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Teaching Awareness of Ethical Governance in Sport

Mental Health in Sport
Teaching Notes

TASK 1

- In small groups, discuss the definitions of mental health

Mental health is important at every stage of life and includes emotional, psychological, and social well-being. Mental health must be approached in the same time with mental illness, because these are as prevalent among sportsmen as in the general population.

TASK 2

Discus the characteristics of being mentally healthy

SLIDE 3, 4

"a state of well-being in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community"

World Health Organization, 2014

„Mental disorders comprise a broad range of problems, with different symptoms. However, they are generally characterized by some combination of abnormal thoughts, emotions, behaviour and relationships with others"

OMS

„Mental disorders (or mental illnesses) are conditions that affect your thinking, feeling, mood, and behavior. They may be occasional or long-lasting (chronic). They can affect your ability to relate to others and function each day."

Reardon, C. L., & Factor, R. M. (2010). Sport psychiatry. A Systematic Review of Diagnosis and Medical Treatment of Mental Illness in Athletes Sports Medicine, 40(11), 961-980

„Sport psychiatry focuses on diagnosis and treatment of psychiatric illness in athletes in addition to utilization of psychological approaches to enhance performance."

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Reardon, C. L., & Factor, R. M. (2010). Sport psychiatry. A Systematic Review of Diagnosis and Medical Treatment of Mental Illness in Athletes Sports Medicine, 40(11), 961-980

TASK 3

Discuss the occurrence of following Psychiatric Diagnoses in Athletes

SLIDE 5

Mood Disorders
Anxiety Disorders
Eating Disorders
Attention-Deficit Hyperactivity Disorder (ADHD)
Addictive Disorders
Other Disorders

Depression in athletes

Student reflection:

- What NCAA sport had the highest rates of depression?
- List at least 3 reasons why this sport might have higher rates of depression than other sports in the study.
- Find at least one other research article that discusses differences in rates of depression between individual and team sport athletes. Give the citation for the article, and write 2-4 sentences to summarize any hypotheses discussed in the article about why there might be such differences.

Wolanin A, Hong E, Marks D, et al. Prevalence of clinically elevated depressive symptoms in college athletes and differences by gender and sport. British Journal of Sports Medicine 2016;50:167-171.

„Involvement in collegiate-level athletics may cause excessive stress due to time constraints and other required academic and athletic related commitments. This stress often creates an imbalance of pressures, which can lead to anxiety and depression."

Yang, J., Peek-Asa, C., Corlette, J. D., Cheng, G., Foster, D. T., & Albright, J. (2007). Prevalence of and risk factors associated with symptoms of depression in competitive collegiate student athletes. Clinical Journal of Sport Medicine, 17(6), 481-487.

Epidemiological studies of psychological distress in the athlete population almost always involve cross sectional designs, only providing a snap-shot of the disease or symptoms at one fixed moment (Appaneal, Levine, Perna, & Roh, 2009).
Depression has been shown to improve in as early as four weeks with physical activity (Doyne et al., 1987), and to remit in a relatively short period of time even in the absence of treatment (Beck, 1967).

McGuire, Lindsey C. Temporal changes in depression and neurocognitive performance in collegiate student-athletes: A repeated measures evaluation pre- and post-concussion injury, Temple University, ProQuest Dissertations Publishing, 2014. 3623217.

The term depression has been used in epidemiological studies as a general term, despite the fact that there are definite distinctions between depressed mood and major depression. Appaneal et al. (2009) identified the difference as a depressed mood being "a transient state of feeling sad or down, whereas major depression is a medical condition consisting of an array of symptoms beyond merely depressed mood" (p. 61). Researchers have argued that according to the social cognitive approach, the difference between a depressed mood and major depression is simply they are two different intensities, rather than two separate phenomena (Maddux & Meier, 1995)

McGuire, Lindsey C. Temporal changes in depression and neurocognitive performance in collegiate student-athletes: A repeated measures evaluation pre- and post-concussion injury, Temple University, ProQuest

Dissertations Publishing, 2014. 3623217.

