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A Systematic Literature Review of Mental Health Assessment Measures for College Athletes: Analyzing Rigor of Empirical Validation and Implications for Practice

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The mental health of college athletes has become a priority for the National Collegiate Athletic Association (NCAA) and athletic departments across numerous Colleges and Universities. College athletes experience a plethora of stressors and mental health concerns that will require the use of mental health assessments to determine the appropriate level of mental health care. Sport social work has limited research exploring empirical evidence on the use and effectiveness of specific mental health assessments for the population of college athletes. A systematic review was conducted utilizing the Cochrane Handbook of Systematic Reviews for Interventions to critically analyze, evaluate, and synthesize the rigor of mental health assessment measures used among college athletes. An initial search of sport social work literature yielded 1,199 articles. After applying inclusion and exclusion criteria, five articles that met the full criteria for inclusion remained. Results indicate there are minimal mental health assessment tools that have empirical data supporting their use with college athletes. Although some suitable mental health screening tools were identified, practitioners must be aware of the limitations of the tools they use and should actively engage in the ongoing development and validation of new assessment scales.

Keywords: sport social work, sport psychology, collegiate athletics, sport, well-being

To be a college athlete requires a keen balance of student life and athletic identity. College athletes have intense time demands, highly regulated schedules, and high expectations to excel scholastically and in their respective sports (Hilliard et al., 2022). In addition to maintaining their student status at their respective college/university, they are expected to represent their institution with high regard even when they are not competing. Recent studies highlighted that athletes experience comparable or higher rates of mental illness symptoms and disorders compared to non-athletic peers (Donohue et al., 2018). It is important to note that 23.7% of college athletes showed symptoms of depression that were clinically significant (Glick

et al., 2020). According to Hilliard et al. (2022), collegiate athletes have reported various areas of concern, including anxiety, depression, stress, eating disorders, substance use, and relationship problems.

The varying mental and physical demands placed on collegiate athletes increase their vulnerability to a variety of mental health disorders and high-risk behaviors (Moore, 2016). Athletes' mental health refers to their overall well-being, including realizing their potential, coping with life's stresses, working productively, and contributing to their community (World Health Organization, 2004). For athletes, this encompasses managing the specific pressures of training and competition and finding a balance between sports and other aspects of life.

According to Reardon and Factor (2010), athlete mental health should be operationalized to include:

Psychological Well-being: The presence of positive emotions and moods, absence of negative emotions, satisfaction with life, fulfillment, and positive functioning.
Performance-Related Mental Health: The ability to perform well under pressure, maintain focus, and recover from setbacks and injuries.
Mental Health Disorders: The presence or absence of clinically significant mental health disorders such as anxiety, depression, eating disorders, and substance abuse.

The Complex Challenges and Cultural Barriers Impacting College Athletes' Mental Health

Many college athletes begin their athletic careers with preexisting challenges, including past traumas, familial stressors, impoverished backgrounds, and prior mental health concerns. These factors cannot be ignored as they significantly impact their well-being and performance. Research from Drexel University reveals that 86% of college student-athletes come from low-income families and live below the federal poverty line (Straurowsky, 2011). The combination of sport-specific risk factors and these pre-existing individual risk factors underscores the critical need for tailored mental health assessments and services for this population (Glick et al., 2020).

Athletic culture often encourages perseverance through adversity without addressing underlying issues. Common slogans such as "no pain, no gain" encourage athletes to continue participating despite symptoms that might indicate injury or the need for mental health intervention. This mindset can lead athletes to allow their sports achievements or failures to become central to their identities and self-worth. The pressure to succeed, often measured by wins and championships, can overshadow other important aspects of their lives, making it difficult to address serious concerns. This intense focus on sports fosters unrealistic expectations and can lead to significant personal challenges. Many athletes are reluctant to seek help for fear of being perceived as weak or facing negative consequences (Edwards, 2021).

As awareness grows, college institutions and coaches begin to recognize the importance of mental health care and physical training. This shift is reflected in the increased attention to mental health in collegiate athletics. The National Collegiate Athletic Association (NCAA) has started implementing best practices and mandating mental health resources at the college level (Glick et al., 2020). Despite this progress, mental health remains a stigmatized topic among

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athletes, who are often incorrectly viewed as perpetually healthy and functional. This misconception fosters an expectation that athletes should compete regardless of their mental state, further perpetuating the stigma and discouraging them from seeking help (Edwards, 2021; Hilliard et al., 2022).

Barriers to Mental Health Service Utilization Among College Athletes

Due to a combination of factors, including perceived stigma, negative attitudes towards seeking help, scheduling conflicts, poor accessibility to care, fear of decreased playing time, an intense focus on succeeding in their sport, limited financial resources, and potential negative perceptions from coaches and teammates, college athletes seek mental health services at significantly lower rates compared to their non-athletic peers (Donohue et al., 2019). Approximately 31% of college athletes reported experiencing depression, but only about 10% sought mental health services (Yang et al., 2007). In contrast, data from the National Institute of Mental Health (NIMH) suggests that about 17.3 million adults in the U.S. (7.1% of all U.S. adults) had at least one major depressive episode in 2017, and about 43.3% of those individuals received treatment (NIMH, 2019). College athletes face a significant mental burden, as they must choose between pleasing their coaches and fans or following their instincts and physical well-being to make the best decision for their overall well-being. Many people are huge fans of college sports but are unaware of the negative impact that collegiate athletic participation can impose on an athlete's mental health (Watson & Kissinger, 2007).

