

Chapter 63. Issues in the Diagnosis of Psychopathological Disorders

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Summary

With so many individuals engaged in sports competition, and with an estimated 20% of the general population likely to personally experience a mental illness in their lifetime (Public Health Agency of Canada, Government of Canada, 2006), it should not be surprising that some elite athletes may experience psychopathological disorders. The pressures of the sport environment, for some, may become too great, and result in decompensation and distress.

In this chapter, we discuss some of the more likely mental health diagnoses that may arise in the context of sport performance. While almost any coach, trainer, or athlete will have a range of articulable strategies for managing pre-performance anxiety or post-loss disappointment, the skilled sport psychologist must be able to distinguish between “normal” mental health concerns and those that cross over into the realm of significant pathology. The dividing line rests in being able to apply formal diagnostic criteria, thereby avoiding either downplaying major problems (e.g., normalizing eating disorders as being “part of the sport”) or exaggerating situational stressors (e.g., an athlete’s anxiety about “making the team”). Depressive, Anxiety, Sleep, Impulse Control, Substance-related, Eating, Attention-Deficit/Hyperactivity, Post-Concussion Syndrome, and Personality Disorders are addressed and a broad overview of legal issues in psychological diagnosis is provided.

Objectives

After reading this chapter, you should be able to:

1. identify the main disorders found among student and elite athletes;
2. explain the key issues associated with specified disorders;
3. understand the incidence and possible risk of athletes developing a psychological problem; and
4. appreciate that working on performance issues with athletes may also involve working on an identified disorder.

Depressive Disorders

The majority of athletes will experience some form of negative affect or low mood following an unfavorable event in competitive sport or in daily life. However, this is not depression. Major Depressive Disorder (MDD), as defined with the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR), features a profound shift in mood and motivation that is more likely to occur accompanying a major setback (American Psychiatric Association, 2000; Davis et al., 2008).

While the prevalence of MDD among athletes varies in the literature, studies have shown that the risk of depression is no greater than those facing the general population, at approximately 21% (Yang et al., 2007), to being as high as double that found among age-matched peers at approximately 50% (Baillie & Davis, in press). Female athletes appear to be at greater risk for developing depression consistently across studies.

A variety of clinician-administered and self-rated scales can be used to identify depressive symptoms and assess their severity (Soleimani, Lapidus, & Iosifescu, 2011). However

– as it is critical to the objective and accurate diagnosis of MDD – a clinician will need to evaluate the athlete’s symptoms through a conversational interview which is used to establish the presence of a depressive experience for at least a two-week duration featuring symptoms that include low mood, loss of desire and interests and, in addition, these are accompanied by clinically significant changes in appetite, sleep, agitation or motor slowing, fatigue or low energy, negative self-reference or guilt, concentration deficit, and suicidal risk or suicidal thinking (see DSM-IV-Tr).

Diagnostic and case conceptualization not only rely on the interpretation of symptoms, medical conditions, and comorbidities, but also an understanding of issues specific to the context of sport that may contribute to the development of a mood disorder. A comprehensive evaluation will also involve gaining a history of challenges to mood (Beedie, Terry, & Lane, 2000), appraisals of negative cognitions and emotion regulation abilities in response to stress (Carter & Garber, 2011), self-esteem (Orth, Robins, & Roberts, 2008), general self-regulation history (Davis, Botterill, & MacNeill, 2002), training recovery practices (Kellmann, 2010), neurobiological responses to adversity (Panksepp, 2004), and family history of mood disorder (Joormann, Cooney, Henry, & Gotlib, 2012).

As part of the athlete’s case formulation, the clinical sport psychologist may be required to recommend treatment and evaluate its effects. Among psychologically-based treatments, cognitive behavioral therapy is one approach that has received considerable empirical support and demonstrated efficacy (Craighead, Cheets, Brosse, & Ilardi, 2007). Following the intervention, the clinical sport psychologist must evaluate if the athlete has responded to the treatment protocol and, if not, discuss medical care. Antidepressants - specifically, Selective Serotonin Reuptake Inhibitors (SSRIs) - have become first-line treatments for most individuals

with depression (Nemeroff & Schatzberg, 2007). The SSRIs have been shown to be effective in treating symptoms of depression with overall effects estimated at 50% (Li, Kuk, & Rush, 2012) with the onset of efficacy requiring four to six weeks (Soleimani, Lapidus, & Iosifescu, 2011). Side effects commonly associated with SSRIs include nausea, gastrointestinal disturbance, insomnia, nervousness, and sexual dysfunction (Nemeroff & Schatzberg, 2007). With an established athlete-sport psychologist relationship, the psychologist is optimally positioned to evaluate this cluster of possible adverse side effects.