The Diagnostic and Statistical Manual of Mental Disorders V (DSM-V) by the American Psychiatric Association categorizes major depressive disorder (MDD) as: A depressed mood or a loss of interest or pleasure in daily activities for more than two weeks, in which mood represents a change from the person's baseline.
The person experiences impaired social, occupational, and/or educational function and at least 5 of the following specific symptoms nearly every day for at least two weeks: 1. Depressed mood or irritable most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful) 2. Decreased interest or pleasure in most activities, most of each day 3. Significant weight change (5%) or change in appetite 4. Change in sleep: Insomnia or hypersomnia 5. Change in activity: Psychomotor agitation or retardation 6. Fatigue or loss of energy 7. Guilt/worthlessness: Feelings of worthlessness or excessive or inappropriate guilt 8. Concentration: Diminished ability to think or concentrate, or more indecisiveness 9. Suicidality: Thoughts of death or suicide, or has suicide plan (APA, 2013)

McGuire, Lindsey C. Temporal changes in depression and neurocognitive performance in collegiate student-athletes: A repeated measures evaluation pre- and post-concussion injury, Temple University, ProQuest Dissertations Publishing, 2014. 3623217.

Collegiate student-athletes have been found to be at an increased risk for depression (Hammond, Gialloreto, Kubas, & Davis, 2013; Storch et al., 2005; Weigand, Cohen, & Merestein, 2013; Yang et al., 2007).

McGuire, Lindsey C. Temporal changes in depression and neurocognitive performance in collegiate student-athletes: A repeated measures evaluation pre- and post-concussion injury, Temple University, ProQuest Dissertations Publishing, 2014. 3623217.

Hammond et al. (2013) examined depression in 50 elite male and female varsity Canadian swimmers, who were competing to represent Canada internationally. The researchers utilized both a semi-structured interview and the BDI-II. The results indicated through the semistructured interview that over the past 36 months, 68% of the athletes met criteria for MDD. After the qualifying competition, 34% met the criteria for MDD, and 26% selfreported mild to moderate levels of depressive symptoms on the BDI-II. Additionally, prior to competition, significantly more females than males were found to have had clinical levels of depression.

McGuire, Lindsey C. Temporal changes in depression and neurocognitive performance in collegiate student-athletes: A repeated measures evaluation pre- and post-concussion injury, Temple University, ProQuest Dissertations Publishing, 2014. 3623217.

Post-injury mood disturbance and negative post-injury reactions in athletes are well-documented in the literature (Smith & Milliner, 1994). Studies have found athletes with injuries experience greater levels of psychological distress than otherwise healthy athletes (Brewer, 2001; Petrie & Perna, 2004).

McGuire, Lindsey C. Temporal changes in depression and neurocognitive performance in collegiate student-athletes: A repeated measures evaluation pre- and post-concussion injury, Temple University, ProQuest Dissertations Publishing, 2014. 3623217.

"Athletes who are attracted to figure skating are perfectionists, which is about being concerned with the achievement of perfection," said Rebekah Dixon, who holds a master's degree in developmental psychology and has taught psychology and human development at the college and university levels. "This leads to being more focused on other people seeing you as perfect, which in itself is a problem, because you're focusing on something that is unattainable."

https://www.cbc.ca/sports/olympics/figureskating/gabrielle-daleman-s-mother-on-her-daughter-s-mental-health-battles-1.4977673

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Eating Disorders

”Eating disorders include anorexia nervosa and bulimia nervosa. The former is characterized by a refusal to maintain a minimally normal bodyweight, while the latter involves repeated episodes of binge eating followed by inappropriate compensatory behaviours, such as food restriction, self-induced vomiting or excessive exercise. Eating disorders among athletes have been relatively well studied, and these conditions might well represent psychiatric disorders that are perpetuated by participation in sport itself.”