The Role of Social Work in Addressing Mental Health Needs of College Athletes

While sport social work is an emerging field, existing literature supports the integration of social work practice within the sports domain. Given the multitude of stressors, risk factors, and stigmas that collegiate athletes face, it is crucial to implement proactive measures through the involvement of a clinical social worker or other clinically licensed mental health professionals to support athletes throughout their collegiate careers (Donohue et al., 2019). Screening for mental health conditions serves as an effective preventative strategy, as early diagnosis and treatment can mitigate the severity and duration of symptoms (Kroshus, 2016). Despite the growing body of research on mental health interventions for athletes, there is a notable gap in the literature regarding mental health screening assessments/tools specifically designed for college athletes.

This systematic literature review (SLR) aims to critically analyze, evaluate, and synthesize the rigor of mental health assessment measures used among college athletes. By examining the empirical validation of these screening tools, the SLR will assess their effectiveness and appropriateness for this specific population. Additionally, the review will describe the methodologies employed in the studies, present the results, discuss the strengths and limitations of the identified tools, and identify implications for social work practice and future research directions.

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Purpose of Review

Mental health challenges are prevalent among student-athletes due to the unique stressors they experience and the stigmas that create barriers to treatment. This literature review systematically aims to analyze, evaluate, and synthesize the rigor of mental health assessment measures specifically used with college athletes. While college institutions have started to use readily accessible screening instruments for mental health conditions, these instruments often fall short, as they fail to consider the athlete's full identity during screening (Kroshus, 2016). Some tools emphasize physical health while providing minimal evaluation of mental health (Donohue et al., 2019), posing significant health risks for college athletes. This is particularly concerning given the NCAA and the National Athletic Trainers' Association's endorsement of integrating mental health screening assessments, referrals, and follow-up recommendations (NCAA Sport Science Institute & NCAA, 2020).

While established, evidence-based mental health screening measures exist for non-athlete populations, athletes may be less motivated to complete these scales due to perceived stigma. Furthermore, college athletes may not provide honest responses because they perceive a disconnect between mental health assessments and their sports performance (Donohue et al., 2018). Despite the availability of psychometrically sound mental health screening assessments, a gap persists in the literature, particularly concerning college athlete-specific mental health tools. Collegiate athletes require specialized mental health assessments, leading to the need for college sport-specific screening tools that are empirically validated for accuracy. Therefore, the empirical development of mental health screening measures that have direct implications for sports is crucial. These measures can help identify mental health conditions in college athletes, facilitate connections to appropriate mental health treatment, and inform effective intervention planning.

Methods

Strategy

The SLR was conducted in July 2023 to answer the SLR question: Are there mental health assessments that have empirical validation specifically for use with college athletes, addressing their unique psychological and performance-related needs? The search for the SLR began in April 2023 and concluded in July 2023. The following multidisciplinary, academic databases were searched: MEDLINE, APA PsycINFO, Psychology and Behavioral Sciences Collections, SPORTDiscuss with Full Text, PubMed, EBSCO, Social Work Abstracts, Health and Psychosocial Instruments, and Google Scholar. The following subject-specific, academic databases were searched: Alliance of Social Workers in Sports, CINAHL with Full Text, and Sociological Collection. Proactive engagement with sport social work experts across various academic institutions was conducted to amass a comprehensive range of sources and gain valuable insights. The powerful Boolean "and" search techniques were employed to refine the search and consolidate pertinent keywords. The searches were as follows: *mental health, college, university, student, athlete, screening,* and *assessment.* The exact Boolean phrase is as follows: AB "mental health" AND AB (college OR university OR student) AND AB athlete AND AB (

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screening OR assessment). A diverse array of keyword combinations was enacted to procure an extensive selection of search outcomes.

Inclusion and Exclusion Criteria

The following seven inclusion criteria were met for articles included in this SLR: (1) Collegiate athletes had to be the primary population of the study, (2) Mental health and/or mental well-being were discussed, (3) Stressors associated with being an athlete were discussed, (4) Mental health assessments specific to college athletes were identified, (5) Articles were full text, (6) Peer-reviewed, (7) Articles were written between the years of 2013 and 2023. Articles published before the year 2013, were not peer-reviewed, focused on professional athletes, implemented mental health models, made no mention of a specific evidenced-based mental health assessment, and did not include college athletes as their population was excluded from use.

The preliminary scoping search of sport social work literature yielded 1,199 articles. Implementing the inclusion criteria resulted in the exclusion of 700 articles. 453 articles were omitted from the remaining 499 articles by applying the "AND" Boolean operator to the remaining keywords. The abstracts of the remaining 46 articles were reviewed, and an additional 30 articles were excluded due to their concentration on sports performance rather than the overall well-being of the collegiate athlete. The remaining 16 articles were examined for specific references to college athletes, collegiate athletes, mental health, and/or mental well-being, as well as a mental health assessment. This resulted in the exclusion of eleven additional articles, leaving five that met all criteria. Refer to Appendix A – Figure A1, located following the reference list, to review the PRISMA Flow Diagram (Stovold et al., 2014).

Quality Assessment

The Consensus-based Standards for Selecting Health Status Measurement Instruments (COSMIN) checklist was employed to rigorously evaluate the methodological quality of the selected studies on the measurement properties of health-related patient-reported outcomes (HR-PROs) (Mokkink et al., 2010). This tool is particularly well-suited for the objectives of this systematic review, as it is specifically designed to appraise the quality of studies assessing measurement properties such as validity, reliability, responsiveness, and practical applicability (Terwee et al., 2012). By utilizing the COSMIN checklist, the review is equipped to provide a comprehensive assessment of the mental health screening tools, ensuring that they meet the necessary standards of methodological rigor and are appropriate for use with college athletes. This approach not only strengthens the validity of the findings but also ensures that the tools evaluated are both scientifically robust and practically relevant to the unique needs of this population.

Data Extraction

To gain a comprehensive understanding of the publications, the author of the review utilized a condensed Cochrane Effective Practice and Organization of Care (EPOC) Data Collection Form to extract data from each publication. This form served as a foundation for

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creating personalized data extraction forms, which allowed the tailoring of the process to specific needs.

