 %, 0.2 %, 0.2 %, respectively; National Collegiate Athletic Association, 2018). However, basketball and track reported the lowest cocaine use for men (2 %) and gymnastics for women (< 1 %), while amphetamines and anabolic steroids were the lowest for men in basketball (0.5 %) and ice hockey (0.0 %), respectively (National Collegiate Athletic Association, 2018). In women's sports, amphetamines were reported to be lowest in rowing (0.0 %), while multiple women's sports reported no use of anabolic steroids (i.e., rowing, field hockey, golf, gymnastics, ice hockey, lacrosse, and swimming; National Collegiate Athletic Association, 2018).

There are significant gender differences in the frequency of reported hard drug use, such as cocaine (5.2 % for men, 1.7 % for women), ecstasy/Molly (2.4 % for men, 1.1 % for women), LSD (2.3 % for men, 0.7 % for women), amphetamines (2.1 % for men, 0.7 % for women), methamphetamines (0.3 % for men, 0.1 % for women), and heroin (0.3 % for men, 0.0% for women; National Collegiate Athletic Association, 2018). Frequency rates for hard drugs were reported to be low for most drugs, indicating no differences between ethnic and racial identities (National Collegiate Athletic Association, 2018). College athletes reported slight increases in hard drug use from freshmen year to senior year. For example, cocaine use for freshmen was 2.3 %, sophomores 4.5 %, juniors 4.3 %, and seniors with 5.0 %.

Similar to marijuana use, there are no studies comparing hard drug use between NCAA, club, and intramural athletes. Data collected from NCAA athletes across all three divisions suggests a trend of hard drug use increasing with the decrease in competition level (National Collegiate Athletic Association, 2018). Division I athletes reported cocaine use (2.6 %), amphetamine use (1.4%), and anabolic steroid use (0.3%); division II athletes reported cocaine use (2.9%), amphetamine use (1.1%), and anabolic steroid use (0.4%); division III athletes reported cocaine use (5.3 %), amphetamine use (1.8%), and anabolic steroid use (0.5%; National Collegiate Athletic Association, 2018).

Hard drug use in athletes often results in detrimental consequences, including poor physical health, athletic performance, decreased reaction time, coordination, concentration, decision-making, psychosis, brain damage, and cardiac damage (Thomas et al., 2010).

Methods of Assessing Substance Use

Accurately assessing substance use can be a challenge (van den Berg et al., 2018), particularly within the context of sports (Donohue et al., 2018). It has been debated if individuals respond truthfully to substance use self-report measures, suggesting mixed results for the validity of self-report measures (Del Boca & Noll, 2000; O'Farrell et al., 2003; van den Berg et al., 2018; Williams & Nowatzki, 2005). Further, collegiate athletes may underreport drug use to evade negative consequences, making the self-report of drug use within this population an inaccurate representation of actual usage (Williams & Nowatzki, 2005). Interestingly, many studies in the literature that investigated substance use in student-athletes are conducted by the NCAA (National Collegiate Athletic Association, 2018); this may be a contributing factor that leads athletes to underreport substance use due to perceived negative repercussions or consequences. These consequences can include and are not limited to, removal from the team (Borsari &

Muellerleile, 2009). Other implications for substance use have adverse physiological effects (Prat et al., 2009) and potentially impact social relationships between teammates, coaches, friends, significant others, and family (Brook et al., 2013).

However, the context in which someone is assessed plays a vital role in the truthfulness of responses. Research suggests that if there is a potential for adverse consequences, individuals might not respond as truthfully as in situations where consequences are low or non-existent (van den Berg et al., 2018).

The most widely used assessment of substance use involves quantity or frequency (e.g., how many drinks of alcohol have you consumed in the past 30 days; Davis et al., 2017; Dietze et al., 2008; Kroshus, 2016; Martin et al., 2021; O'Brien et al., 2005, 2007). This approach to assessing substance use can lead to inaccurate responses because of errors due to memory lapses. Therefore, assessment tools have been developed that include memory aids.

For instance, the Timeline Followback (TLFB; Sobell et al., 1986; see measures section for more details) has demonstrated reliability and validity as a measure of substance use in the general and athletic population. In this assessment, a calendar is first completed with significant past experiences (e.g., birthdays) and events (e.g., holidays) that have occurred on particular dates. These markers are subsequently used to aid memory in assessing which days substances were used. This measure has consistently been shown to be both reliable and valid in various non-athlete populations (Donohue et al., 2015; Panza et al., 2012; Sobell et al., 1986), and in collegiate athletes, this measure has successfully measured changes in substance use outcomes (Donohue et al., 2018). However, this measure has yet to be psychometrically examined in collegiate athletes, who, as indicated above, may be inherently less likely than non-athletes to report substance use.

The Structured Clinical Interview for DSM-IV (SCID-IV; First et al., 2002) has been assessed for acceptable reliability and validity in determining the presence or absence of substance use disorders in adults (Kranzler et al., 1996; Spitzer et al., 1992) with demonstrated clinical utility in athletes (Donohue et al., 2015).

Urinalysis and hair follicle analyses are biological assessments of substance use (van den Berg et al., 2018). These measures offer tremendous advantages in objectively detecting whether substance use is present or not. Indeed, these measures are often insensitive to detection when substance use occurs beyond established windows of detection (Van den Berg et al., 2018), and although rarer, may lead to false positives (e.g., consumption of excessive amounts of poppy seeds may indicate opiate use, inhaling secondary marijuana smoke). Other drawbacks of these biological methods include cost and intrusiveness (van den Berg et al., 2018). Moreover, biological measures are influenced by various factors, including chronicity of use and percentage of adipose tissue (more makes it easier to detect) and activity level (more makes it harder to detect substance use). Low adipose tissue and high activity levels in athletes, compared with non-athletes, are thus likely to increase false negatives as compared with non-athletes (Patel, 2006).

The Sport Interference Checklist (SIC; Donohue et al., 2007) was developed as a screening instrument to assess factors that may interfere with an athlete's training (Problems in Sport Training Scale; PSTS) and performance during competition (Problems in Sport Competition Scale; PSCS). This 26-item measure has demonstrated validity and reliability in collegiate athletes (Donohue 2007, 2019, 2020). In the current study, two additional questions were added to the SIC to assess substance use (i.e., alcohol use, other drug use). The first question was, "*how often does alcohol use interfere with your performance*," and the second

question was, "*how often does drug use, or use of prescribed drugs more than a medical doctor's recommendation interfere with your performance*." Item responses were specific to performance during training and performance during competition.

The relative weaknesses of the SIC are that it lacks objectivity and does not assess frequency and quantity. However, a potential benefit to using the SIC substance use items is that athletes may be more compelled to report substance use as interference in training and competition than reporting its frequency due to other potential adverse consequences (van den Berg et al., 2018).

Based on the adverse effects of substance use in athletes, and the lack of psychometric examination of assessment measures of substance use in athletes, there is a need to comprehensively evaluate how providers can effectively assess athletes' substance use. Limitations of substance use assessments within the college athlete population are false negatives associated with denial of substance use and false-negative and positive conclusions in biological testing. There are also problems with diagnostic assessments of substance use disorder (e.g., SCID-IV), including denial of substance use or substance use problems and relatively high completion time. Additionally, substance use assessments in sports can be costly and intrusive, especially if urine samples must be observed and lack relevance to sports.