Reardon, C. L., & Factor, R. M. (2010). Sport psychiatry. A Systematic Review of Diagnosis and Medical Treatment of Mental Illness in AthletesSports Medicine, 40(11), 961-980

Moreover, men athletes are more at risk of developing eating disorders compared with the general population of men than women athletes are when compared with the general population of women. However, Glazer reported that men may return more rapidly to their normal weights and eating behaviours than do women after ending their competitive athletic careers, although this is variable, with some retired athletes continuing to rely on eating disordered behaviours for stress reduction

Reardon, C. L., & Factor, R. M. (2010). Sport psychiatry. A Systematic Review of Diagnosis and Medical Treatment of Mental Illness in Athletes Sports Medicine, 40(11), 961-980

Specific sports that can create risk for developing an eating disorder

Gymnastics, swimming, diving, rowing, bodybuilding and wrestling, because athletes must “make weight” or maintain a certain body size to stay competitive. Aesthetic or endurance sports such as gymnastics, figure skating, dance, diving or track and field because they focus on appearance and on the individual rather than on the entire team.

https://www.nationaleatingdisorders.org/eating-disorders-athletes

Factors that protect athletes from developing eating disorders

Positive, person-oriented coaching style rather than negative performance-oriented coaching style. Social influence and support from teammates with healthy attitudes towards size and shape. Coaches who emphasize factors that contribute to personal success such as motivation and enthusiasm rather than body weight or shape.

https://www.nationaleatingdisorders.org/eating-disorders-athletes

Anorexia Nervosa

- Heart failure. This can be caused by slow heart rate and low blood pressure. Those who use drugs to stimulate vomiting, bowel movements, or urination are also at high risk for heart failure. Starvation can also lead to heart failure, as well as brain damage.
- Brittle hair and nails; dry skin. Skin may dry out and become yellow, and the affected person can develop a covering of soft hair called lanugo.
- Mild anemia
- Swollen joints
- Reduced muscle mass
- Osteoporosis

Bulimia Nervosa

- Erosion of tooth enamel from the acid-produced by vomiting
- Inflammation of the esophagus (the tube in the throat through which food passes to the stomach)
- Enlarged glands near the cheeks (giving the appearance of swollen cheeks)
- Damage to the stomach from frequent vomiting
- Irregular heartbeat
- Heart failure

- Electrolyte imbalances (loss of important minerals like potassium) that can lead to sudden death
- Peptic ulcers
- Pancreatitis (inflammation of the pancreas, which is a large gland that aids digestion)
- Long-term constipation

Binge Eating Disorder

- High blood pressure
- High cholesterol
- Fatigue
- Joint pain
- Type II diabetes
- Gallbladder disease
- Heart disease

https://www.nationaleatingdisorders.org/eating-disorders-athletes

Though most athletes with eating disorders are female, male athletes are also at risk—especially those competing in sports that tend to emphasize diet, appearance, size and weight. In weight-class sports (wrestling, rowing, horseracing) and aesthetic sports (bodybuilding, gymnastics, swimming, diving) about 33% of male athletes are affected. In female athletes in weight class and aesthetic sports, disordered eating occurs at estimates of up to 62%.

Sport Nutrition for Coaches by Leslie Bonci, MPH, RD, CSSD, 2009, Human Kinetics. Byrne et al. 2001; Sundot - Borgen & Torstviet 2004

•Among female high school athletes in aesthetic sports, 41.5% reported disordered eating. They were eight times more likely to incur an injury than athletes in aesthetic sports who did not report disordered eating.

Jankowski, C. (2012). Associations Between Disordered Eating, Menstrual Dysfunction, and Musculoskeletal Injury Among High School Athletes. Yearbook of Sports Medicine, 2012, 394-395. doi:10.1016/j.yspm.2011.08.003

Anxiety Disorders

Apart from the single study on social anxiety disorder, which is described in the following section, anxiety disorders, including social anxiety disorder, generalized anxiety disorder, obsessive compulsive disorder (OCD), panic disorder, posttraumatic stress disorder and specific phobias, have been minimally studied in athletes. Many athletes have normal 'state anxiety', meaning they become appropriately anxious before competition but it does not permeate their entire life

Reardon, C. L., & Factor, R. M. (2010). Sport psychiatry. A Systematic Review of Diagnosis and Medical Treatment of Mental Illness in Athletes Sports Medicine, 40(11), 961-980

Anxiety is an unpleasant emotional state or reaction that is characterized by feelings of apprehension, intensity, preoccupation, and disturbance, and is often associated with biological changes in the body (Nolen-Hoeksema, 2014).