Anxiety Disorders

Whether discussing “performance” anxiety or Anxiety Disorder (e.g., phobia or generalized anxiety), the construct of this emotion remains relatively similar. Specifically, anxiety has a unique set of properties that differentiates it from other emotions. For athletes and non-athletes, the cognitions that induce anxiety tend to be about the future. Second, the future element that the individual is anxious about is always a perceived threat or danger. It should be noted two types of threats exist – 1) threat to safety (i.e., “that guy is going to injure me”) and 2) threat to ego integrity (i.e., “if I lose, then I am a loser”). Third, anxiety has cognitive and physiological elements. Physiological symptoms may include but are not limited to muscle tension, headaches, gastrointestinal issues, increased heart rate, and difficulty breathing.

Key to diagnosing anxiety in athletes is understanding that fear and avoidance are two different, but not independent, learning processes (Bugelski, 1938; Konorski, 1950). In Mowrer’s well-established *Two-Factor Theory*, fear was a product of sign learning (Mowrer, 1956, 1960a, 1960b). Specifically, a signal was paired to a noxious event, such as a shock, which lead to the organism eventually experiencing fear to the signal. In contrast, avoidance was a product of solution learning, trial and error learning, or response substitution. The organism was

rewarded, relieved, reinforced by engaging in a behavior that effectively reduced the intensity of the fear. Mowrer (1956) suggested, “Hence we are led to speak of *two types* of ‘fear conditioning’: conditioned *arousal* of fear and conditioned *relaxation*, or relief, thereof” (p.117). To the extent that avoidance is successful, fear is stronger because the bond between the signal and the noxious event is never extinguished even if they are no longer paired (Levis & Brewer, 2001). If an elicited fear for an athlete is never extinguished, then avoidance will continue to be reinforced because it provides relief. Thus, an elicited fear impacts avoidance and avoidance impacts an elicited fear.

Because the demands on athletes are somewhat unique, fear and avoidance problems may require unique assessment. Thus, the functioning of an athlete with an anxiety problem may present differently than that of a non-athlete. For example, an athlete may be functioning well below their personal norm, but may not meet the DSM-IV-TR criteria for an anxiety disorder. Specific examples are found in the differences between post-traumatic stress disorder (PTSD) and the experience of a traumatic championship loss. Post-traumatic stress disorder may occur after a bobsleigh accident which critically injures one teammate and leaves two others in hospital. The surviving, non-injured athlete may experience the noxious event (the crash) with fear of ever competing again with sufficient speed to win or with avoidance of their teammates who have been hospitalized. Personal failure deemed to account for the loss of a major championship, however difficult, may not meet the DSM-IV-TR criteria for anxiety disorder. Sport psychologists are called on to distinguish this important difference noting the degree and full scope of symptom expression.

Psychological intervention to reduce the impact of the noxious stimulus - to teach effective coping - flows from intelligent diagnosis. Because many treatments for anxiety

disorders are empirically validated, one course of action is to adapt these treatments to the athlete. Goldman (2003) applied Ellis's theory within the context of the athletic experience. Another course of action may be to alter treatments specific to the athletic mind. An example of augmenting validated treatment for athletes would be Goldman's (2004) competence induction technique which, in turn, is based on Suinn's (1990) anxiety management training.

Even if the anxiety rises to the threshold of *disorder* it may still be grounded in the sport experience and treated within the framework of sport performance. Anxiolytic treatments to consider for athletes include: Wolpe's (1981) reciprocal inhibition, Jacobson's (1938) progressive muscle relaxation; Beck's (1976) cognitive behavior therapy; Ellis's rational emotive behavior therapy (Ellis & Ellis, 2011; Ellis & Harper, 1961); Hayes's acceptance and commitment therapy (Hayes & Smith, 2005); and Linehan's (1995) dialectical behavior therapy. Further, many of these treatments can be enhanced with biofeedback technology.