Therefore, the investigator in this study concurrently examined multiple methods of assessing for substance use in athletes (i.e., TLFB, SCID-IV, SIC substance use items). This permitted an extensive initial evaluation of SIC substance use items to ultimately determine their usefulness within the context of sport. The purpose of the current study was to examine clinical utility of the Sport Interference Checklist (SIC) substance use items scores in a sample of collegiate athletes pursuing psychological intervention services, including test-retest reliability,

relationship with a measure of mental health, concurrent validity with another measure of substance use, and lastly, the difference in SIC substance use item scores in athletes who evidence substance use disorders from those who do not. Additionally, differences in substance use interference scores by age, gender, ethnicity/race, year in school, and level of competition were assessed.

Chapter 2

Method

Measures

Sport Interference Checklist (SIC; Donohue et al., 2007) was used to determine how various factors affected training (Problems in Sport Training Scale; PSTS) and competition (Problems in Sport Competition Scale; PSCS). The PSTS and the PSCS include the same 26 items assessing problem areas that athletes might experience (i.e., "How often does this [problem] interfere with your performance during training?" and "How often does this [problem] interfere with your performance during competition?"). Item responses are rated utilizing a 7-point Likert scale (1 = never, 7 = always). Points are added to obtain a total score for each scale, with higher totals indicating more significant interference for training or competition. The PSTS and PSCS have demonstrated acceptable validity and reliability in collegiate athletes and professional circus artists (Donohue et al., 2007, 2019, 2020). Donohue and colleagues (2007) investigated the initial psychometric properties of the SIC in college athletes. The PSTS items indicated high internal consistency (Cronbach's $\alpha = .91$), demonstrated convergent validity with a mental health measure of psychiatric symptoms (Symptom Checklist – 90 – Revised Global Severity Index; $r = .45$ - .58), and resulted in a four-factor structure accounting for 58.7 % of the variance (Donohue et al., 2007). The PSCS items indicated high internal consistency (Cronbach's $\alpha = .92$), demonstrated convergent validity with a mental health measure of psychiatric symptoms (Symptom Checklist – 90 – Revised Global Severity Index; $r = .33$ - .44), and resulted in a six-factor structure accounting for 64.4% of the variance (Donohue et al., 2007). In the current study, two questions related to substance use were added, yielding four scores (i.e., alcohol use interfering with performance during practice, alcohol use interfering with

performance during competition, drug use interfering with performance during practice, drug use interfering with performance during competition).

The Symptom Checklist-90-R (SCL-90-R; Derogatis et al., 1976) is a 90-item questionnaire divided into nine major dimensions to determine the overall severity of mental health symptomatology. Each item is scored on a 5-point Likert scale, ranging from zero to four. Zero represents "not at all," and four corresponds to "extremely." A Global Severity Index is calculated by adding all scores and dividing the sum by the number of items, which equals four being the highest severity of symptoms. The SCL-90-R demonstrated acceptable validity and reliability in community samples (Derogatis, 1994), college students (Martinez et al., 2005; Todd et al., 1997) and indicated clinical utility in college athletes (Donohue et al., 2004, 2015). For the purpose of this study, the researcher used the Global Severity Index as its main measure of mental health symptomatology.

The *Structured Clinical Interview for DSM-IV* (SCID-IV; First et al., 2002) may be used to assist assessment of mental health diagnoses as consistent with the Diagnostic and Statistical Manual of Mental Disorders fourth edition (4th ed., text rev.; DSM-IV-TR; American Psychiatric Association, 2000). This scale has demonstrated validity and reliability in adults (Kranzler et al., 1996; Spitzer et al., 1992) and has demonstrated clinical utility in collegiate athletes (Donohue et al., 2015). Substance abuse and dependence scales were modified slightly to represent DSM-5 criteria.

The *Timeline Follow-Back* (TLFB; (Sobell et al., 1986) was used to determine the number of days of alcohol and days of drug use reported by participants during the four months prior to the psychological assessment. A calendar is used that includes various events (e.g., parties, competitions) to assist in memory of substance use days. The TLFB demonstrated

validity and reliability in college students (Panza et al., 2012; Sobell et al., 1986) with clinical utility in college athletes (Donohue et al., 2015).

Procedures

Participants from a Division 1 southwestern university in the United States were referred by various sources to determine their interest in participating in a controlled treatment outcome study (see Donohue et al., 2018). Referral sources included the university's athletics department, coaches, and teammates, consequent to their participation in mental skills training exercises in team workshops and through receipt of course credit for research participation. Three hundred and sixteen athletes were referred to the study, while 285 agreed to complete study consent and complete an initial assessment specific to the aforementioned controlled treatment outcome study (see Fig.1). The test battery was administered upon the study consent of participants, and included an assessment of demographic factors, the Symptom Checklist-90-R (SCL-90-R; Derogatis et al., 1976) and the Sport Interference Checklist (SIC; Donohue et al., 2007). Then, the participants were randomly assigned to one of two standardized interview conditions developed to facilitate engagement in the treatment outcome study. The results of this engagement study are comprehensively reported elsewhere (Donohue et al., 2016). 74 participants agreed to participate in the second psychological assessment battery that was relevant to determining if they qualified for the treatment outcome study. This second assessment battery was scheduled to occur approximately one week after the completion of the initial assessment and included, for the purpose of the current study, the SIC (Donohue et al., 2007), Structured Clinical Interview for DSM-IV (SCID-IV; First et al., 2002) and the Timeline Follow-Back (TLFB; Sobell et al., 1986).

To participate in the first assessment, participants had to be at least 18 years old and actively participating in an NCAA, university club, or intramural sport. They had to report using alcohol or non-prescribed drugs during the previous four months. To participate in the second assessment, participants had to agree to invite at least one significant other to attend intervention sessions if they qualified for the treatment outcome study and not receive psychotherapeutic services other than those assigned in the treatment outcome study. Additionally, participants had to be in the local area for eight months, which was the duration of the randomized controlled trial.

Participants

Data for the test-retest reliability included 57 participants (i.e., NCAA n = 28; Intramural n = 20; Club n = 9). At the start of the study, participants were approximately 20 years old (M = 20.65); about half were male (57.9 %), and most individuals were White/Caucasian (38.6 %; Black 10.5 %; Asian 10.5 %; Latinx 19.3 %; Pacific Islander 1.8 %; and Other 19.3 %) and Freshmen (21.1 %; Sophomore 33.3 %; Junior 26.3 %; and Senior 19.3 %).

Data from the first time point assessment included 280 participants (i.e., NCAA n = 124; Intramural n = 123; Club n = 33). At the start of the study, participants were approximately 19 years old (M = 19.87); about half were male (51.8 %; female 48.2 %), and the majority were White/Caucasian (39.6 %; Black 15.4 %; Asian 8.6 %; Latinx 11.4 %; Pacific Islander 3.9 %; and Other 21.1 %) and Freshmen (36.4 %; Sophomore 29.6 %; Junior 21.4 %; and Senior 12.5 %).

The second time point assessment included 74 participants, who consented to continue the study and complete the second assessment. These participants mainly were NCAA athletes (i.e., NCAA n = 42; Intramural n = 21; Club n = 11), approximately 20 years old (M = 20.5),

about half were Male (52.7 %), and the majority were White/Caucasian (41.9 %; Black 18.9 %; Asian 10.8 %; Latinx 21.6 %; Pacific Islander 1.4 %; and Other 5.4 %) and Freshmen (23.0 %; Sophomore 31.1 %; Junior 28.4 %; and Senior 17.6 %).

Hypotheses

(1) There will be a statistically significant 1-week test-retest reliability for the SIC substance use items; (2) there will be a statistically significant positive relationship for the SIC substance use items with a measure of mental health (i.e., SCL-90-R); (3) there will be a statistically significant positive relationship for the SIC substance use items with a well-validated measure of substance use frequency to demonstrate concurrent validity (i.e., TLFB); and (4) there will be a statistically significant difference on SIC substance use item scores in athletes who were diagnosed with a SCID-IV current substance use disorder as compared to athletes who did not.