Bára Fanney Hálfdanardóttir, Anxiety and Depression Symptoms in Athletes and Their Attitudes Towards These Problems, Reykjavík, Ísland 2016

Social Anxiety Disorder

„Social anxiety was positively correlated with avoidance of individual sports but not team sports. Social anxiety did not correlate with level of competition (e.g. no involvement vs intramural vs intercollegiate)."

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Compulsive Disorders

„There have been several studies that addressed exercise as a compulsive behaviour (variably referred to as 'positive addiction' 'exercise addiction' and 'obligatory running'). These studies have described a process in which individuals experience withdrawal symptoms such as depression anxiety and irritability when they are unable to exercise, and how exercise 'addicts' continue to exercise despite medical contraindications, with potential adverse impact on work, home and social life."

Reardon, C. L., & Factor, R. M. (2010). Sport psychiatry. A Systematic Review of Diagnosis and Medical Treatment of Mental Illness in Athletes Sports Medicine, 40(11), 961-980

Obsessive-Compulsive Behaviours: Are athlete's at risk?

OCD is considered to be an extremely crippling and debilitating disorder and causes extreme psychological distress for the sufferer. It has been a topic of extensive research in psychology with Antony et al. (1998) stating that 80% of people in the general population will experience obsessions and compulsions from time to time. Obsessions are unwanted thoughts, images or urges that repeatedly occur despite efforts in trying to resist them. These thoughts may include recurrent doubts about whether actions are being performed correctly, this often leads to an impairment in functioning as a result and can cause significant anxiety and distress for the individual.

Muscle dysmorphia

„'Muscle dysmorphia' is probably a subtype of body dysmorphic disorder, which is often felt to lie on the OCD spectrum. It is a disorder of distorted body image in which patients who are quite muscular nonetheless feel that they are too small. Muscle dysmorphia could well be an example of a psychiatric condition that is perpetuated by sport itself. No large, systematic studies of the prevalence of muscle dysmorphia have been published, but Pope et al. have reported that bodybuilders seem to be at higher risk than other athletes and that women bodybuilders have a higher incidence than their men counterparts."

Reardon, C. L., & Factor, R. M. (2010). Sport psychiatry. A Systematic Review of Diagnosis and Medical Treatment of Mental Illness in Athletes Sports Medicine, 40(11), 961-980

Body dysmorphic disorder is described as a preoccupation with an imagined defect in appearance, which causes severe distress and impairment in daily functioning. Body dysmorphic disorder tends to co-occur with other psychiatric conditions, such as obsessive-compulsive disorder, depression, substance abuse, and eating disorders. The disorder is prevalent in settings where a high importance is placed on physical appearance, such as sport and exercise contexts and in particular aesthetic sports.

https://psychology.iresearchnet.com/sports-psychology/body-image-and-self-esteem/body-dysmorphic-disorder-muscle-dysmorphia/

Attention-deficit hyperactivity disorder (ADHD)

„Attention-deficit hyperactivity disorder (ADHD) is a persistent pattern of inattention and/or hyperactivity-impulsivity that is more frequently displayed and more severe than is typically observed in individuals at a comparable level of development.
Based on anecdotal reports, ADHD appears to be more prevalent in athletes than non-athletes, possibly because those with ADHD are drawn to physical activity, this, thereby, being an example of athletes choosing the athletic arena as a means of coping with a disorder."