Sleep

Sleep insufficiency has measurable negative effects on the central nervous system (CNS; e.g., on reaction time, recovery, and functioning). In sport, inadequate sleep can lead to poor performance during practice and on game days, and can also contribute to increased injury risk. Thus, the sport psychologist will evaluate sleep quality, quantity, and consistency as significant influences on player health and performance.

Disorders of sleep are often overlooked even though this class of maladjustment is both classified within both the ICD-10 and the DSM-IV-TR (Stores, 2007; World Health Organization, 1992). The sport psychologist should be familiar with both diagnostic methods as well as with the work of the European Sleep Research Society (ESRS) founded in 1971 and the American Academy of Sleep Medicine (originally the American Sleep Disorders Association).

Clinical issues of sleep are putatively more prevalent among athletes due to travel, changing sleep environments, time zone changes, and disruption in schedules. Derman and colleagues identified sleep difficulties as part of a cycle of under-recovery and *chronic fatigue* in athletes (Derman et al., 1997). The assessing sport psychologist will track these factors together with others such as unpredictable work flow, changing scope of responsibility, irregular work/rest cycles hours, reduced social connections, and large amount of travel, as these may become a storm of increased stressors that can impact the overall health and performance of athletes.

Rest impacts the CNS with general musculoskeletal effects (e.g., on sharpness, reaction times, skill execution). The sport psychologist, therefore, notes players who show increased fatigue (Mah, Mah, Kezirian, & Dement, 2011) and knows that reduced sleep is not only a risk factor for injury and concussion but for chronic diseases states (i.e., hypertension, diabetes, obesity) and mood disorders and anxiety (Centers for Disease Control and Prevention (CDC), 2011; Chapman, McKnight-Eily, Perry, & Anda, 2008).

Difficulty falling and staying asleep, daytime sleepiness, movement during sleep which reduces its quantity, and breathing issues during sleep are all problems that are attended to by the assessing psychologist, who will also be aware that there are currently 78 recognized sleep disorders described by the ICD-10 and DSM-IV-TR. These may be grouped into four main categories: problems falling and staying asleep (insomnia), problems staying awake (excessive daytime sleepiness), problems sticking to a regular sleep schedule (sleep rhythm problem), and unusual behaviors during sleep (sleep-disruptive behaviors). The first three categories are also known as dyssomnias (e.g., insomnia, narcolepsy, sleep apnea, and restless leg syndrome) that may be further divided into intrinsic and extrinsic sleep disorders in conjunction with

information provided by the psychologist. The clinician notes environmental and behavioral factors relevant to dyssomnias such as inadequate sleep hygiene, altitude insomnia, adjustment sleep disorder, and alcohol-dependent sleep disorder.

The fourth category relates especially to parasomnias for which the psychologist assesses partial arousal or disorders that may interfere with sleep stage transitions, such as sleepwalking, night terrors, sleep talking, nightmares, sleep paralysis, and REM sleep behavior disorder (Institute of Medicine, 2006).

Impulse Control Disorders

Sport psychologists frequently evaluate inappropriate, explosive anger, late-night on-line gambling, and self-mutilation. These three concerns are examples of impulse control disorders (ICDs) and are classified by the inability to manage/resist impulses and related behaviors that may be maladaptive or cause personal distress to self or others. They are characterized by symptoms such as feeling tension, strong emotions, and/or anxiety. This “tension” is relieved with the performance of an impulsive behavior or series of behaviors that temporarily relieve the unwanted tension, but with potential long-term consequences (see ICD-10 and DSM-IV-Tr).

The psychologist will not confuse ICDs with anxiety/obsessive compulsive disorders (OCD) or substance use-related disorders, which share the neurological underpinnings and behavioral components of ICDs. In particular, the orbital cortex, basal ganglia, and thalamus, and the neurotransmitters dopamine and serotonin are thought to be involved in this broad range of disorders (Grant, Brewer, & Potenza, 2006; Temcheff, Derevensky, & Paskus, 2011). Still, there are key clinical and biological differences (Potenza, Koran, & Pallanti, 2009). All ICDs involve the loss or lack of control in certain situations, especially under times of stress or tension. The aberrant behavior is not premeditated and is outside of the individual’s control. The impulsive

behavior often has significant legal, monetary, or societal consequences. For example, the legal ramifications of kleptomania are often criminal shoplifting charges.