Statistical Plan and Data Preparation

The data underwent preliminary analyses to calculate means and standard deviations for the independent and dependent variables. For a detailed presentation of the current study's sample, descriptive statistics were used to explore demographic variables (e.g., age, gender, ethnicity, year in school, athlete type). Additionally, the variables were inspected for normality using guidelines according to Tabachnick and Fidell (2013). Variables demonstrated normality with values between -1 and 1 for skewness and -1.5 and 1.5 for kurtosis (Tabachnick and Fidell, 2013). As Tabachnick and Fidell (2013) suggested, the researcher implemented logarithmic transformations for variables that did not demonstrate normality. Assumptions for the Pearson correlation were investigated, including linearity between the independent and dependent

variables, homoscedasticity, and normally distributed residuals. Cases with missing data were removed from the data set.

To evaluate whether the SIC substance use items yield similar scores when administered within a one-week period without intervention and to understand if these items are representative and stable over time, an intraclass correlation coefficient was calculated to determine the 1-week test-retest reliability for SIC substance use items for individuals who completed both assessments. A partial Pearson correlation coefficient was calculated to determine the relationship between the SIC substance use items and a measure of mental health (i.e., SCL-90-R). Additionally, a Pearson correlation was used to examine the relationship between the SIC substance use items and a substance use frequency measure (i.e., TLFB). Finally, an Independent Samples *t*-Test was used to investigate the difference in SIC substance use item scores in athletes who met clinical criteria for a current substance use disorder determined by an assessment for mental health disorders in adults (i.e., SCID-IV adapted for DSM-5), as compared to athletes who did not meet clinical criteria for a current substance use disorder.

Group differences on the Sport Interference Checklist substance use items scores were analyzed. A Pearson correlation coefficient was calculated to investigate the impact of age, an independent samples *t*-test was used to investigate the difference between gender, and an Analysis of Variance was conducted to examine group differences for ethnicity/race, year in school, and athlete type.

Chapter 3

Results

Data Screening

The current data was analyzed using the Statistical Package for Social Sciences (SPSS) Version 29.0. Data screening procedures were conducted to examine whether all variables met the assumptions for the statistical analyses used in this current study. Descriptive statistics were examined to identify outliers and missing values. Boxplots were visually inspected, and identified outliers for the variables that were used.

The four added SIC items investigating alcohol and drug use interference with training and competition indicated significant relationships with one another. The four items demonstrated good internal consistency for the first time point with a sample of 285 participants ($\alpha = 0.88$) and acceptable internal consistency for the second time point with a sample of 74 participants ($\alpha = 0.75$; Cortina, 1993). Therefore, these items were combined into a single item composite score (i.e., the Sport Interference Checklist substance use composite score); permitting consistency with other measures used in this study, such as the TLFB, which combined alcohol and other drugs into one substance use frequency score.

For the *SCL-90-R global severity index* variable, five responses were removed from the data due to their values being outliers. Two other variables, including the *Sport Interference Checklist Substance Use Items* variable from the second time point and the *Timeline Follow-Back 30-day substance use frequency* variable, were modified using Tabachnick and Fidell's (2013) suggestion to remove outliers. Tabachnick and Fidell (2013) recommended moving outliers closer to the distribution by adjusting the most extreme value closer to the next value in the distribution. Finally, based on the recommendation by Tabachnick and Fidell (2013), one

variable, the *Sport Interference Checklist Substance Use Items* from the first time point, was transformed using the inverse formula (1/variable). After transformation, the variable was also reflected by subtracting a constant to restore the original directionality of the data (Tabachnick and Fidell, 2013).

Skewness and kurtosis values were examined to evaluate the distribution of the data. Initially, variables violated the assumption for normality, with values for Skewness and Kurtosis being outside the acceptable ranges. After transforming the variables and removing outliers, data demonstrated acceptable values for skewness and kurtosis, indicating acceptable values to meet the assumptions of normality. After the screening and modification of the data, the variables met all assumptions for the planned statistical analyses and therefore are appropriate for further analysis.

Hypothesis 1

There will be a statistically significant 1-week test-retest reliability for the SIC substance use item scores. Table 4 illustrates the results of the intraclass correlation coefficient demonstrating the one-week test-retest reliability between the SIC substance use item scores from the initial assessment to the second assessment, which was about one week apart. Cicchetti (1994) recommended intraclass correlation coefficient values as poor reliability (≤ 0.39), fair reliability (0.40 to 0.59), good reliability (0.60 to 0.74), and excellent reliability (0.75 to 1.00). The intraclass correlation coefficient analysis revealed a good agreement between raters' scores from two different time points that are one week apart (ICC = 0.74, 95% CI [0.57, 0.85], $p <$ .001). The intraclass correlation coefficient analysis results suggest a good agreement level at a one-week test-retest. The ICC values for the overall scores and individual items indicate that the raters were consistent in their ratings and that the assessment tool is reliable. Additionally, the

root mean square error (RMSE)was determined to be 0.68, suggesting that, on average, there will be a 0.68-point difference in scores when athletes are assessed at two different time points.

Hypothesis 2

There will be a statistically significant positive relationship between the SIC substance use item scores and a mental health measure assessed by the SCL-90-R global severity index. Table 5 shows the relationship between substance use interference scores (as measured by the SIC Substance Use Item scores) and mental health symptomology (as measured by the SCL-90-R global severity index). Three demographic variables (i.e., age, gender, and athlete type) demonstrated statistically significant differences in SIC Substance Use Item scores, which resulted in controlling for these variables in this current analysis. This relationship was investigated using a partial Pearson product-moment correlation coefficient while controlling for the participant's age, gender (i.e., male and female), and athlete type (i.e., NCAA, Club, Intramural). Preliminary analyses were performed to ensure no violation of normality, linearity, and homoscedasticity assumptions. There was a weak, positive correlation between the two variables, $r = .217$, $n = 280$, $p < .001$, with high scores of substance use interference associated with high levels of mental health symptomology.

Hypothesis 3

There will be a statistically significant positive relationship between the SIC substance use item scores and substance use frequency as measured by the TLFB. Table 6 demonstrates the results of the Pearson correlation. The relationship between the substance use interference scores (as measured by the SIC Substance Use Item scores) and 30-day substance use frequency (as measured by the TLFB) was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of normality, linearity, and

homoscedasticity assumptions. There was a weak, positive correlation between the two variables, $r = .255$, $n = 74$, $p = .014$, with high scores of substance use interference associated with high amounts of substance use frequency.

Hypothesis 4

There will be a statistically significant difference in SIC substance use item scores in athletes diagnosed with a SCID-IV current substance use disorder compared to athletes who did not. An independent-samples *t*-test was conducted to compare substance use interference scores (as measured by the SIC Substance Use Item scores) for athletes diagnosed with a current substance use disorder and athletes not diagnosed with a current substance use disorder (see Table 7). There was no significant difference in scores for athletes who were diagnosed with a current substance use disorder ($M = 1.73$, $SD = 0.79$) and athletes who were not diagnosed with a current substance use disorder ($M = 1.48$, $SD = 0.58$; t (35.15) = -1.43, $p = .08$, one-tailed). The magnitude of the difference in the means (*mean difference* = -.26, 95% CI: -.63 to .11) was very small (*eta squared* = 0.03).