Reardon, C. L., & Factor, R. M. (2010). Sport psychiatry. A Systematic Review of Diagnosis and Medical Treatment of Mental Illness in Athletes Sports Medicine, 40(11), 961-980

Body dysmorphic disorder is equally prevalent in males and females; however, a subset of the disorder, muscle dysmorphia, is reported more frequently among males. Muscle

dysmorphia is a chronic preoccupation with insufficient muscularity and inadequate muscle mass. Individuals presenting with muscle dysmorphia perceive themselves as much thinner than they actually are, and experience pressure to increase muscle mass and strength, despite possessing a much higher muscle mass than the average male.

https://psychology.iresearchnet.com/sports-psychology/body-image-and-self-esteem/body-dysmorphic-disorder-muscle-dysmorphia/

Sleep disorder

Multiple recent systematic reviews have suggested that athletes' insufficient quality and quantity of sleep lead to potential decline in physical performance (eg, sudden power and endurance), decline in cognitive performance (eg, attention and memory), and increase the risk of illness or injury. It has also been reported that 30.6% of top athletes have sleep disorders. Therefore, prevention and improvement of sleep disorders are essential for improving competitive abilities and maintaining athletic conditioning."

Monma, T., Ando, A., Asanuma, T., Yoshitake, Y., Yoshida, G., Miyazawa, T., ... & Tokuyama, K. (2018). Sleep disorder risk factors among student athletes. Sleep medicine, 44, 76-81.

„After controlling mutual influences among explanatory variables in multivariate analysis, risk factors independently related to sleep disorders are "bedtimes," "wake-up times," "part-time jobs," "use of smartphone/cellphone after lights out," "morning practices," "motivation loss stressor," and "psychological distress."

Monma, T., Ando, A., Asanuma, T., Yoshitake, Y., Yoshida, G., Miyazawa, T., ... & Tokuyama, K. (2018). Sleep disorder risk factors among student athletes. Sleep medicine, 44, 76-81.

"Among competition activities, morning practices were a risk factor for sleep disorders. A previous study reported that athletes with morning practices have a shorter sleep duration"

Monma, T., Ando, A., Asanuma, T., Yoshitake, Y., Yoshida, G., Miyazawa, T., ... & Tokuyama, K. (2018). Sleep disorder risk factors among student athletes. Sleep medicine, 44, 76-81.

Practicing sport at the highest level is typically accompanied by several stressors and restrictions on personal life. Elite athletes' lifestyle delivers a significant challenge to sleep, due to both the physiological and psychological demands, and the training and competition schedules. Inter-individual variability of sleep patterns (e.g., sleep requirements, chronotype) may have important implications not only for recovery and training schedules but also for the choice of measures to possibly improve sleep. This article provides a review of the current available literature regarding the variability of sleep among elite athletes and factors possibly responsible for this phenomenon. We also provide methodological approaches to better address the inter-individual variability of sleep in future studies with elite athletes. There is currently little scientific evidence supporting a specific influence of one particular type of sport on sleep; sleep disorders may be, however, more common in strength/power and contact sports. Sleep behavior may notably vary depending on the athlete's typical daily schedule. The specificity of training and competition schedules possibly accounts for the single most influential factor leading to inconsistency in sleep among elite athletes (e.g., "social jet lag"). Additionally, athletes are affected by extensive exposure to electric light and evening use of electronic media devices. Therefore, the influence of ordinary sleep, poor sleep, and extended sleep as important additional contributors to training load should be studied. Future experimental studies on sleep and elite sport performance should systematically report the seasonal phase. Boarding conditions may provide a good option to standardize as many variables as possible without the inconvenience of laboratory. The use of interdisciplinary mixed-method approaches should be encouraged in future studies on sleep and elite sport. Finally, high inter- and intra-individual variability in the athletes' sleep characteristics suggests a need for providing

individual responses in addition to group means.

Nedelec, M., Aloulou, A., Duforez, F., Meyer, T., & Dupont, G. (2018). The variability of sleep among elite athletes. Sports medicine-open, 4(1), 34.

There is currently little scientific evidence to support a specific influence of a given type of sport on sleep. Brandt et al. described the perceived sleep quality of elite athletes during a competitive period, and found no significant differences between sports modalities (individual versus team sport). Conversely, it had been shown previously that athletes from individual sports go to bed earlier, wake up earlier, and obtain less sleep (individual vs team; 6.5 vs 7.0 h) than athletes from team sports. Sleep disorders are also more prevalent in esthetic sports (33%), while athletes in high risk sports (i.e., sliding, aerial, and motor sports) had significantly less sleep issues than the others.