The key issue for the sport psychologist is to be aware about the existence of the problem and to encourage open discussion among athletes. Pathological gambling has received much recent attention related to research and prevention, and is relevant to sport psychology (Holden, 2010). The NCAA gambling survey (2008) found that approximately 30% of male and 7% of female student-athletes acknowledged gambling on sporting events (Huang, Jacobs, Derevensky, Gupta, & Paskus, 2007). Pathological gambling is often overlooked as gambling is imbedded in many sporting cultures and environments, but its impact on overall health is significant. Huang et al. (2007) found direct associations between gambling and multiple risk behaviors (i.e., increased prevalence of substance use, disordered eating, and high risk sexual behavior) that are similar to those with substance use-related disorders. Untreated and undiagnosed ICDs often lead to exacerbation of comorbid emotional disorders including anxiety, mood, and sleep disorders. Although most mental health issues are diffusely spread throughout the population, ICDs seem to be concentrated/clustered with other mental health disorders (Kessler et al., 2005; Kessler, Chiu, Demler, Merikangas, & Walters, 2005).

Secondary to the primary diagnosis is the assessment of comorbid clinical issues such as depression and anxiety. The sport psychologist will evaluate both, knowing that there is a range of comorbidity in pathological gambling; for example, some occur with suicidal implications, and each with life status and performance implications for athletes (Lorains, Cowlshaw, & Thomas, 2011). For the athlete with intermittent explosive rage, the sport psychologist will evaluate other possibilities such as comorbid post-traumatic stress disorder or substance abuse.

Substance-Related Disorders

The clinical sport psychologist may be confronted with an athlete who presents with behavioral, cognitive, and affective symptoms associated with a Substance-Related Disorder. Unique with this disorder is the sociological concept of positive and negative deviance related to behavioral patterns of use (Hughes & Coakley, 2001). Athletes tend to use substances for two primary purposes – 1) recreational use (mostly drugs of abuse such as alcohol, marijuana, opiates) and 2) performance enhancement (e.g., anabolic steroids, HGH). It is important that the sport psychologist understands and explores the athlete's motivation for use of substances, and obtains a clear and accurate (from the athlete and other resources such as the coach, family, and medical staff) history related to their substance use patterns to determine if the use is maladaptive or unhealthy - leading to clinically significant impairment in general functioning or resulting in a substance-specific syndrome or constituting a contravention of codes for fairness in sport.

Although there is limited data concerning the use of substances amongst elite professional/Olympic athletes, the collegiate student-athlete population has been well-examined. In their most recent survey, the National Collegiate Athletics Association (NCAA) found that over 83% of the survey participants (NCAA Division I-II-III student-athletes) reported use of alcohol over the past year, which increased by 5% from 2005 to 2009. In addition, findings indicated that survey participants reported that over 22% used marijuana within the past 12 months (up 1.4% from 2005 to 2009); 3.3% of participants reported use of narcotics; and 6.4% of participants reported the non-prescribed use of Adderall or Ritalin with 4.3% reporting use with a prescription (NCAA, 2012). This data included over 20,000 participants with a breadth of age and diversity demographics and represents a large population of collegiate student-athletes from 18-22 years.

One role for the assessing psychologist will be to determine if the athlete demonstrates clinical symptomology of a substance-related abuse or dependence diagnosis (see DSM-IV-Tr), whether treatment is required and, if so, what approach will be most effective. Often, the athlete's use of substances has already negatively impacted his/her family, social group, academics, and relationships before it negatively impacts their athletic performance. Interventions can range from outpatient counseling to intensive outpatient therapy (2-3 days/week for 3-5 hours each day) to inpatient treatment (typically 28-42 days for most inpatient care). Traditional cognitive-behavioral therapies have been shown to be effective in the outpatient care of substance related disorders, and motivational interviewing (Miller & Rollnick, 2013) has most recently been encouraged as a therapeutic model of intervention for athletes with abuse issues. Regardless, a competent clinical sport psychologist will assess how best to utilize professional resources in the substance abuse treatment domain.

Eating Disorders

In the area of Eating Disorders – beyond DSM-IV-TR and the ICD-10 criteria – a key in the diagnosis is evaluating an athlete's denial of problems and the athlete's failure to discern when behaviors are unhealthy. Denial may be shadowed by: 1) problems inherent within the calculation of body mass index (BMI); 2) eating disorder symptoms masquerading as 'dedication'; 3) difficulty discriminating between an extreme behavior and an eating disorder symptom; and, 4) the high prevalence of eating disorder symptoms fostering misperceptions about what should be "normal".