Methods of Analysis

The systematic literature review employed a narrative synthesis of the data, as a meta-analysis was deemed inappropriate due to significant variations across the randomized control trials (RCTs) included in the review. These variations encompassed poor quality of the RCTs, differences in protocols, and inconsistencies in reporting outcomes, all of which precluded the statistical synthesis of the trial results. Instead, the synthesis focused on evaluating the validity and reliability of the scales outlined in each study, highlighting their effectiveness in identifying collegiate athletes who may meet the diagnostic criteria for mental health disorders.

The COSMIN checklist was integrated into the analysis to systematically assess the methodological quality of the studies on the measurement properties of HR-PROs. The COSMIN checklist evaluates various dimensions of measurement properties, including reliability, validity, and responsiveness. This systematic approach ensured that the mental health screening tools included in the review were rigorously appraised for their psychometric properties.

Reliability Analysis: Cronbach's alpha was utilized in several studies to assess the internal consistency of the scales. This statistical measure is critical for determining the degree of interrelatedness among items within a scale (Taylor et al., 2023). By considering both the variance of each item and the covariance between items, Cronbach's alpha provides an indication of the level of association among the items on the scale. The internal consistency is categorized into various levels, such as excellent ($\alpha \geq 0.90$), good ($\alpha \geq 0.80$), acceptable ($\alpha \geq 0.70$), questionable ($\alpha \geq 0.60$), and poor ($\alpha \leq 0.59$) (Taylor et al., 2023). These classifications guided the evaluation of the scales' reliability within the included studies.

Validity Analysis: Receiver Operating Characteristic (ROC) analysis was another key tool used across the studies to assess the validity of the scales. ROC analysis is particularly useful for determining the sensitivity and specificity of scales in distinguishing between different diagnostic outcomes. The Area Under the ROC Curve (AUC) was calculated, with an AUC of 0.50 indicating chance classification and an AUC of 1.00 indicating perfect classification accuracy (Donohue et al., 2019). The studies employed ROC analysis to identify optimal cutoff points that maximize the scales' sensitivity and specificity in diagnosing mental health conditions among college athletes.

For a comprehensive overview of the validity and reliability measures utilized in each study, refer to Appendix A - Table A3.

Results

This systematic literature review includes five studies conducted in the United States between 2019 and 2023. Each study focuses on a distinct evidence-based mental health assessment tool used with college athletes, detailed in Appendix A - Table A1. The studies varied in their approaches and methodologies but shared a common goal: to evaluate the

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reliability, validity, and other psychometric properties of these mental health measures in the context of college athletics. These assessments were examined using various components of the COSMIN checklist, ensuring a comprehensive appraisal of their methodological rigor.

Measurements

The study conducted by Donohue et al. (2019) investigated a range of scales, including the Global Severity Index of the Symptom Checklist-90-Revised (SCL-90-R GSI), Problems in Sport Competition Scale (PSCS), Problems in Sports Training Scale (PSTS), and the Desire to Pursue Sport Psychology Scale (DSPS). These instruments assess the behavioral and cognitive factors that may impede athletic performance, particularly during training and competition for college athletes. The SCL-90-R GSI, a well-established self-report measure, evaluates overall mental functioning and psychological distress. Participants in the study rated their experiences on a 5-point Likert scale, which demonstrated high internal consistency (Cronbach's alpha = 0.94). The PSCS and PSTS scales also exhibited strong internal consistency, with Cronbach's alphas of 0.91 and 0.89, respectively. ROC analysis was employed to assess the predictive validity of these scales, revealing that the Sport Interference Checklist (SIC) domains (PSTS, PSCS, DSPS) were significant predictors of mental health issues among college athletes. The Area Under the Curve (AUC) values ranged from 0.76 to 0.88, indicating good to excellent classification accuracy for identifying college athletes at risk for mental health problems (Donohue et al., 2019).

The most recent study by Donohue et al. (2023) introduced the Mental Health Disorders Screening Instrument for Athletes (MHSIA), a tool developed with input from college athletes and guided by a clinical psychologist. The MHSIA is designed to screen for mental health disorders using items aligned with DSM-5 criteria, focusing on how these disorders interfere with life outside of sports. The study utilized a 7-point frequency scale (ranging from 1 = Never to 7 = Always) to measure the frequency of these interferences. The internal consistency of the MHSIA was high, with a Cronbach's alpha of 0.93. Multivariate analysis of variance (MANOVA) was used to explore differences in MHSIA scores across gender and athletic levels, revealing no significant differences, thus supporting the scale's generalizability. ROC analysis further validated the MHSIA, with AUC values between 0.82 and 0.91, indicating strong predictive power for identifying clinically significant mental health issues within college athletes (Donohue et al., 2023).

LoGalbo et al. (2022) examined the Patient Health Questionnaire-9 (PHQ-9) and the ImPACT Symptom Inventory, focusing primarily on the PHQ-9 as a tool for assessing depression. The PHQ-9 is a widely used self-report measure that evaluates the severity of depressive symptoms, with scores categorized into levels of depression (e.g., mild, moderate, severe). The internal consistency of the PHQ-9 in this study was robust, with a Cronbach's alpha of 0.86. ROC analysis was used to assess the tool's sensitivity and specificity in predicting depression among college athletes, with an AUC of 0.79 indicating good accuracy. The study also explored the correlation between PHQ-9 scores and the ImPACT Symptom Inventory, finding significant associations that further supported the PHQ-9's validity as a screening tool for depression in college athletes (LoGalbo et al., 2022).