Group Differences

Substance Use Interference and Age

Table 8 demonstrates the results of the Pearson correlation analyzing the relationship between substance use interference scores and the age of the participants. The relationship between substance use interference scores (as measured by the SIC Substance Use Item scores) and age were investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of normality, linearity, and homoscedasticity assumptions. There was a statistically significant weak positive correlation between the two

variables, $r = .185$, $n = 280$, $p = .002$, with high scores of substance use interference associated with older participants.

Substance Use Interference and Gender

An independent-samples *t*-test was conducted to compare substance use interference scores (as measured by the SIC Substance Use Item scores) between male and female athletes (see Table 9). There was a statistically significant difference in scores between male athletes ($M = 0.35$, $SD = 0.27$) and female athletes ($M = 0.27$, $SD = 0.20$; $t\ (264.02) = 3.02$, $p = .001$, one-tailed). The magnitude of the difference in the means (*mean difference* = .09, 95% *CI*: .03 to .14) was extremely small (*eta squared* = 0.03).

Substance Use Interference and Ethnicity/Race

A one-way between-groups analysis of variance was conducted to explore the impact of ethnicity/race on the levels of substance use interference during training and competition, as measured by the Sport Interference Checklist Substance Use items scores (see Table 10). Participants included White, Black, Pacific Islander, Asian, Hispanic/Latino, and other. There was no statistically significant difference at the $p < .05$ level in substance use interference scores between the six groups: $F\ (5, 274) = .865$, $p = .505$. The effect size, calculated using eta squared, was a small effect size of .02.

Substance Use Interference and Year in School

A one-way between-groups analysis of variance was conducted to explore the impact of the year in school on the levels of substance use interference during training and competition, as measured by the Sport Interference Checklist Substance Use items scores (see Table 11). Participants included freshmen, sophomores, juniors, and seniors. There was no statistically significant difference at the $p < .05$ level in substance use interference scores between the six

groups: F (3, 276) = 1.981, p = .117. The effect size, calculated using eta squared, was a small effect size of .02.

Substance Use Interference and Athlete Type

A one-way between-groups analysis of variance was conducted to explore the impact of athlete type on scores of substance use interference during training and competition, as measured by the Sport Interference Checklist Substance Use items scores (see Table 12). Participants included NCAA, Club, and Intramural athletes. There was a statistically significant difference at the $p <$ .05 level in substance use interference scores for the three groups: F (2, 277) = 8.111, $p < .001$. The effect size, calculated using eta squared, was a medium effect size of .06. Post-hoc comparisons using the Tukey HSD test indicated that NCAA athletes (M = 0.25, SD = 0.18) reported significantly less interferences in sport training and competition when compared with Club athletes (M = 0.39, SD = 0.27) and Intramural athletes (M = 0.36, SD = 0.28). Club athletes (M = 0.39, SD = 0.27) did not differ significantly from Intramural athletes (M = 0.36, SD = 0.28).

Chapter 4

Discussion

The current study examined the psychometric properties of the Sport Interference Checklist's Substance Use item scores, including secondary analyses to investigate differences in the levels of substance use interference for age, gender (i.e., male and female), ethnicity/race (i.e., White, Black, Pacific Islander, Asian, Hispanic/Latino, and other), year in school (i.e., freshman, sophomore, junior, and senior), and athlete type (i.e., NCAA, club, and intramural).

The current study uniquely addresses the need for more effective substance use assessments specifically designed for the athlete population (van den Berg et al., 2018). It was determined that this measure is useful for providers working with athletes. The results for test-retest reliability indicated good reliability, suggesting the SIC Substance Use item scores are generally reliable across time. RMSE analyses indicated that, on average, there will be a .68-point (scale of 1 to 7) difference in scores in a second administration performed approximately one week later.

There was a relationship between the SIC Substance Use items and a well-established measure of substance use (i.e., TLFB), suggesting the SIC substance Use Item scores evidenced concurrent validity in this collegiate athlete sample. This positive relationship also suggests athletes may be sensitive to the negative effects of higher rates of substance use on their sports performance in both training and competition. Athletes are more likely to experience negative consequences due to substance use than non-athletes (National Collegiate Athletic Association, 2022b), as well as the impact of substance use due to its effects on their performance and general functioning (Thomas et al., 2010).

Higher substance use interference with sports training and competition was hypothesized to be positively associated with mental health symptomology, as consistent with the extant literature showing that higher levels of substance use are associated with higher mental health concerns (Cranford et al., 2009). Albeit a weak relationship, higher interference in sports performance was associated with increased mental health symptom severity. This is consistent with existing literature and was thus expected to have a weaker relationship. The substance use interference items measure a different construct than the SCL-90-R global severity index and might evidence errors in the measure itself. However, in summary, this suggests that more emphasis must be placed on overall mental health symptomology in athletes, particularly when they report substance use interfering with their performance in training and competition.

Lastly, investigating the difference in substance use interference with sport performance scores between athletes diagnosed with a current substance use disorder and athletes not diagnosed with a substance use disorder was not statistically significant, although it approached significance.

Some of the largest substance use studies in athletes are conducted by the National Collegiate Athletic Association (NCAA) by sending out a substance use survey to participating NCAA Division I, II, and III universities (National Collegiate Athletic Association, 2018). There are concerns about the accuracy of the data collected by the NCAA, as student-athletes are asked to disclose information about their substance use that could potentially lead to detrimental consequences to their sports careers (Williams & Nowatzki, 2005). Moreover, substance use of other athlete types (i.e., club, intramural) is rarely assessed in studies (Donohue et al., 2018), and there are no existing studies in the literature examining how substance use interferes with sports performance during training and competition. Therefore, differences in levels of substance use

interference in sports performance during training and competition were investigated by age, gender, ethnicity/race, year in school, and athlete type.

There was a weak statistically significant relationship between substance use interference and age, indicating that the older the participant was, the higher the reported substance use interference in training and competition. The existing literature on substance use frequency shows that older collegiate athletes report higher substance use (National Collegiate Athletic Association, 2018; Tomon & Ting, 2010), indicating that athletes who report an increase in substance use frequency throughout their collegiate career are likely to report an increase in the levels of interference. These current results suggest that the relationship between substance use and age is similar between NCAA athletes and club and intramural athletes, which are far more prevalent worldwide.

In the current study, men reported higher levels of substance use interference than women. Previous studies on substance use frequency have found higher substance use rates in male athletes than female athletes (Buckman et al., 2011; Knettel et al., 2021). Interestingly, a study assessing substance use in athletes that researchers outside of the NCAA reported higher alcohol use in male athletes as compared to female athletes (Knettel et al., 2021). The survey conducted by the NCAA reported higher alcohol use in female athletes as compared to male athletes (National Collegiate Athletic Association, 2018), which potentially speaks to the issues addressed above of athletes not responding truthfully to self-report measures, especially when the NCAA distributes them. In understanding this finding, it is important to consider that men consistently report significantly greater perceived stigma relevant to mental health disorders than women (Wang et al., 2007). Therefore, men may be more inclined than women to deny substance use frequency due to perceived stigma.

There was a statistically significant difference between athletes of different types (i.e., NCAA, club, and intramural). Club and intramural athletes reported higher levels of substance use interference than NCAA athletes. This makes sense because NCAA athletes are generally considered more elite and expected to be more advanced in factors that facilitate optimum performance in training and competition. These findings are also consistent with previous literature on substance use frequency, reporting higher rates of substance use in club and intramural athletes (Barry et al., 2015), which can likely lead to higher interference scores in their sports training and competition.