The current diagnosis for anorexia nervosa includes an extremely low weight—below a BMI of 17.5. The index is a standard measure using height and weight (World Health Organization, 1992). It does not account for increased muscle mass in athletes that permits

grossly undernourished athletes to meet each criterion for anorexia nervosa except the BMI criterion. The sport psychologist must know that application of the standard criteria is a flawed approach, and thus make allowances for any known increases in muscle weight. If possible, anthropometric data should be obtained to guide in this analysis.

Most athletes are driven by at least some level of perfectionism. Elite athletes train until they get it just right. So it is important to ask: “Do they abstain from “unhealthy” food? Do they comply exactly with their coach’s instructions?” High-achieving athletes share symptoms with persons in the general population - their behavior, on the other hand, may be unique to sport. When an athlete runs extra miles between practices, her coach praises her dedication. What the coach doesn’t know is that for many athletes with eating disorders, the extra running is an equivalent to purging. Likewise, athletes strive to eat “healthy” as a means to improve performance. The sport psychologist notes, however, whenever careful, “healthy” eating and extra workouts combine with other risk factors, such as eliminating certain foods altogether. Saying, “I have learned to watch that my diet does not load up on the glycemic index” may reflect an insidious pattern of denial of nutritional needs under the mask of dedication.

Athletics is a culture of extremes. How does one define exercise abuse in an individual who trains for his sport four-to-five hours a day? If he’s using exercise to maintain a negative energy balance and is exhibiting other signs of compulsion and lack of control, then he indeed may be abusing exercise. And what if the athlete has to eat 5,000 calories to maintain his weight—is that binge-eating?

When diagnosing eating disorders in athletes, the clinical sport psychologist remembers the criteria for binge eating disorder - the consumption of a significantly large amount of food *and* the feeling of being out of control. If the athlete’s consumption is roughly that of the

teammates and he or she doesn't feel out of control in this consumption, then very likely the diagnosis is not binge eating.

Finally, eating disorder symptoms (occasional food restriction, binge-eating, purging through exercise abuse, diet pills, self-induced vomiting) plague high performance sport, and particularly affect those athletes in "lean" sports. Quite a few suffer eating disorder symptoms that are subclinical but problematic; these athletes may go undiagnosed because their circumstance and behavior is common among their peers and because the diagnostic criteria for eating disorders are not met (Greenleaf, Petrie, Carter, & Reel, 2009). Future criteria, potentially in DSM-V, would elevate subclinical syndromes to clinical significance, ameliorating this diagnostic issue. Still, this step would not fully offset the other diagnostic issues identified above. Therapy recommendations, coaching, medical, and sport science consultations, travel considerations, workout planning, and competition strategies must each factor in this composite of four highlighted issues. Without doing so, the athlete's health is placed at risk, and health issues are of far greater priority to the sport psychologist than performance will ever be.

Attention-Deficit/Hyperactivity Disorder

Attention-Deficit/Hyperactivity Disorder (ADHD) - characterized by inattention, impulsivity, and hyperactivity - is one of the most common psychological disorders among children and adolescents. Athletes are no exception. In this section, four key diagnostic issues underlying the development of rational clinical intervention are highlighted.

An estimated 2-5% of school-aged children are diagnosed with ADHD, with boys experiencing the disorder more than girls (see DSM-IV-Tr). The prevalence rate of ADHD is not well documented in athletes, but some theorists have proposed that it may be more prevalent in athletes due to a tendency for individuals with ADHD to be drawn to physical activity (Burton,

2000). In one study by Heil and colleagues (Heil, 2000; Heil, Hartman, Robinson, & Teegarden, 2002), a prevalence rate of 7.3% was identified in a population of athletes and this rate varied between sports.

The assessing sport psychologist notes how ADHD - composed of two major symptom clusters: inattention and hyperactivity (disinhibition) – manifests and affects sport performance as well as social and academic functioning. Inattention is characterized by persistent difficulty in directing and sustaining attention toward a task, while disinhibition is often manifested by an inability to suppress impulsive behaviors or employ thinking abilities. Some of the most successful athletes have been diagnosed with ADHD including Olympic gold medal winner Michael Phelps and Olympic 100-meter champion Justin Gatlin, who made it publicly known they have ADHD.