Nedelec, M., Aloulou, A., Duforez, F., Meyer, T., & Dupont, G. (2018). The variability of sleep among elite athletes. Sports medicine-open, 4(1), 34.

The prevalence of obstructive sleep apnea appears to be much higher in strength power athletes (e.g., rugby) than the general population, possibly due to a large body mass and neck circumference

Nedelec, M., Aloulou, A., Duforez, F., Meyer, T., & Dupont, G. (2018). The variability of sleep among elite athletes. Sports medicine-open, 4(1), 34..

Professional athletes often spend nights in an unfamiliar hotel environment throughout the season, before home and away matches and during training camps. Described by Suetsugi et al., “the first night effect” may potentially contribute to sleep impairment in such circumstances. The first-night effect is thought to result from an individual’s lack of adaptation to the unfamiliar environment (usually a sleep laboratory) [86]. The main characteristics of this effect are decreased total sleep time, decreased REM sleep, and a lower sleep efficiency index

Nedelec, M., Aloulou, A., Duforez, F., Meyer, T., & Dupont, G. (2018). The variability of sleep among elite athletes. Sports medicine-open, 4(1), 34.

TASK 4

Discuss the role and influence of following professionals in Athletes

SLIDE 6

Sport psychologist (SP):

In general, SPs are responsible for performance enhancement service, and for providing support in sub-clinical issues. SPs are licenced psychologists in many countries (France, GB & NI, Italy). In Sweden, and in Germany, individuals working as SPs have an academic education in psychology, sport science and/or sport psychology, at a Master or Doctoral level, but do not necessarily have a licence as psychologists. In Germany, there is a distinction between SPs who have an academic degree in psychology, and Sport Psychological Experts (SPEs) who have an academic degree in sport science and a further specialized education in sport psychology quality assured by the German Association of Sport Psychology (ASP). Both groups have similar functions and rights in the field of elite sport. In Hungary SPs are psychologists who hold a master degree in psychology and attended a further 2 years specialization in sport psychology.

• **(Sport) Psychotherapists or clinically trained (sport) psychologists**:

In Sweden, a group of SPs are clinically trained and allowed to provide psychotherapy for

clinical disorders under supervision. Thus, this specific group of SPs in Sweden are also allowed to treat MHD, thus expanding the professional boundaries beyond the traditional role of sport psychology. In a similar vein, many SPs in Italy and Germany are also trained as psychotherapists which enables referral among professionals when a clinical intervention is needed.
Other represented countries (but also in some cases in Germany) refer clinical cases to clinically trained psychologists or psychotherapists, where it is emphasised that these professionals should have specific knowledge in sports. The English Institute of Sport SPs are specifically trained in Mental Health First Aid (MHFA). The Hungarian Olympic Committee provides some professional psychotherapists as specialized support for Olympic athletes.

Medical doctors:
Psychiatrists (France, Germany, Italy, Sweden, Hungary), and/or sport medicine physicians (France, GB & NI, Italy) provide initial support for MHD in elite athletes. In France, GB & NI and Italy the sport medicine physician (not psychiatrists) are involved in the initial screening process, but refer to a clinical psychologist/ psychiatrist for further assessment. Psychiatrists and sport medicine physicians are the only ones that are allowed to prescribe medication and thereby provide pharmacological treatment.

TASK 5

Discuss the influence of addictive disorders in Athletes

SLIDE 7

Addictive Disorders

„Addictive disorders include substance abuse, characterized by a maladaptive pattern of substance use manifested by recurrent and significant adverse consequences related to the repeated use of a substance, and the more severe substance dependence, which is a cluster of cognitive, behavioural and physiological symptoms (often including tolerance and withdrawal symptoms) indicating the an individual continues use of a substance despite significant substance-related problems."

Reardon, C. L., & Factor, R. M. (2010). Sport psychiatry. A Systematic Review of Diagnosis and Medical Treatment of Mental Illness in Athletes Sports Medicine, 40(11), 961-980

Alcohol

Alcohol use among college athletes has been reported to be higher than in the general public (75–93%formen athletes and 71–93% for women athletes), with rates of alcohol use higher in swimming/diving, soccer and baseball/ softball than basketball, volleyball and track and field. In a very large retrospective NCAA study of 13 914 student athletes, alcohol was the most widely used substance in the past year (used by 85%of athletes), followed by cannabis (28.4%) and smokeless tobacco (22.5%).

