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Clinical Commentary: Depression and Anxiety in Adolescent and Young Adult Athletes

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Mental health (MH) symptoms and disorders are common in adolescents and young adults, and athletes may be at risk due to sport-specific triggers such as injury or illness as well as stressors related to performance, transition, or retirement from sport. Anxiety and depression are reported frequently in this age group, and early recognition and treatment can improve outcomes. The medical team (eg, athletic trainers or therapists, team physicians) should be familiar with the symptoms of depression and anxiety, recognize "red flags" for these symptoms and disorders, and seek to provide screening assessments and develop MH plans and MH emergency action plans. As a part of their scope of practice, team physicians should have the initial assessment and management of patients with these MH conditions and appreciate the importance of referrals to other MH providers with expertise caring for athletes. Athletic trainers are often the first point of contact for athletes who may be experiencing MH symptoms and therefore play a key role in early recognition and referrals to team physicians for early diagnosis and treatment. Additional resources that provide more in-depth information regarding the treatment and management of anxiety and depression are provided herein.

Key Words: team physician, athletic trainer, athletic therapist, mental health, psychology, stress

Key Points

- Mental health (MH) symptoms and disorders, specifically depression and anxiety, are common in adolescent and young adult athletes.
- Sport medical staff (eg, athletic trainers/therapists and team physicians) can provide critical MH services to athletes and play an important role in education about MH conditions and their recognition, treatment, and prevention.
- Understanding the role of screening for MH conditions, as well as policies regarding MH plans and MH emergency action plans, is necessary for the sports medicine team.

Mental health (MH) symptoms and disorders are an important component of overall health and well-being in athletes. Recognizing and understanding the signs and symptoms of MH disorders have been increasingly studied in the sports medicine literature.[1–3] Mental health symptoms and disorders are common in elite athletes specifically and in adolescents and young adults generally.[3–11] A narrative systematic review[3] indicated that the prevalence of MH disorders in athletes was similar to that of the general population, with sport-specific factors such as decreased performance, injury, and transition or retirement from sport thought to increase athletes' risks. The prevalence of depression and anxiety symptoms and disorders was reported as 32% and 26% among current and former elite athletes, respectively.[4] In elite male team sports, the prevalence of depression and anxiety symptoms and disorders was as high as 45%.[3] The effects of COVID-19 on MH symptoms and disorders has been reviewed.[12,13] Compared with prepandemic, anxiety and depression symptoms in male and female footballers (soccer players) were greater during the COVID-19 emergency period.[14]

In an evaluation[10] of German children (aged 12–14 years) and adolescents (aged 14–18 years) using measures of subclinical and clinically elevated measures of anxiety and depression (via the Hospital Anxiety and Depression Scale), researchers found that 6.7% and 3.4% demonstrated subclinical scores and clinically elevated scores, respectively, on the anxiety subscale and 9.5% and 3.7% demonstrated subclinical scores and clinically elevated scores, respectively, on the depression subscale. Boys and girls (both children and adolescents) did not show a difference ($P \geq .05$), and neither did younger and older children ($P \geq .05$).[10] In a large cross-sectional study[7] of US children and adolescents, 8% reported suffering from anxiety or depression, and a higher proportion of individual-sport athletes than team-sport athletes reported anxiety or depression (13% versus 7%, respectively, $P < .01$). This higher prevalence in individual versus team sports has also been described in elite and college-aged athletes.[8,9]

Emerging adulthood spans ages 18 to 25, the time when adolescence meets young adulthood. Emerging adulthood is also when most MH symptoms and disorders first occur, with 63% to 75% presenting by age 25 years and 50% by age 15 years.[6,11] Furthermore, key developmental transitions and pressures related to MH symptoms and disorders arise during emerging adulthood, including the growth of autonomy and sexual identity and responses to peer pressure (both gender and cultural norms), as well as the hormonal, physical, and psychological changes of maturation.[15]

In addition, other biopsychosocial factors play a role in the development of MH symptoms and disorders, including

a family history of MH conditions, substance abuse, history of trauma (eg, sexual or physical abuse, bereavement, family violence), and other sport-specific stressors, including concerns about performance, injury or illness, and retirement considerations.[16–19] When coaches and teammates are a source of stress, the risks for both acute and overuse injuries increase.[20] In recent years, the effects of social media on MH in athletes have captured significant attention,[21] and these can be particularly challenging for adolescents and young adults.