Individuals with ADHD also experience a variety of other difficulties such as developmental, cognitive, behavioral, emotional, academic, and even medical difficulties and comorbidities (Barkley & Murphy, 2006). Individuals with ADHD are also at an increased risk for: substance abuse, academic underachievement, impaired peer relationships, dangerous driving, and delinquent and impulsive risky behaviors.

A key aspect of the diagnosis of ADHD is that the clinical sport psychologist may be engaged to provide documentation of ADHD in support of an application for medical treatment. Amphetamine-derived psychostimulant medications, such as Adderall and Ritalin, are effective and proven treatments for ADHD (Jensen et al., 2001). However, these medications are not well understood in the context of athletics and they appear to pose some potential benefits and risks toward performance and health of an athlete. Stimulant medications may impair thermoregulation, mask symptoms of fatigue and elevate heart rate that could pose cardiac and

general health risks. There are also concerns with a growing trend of nonmedical misuse of stimulants being abused as a party drug or taken without a prescription for its academic effects.

Stimulants may also result in performance enhancing effects through both physiological functions (decreased time to exhaustion, increased acceleration, prolonged peak performance, and improved balance), as well as improved cognitive abilities (improved attention to task, positive affect, aggression, and decreased pain sensation). A common side effect of stimulants is appetite suppression, which could have either a positive or negative impact based on the sporting event.

As a result, the undocumented use of stimulants is banned by most governing bodies including the International Olympic Committee (IOC) and the NCAA. The NCAA and the IOC, through the World Anti-Doping Agency, each have therapeutic use exemption policies for determining when ADHD treatment is necessary. Exemptions may be obtained with very thorough medical and psychological evaluation, inclusive of neuropsychological testing. A diagnosis *must* be granted with written approval by the regulatory body before the medication use is considered sanctioned. The clinician(s) who makes the diagnosis must always remember to verify that written approval has been obtained. Dialogue and advocacy for the diagnostic position may be required before approval is granted.

Unfortunately, the criteria by which an athlete with ADHD may obtain a therapeutic use exemption (TUE) for his or her use of prescribed stimulants are neither readily available to clinicians nor understood. Drug testing policies amongst professional sports are even more poorly defined; moreover, they lack consensus and they do not provide clear guidelines for the responsible or therapeutic use of stimulants.

Given the potential risks and drug testing sanctions, it is important for athletes with ADHD and for those psychologists who provide care to those athletes to each be knowledgeable about these factors. In light of the above, psychosocial treatment efforts to deal with the behavioral, emotional, and cognitive issues are a critical piece of comprehensive treatment (Barkley & Murphy, 2006).

Post-Concussion Syndrome/Disorder

Concussion, or mild traumatic brain injury (mTBI), is a complex pathophysiologic process affecting the brain, induced by traumatic (direct or indirect) biomechanical forces, which typically results in the rapid onset and spontaneous recovery of short-lived impairment of neurologic function; a range of symptoms may or may not involve a loss of consciousness (Herring et al., 2011; McCrory et al., 2009). The clinical sport psychologist must be competent to know the signs and symptoms of mTBI. In addition, the psychologist will frequently be called on to document the pattern of recovery, noting clearance of symptoms, functional recovery, and residual symptoms.

Acute signs and symptoms following a concussive event can include physically-based or somatic signs such as headache, dizziness, balance problems, nausea, visual disturbance, fatigue/drowsiness, and light or noise sensitivity; cognitive symptoms can include confusion, fogginess, slowed processing, poor concentration/poor focus, verbal expressive problems, and poor memory (anterograde or retrograde amnesia); emotional symptoms can include emotional lability, irritability, anxiety, and sadness; and sleep disturbances can also emerge (onset insomnia, discontinuity, or hypersomnia). These temporary post-concussion symptoms are thought to resolve in the vast majority of cases, with a gradual, stepwise timeframe of recovery being most common.