There were no significant differences for collegiate athletes between substance use interference scores and reported ethnicity/race, and substance use interference scores and their year in school. Previous self-report assessments suggest Black individuals are more likely to underreport substance use than White individuals perhaps because marginalized populations have been found to under-report illicit behavior, more than Caucasian groups, likely due to perceived negative consequences (Fendrich & Johnson, 2005). Participants from the current study (Donohue, 2018) were informed of the NIH certificate of confidentiality (a study strength), which allows the data to be protected from any outside parties to be viewed; likely resulting in more truthful reporting of substance use and substance use interference within minority populations included in the study. Additionally, results indicate that even though collegiate athletes might report different rates of substance use (Khan et al., 2014; National Collegiate Athletic Association, 2018; Zamboanga et al., 2021), they are all reporting similar scores of the reported substance use interfering with their training and competition.

In summary, study results preliminarily support the reliability and validity of the Sport Interference Checklist's Substance Use items for use in collegiate athletes. The developed screen

for substance use also evidences advantages over existing substance use screens. Indeed, its response set is specific to the sports environment, is quick and easy to administer and interpret, will be publicly available at no cost, is not intrusive, and was developed in a real-world context involving student-athletes who were pursuing intervention focused on mental wellness. Given the conspicuous absence of sport-specific substance abuse screens in collegiate athletes, the current findings substantially contribute to the literature (van den Berg et al., 2018). Indeed, this scale fills a substantial gap in this literature by providing an initial examination of a measure that assesses interference in an athlete's training and competition and potentially reduces the stigma associated with the explicit assessment of pathology outside of sport. Evaluating substance use interference adds valuable information to the existing literature, as it screens for the level of substance use impacting the athlete's performance during training and competition, which are highly important areas for athletes wanting to be successful in their sports. Lastly, providers who work with athletes in a collegiate setting now have an assessment tool they can use to assess the impact of athletes' use of substances on sports performance; potentially assisting motivational interviewing for those who evidence relatively high scores. Investigators indicate that early detection of substance use problems in athletes may lead to early intervention and improvement of performance. Therefore, reviewing athletes' responses to the examined measure may facilitate engagement in substance abuse programming when warranted, although this will need to be determined in future studies.

However, a potential confound in the interpretation of the current study results is the time frame inconsistency of symptomology reporting. The TLFB is designed to assess substance use frequency during the previous 30 days, the SCL-90-R assesses difficulties with mental health symptoms during the previous week, and the criteria for a SCID-IV current substance use

diagnosis is based on substance consumption within the past year. In contrast, the Sport Interference Checklist Substance Use Item scores assess the current interfering effects of substance use on sports performance. Indeed, it would make sense that the relationship may have been stronger if the assessments were measuring the respective factors concurrently. Other limitations include a lower sample size for some of the analyses limiting the generalizability of the results and reducing the ability to detect smaller effects and relationships between variables. The participants were from one university, including data for Division I, club, and intramural athletes. Collecting data from multiple universities with different geographic locations and different NCAA divisions, including NAIA schools, would assist in a deeper understanding of substance use interference and the generalizability of the findings. The Sport Interference Checklist is a self-report measure that inherently exhibits similar limitations as all other self-report measures, including but not limited to a social desirability bias (Latkin et al., 2017).

Further research is recommended to substantiate the current study results in non-collegiate athletes, such as youth, professional athletes, and other performers. Additionally, further research might explore how the SIC substance use items can potentially be a sensitive measure within a non-sports population when items are rephrased to match the setting of the specific population. It is recommended that future research involving substance use continue to explore more effective ways to assess substance use outside of self-report measures and measures that are intrusive and time-consuming. Furthermore, future research should be aimed at investigating reasons athletes experience an increase in substance use frequency as they progress through their collegiate careers. Lastly, because the results suggest substance use is associated with interferences in sports performance during training and competition, there may be a need to

develop and examine sport-specific substance abuse programs, such as The Optimum Performance Program in Sports (Donohue et al., 2018).

Appendix A: Tables

Table 1
Participant Demographics for Hypothesis 1 (N = 57).

Demographic		
	M	*SD*
Age in Years	20.65	2.43
	λ	*%*
Gender		
Male	33	57.9
Female	24	42.1
Ethnicity		
White/Caucasian	22	38.6
Black/African-American	6	10.5
Asian/Asian American	6	10.5
Hispanic/Latino	11	19.3
Pacific Islander	1	1.8
Other (multiple or not listed)	11	19.3
Year in school		
Freshman	12	21.1
Sophomore	19	33.3
Junior	15	26.3
Senior	11	19.3
Athlete Type		
NCAA	28	49.1
Club	9	15.8
Intramural	20	35.1

Note. λ: frequency.

Table 2
Participant Demographics for Hypothesis 2 (N = 280).

Demographic		
	M	*SD*
Age in Years	19.87	1.99
	λ	*%*
Gender		
Male	145	51.8
Female	135	48.2
Ethnicity		
White/Caucasian	111	39.6
Black/African-American	43	15.4
Asian/Asian American	24	8.6
Hispanic/Latino	32	11.4
Pacific Islander	11	3.9
Other (multiple or not listed)	59	21.1
Year in school		
Freshman	102	36.4
Sophomore	83	29.6
Junior	60	21.4
Senior	35	12.5
Athlete Type		
NCAA	124	44.3
Club	33	11.8
Intramural	123	43.9

Note. λ: frequency.

Table 3
Participant Demographics for Hypothesis 3 and 4 (N = 74).

Demographic		
	M	*SD*
Age in Years	20.50	2.15
	λ	*%*
Gender		
Male	39	52.7
Female	35	47.3
Ethnicity		
White/Caucasian	31	41.9
Black/African-American	14	18.9
Asian/Asian American	8	10.8
Hispanic/Latino	16	21.6
Pacific Islander	1	1.4
Other (multiple or not listed)	4	5.4
Year in school		
Freshman	17	23.0
Sophomore	23	31.1
Junior	21	28.4
Senior	13	17.6
Athlete Type		
NCAA	42	56.8
Club	11	14.9
Intramural	21	28.4

Note. λ: frequency.

Table 4

Hypothesis 1: Intraclass Correlation Coefficient (N = 57).

	ICC (95% CI)	*p*-value
SIC-Substance Use Item	.74 (.57 to .85)	< .001

Note. ICC = Intraclass correlation coefficient measured with a two-way mixed, absolute agreement model.

Table 5
Hypothesis 2: Pearson Partial Correlation (N = 280).

Variable	SCL-90-R Global Severity Index
SIC-Substance Use Items Score	.22**

Note. TLFB = 30-day Timeline Follow-Back
** $p < .001$.

Table 6
Hypothesis 3: Pearson Correlation (N = 74).

Variable	TLFB
SIC-Substance Use Item	.26*

Note. TLFB = 30-day Timeline Follow-Back
* $p < .05$.

Table 7
Hypothesis 4: Independent-Samples t-Test (N =74).

	Current SUD		No Current SUD				
	M	*SD*	*M*	*SD*	*t*(35.15)	*p*	Cohen's *d*
SIC-Substance Use Item	1.73	.79	1.48	.58	-1.43	.08	.65

Note. Current SUD = Current Substance Use Disorder diagnosis based on the DSM-5 criteria

Table 8
Sport Interference Checklist Substance Use Items Scores and Age (N = 280).

Variable	Age
SIC-Substance Use Items Score	.19

$p = .002$.

Table 9
Sport Interference Checklist Substance Use Items Scores and Gender (N = 280).

	Male		Female				
	M	*SD*	*M*	*SD*	*t*(264.02)	*p*	Cohen's *d*
SIC-Substance Use Items	.35	.27	.27	.20	3.02	.001	.XX

Table 10

Sport Interference Checklist Substance Use Items Scores and Ethnicity/Race (N = 280).