RECOGNITION AND REFERRAL

Recognition of MH symptoms and disorders in adolescents and young adults can be difficult. Despite the high prevalence of depression and anxiety in young adults, fewer than half receive treatment for their MH conditions.[22,23] Early recognition is important given the evidence suggesting that early treatment improves outcomes.[24] Identifying both the barriers to and facilitators of help-seeking behaviors in athletes is critical, especially because very few adolescents and young adults seek treatment. In a qualitative investigation[25] of elite athletes aged 16 to 23 years, the main perceived barriers to seeking help were stigma and privacy concerns, lack of MH literacy, and negative past experiences with seeking help. In this same study,[26] the key facilitators of help seeking were receiving encouragement from others, an established relationship with a provider, previous meaningful interactions with a provider, positive attitudes of others (especially the coach), and access to care.

The sports medicine team and the sport environment can be very influential in providing a supportive environment to the athlete. The environment includes interactions with teammates and coaches, school policies and programs, the school and local community, and the overall culture that the individual experiences as a student and athlete. The medical team and sport environment can help foster an environment that promotes MH, destigmatizes MH challenges, normalizes care-seeking, facilitates early identification of MH conditions, and encourages referrals to licensed practitioners qualified to provide MH services.[27,28] Also, the medical team can provide an educational platform regarding the role of mental well-being in overall health and the ability to thrive both on and off the field.[27,28] The sports medicine team can be instrumental in facilitating help-seeking behavior, providing education, and developing and implementing programs for screening and can create MH plans and MH emergency action plans (MHEAPs).[24] Plans for MH address nonemergent MH concerns (eg, performance anxiety, depressive symptoms without intent to harm), whereas MHEAPs should address MH emergencies (ie, plans to harm one's self or others); both are important for the medical team to address.[24,29,30]

DEPRESSION

Symptoms of depression and anxiety should be differentiated from criteria in the *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition (*DSM-5*),[31] for meeting the clinical diagnosis of major depressive disorder or generalized anxiety. Although screening for MH symptoms can be performed by the athletic trainer (AT) or other member of the health care team, a clinical diagnosis requires an assessment by a qualified physician or licensed MH provider. Individuals meet the criteria for major depressive disorder (MDD) if they experience depressed mood or little interest or pleasure in activities on most days over at least a 2-week period in association with physical, psychological, and cognitive symptoms and impairment in daily function.[31] The risk factors for MDD and symptoms of depression in athletes include genetic factors, lack of social support or poor interpersonal relationships, injury, decreased performance, and retirement from sport.[3,32–35]

Differentiating the symptoms of depression and MDD from those of overtraining and nonfunctional overreaching (NFO) can be challenging because the overlap can be significant. Increased and accumulated training load, inadequate rest or recovery, and other non-training stresses can result in NFO and lead to a short-term decrease in performance.[36] Examples of non-training stressors are poor nutrition, sleep dysfunction, interpersonal difficulties, occupational or sport-related stressors, and environmental factors (eg, adjusting to cold, heat, humidity, altitude). *Overtraining* is defined as a more severe form of NFO in which performance decrements can last for weeks to several months.[37] Both NFO and overtraining can be associated with decreased performance as well as psychological manifestations such as depressed mood. Other symptoms common to both are fatigue, sleep disturbances, changes in appetite, apathy, and decreased concentration.[37–41]

Major depressive disorder is often associated with decrements in performance and withdrawal from sport participation and, in some cases, with suicide.[3,42,43] The treatment of depression and MDD depends on the severity of the illness, can vary depending on comorbidities, and often includes psychotherapy (eg, cognitive behavioral therapy, group therapy) as well as consideration of medications.[3] The choice of medications must be individualized and needs to take into account potential effects on performance, as well as interactions with other medications and compliance with antidoping regulations.[1,3] A *suicide risk assessment* (which identifies whether an individual has suicidal ideation and plans) is important as part of the regular monitoring of athletes with depression. A multidisciplinary team approach to the management of MH conditions in athletes is optimal and ideally includes the AT, team physician with core competency in MH, psychologist, and psychiatrist, as along with other licensed or registered MH providers.[1,3]