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Taylor et al. (2023) evaluated the International Olympic Committee Sport Mental Health Assessment Tool 1 (SMHAT-1), which includes 13 domains such as anxiety, depression, suicide ideation, sleep disturbances, and substance use. The SMHAT-1 assessment tool has been developed for utilization by sports medicine physicians and other licensed/registered health professionals. Its purpose is to evaluate elite athletes, encompassing professional, Olympic, Paralympic, or collegiate-level athletes aged 16 years and above, who may be susceptible to or already manifesting mental health symptoms and disorders. The internal consistency of the SMHAT-1 was assessed using Cronbach's alpha, with values ranging from 0.78 to 0.89 across the different domains, indicating good reliability. The study also compared these values to those obtained in a previous study with elite athletes, using the Cocron R package to statistically analyze differences in Cronbach's alphas. The comparison revealed that the SMHAT-1 is a reliable tool for assessing a broad range of mental health issues in college athletes, with its comprehensive nature making it particularly useful in this context (Taylor et al., 2023).

The study by Tran (2020) focused on the General Anxiety Disorder-7 (GAD-7) and General Anxiety Disorder-2 (GAD-2) scales, both of which are widely recognized for their validity in assessing anxiety. The GAD-7 is a seven-item scale that measures anxiety severity, while the GAD-2 is a shorter version that includes only the first two items. The internal consistency of the GAD-7 was excellent, with a Cronbach's alpha of 0.92, while the GAD-2 demonstrated satisfactory reliability with a Spearman-Brown coefficient of 0.82. The study employed ROC analysis to evaluate the diagnostic accuracy of these scales, finding that the GAD-7 had an AUC of 0.87 for identifying anxiety disorders, which is considered excellent. The GAD-2, while shorter, also performed well with an AUC of 0.78, making it a useful screening tool when brevity is essential (Tran, 2020).

Validity and Reliability of the Measures

The studies included in this review demonstrated strong methodological quality, with each assessment tool undergoing rigorous testing for reliability and validity. Internal consistency, as measured by Cronbach's alpha, was consistently high across the studies, reflecting the reliability of the scales. The ROC analysis, a statistical method used to evaluate the diagnostic accuracy of the tools, provided further evidence of their validity. AUC values across the studies ranged from 0.76 to 0.91, indicating that these tools are effective in distinguishing between athletes with and without mental health issues. Additionally, the use of multivariate analyses in some studies helped to establish the generalizability of the tools across different subgroups, such as gender and athletic level, further supporting their validity.

Themes within the Literature

Several themes emerged from this systematic review, reflecting both the strengths and limitations of the current mental health assessments for college athletes:

Focus on Deficits: Most of the the mental health assessments reviewed focus primarily on identifying deficits or symptoms of mental health disorders. While these tools are valuable for diagnosing and treating mental health issues, they do not incorporate components that assess protective factors or strengths. Positive psychology, which emphasizes the identification and

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promotion of strengths and protective factors, is notably absent from these assessments. Incorporating such elements could provide a more holistic understanding of athletes' mental health and guide interventions that not only address deficits but also build resilience.

Role of Sports Psychologists and Mental Health Professionals: The studies frequently highlighted the role of sports psychologists as the primary professionals administering these mental health assessments. However, the broader category of "appropriately trained health professionals" was also mentioned, which could include clinical sport social workers, counselors, and other mental health practitioners. Despite this, the specific mention of "Sport Social Workers" as qualified professionals was lacking in the literature. Given the growing recognition of social work within sports contexts, it is essential to advocate for the inclusion of Sport Social Workers as key players in the mental health care of athletes, ensuring that their expertise is recognized and utilized in both clinical and research settings.

Need for Tailored Assessments: The critical need for additional empirical data on mental health assessments tailored specifically for college athletes was a common theme across the studies. While the tools reviewed have been validated in various populations, the unique context of college athletics—characterized by high pressure, performance demands, and transitional life stages—necessitates assessments that are sensitive to these specific challenges. The development of tailored assessments that address both the mental health challenges and the strengths of college athletes is crucial for providing effective support and intervention.

Methodological Rigor: The studies demonstrated a high level of methodological rigor, particularly in the use of the COSMIN checklist for evaluating the quality of the assessments. This rigorous approach ensures that the tools used are not only reliable and valid but also appropriate for the specific population being studied. The consistent use of ROC analysis and multivariate techniques across the studies further supports the robustness of the findings and underscores the importance of methodological quality in mental health research.

Discussion

Key Findings

This review examined if mental health assessments have empirical backing for use with college athletes. Using a systematic review methodology, the goal of this review was to address a significant gap in the existing literature. The initial search generated 1,199 articles, but after applying additional search terms and inclusion and exclusion criteria, the results were narrowed to just five articles. The review provided valuable insights into the quality and quantity of mental health assessment tools specific to the college athlete population. All the studies demonstrated reliability and validity when using their proposed research mental health assessment tool. Using varying reliability and validity testing, the assessment tools were shown to be effective in determining if college athletes are experiencing mental health symptoms and/or if a college athlete would meet the need for additional mental health support. For results of this systematic literature, refer to Appendix A - Table A4.

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Donohue et al. (2019) found that the SIC demonstrated reliability and validity and that its total scores are sensitive to assessing treatment outcomes. The MHSIA examined by Donohue et al. (2023) exhibited high levels of reliability, validity, and efficacy in assessing a broad range of mental health issues among college athletes. The study by LoGalbo et al. (2022) supports the use of a distinct depression screening instrument, such as the PHQ-9, with student-athletes. Taylor et al. (2023) found that the questionnaires recommended by the IOC MHWG for use with college student-athletes were generally reliable measures of mental health symptoms. Taylor et al. (2023) noted that only eight of the thirteen mental health domains (stress, anxiety, depression, suicide and self-harm ideation, ADHD, PTSD, and bipolar surveys) demonstrated acceptable internal consistency reliability. The Tran (2020) study validates the clinical utility of the GAD-7 and GAD-2 for use in the population of collegiate student-athletes, as both instruments demonstrated acceptable reliability, precision, and construct validity.