	White		Black		Pacific Islander		Asian		Hispanic/ Latino		Other		$F(5, 274)$	p-value	η^2
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*			
SIC-SU	.31	.22	.30	.26	.29	.25	.27	.20	.39	.30	.32	.26	.865	.505	.02

Note. SIC-SU = Sport Interference Checklist Substance Use Items Scores

Table 11

Sport Interference Checklist Substance Use Items Scores and Year in School (N = 280).

	Freshman		Sophomore		Junior		Senior		$F(3, 276)$	p-value	η^2
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*			
SIC-SU	.28	.23	.34	.27	.30	.23	.37	.23	1.981	.117	.02

Note. SIC-SU = Sport Interference Checklist Substance Use Items Scores

Table 12

Sport Interference Checklist Substance Use Items Scores and Athlete Type (N = 280).

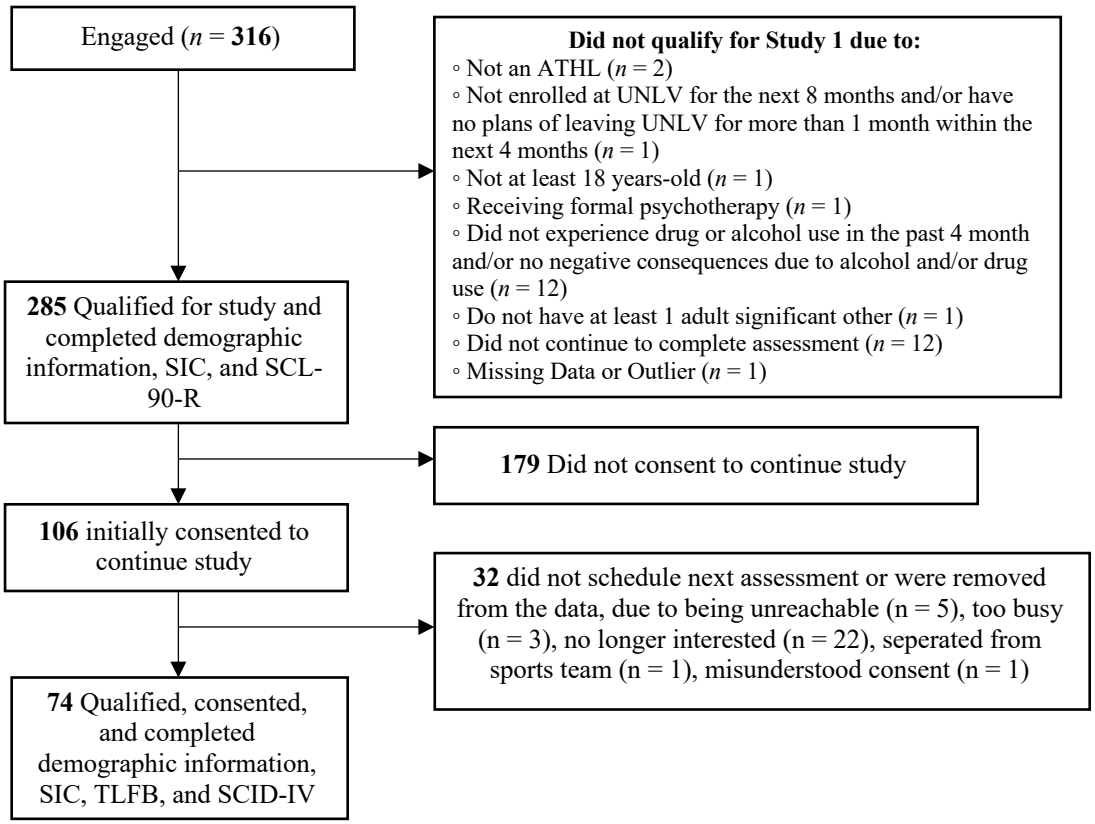
	NCAA		Club		Intramural		$F(2, 277)$	p-value	η^2
	M	*SD*	*M*	*SD*	*M*	*SD*			
SIC-SU	.25	.18	.39	.27	.36	.28	8.111	< .001	.06

Note. SIC-SU = Sport Interference Checklist Substance Use Items Scores

Appendix B: Figures

Figure 1

Flow Chart of participants



Note. Flow chart depicting participants' path from initial engagement until final assessment.

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Thesis: *The Relationship Between Resilience and NCAA Division I Swimming Times*
Chair: Jenelle Gilbert, Ph.D.

B.A. **Psychology, minor in Exercise Physiology** May 2014
Drury University, Springfield, MO

CLINICAL EXPERIENCES

Doctoral Intern, Oklahoma Sport Psychology Consortium July 2022-Present
University Athletics Department/Private Practice
Norman, OK

Supervisors: Dolores Christensen, Psy.D. (Fall 2022)
Cody Commander, Psy.D. (Fall 2022 & Spring 2023)
Javan Jean-Noel, Psy.D. (Spring 2023)

Psychological Resources for OU Student-Athletes (PROS)

- Mental health department housed within the University of Oklahoma athletics department
- Provided individual therapy, psychological assessments, sport psychology interventions for individuals and teams
- Collaborated and consulted with a multidisciplinary team including coaches, administration, athletic trainers, dietitians, physicians, and psychiatrist
- Received didactic seminars addressing psychological issues around working with an athlete population

Commander Counseling and Wellness

- Private practice providing services for the community
- Provided psychological assessments for children and adults assessing general mental health concerns, ADHD, learning disorders, and Autism Spectrum Disorders
- Provided therapy and sport psychology services to local professional organizations

Psychology Trainee, The Eating Disorder Institute July 2021-Present
Private Practice 16 hours per week
Las Vegas, NV

Supervisor: Lindsey Ricciardi, Ph.D.

- The Eating Disorder Institute is a private practice providing comprehensive care to individuals diagnosed with an eating disorder.
- Implementing evidence-based treatments (e.g., CBT-E, FBT, CBT-AR, and DBT) for adolescents, families, and adults diagnosed with eating disorders (e.g., Anorexia Nervosa, Bulimia Nervosa, Binge-Eating Disorder, Avoidant/Restrictive Food Intake Disorder).
- Co-facilitating a DBT Skills group for individuals who are diagnosed with eating disorders.
- Weekly 1-hour supervision with the licensed therapist and owner of the EDI.
- Monthly 2-hour didactic seminars around topics related to eating disorders (e.g., Nutritional needs presented by a dietitian specialized in eating disorders, The components of change and how to get individuals, teen, and families to be willing to change, managing parents of patients presenting with eating disorders, etc.).
- Weekly 1-hour team meetings including all therapists, dietitians, and administrative staff to consult and collaborate about the care for patients.
- Consultations with pediatricians, physicians, and psychiatrists to provide holistic care.

Psychology Trainee, Student Counseling and Psychological Services August 2020-Present
University Counseling Center 16-20 hours per week
University of Nevada, Las Vegas

Supervisors: Tanya Crabb, Psy.D. (Fall 2021)
Christina Patterson, Ph.D. (Spring 2021, Summer 2021)
Michael Browning, Psy.D. (Fall 2020)

- The university counseling center at UNLV provides care to its undergraduate and graduate students. It uses a step-care model and provides self-help resources, workshops, group psychotherapy, and individual therapy.
- Individual therapy is based on a short-term model providing a maximum of twelve sessions for a student.
- Provided individual interventions for patients in tele-therapy and in-person formats with a caseload of 11 patients per week, with an additional initial intake assessment of 2 students per week.
- Diagnoses included affective disorders, anxiety disorders, trauma related experiences, academic related difficulties. Primary theoretical approaches utilized included CBT, DBT, and MI.
- Assisted the training director with formatting of syllabi for the doctoral interns.
- Assisted the embedded Sport Psychologist with the creation of a syllabus for a sport psychology rotation for the APA-Accredited doctoral internship.
- Participated in outreach opportunities to educate and inform UNLV students about specific disorders and services provided at CAPS.
- Created and presented a 1-hour didactic seminar for all practicum trainees about eating disorders.