Information regarding clinical management and research regarding concussed athletes has substantially grown over the last 10 years, and the field of “sports neuropsychology” (Lovell et al., 2003; Webbe, 2011) has emerged. Data from sports-related concussions (SRC) suggests recovery for most athletes occurs within one to three weeks (Iverson, 2011), with professional athletes recovering faster than collegiate athletes, who recover faster than high school athletes. While the vast majority of individuals recover completely from concussions, there is a group of individuals with persisting or lingering symptoms/deficits beyond the expected timeframes of recovery, who are described as having post-concussion syndrome (PCS) or post-concussion disorder. The syndrome is described, according to the ICD-10, as the occurrence of head trauma with loss of consciousness that precedes symptom onset by a maximum of 4 weeks, with three or more symptom categories (physical/somatic, emotional, subjective cognitive symptoms without neuropsychological evidence of marked impairment, insomnia, reduced alcohol tolerance), and “preoccupation with above symptoms and fear of brain damage with hypochondriacal concern and adoption of sick role” (World Health Organization, 1992).

In contrast to the ICD-10, the DSM-IV-TR requires a history of head trauma that has caused significant cerebral concussion, neuropsychological evidence of difficulty in attention and memory, and three or more symptoms that last at least three months and have onset shortly after head trauma or represent substantial worsening of previous symptoms (fatigue, disordered sleep, headache, dizziness, irritability, anxiety/depression/affect lability, changes in personality, apathy, or lack of spontaneity); these symptoms result in significant impairment in daily function that reflects decline from previous level.

The subset of concussed individuals who have persistent symptoms in the physical, cognitive, or affective modalities, have been estimated to be between 10-15% of those who have

had a mild head injury (Wood, 2004) and, given the significant and enduring impact of these varied symptoms, have been described as the “miserable minority” (Ruff, Camenzuli, & Mueller, 1996). A similar percentage of people with a history of mTBI still report persistent symptoms and deficits 1-year post-injury (Pagulayan, Hoffman, Temkin, Machamer, & Dikmen, 2008).

When symptoms persist over three months post-injury, the impact on the athlete can often be seen in their reduced general level of function. The persistence of symptoms that produce PCS is thought to be influenced by a variety of factors. In general, physiologic factors are seen as largely contributory to the origin of acute post-concussive symptoms, with psychological factors more contributory to the persistence of symptoms beyond the expected recovery timeframe. Wood’s (2004) discussion of a diathesis-stress paradigm for PCS reviews the interaction between physiological and psychological factors, including motivational factors, different coping styles, the role of attribution, and iatrogenic factors. Athletes with persistent symptoms or PCS are typically faced with restriction of activities (both physical and cognitive) as part of their treatment; these restrictions or changes in activity level can be helpful in lowering symptoms caused by physical or cognitive exertion, but may also trigger significant emotional symptoms (frustration, sadness, anxiety) and social consequences (social withdrawal, social or interpersonal stress). For student-athletes who miss school as a result of concussion symptoms, the academic stress of having to make up schoolwork and, at some point, also keep up with schoolwork, is substantial and produces secondary stress symptoms. For some athletes, the loss of training and social interaction with their teammates for a prolonged timeframe can produce a loss of identity and depressed mood. These emotional consequences can be seen as secondary to the concussion, but appear to play a primary role in the maintenance of persistent symptoms, and can ultimately influence cognitive functioning.

Personality Disorders

Without a doubt, the world of sport has seen its share of famous characters, including Babe Ruth, Muhammad Ali, Joe Namath, Don Cherry, and Florence Griffith-Joyner, athletes whose personalities and presence outside of competition made them seem larger than life. Strong personality features, though, can negatively impact on team dynamics and on the individual's ability to focus on his or her sport performance. When personality features begin to cause distress in social, occupational or other areas of functioning, the diagnosis of a personality disorder must be considered.

Personality disorders can also be described as learned behavior strategies that, for the individual, afford coping in one environment, but cause difficulty in other environments due to a lack of flexibility or adaptability by the individual (Turner, 1984). For example, displaying a massively large ego in the sport context may intimidate other competitors, garner increased media attention, and enhance endorsement contract potential. However, in the athlete's private life, such a self-absorbed, emotionally exuberant manner may create marital disharmony, distance and conflict, and generally superficial relationships.