Strengths

This study offers a unique perspective and provides insight into a significant gap in literature within the realm of sport social work. While research exists on the efficacy and reliability of various mental health assessments, little research exists on the study of their use with the college athlete population. This critical gap in the literature is imperative considering the need for mental health care among college athletes, due to their many demands and associated stressors. After reviewing current literature, this systematic literature review provides a foundation for future research on assessing mental health assessments and their efficacy of use with college athletes. Another strength of this literature review is the methodical approach taken by the author. The author followed specific and systematic search procedures to ensure a thorough and reliable review of the literature. Additionally, the review applied well-considered inclusion and exclusion criteria to select high-quality articles that effectively address the overall aim of the review.

Limitations

There is a significant gap in the literature specifically addressing the use of mental health assessments with college athletes, particularly concerning the implementation of mental health screenings during pre- and post-season medical assessments. The scarcity of available research in this area led to an exclusionary approach in this review, resulting in only five articles meeting the stringent inclusion criteria. This limited data pool restricts the ability to draw definitive conclusions, as the findings are based on a narrow scope of available studies.

Another limitation pertains to the generalizability of the findings. The sample in all included studies was restricted to college student-athletes, which raises concerns about the applicability of the results to other groups, such as grade school or high school student-athletes. The unique developmental, psychological, and physical challenges younger athletes face might not be adequately represented in studies focused solely on college populations. Therefore, while the findings may offer valuable insights, their relevance to other athletic cohorts remains uncertain.

Additionally, the validity of the mental health assessments used in the studies presents a noteworthy limitation. Two assessment tools were not specifically designed for use with athletes,

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and not all studies have included explicit validity scores in the results. These tools, while effective in identifying general mental health issues within the college student-athlete population, may not capture essential athletic variables that are critical to sports performance and overall well-being. For instance, factors such as athletic identity, sport-specific stressors, team dynamics, and the intense physical demands of training and competition are integral to an athlete's mental health but might be overlooked or inadequately assessed by these more generalized tools. The potential lack of sensitivity to these athletic-specific factors can result in incomplete or less accurate assessments, potentially leading to interventions that do not fully address the unique needs of college athletes. The tools may not adequately account for the complex interplay between athletic participation and mental health, potentially leading to an incomplete or skewed understanding of the athlete's psychological state.

Therefore, while the assessments used have demonstrated some utility in this context, there is a need for more tailored instruments that can more accurately reflect the specific mental health needs of athletes. This limitation underscores the importance of developing and validating mental health assessments specifically tailored to this population, ensuring they are equipped to capture the full spectrum of experiences and challenges faced by college athletes. As the field moves forward, it will be crucial to address these validity concerns to ensure that mental health interventions are both effective and relevant to the distinct context of collegiate sports.

Implications for Practice

Despite the limited literature on the efficacy of mental health assessments explicitly tailored for college athletes, sport social work practice is influenced by numerous implications at both micro and macro levels. Practitioners must recognize that adopting specific mental health assessments can profoundly shape their practices, impacting individual client interactions and broader organizational strategies. The practical application of the scales mentioned in this work requires careful consideration of their benefits and limitations. On the one hand, these tools offer significant benefits in providing a structured and standardized approach to assessing the mental health of college athletes. By utilizing these scales, practitioners can gain valuable insights into various aspects of an athlete's mental health, such as identifying symptoms of anxiety, depression, or stress, which may otherwise go unnoticed. These early detections enable timely interventions that can support the athlete's well-being and enhance their performance both in and out of the respective sport.

Moreover, the use of these scales can facilitate communication between athletes, sport social workers, coaches, and medical professionals. When used effectively, these assessments can provide a common language and framework for discussing mental health concerns, making it easier for multidisciplinary teams to collaborate on developing comprehensive care plans tailored to the athlete's unique needs. Additionally, the data gathered from these assessments can inform broader organizational strategies, helping institutions to develop targeted mental health programs, allocate resources more effectively, and track the efficacy of interventions over time.

However, practitioners should be mindful of potential validity issues with existing scales. Many of these tools were not initially designed with athletes in mind and not all scales incorporated explicit validity results. While they are effective in some contexts, they may lack the specificity required to fully capture the unique mental health challenges faced by college

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athletes. For instance, scales that do not consider sport-specific stressors, such as the pressure to perform, the impact of injuries, or the demands of balancing academics with athletics, may not accurately reflect the mental health challenges faced by college athletes. This can result in a partial or skewed understanding of the athlete's well-being, leading to interventions that may not fully address their needs.

Practitioners must also be cautious about the potential for misinterpretation or over-reliance on these tools. Mental health assessments should be viewed as one component of a comprehensive evaluation process, rather than the sole determinant of an athlete's mental health status. Over-reliance on these tools without considering the broader context of the athlete's life and experiences can lead to inappropriate interventions. For instance, a scale may indicate elevated levels of anxiety or depression, but without a deeper understanding of the athlete's sport-related pressures or identity issues, the chosen intervention may fail to resonate with the athlete or address the root cause of their distress.

To mitigate these limitations, it is essential for practitioners to use these scales in conjunction with other assessment methods, such as qualitative interviews, observations, and collaboration with coaches. This holistic approach allows for a more comprehensive understanding of the athlete's mental health and ensures that interventions are tailored to their specific circumstances. Additionally, practitioners should advocate for the development and use of mental health assessments that are specifically designed for athletes, considering the unique stressors, identity factors, and demands of collegiate sports.

While the use of existing mental health scales can provide valuable insights and support for college athletes, it is crucial for practitioners to remain aware of their limitations and interpret the results within the broader context of the athlete's experience. By doing so, sport social workers and other professionals can ensure that their interventions are both effective and relevant, ultimately contributing to the holistic well-being of the athletes they serve. The practical application of the scales mentioned in this work requires careful consideration of all their benefits and limitations.