- Other activities included weekly 1-hour didactic seminars on various topics related to student needs; case rounds to consult about student disposition, conceptualization, and treatment planning; supervision with a licensed full-time staff member; and supervision with a doctoral intern.

Psychology Trainee, The PRACTICE July 2019-August 2020
Department Community Mental Health Clinic 16 hours per week
Las Vegas, NV

Individual Therapy *Supervisor: Shane Kraus, Ph.D.*

- The PRACTICE was the 2019 recipient of the Association of Psychology Training Clinic's (APTC) Clinic Innovations Award - Training; this national award recognizes one training clinic annually for its leadership in innovations that impact students training.
- Provided individual interventions for patients in tele-therapy and in-person formats with a caseload of approximately 3 patients per week in an outpatient psychology department-sponsored mental health training clinic.
- Diagnoses included affective disorders, anxiety disorders, obsessive-compulsive disorders, substance use disorders, personality disorders. Primary theoretical approaches utilized included CBT, DBT, ERP, and MI.
- Received weekly individual and group supervision with digital video review. Attended weekly practicum seminars, which included didactic, group supervision, and case conference components.

Group Psychotherapy *Supervisors: Noelle Lefforge, Ph.D.*
Amelia Black, Ph.D.

- Co-facilitated a weekly psychotherapy group including a CBT Skills Group (Fall 2019), Interpersonal Processing Group (Spring 2020), and DBT Skills Group (Summer 2020).
- Participated in weekly case rounds where new patient intakes were reviewed.
- Provided case management as adjunct to group psychotherapy to prevent patient drop-out and improve patient engagement and utilization of group psychotherapy, as well as management of acute symptoms that may necessitate management in addition to group psychotherapy (e.g., suicidality).
- Provided pre-treatment preparation to incoming group members.
- Monitored outcomes of group patients (Outcome Questionnaire and Group Questionnaire) and consulted with group facilitators on patient issues as needed.

Assessment *Supervisor: Shane Kraus, Ph.D.*

- Conducted psychodiagnostic and neuropsychological assessments in an outpatient department-sponsored mental health training clinic using a flexible battery of psychometrically validated tests and measures with adults referred from the community with a range of referral questions.
- Further responsibilities included interviewing, scoring, interpreting, differential diagnosis, writing integrated reports, and provision of feedback to patients.
- Supervision consisted of weekly individual and group meetings with digital video review, reviewing cases, training in case conceptualization, joint determination of evidence-based

assessment battery and interpretation of results, integrated report revisions, and discussion of feedback.
- Administered the WAIS-IV, WJ-COG-IV, WJ-ACH-IV, WJ-OL-IV, WMS-IV, TOMM, CCPT-3, D-KEFS, SCID-5, SCID-5-PDQ, MMPI-2, SCL-90-R, BDI, BAI, BHS, NDRT, RBANS.

TRAINING EXPERIENCES

F.E.A.S.T. Webinar Series
Daniel LeGrange, Ph.D. Fall 2021, 3 hours
Walter Kaye, M.D.
Sarah Ravin, Ph.D.
- "What's new with FBT?," **"**Is Anorexia Nervosa an Eating Disorder? How Anxiety Inhibits Eating," **"**ARFID 101: Subtypes, Symptoms, and Effective Treatment"
- These webinars focused on general understanding of specific eating disorders and the current best practices for the treatment of these disorders.

Immigration and Identity: Systemic Impacts on Individual Lived Experience
Shruti Mukkamala, Ph.D. Fall, 2021, 1 hour
Elizabeth Hernandez, Ph.D.
- This webinar was a practice-focused presentation that established the need for culturally responsive and social justice focused approaches to treating immigrant students and their loved ones.
- Presenters provided an update on recent immigration policy and relevant research on the psychological impact of immigration and discussed tools to effectively provide clinical services to students impacted by immigration.

Integrating FBT for Adolescents to Treat Eating Disorders into a DBT Therapy Program
Lucene Wisniewski, Ph.D., FAED Summer 2021, 10 hours
Melissa Gerson, LCSW
Michelle Lupkin, Ph.D.
- Learn how to use DBT theory and practice in the context of family-based treatment. Using lecture, case examples, small group exercises, and role plays, provided the opportunity to practice and observe DBT treatment strategies for those diagnosed with an eating disorder.

Telepsychology Best Practice 101 Summer 2020, 8 hours
Marlene M. Maheu, Ph.D., American Psychological Association
- Training series provided an introduction to telepsychology, including competencies for tele-practice, critical ethical, legal, clinical, and technical issues, and reimbursement strategies.

Interprofessional Education Day Spring 2020, Spring 2021, 12 hours
University of Nevada, Las Vegas
- Annual integrated care workshops with medical, nursing, psychology, physical therapy, and social work students aimed at increasing awareness of interprofessional education,

roles, responsibilities, and understanding of interprofessional team functioning to better serve patients.

Comprehensive Training in Dialectical Behavioral Therapy (DBT) Fall 2019, 42 hours
Alan and Armida Fruzzetti, Ph.D., University of Nevada, Las Vegas

- Comprehensive 6-day training focused on DBT, an evidence-based treatment for complex, difficult to treat mental disorders. DBT combines standard cognitive-behavioral techniques for emotion regulation and reality-testing with concepts of distress tolerance, acceptance, and mindful awareness largely derived from Buddhist meditative practice. Workshop introduced DBT theory, structure, targets, treatment strategies, skills, skill training, and skill coaching.

PEER-REVIEWED PUBLICATIONS

Peer-Reviewed Journal Publications

Donohue, B., Phrathep D., Stucki, K. B., **Kowal I.**, Breslin, G., Cohen, M., … (2021). Adapting an Evidence-Supported Optimization Program for Mental Health and Sport Performance in Collegiate Athletes to Fit Youth from Ethnic/Racial Minority and Low-Income Neighborhoods: A National Institutes of Health Stage Model Feasibility Study. *International Journal of Psychiatry in Medicine,* 009121742110065. https://doi.org/10.1177/00912174211006547

Book Chapter Publications

Kowal, I., Donohue, B., & Phrathep, D. (in press). Mapping it Out – Goal Setting. In S. Shepphird (Eds.), *Sport Psychology Workbook*. Oakland, California. New Harbinger.

Manuscripts in Preparation

Kowal, I., Donohue, B., Allen, D., Kraus, S., Mercer, J. (in preparation). Clinical Utility of the Substance Use Items of the Sport Interference Checklist in Collegiate Athletes.

CONFERENCE PRESENTATIONS

Phrathep, D., **Kowal, I.**, Janeo, M., Goto, A., Tsalafos, A., Huslig, S., Granstrom, I, Cohen, M., Donohue, B. (2022, March). *A Family-Based Optimization Intervention Implemented through Video-Conferencing to Address Major Depressive Disorder in a Latina Adolescent Athlete During Covid-19*. [Verbal presentation]. AASP 2022 Regional West Conference, California Baptist University, Riverside, California.