Individuals with narcissistic personality disorder have a pervasive pattern of grandiosity and marked needs for admiration from others (see DSM-IV-Tr). They also lack empathy for others. In a team context, athletes with these features may be quite demanding (e.g., seeking more time with coaches, asking for special travel arrangements, missing curfew as a result of following their own rules) and, hence, highly disruptive. Even when formal diagnostic criteria are not satisfied, narcissistic personality traits of a team leader can negatively affect team morale and cohesion. Along with their suggestion that sports builds characters, not character, Ogilvie Tutko, and Thomas (1971) bluntly wrote, "If you want to build character, try something else."

Individuals with histrionic personality disorder (HPD, DSM-IV-Tr) have a pervasive pattern of excessive emotionality and attention-seeking behavior. When not the center of attention, athletes with HPD may engage in behaviors that sabotage both themselves and the team, as drawing focus back to themselves may be more important than any achievement in sport competition.

We cannot explore here each of the eleven personality disorders identified in DSM-IV-Tr, but the prudent sport psychologist will have to be aware of the signs of a personality disorder in the athletic environment, often looking to the effects on team dynamics of one or two particularly disruptive athletes. The criterion of impaired functioning may not be a feature of the individual as much as of the team, facing the fallout from a problematic athlete. Interventions may range from behavior therapies to cognitive therapies but, given the challenges inherent in treating any personality disorder (Bateman & Fonagy, 2000), over time the sport psychologist may be put into the position of supporting the team (and coaches) in determining their responses to the athlete with a personality disorder.

Legal issues in diagnosis

As noted earlier in this chapter, the diagnosis of ADHD and the likely use of pharmacological interventions must be approved by a sport regulatory body – with full documentation retained by the diagnosing professional – in order for the involved athlete to avoid prosecution for unauthorized use of those restricted substances. Any psychologist practicing in the realm of sport must be aware of various other regulatory and legal issues that arise with respect to diagnosis.

The most obvious issue with respect to regulation of diagnostic capacity relates to what kind of mental health professional is authorized to make a formal diagnosis. In some

jurisdictions, that right belongs exclusively to physicians (including but not limited to psychiatrists) and no other medical service provider may make a diagnosis. In other jurisdictions, the type of training obtained by the service provider is more important than his or her job designation or profession (e.g., Varela, 2008). Put simply, to avoid potential liability for making an erroneous diagnosis or one not authorized in law, the skilled and cautious sport psychologist will ensure adequate training both in terms of formal diagnostic assessment and in terms of local regulatory conditions. For sport psychologists traveling with teams, those regulations may change several times in the course of a single road trip.

Concluding Remarks

Among the diagnoses having greatest prevalence in an athlete population, this chapter has outlined what are deemed the more salient diagnostic issues. In a perfect scenario every practitioner who makes a diagnosis is competent to practice in both sport and clinical psychology. Alternatively, sport performance professionals – who are not licensed – will appreciate the importance of still knowing the DSM-IV-TR criteria for the disorders we have reviewed and will, therefore, be in the optimal position to expeditiously assist an athlete by referral. It is not sufficient to know simply when an athlete has psychological concerns; every psychologist and sport professional, alike, must know what to do about these concerns.

Positioning appropriate psychological counseling and intervention for an athlete starts with the practitioner appreciating how the sometimes unique dynamics of sport impact mental health diagnostics, understanding limits to the scope of practice, and reaches – again in a manner that is unique to sport – to communicating effectively among an athlete’s sport science and coaching support team.

Learning Aids

1. The research indicates that among athletes depression may be more prevalent than once thought. Consider how this could be related to performance expectations, to socialization pressures, to coach-athlete dynamics, to academic stress, to injury, and to family of origin stress.
2. Comorbidity is defined by the co-occurrence of two or more disorders. Consider how one may impact the expression of another and examine diagnostic criteria for overlapping symptoms. For example: Might a concussion recovery impact the expression of sleep, impulse control, attention, and depressive challenges?
3. A predisposition to anxiety may itself be a risk factor for other problems. Thus, disordered eating may start as a simple performance worry in weight-sensitive sport and result in reduced appetite with the unintended consequence that performance is initially improved. Be aware that anxiety may serve as a foundation for other disorders and use supplementary reading to review the literature on predisposition factors.
4. One legal issue pertains to competency to diagnose. Evaluate others such as whether there could be a liability for the practitioner as well as for the team if the sport behavior professional cannot diagnose, due to inadequate training. Beyond competency consider related issues such as consultations with coaches and parents, and informed consent.

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