Next Steps for Scale Development

Given the current state of the literature, there is a pressing need to develop more robust and athlete-specific mental health assessment tools. Future research should focus on creating scales that incorporate the unique stressors and challenges college athletes face, such as the pressures of competition, the demands of balancing academics and sports, and the psychological impact of injuries. These tools should be rigorously tested for validity and reliability within the college athlete population to ensure they accurately reflect the mental health status of college athletes.

Additionally, the development of these tools should be a collaborative effort involving sport social workers, psychologists, athletes, and other stakeholders. Such collaboration can help ensure that the tools are practical, user-friendly, and tailored to the specific needs of athletes. By integrating feedback from practitioners who work directly with athletes, these tools can be refined to better capture athletes' mental health nuances, leading to more effective interventions.

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Conclusion

While pre- and post-season mental health screenings for college athletes are not universally implemented across all institutions, existing literature underscores their importance. These screenings are vital for helping athletes achieve peak performance in their sports, academic pursuits, and personal lives. However, the current assessment tools have limitations, particularly regarding their validity and applicability to athletes.

To better support the mental health and overall well-being of college athletes, there is a clear need to develop assessment tools tailored specifically to this population. This includes incorporating variables unique to athletes, such as performance-related stress and injury-related psychological impacts. By addressing these gaps, the field can progress toward more comprehensive and effective mental health care for college athletes.

Furthermore, practitioners must be aware of the limitations of the tools they use and should actively engage in the ongoing development and validation of new assessment scales. Through collaboration and continued research, sport social workers can contribute to the creation of more effective mental health interventions, ultimately enhancing the performance and quality of life of college athletes.

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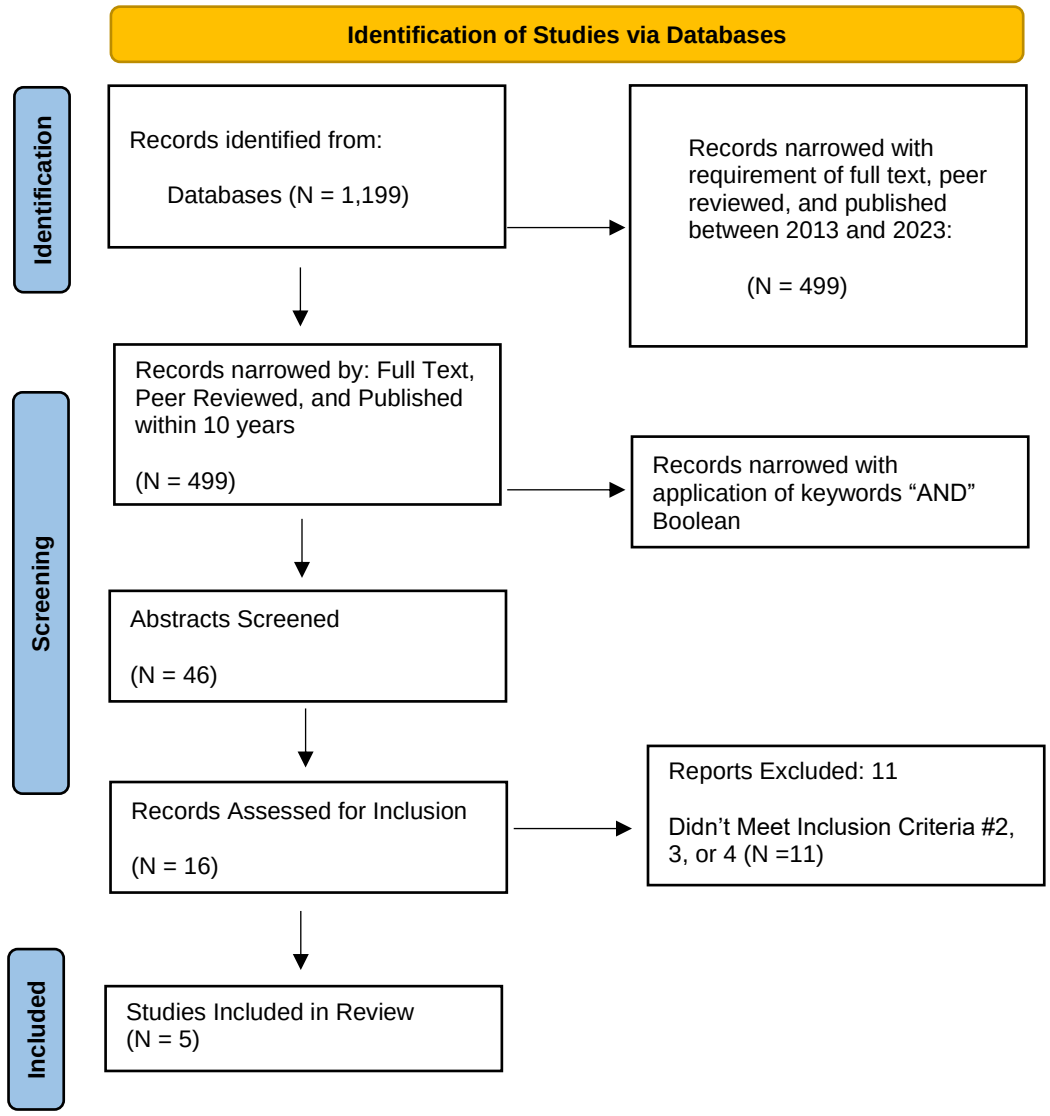
Appendix A

Figure A1. PRISMA Flow Diagram



Adopted From: Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D., et al. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