Suicide is a significant concern in the young adult athlete population, responsible for 7.3% of all deaths in National Collegiate Athletic Association (NCAA) athletes (mean age = 20 years) between 2003 and 2012.[44] The incidence of suicide was higher in male than in female athletes (1.35/100 000 versus 0.37/100 000, respectively; relative risk [RR] = 3.7, $P < .01$), and in African American than in White athletes (1.22/100 000 versus 0.87/100 000, respectively; RR = 1.4, $P = .45$). Male American football athletes had the highest incidence (2.25/100 000) with an RR of 2.2 ($P = .03$) of suicide compared with all non-football male athletes.[44] In 2015, the overall suicide rate was 0.93 per 100 000 per year for collegiate athletes versus 13.3 per 100 000 in the general US population for this age group.[45] The risk factors for suicide are a history of childhood trauma, agitation, impulsivity, interpersonal conflict, physical illness or injury, sleep disturbances, anxiety, aggression, hopelessness, drug and alcohol use, and prior suicide attempts.[3,46–49] The importance of screening for risk factors and implementing suicide-prevention efforts should be emphasized at every level and

ideally in a variety of situations (eg, during preparticipation examinations [PPEs], injury follow-ups by physicians, athletic training facility follow-up by ATs) as they relate to promoting help-seeking behaviors and raising overall awareness for health care providers, athletes, families, coaches, and all members of the athlete entourage. The *athlete entourage* has been defined by the International Olympic Committee as parents, coaches, agents, doctors, physiotherapists, sponsors, training partners, and any other individual or organization working directly with athletes (https://olympics.com/athlete365/app/uploads/2020/11/3044_Athletes_Entourage_Commission_Guide_4b.pdf). The sports medicine team has a valuable opportunity to prevent suicide by implementing MH screening and including MH concerns in the emergency action plan.

ANXIETY

Anxiety disorders are also common in athletes and include generalized anxiety disorder (GAD), social anxiety disorder, obsessive-compulsive disorder, and panic disorder. Similar to depression, the presence of symptoms (eg, constant worry or fear, restlessness, difficulty concentrating, sleep disturbances, irritability, feeling out of control) needs to be differentiated from the diagnostic criteria used to define these clinical disorders. The rates of anxiety disorders in athletes do not differ significantly from those in the general population.[50,51] Generalized anxiety disorder has been reported in 6% of athletes when clinician diagnosed and 14.6% using self-report, with female sex and injury being 2 independent risk factors.[3] As for other anxiety disorders in athletes, social anxiety has been described in 14.7%,[52] obsessive-compulsive disorder in 5.2%,[53] and panic disorder in 4.5%.[52] Risk factors for symptomatic high levels of anxiety in elite athletes, excluding anxiety related to performance, include female sex, younger age, musculoskeletal injury, career dissatisfaction, and $\geq$1 recent adverse life events.[54]

The *DSM-5* criteria[31] for GAD are excessive anxiety and worry about several events or activities, occurring on most days for at least 6 months, and the individual finding it difficult to control the worry. In addition, at least 3 other symptoms (eg, restlessness or feeling keyed up or on edge, difficulty concentrating or the mind going blank, muscle tension, being easily fatigued, irritability, sleep disturbances) must also be present, and the anxiety or worry must cause significant distress or impair the individual's ability to function. The symptoms should not be explained by other medical conditions, including mental disorder(s) or a substance abuse disorder.[31] For athletes, differentiating GAD or other anxiety disorders (eg, social anxiety disorder, obsessive-compulsive disorder, panic disorder) from the normal level of anxiety that accompanies competition can be problematic. The sports medicine team should also remember that MH symptoms or disorders such as eating disorders and depression often coexist with anxiety.

Treatment for GAD and other anxiety disorders should be individualized. However, most individuals show a good response to cognitive behavior therapy and interventions that address specific conditions and triggers for anxiety disorders.[1,3,55,56] Medications are often used to treat GAD and other anxiety disorders in athletes, and the same important considerations regarding side effects, interactions with other medications, effects on performance, and compliance with anti-doping regulations should be addressed by the prescribing physician. An understanding of sport and the effects of medications on sport and performance is essential in treating athletes with MH disorders.