Phrathep, D., **Kowal, I.**, Tsalafos, A., Huslig, S., Granstrom, I., Goto, A., Cohen, M., Janeo, M., & Donohue, B. (2021, October). *A Controlled Case Evaluation of a Family-Based Optimization Intervention Implemented through Video-Conferencing to Address ADHD and Oppositional Defiant Disorder in an Adolescent Athlete*. Poster presentation conducted at the Association for Applied Sport Psychology, Virtual Conference.

Phrathep, D., **Kowal, I.**, Tsalafos, A., Granstrom, I., Goto, A., Cohen, M., & Alvarado, N., & Donohue, B. (2021, October). *A Family-Based Optimization Intervention Implemented through Video-Conferencing to Address Major Depressive Disorder in a Latina Adolescent Athlete During COVID-19*. Poster presentation conducted at the Association for Applied Sport Psychology, Virtual Conference.

Phrathep, D., **Kowal, I.**, Donohue, B. (2020, October). *Initial Feasibility of an Evidence-Supported Approach to Mental Health and Sport Performance in Youth Athletes.* Poster Presentation at the AASP Conference, Virtual Conference.

Kowal, I., Phrathep, D., Janeo, M., Griffin, E., (2020, January). *Optimizing Communication Through Evidence-Supported Interventions for Athletes.* Workshop conducted at the annual conference of the Center for Performance Psychology, National University's Sanford Education Center, Carlsbad, CA.

Strong, M., **Kowal, I.**, Hill, J., Cohen, M., Kawi, J., & Donohue, B. (2019, November). *A Comprehensive Examination of the Relationship between Psychiatric Symptoms and Substance Use in College Athletes.* Poster presented at the Association for Behavioral and Cognitive Therapies, Atlanta, GA.

Donohue, B., Gavrilova, E., **Kowal, I.** (2019, January). *A reliable and valid method of assessing, conceptualizing, and addressing problems that interfere with sport performance.* Workshop conducted at the annual conference of the Center for Performance Psychology, National University's Sanford Education Center, Carlsbad, CA.

Kowal I., Gilbert J., Moore-Reed S., Gilbert W. (2016, September) *Swimming Success: Relationship Between Resilience and Swimming Performance.* Poster presented at the 2016 AASP Conference, Phoenix, AZ

OUTREACH EXPERIENCES

Anxiety Presentation for Engineering Students Fall 2021
University of Nevada, Las Vegas *Supervisor: Tanya Crabb, Ph.D.*

- Presented with collogues to engineering students about anxiety and psychological services at UNLV.

Campus Tabling Event Fall 2021
University of Nevada, Las Vegas *Supervisor: Tanya Crabb, Ph.D.*

- Interacted with students on campus to answer any questions about psychological services at UNLV and provided handouts and flyers to students asking for more specific information.

Business Education Program Fall 2021
Las Vegas, NV *Supervisor: Brad Donohue, Ph.D.*

- This program provided student teenagers the opportunity to learn how to be effective in the business environment. Students received workshops and education about being a first-time employee and received the opportunity to get their first jobs.
- The students learned various skills from The Optimum Performance Program in Sports, modified to employees.
- Taught a positive request skill to the students through modeling, role-playing, and breakout groups to let students practice the skills.

HEROS Project Fall 2019-Spring 2020
Las Vegas, NV *Supervisor: Brad Donohue, Ph.D.*

- HEROS Project is a non-profit organization providing after-school programing to an underserved population.
- Prepared and led the training of The Optimum Performance Program in Sports (an FBT intervention modified for sports by Dr. Bradley Donohue) to the group leaders of HEROS.
- Gathered feedback from group leaders about the appropriateness of the modified TOPPS interventions for youth athletes.

TEACHING EXPERIENCES

Instructor, Introduction to Psychology (Psychology 101) Fall 2020
University of Nevada, Las Vegas *Supervisor: Wayne Weiten, Ph.D.*

- Taught 2 sections of virtual Psychology 101 courses, while concurrently enrolled in *Teaching of Psychology* with a supervisory component.
- Developed syllabi, planned courses, prepared, and presented lectures, facilitated class discussions, developed online content pages, utilized MindTap learning platform, and created and graded exams.

Teaching Assistant, Research Methods Fall 2018-Spring 2019
University of Nevada, Las Vegas; Psychology Department *Supervisor: Gloria Wong, Ph.D.*

- Graded and assisted with creating exams and assignments for 2 sections of the research methods course.

Teaching Assistant, Counseling Techniques Spring 2015
California State University; Fresno, CA; Counseling Department

- Modeled counseling skills to beginning student counselors through role-plays with students from the course.
- Assisted in providing feedback to students from the course on their counseling role-plays with other students.

Teaching Associate, Swim for Beginners Fall 2014-Spring 2016
California State University; Fresno CA – Kinesiology Department

- Developed a syllabus, planned courses, prepared, and presented lectures, facilitated class discussions, and created and graded exams.
- Demonstrated and taught beginner swimming skills to students who were not comfortable with swimming.

Teaching Associate, Swim for Fitness Fall 2014-Spring 2016
California State University; Fresno CA – Kinesiology Department

- Developed a syllabus, planned courses, prepared, and presented lectures, facilitated class discussions, and created and graded exams.
- Taught students more advanced swimming skills and provided practices to students depending on their level of swimming.

WORK EXPERIENCES

Assistant Coach, Men's and Women's Swimming & Diving Team Sep. 2016-July 2018
University of Nevada, Las Vegas (Division I)

Student-Manager – Women's Swimming & Diving Team Fall 2014-Spring 2016
California State University, Fresno (Division I)

SELECTED ACTIVITIES

Program Coordinator, The Optimum Performance Program Spring 2020
University of Nevada, Las Vegas, NV *Supervisor: Brad Donohue, Ph.D.*

- The Optimum Performance Program is a non-profit applied research laboratory that hosts several cutting-edge research projects that are supported by NIH and other federal agencies. The Optimum Performance Program won Outstanding New Student Organization of the Year in 2014 and Outstanding New Program in 2013.
- Coordinated tasks for Graduate and Research Assistants, conducted weekly laboratory meetings, provided TOPPS intervention training to community providers, and organized group supervision meetings.

Performance Professional, The Optimum Performance Program Summer 2017-Fall 2019
University of Nevada, Las Vegas, NV *Supervisor: Brad Donohue, Ph.D.*

- Assisted with The Optimum Performance Program in Sports dissemination, training, and implementation, while serving as the publication coordinator.

Secretary, Sport Psychology Club Fall 2015-Spring 2016
California State University, Fresno, CA *Supervisor: Dawn Lewis, Ph.D.*

- Coordinated of weekly meetings and took minute notes.
- Organized yearly club trips to areas relevant to sport psychology (e.g., Wounded Warrior Project in San Diego)
- Planned, prepared, and taught a yearly Mental Skills Camp to high school students.

EDITORIAL EXPERIENCES

Editorial Assistant Jun 2020-Apr 2022
Journal of Child & Adolescent Substance Abuse *Editor: Ron Acierno, Ph.D.*

LANGUAGES

- English
- German
- Polish
- French

MEMBERSHIPS & CERTIFICATIONS

Association for Applied Sport Psychology	2013-present
Nevada Psychological Association	2019-present
Clinical/Counseling Sport Psychology Association	2022-present

HONORS AND AWARDS

Outstanding Graduate Student Award, Kinesiology Department	Spring 2016
Outstanding Thesis Award, Kinesiology Department	Spring 2016
Recognition in Scientific Analysis by the Behavioral Sciences Department	Spring 2016
Drury's Men's Swimming & Diving Team Captain	Fall 2013-Spring 2014
Dean's List Scholarship	Fall 2012-Spring 2014
4 Time Division II Swimming and Diving Champions	2011-2014