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Table A1

Study Characteristics Table

Study Authors	Study Population	Mental Health Screening Tool Used	Outcomes
Donohue et al., 2019	NCAA Division I College Athletes	Global Severity Index of Symptom Checklist-90-Revised (GSI), Problems in Sport Competition Scale (PSCS), Problems in Sports Training Scale (PSTS), and Desire to Pursue Sport Psychology Scale (DSPS).	PSCS and PSTS are appropriate for identifying college athletes suitable for mental health interventions.
Donohue et al., 2023	NCAA Division I College Athletes (NCAA, Club, or Intramural Sports/ Undergraduate)	The Mental Health Disorders Screening Instrument for Athletes (MHSIA)	Each item on the MHDSIA had a significant loading on a single component. Additionally, the MHDSIA exhibited a robust level of convergent validity with the Symptom Checklist-90-Revised Global Severity Index (SCL-90-R GSI), which is a well-established measure of psychiatric symptoms, as anticipated.
LoGalbo et al., 2022	NCAA Division II College Athletes	Patient Health Questionnaire -9 (PHQ-9) and ImPACT Symptom Inventory	Using a stand-alone depression measure like the PHQ-9 with college athletes at baseline assessment is supported.

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Taylor et al., 2023	NCAA Division I College Athletes (Pacific Athletic Conference -12)	International Olympic Committee Sport Mental Health Assessment Tool 1 (13 Mental Health Domains)	Eight mental health surveys demonstrated good internal consistency reliability. The suggested mental health surveys for collegiate athletes were credible.
Tran, 2020	Intercollegiate Varsity College Athletes (Undergraduate and Graduate Student Status)	General Anxiety Disorder-7 (GAD-7) and General Anxiety Disorder-2 (GAD-2)	The findings of this study provide evidence for the reliability, accuracy, and construct validity of the GAD-7 and GAD-2 instruments when used with a sample of student-athletes at a national level.

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Table A2

Description of Mental Health Measures Used in IOC Sport Mental Health Assessment Tool 1

Measure	Description
Athlete Psychological Strain Questionnaire (APSQ)[20]	The APSQ is a 10-item measure that asks participants to indicate '…how you have been feeling over the past 30 days…' on a Likert-type scale ranging from 1 (none of the time) to 5 (all of the time) on items related to athletic distress. Total scores range from 10 to 50, and cut-offs are based on severity level: moderate ≥15, high ≥17 and very high ≥20. These cut-offs were tested in three Australian national sports teams,[20] and the current study used a cut-off of ≥17.[6]
Generalized Anxiety Disorder-7 (GAD-7)[7]	The GAD-7 is a 7-item anxiety measure that asks participants to indicate how often they have been bothered by specific anxiety symptoms 'over the last 2 weeks' on a scale ranging from 0 (not at all) to 3 (nearly every day). Total scores range from 0 to 21. In one study, a cut-off of ≥10 provided optimal sensitivity (89%) and specificity (82%) when compared with Structured Clinical Interview for DSM-IV.[24 25]
Patient Health Questionnaire-9 (PHQ-9)[8]	The PHQ-9 is a 9-item depression measure that asks participants to indicate how often they have been bothered by depressive symptoms 'over the last 2 weeks' on a scale ranging from 0 (not at all) to 3 (nearly every day). Total scores range from 0 to 27. A cut-off of ≥10 provides optimal sensitivity (99+%) and specificity (92%) in primary care patients, although it is unclear how the comparator diagnosis was determined in the original study. A cut-off of ≥10 was used in the present study.[6]
Athlete Sleep Screening Questionnaire-Sleep Difficulty Score subscale (ASSQ-SDS)[21 22]	A short version of the 15-item ASSQ consisting of 5 items was used to detect clinically significant sleep disturbances and daytime dysfunction. Respondents rate their sleep characteristics using scales ranging from 0 to 3 and 0 to 4 with ratings differing for each item. The scores for key sleep factors (total sleep time, insomnia, sleep quality, chronotype) are summed to obtain a total severity score, ranging from 0 to 17. The short version of the ASSQ was used by Gouttebarge and colleagues[6] with a cut-off of ≥8, which was used in this study. The short 5-item version of the ASSQ has not yet been validated.
Alcohol Use Disorders Identification Test-Consumption (AUDIT-C)[9]	The AUDIT is a 10-item measure designed to identify people with hazardous or harmful patterns of alcohol consumption with three subscales: alcohol consumption, drinking behaviour and alcohol-related problems. In the current study, only the 3-item consumption subscale[9] was used, which asks participants to indicate on a scale ranging from 0 to 4, 'How often do you have a drink containing alcohol?', 'How many standard drinks containing alcohol do you have on a typical day when you drink?' and 'How often do you have six or more drinks on one occasion?'. Total scores range from 0 to 12. The cut-off score was ≥4 for men and ≥3 for women and other genders.[6]
Cutting down, Annoyance by criticism, Guilty feeling, and Eye openers-Adapted to Include Drugs (CAGE-AID)[26]	The CAGE-AID is a 4-item measure on 'substance misuse' that asks participants about their drug use and their feelings surrounding it. Participants respond to each item with 'Yes' or 'No', and total sores range from 0 to 4. The cut-off was ≥2 in this study, as used by Gouttebarge *et al.*[6]
Brief Eating Disorder in Athletes Questionnaire (BEDA-Q)[23]	The BEDA-Q is a 9-item self-report measure on eating habits and thoughts about food, eating, weight and body image. Respondents indicate to what extent they have been bothered by each statement (eg, 'I felt extremely guilty after overeating') over the 'past 2 weeks' on a scale ranging from 0 to 3. Total scores range from 0 to 18, and a cut-off of ≥4 was used based on as used by Gouttebarge *et al*'s[6] recommendations.
Eating Disorder Examination–Questionnaire Short (EDE-QS)[27]	The EDE-QS is a 12-item self-report questionnaire on eating disorder symptoms and behaviours. Individuals indicate the frequency of the symptoms and behaviours over 'the past 7 days' on a response scale ranging from 0 to 3. Total scores range from 0 to 24. A cut-off score of ≥15 used in the study provides optimal sensitivity (83%) and specificity (85%) with good positive predictive value (37%).[28]
Adult ADHD Self-Report Scale (ASRS-v1.1) Screener[29 30]	The abbreviated version of the 18-item ASRS-v1.1 screens for attention deficit hyperactivity disorder (ADHD) in adults using 6 items that were found to be the most predictive of symptoms consistent with ADHD.[30] Respondents rate the frequency of each symptom over 'the past 6 months' on a scale ranging from 0 to 1. Total scores for the 6-item ASRS-v1.1 range from 0 to 6, and a cut-off of ≥4 was used in the current study.[6]
Mood Disorder Questionnaire (MDQ)[31]	The MDQ is a 15-item self-report measure that screens for bipolar disorder, particularly for bipolar I and to a lesser extent bipolar II. A cut-off point of ≥7 provides optimal sensitivity (69%) and specificity (67%) when applied to patients with mood disorders.[32] A cut-off of ≥7 plus a positive endorsement of items 2 (temporality) and 3 (impairment level) was used in the current study.[6 33]
Primary Care PTSD Screen for DSM-5 (PC-PTSD-5)[34]	The PC-PTSD-5 is a 5-item self-report screen that asks participants to indicate if they have been through a traumatic event. Participants who indicate such an event are then asked if they have experienced specific PTSD symptoms 'in the past month' with answer choices 'Yes' or 'No'. Total scores range from 0 to 5. The PC-PTSD-5 is designed to identify individuals with probable PTSD, and a cut point of ≥3 provides optimal sensitivity (95%) and specificity (85%).[34]
Problem Gambling Severity Index (PGSI)[35 36]	The PGSI is a 9-item measure on gambling severity that asks participants to indicate if they have engaged in certain gambling activities in 'the past 12 months' on a scale ranging from 0 (never) to 3 (almost always). Total scores range from 0 to 27, and a cut-off of ≥8 was used in this study.[6]
Prodromal Questionnaire (PQ-16)[37]	The PQ-16 is a 16-item measure assessing 'psychosis risk', which asks individuals to note 'Yes' or 'No' to having experienced specific psychosis symptoms. For each psychotic symptom noted, respondents indicate the severity of the symptom on a scale ranging from 0 (none) to 3 (severe). Severity items are summed to yield a total score, ranging from 0 to 16. A cut-off of ≥6 was found to provide high sensitivity (87%) and high specificity (87%).[37]

DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition; PTSD, post-traumatic stress disorder.

(Taylor et al., 2023)

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Table A3

Validity and Reliability Tools

Article	Reliability and Validity Tool	Values
Donohue et al., 2019	Cronbach Alpha	• PSTS Total Scale α = .93, • PSCS Total Scale α = .93 • DSPS Total Scale α = .96
Donohue et al., 2023	Cronbach Alpha	• MHDSIA Total Scale α = 0.86
LoGalbo et al., 2022	Receiver Operating Characteristic (ROC) Analysis	• Analysis demonstrated that an ImPACT affective symptom cluster score of 0.5 had the highest classification accuracy compared to PHQ-9 categorization using a cutoff of 5. • However, sensitivity was low (0.44), and specificity was high (0.84), indicating that over half of individuals above the PHQ-9 depression cutoff would be missed (false negatives).
	Linear Regression	• Results demonstrated that PHQ-9 total score was significantly predicted by all four ImPACT symptom clusters. • The sleep cluster was the best predictor of PHQ-9 total score $R^2 = 0.20,\ p < .001$, followed by the affective cluster $R^2 = 0.15,\ p < .001$, cognitive cluster $R^2 = 0.15,\ p < .001$, and physical cluster $R^2 = 0.12,\ p < .001$. • Additionally, the single ImPACT symptom of "fatigue" accounted for the most individual variance in PHQ-9 total score $R^2 = 0.16,\ p < .001$.
Taylor et al., 2023	Cronbach Alpha	• Refer to article (Table Four, pg. 599)
Tran, 2020	Cronbach Alpha	• GAD-7 α = .91
	Spearman-Brown coefficient	• rsB = .85
	ROC Analysis	• All the AUC values were considerably higher for the GAD-7 than the GAD-2 through all indicators

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Table A4

Results

Study Authors	Mental Health Screening Tool Used	Useful for use with College Athletes during a Pre and Post Season Mental Health Screening?
Donohue et al., 2019	Global Severity Index of Symptom Checklist-90-Revised (GSI), Problems in Sport Competition Scale (PSCS), Problems in Sports Training Scale (PSTS), and Desire to Pursue Sport Psychology Scale (DSPS).	Yes - PSCS and PSTS are appropriate for identifying college athletes suitable for mental health interventions.
Donohue et al., 2023	The Mental Health Disorders Screening Instrument for Athletes (MHSIA)	Yes - The MHDSIA exhibited a robust level of convergent validity with the Symptom Checklist-90-Revised Global Severity Index (SCL-90-R GSI), which is a well-established measure of psychiatric symptoms, as anticipated.
LoGalbo et al., 2022	Patient Health Questionnaire -9 (PHQ-9) and ImPACT Symptom Inventory	Yes - Using a stand-alone depression measure like the PHQ-9 with college athletes at baseline assessment is supported.
Taylor et al., 2023	International Olympic Committee Sport Mental Health Assessment Tool 1 (13 Mental Health Domains)	Yes - Eight of the 13 mental health surveys demonstrated good internal consistency reliability.

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Tran, 2020	General Anxiety Disorder-7 (GAD-7) and General Anxiety Disorder-2 (GAD-2)	Yes - The findings of this study provide evidence for the reliability, accuracy, and construct validity of the GAD-7 and GAD-2 instruments when used with a sample of student-athletes at a national level.

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