PREVENTION AND ASSESSMENT

Prevention efforts directed at anxiety and depression as well as other MH disorders in athletes include education (eg, athlete and other stakeholder education, MHEAPs), screening efforts, and early recognition and referral to initiate management. Incorporating MH screening into PPEs is desirable, as is using screening tools and questionnaires as indicated based on significant life stressors that might trigger an adverse psychological response (eg, unexplained decrease in performance, injury or illness, suspected harassment or abuse, after a major competition or competitive cycle, transitioning or retiring from sport).[57]

The health care team, including team physicians and ATs, can educate athletes, administrators, and coaches regarding MH, and this can go a long way toward destigmatizing MH conditions and normalizing help-seeking behaviors. Screening MH during the PPE can lead to the early recognition of an athlete who may be struggling and can inform the athlete about available resources, which may increase the likelihood that the athlete will reach out to the health care team for help. The Sports Mental Health Assessment Tool (SMHAT-1) and Sports Mental Health Recognition Tool (SMHRT-1) were developed by the International Olympic Committee Mental Health Working Group to assist in recognizing common MH conditions (eg, psychological distress, depression, anxiety, sleep disturbances, alcohol or drug misuse, disordered eating).

The SMHAT-1 is a standardized tool intended to identify MH symptoms and disorders[57] and was designed for use with athletes at the collegiate, professional, Olympic, and Paralympic level who are $\geq$16 years of age. Although the tool has not been designed for or validated in younger athletes, many of its subcomponents are likely applicable, although future research is needed. The first step in the SMHAT-1 is administering the Athlete Psychological Strain Questionnaire, which has been validated in elite athletes in Australia as well as Japan,[58–60] as a screening tool for distress. Subcomponents of the SMHAT-1are the Patient Health Questionnaire-9, which assesses depression; the Generalized Anxiety Disorder-7, which assesses anxiety; the Athlete Sleep Screening Questionnaire, which assesses sleep disruption; the Alcohol Use Disorders Identification Test–Consumption, which assesses alcohol misuse; the Cutting Down, Annoyance by Criticism, Guilty Feeling, and Eye Openers Adapted to Include Drugs, which assesses substance misuse; and the Brief Eating Disorder in Athletes Questionnaire (BEDA-Q), which assesses eating disorders.[57] In Canadian university-level athletes, the SMHAT-1 was both feasible and reliable.[61]

The SMHRT-1 is a recognition tool that was developed for athletes, coaches, administrators, and other members of the athlete entourage. It can be extremely useful in identifying what to look for in athletes who may be experiencing MH conditions, including thoughts (eg, low self-esteem, pessimism, problems focusing), feelings (eg, irritability, anger, sadness, emptiness, lack of motivation), actions (eg, withdrawal, decrease in performance), and physical changes (eg, changes in weight or appearance, signs of self-harm, signs of alcohol or drug abuse).[57] The SMHRT-1 also provides a section on red flags, such as comments related to harming oneself or

others, feeling helpless or overwhelmed to the point of being nonfunctional, dramatic weight changes, excessive emotionality, and panic attacks.[57] If any red flags are observed, immediate help should be sought. Finally, the SMHRT-1 offers guidance on what to do if an athlete or other member of the athlete entourage reports or sees any thoughts, feelings, actions, physical changes, or red flags in themselves or others.[57]

As mentioned previously, having MH plans and MHEAPs[24] are critical aspects of prevention for the sports medicine team.[24,29,30,62] Creating MH plans and MHEAPs demonstrates a commitment to well-being and MH.[24] The plans incorporate educational programs as well as policies and protocols to be followed, recognize MH resources and initiatives that incorporate diversity and inclusion, and help build a culture of support, communication, and wellness.[24,62] The MHEAP for athletes identifies the stakeholders and "chain of command" for providers, outlines the steps that should be followed when facing emergent or nonemergent MH situations, and acknowledges that the sports medicine team (AT, physiotherapist, and team physician) is often the first point of contact for referral to a primary care physician, psychologist, or psychiatrist for specialized MH care.[24]

PRACTICAL CONSIDERATIONS

Athletic trainers are often the first point of contact for athletes who may be experiencing MH symptoms, and they must be ready and able to identify when these situations occur and implement the MHEAP. The AT must work closely with the team physician to assist in early recognition, additional testing, and referrals to MH providers as indicated. The following 2 case presentations illustrate the important role the sports medicine team and entourage has in supporting athletes' health and safety.

Case 1: Shandra is a 16-year-old soccer player who tore her anterior cruciate ligament while playing on the varsity team. She had surgery, and although she initially met all of her rehabilitation goals, more recently she has seemed withdrawn, has shown up late for her rehabilitation sessions, and does not seem her normal self. You notice that she appears more apathetic, and when you ask how she is doing, she tells you that she no longer feels like she is a part of the team, doubts she will ever be able to compete again, and expects to lose her place on the team. She says she is not sleeping well, has lost all her motivation, and is uncertain what she will do if she cannot play soccer anymore. Her teammates tell you that Shandra does not want to attend team functions and has been tearful. You notice that she has lost weight, and when you ask her about it, she states that she is not working out anymore and so thinks she should not be eating as much and that she has little appetite anyway.

Case 2: Sam is a freshman collegiate baseball player, and the coach comes to the athletic training facility because he is concerned about Sam's lack of concentration. Sam was making errors at shortstop and seemed distracted. In the dugout, during meetings, and on away trips, he was always fidgeting and unable to sit still. When the coach asked if everything was OK, Sam said he had "always been a worrier" and had trouble falling asleep because his mind "was always racing." He noted that, at times, this was accompanied by heart pounding, trembling, and shortness of breath and that he thought he was going to die of a heart attack. He sometimes felt "overwhelmed" and unable to concentrate on his studies or baseball because he felt "out of control." He indicated that he had spoken to his teammates about his worrying but was afraid that he was becoming a burden to them.

In both of these examples, key behaviors should trigger further conversation with the athlete and follow-up with the medical team. In case 1, Shandra is presenting with several behaviors after a major injury that raise concern about depression: withdrawal, tearfulness, apathy, weight loss, loss of appetite, lack of motivation, and sleep dysfunction. Further conversation with her is needed to better understand how she is feeling and to ask about any thoughts of self-harm or harm to others. Discussing the available resources for additional support is also important; the expediency depends on her responses. Using a screening tool such as the SMHAT or the Patient Health Questionnaire-9 and discussing the situation with the team physician is needed because all concerned should be aware of and consider other medical conditions, and the team physician can assist in initiating treatment and providing referrals as appropriate. Underscoring with Shandra that these emotions are not uncommon and offering support and follow-up is critical. Setting rehabilitation goals that are attainable in the athletic training facility, where she can see her progress, and working with the coach to find ways she can participate, so that she continues to feel like vital part of the team, will also be helpful.

In case 2, Sam displays signs and symptoms consistent with anxiety and panic attacks, including excessive and persistent worrying, trouble sleeping, and episodes of heart pounding and racing, as well as feeling as if he is going to have a heart attack. Furthermore, feelings of being overwhelmed and out of control are common in anxiety. In this scenario, the AT should discuss with the coach the potential for anxiety disorder and recommend that the coach support Sam in speaking to the medical staff regarding his symptoms, thereby underscoring the importance of supporting help-seeking behavior. The coach can refer Sam to his AT initially, but a subsequent referral to a team physician for evaluation is essential, because several medical conditions can present with similar symptoms. The team physician can often assist by performing a complete history and physical examination, ordering additional testing as indicated, and initiating treatment and related referrals. A collaborative approach to MH conditions, with stakeholders including the athlete, medical staff, and athlete entourage, is beneficial in optimizing early intervention and treatment of patients with MH conditions.

Both cases demonstrate the critical role that ATs as well as medical staff and other entourage members can play in supporting athlete health and safety, including their MH. Understanding common MH conditions and associated triggers (eg, performance concerns, injury or illness, retirement), as well as having MHEAPs in place that are regularly reviewed and discussed by all stakeholders, is imperative.

CONCLUSIONS

Depression and anxiety are common in adolescent and young adults, and athletes may be specifically at risk due to sport-specific triggers such as performance concerns, injury or illness, or transition or retirement from sport. The AT, as well as the medical team more generally, should be aware of the typical symptoms and clinical presentations that are associated with these MH conditions, help support athletes and the athlete entourage by implementing screening and

emergency plans, and play an active role in the initial treatment and referral to MH specialist providers.

DISCLOSURES

Dr Putukian is a consultant and chief medical officer for Major League Soccer. She serves as a senior advisor to the National Football League Head, Neck and Spine Committee and member of the FA Research Task Force, the National Operating Committee on Standards in Athletic Equipment, and the Concussion in Sport Expert Panel. She also participates on the International Olympic Committee Mental Health Working Group, the US Olympic & Paralympic Committee Mental Health Advisory Committee, and the US Soccer Medical Advisory Committee. She has assisted with the UK Concussion Foundation Forum; received research funding from the National Collegiate Athletic Association–US Department of Defense Concussion Assessment, Research and Education Consortium; and received honoraria and travel reimbursement for speaking and conferences attended, royalties from *Netter's Sports Medicine* textbook, and compensation for expert testimony in cases involving concussion, the team physician, and other sports medicine topics.

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