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Miller et al. addressed the possible link between psychopathology and alcohol abuse in athletes. They surveyed 262 college athletes about alcohol abuse and psychiatric symptoms. Twenty-one percent reported heavy alcohol use, with significant dose-dependent correlations between alcohol abuse and depressive symptoms, as well as general psychiatric symptoms. They could not determine causality.

Reardon, C. L., & Factor, R. M. (2010). Sport psychiatry. A Systematic Review of Diagnosis and Medical Treatment of Mental Illness in AthletesSports Medicine, 40(11), 961-980

Athletes, like the rest of the population, consume alcohol. Sporting clubs and associations

are frequently reported in the media to place bans or restrictions on the availability and consumption of alcohol by contracted athletes. Yet the same media organizations also report on alcohol-fuelled violence or misdemeanors perpetrated by these same athletes, suggesting anecdotally that athletes consume alcohol, occasionally to excess. This is quantitatively supported by dietary surveys of athletic populations that demonstrate self-reported alcohol intake constitutes up to 5% of the total daily energy intake in elite athletes. However this is far from universal, as survey data reports either greater or reduced alcohol ingestion in athletic populations than the general community. This high variability in reported alcohol intake within athletic groups may in part be due to the characteristics of each sporting discipline. Alcohol intake appears to be positively associated with team sports where alcohol consumption is often encouraged as a component of team/group bonding and can be related to stress relief.

Vella, L. D., & Cameron-Smith, D. (2010). Alcohol, athletic performance and recovery. Nutrients, 2(8), 781-789.

Furthermore, there is some evidence which suggests that hazardous drinking behaviour may be related to the level of involvement, participation or investment in sports (Wechsler *et al*., 1997). For example, Leichliter *et al*. (1998) reported higher rates of binge drinking among the leaders of sports teams than in the members of the sports team themselves. Sports team members, in turn, were more likely to report binge drinking than non-athletes. Similarly, in a national study of 17 251 college students, Wechsler *et al*. (1997) found that more students involved in athletics engaged in binge drinking (61%) than students only 'partly' involved in athletics (55%), and students with no involvement in athletics (43%). Results from French studies suggest that the relationship between sport participation and drinking is complex (Lorente *et al*., 2004) with type of sport, time invested in sport practice, level of sport practice, and cross cultural differences potentially playing a mediating role in this relationship. In a sample of 816 French adolescents, Lorente *et al*. (2004) found that involvement in sports was associated with an elevated use of alcohol. However, participants at the elite levels of sport—participants who were involved in ≥6 days of sport training—were found to have lower levels of daily alcohol consumption. Additionally, in a sample of 677 French sports science students, Lorente *et al*. (2003) found no difference among departmental, regional, or national/international level competitive sportspeople in the frequency of alcohol intoxication.

O'Brien K.S., Blackie J.M., Hunter J.A. Hazardous drinking in elite New Zealand sportspeople. Alcohol Alcohol. 2005;40:239–241

Stimulants

„Stimulant use is of particular importance in sport psychiatry. Athletes sometimes use stimulants for performance enhancement, but there can also be adverse effects of stimulant use on performance including anxiety, insomnia, tremulousness, irritability and weight loss. Athletes may use alcohol and sedatives to counteract the side effects of stimulant stacking. Tobacco Athletes use chewing tobacco for a variety of reasons. Among professional athletes, the most common reasons given for use are pre-game and post-game relaxation, improved concentration, boredom, increased energy, the need to have something in the mouth and performance improvement. College baseball players gave a different set of reasons including recreational or social reasons (48%), pleasure and stress relief; only 1.4% indicated performance enhancement."

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Performance-enhancing substances (PESs) have unfortunately become ubiquitous in numerous sports, often tarnishing the spirit of competition. Reported rates of PES use among athletes are variable and range from 5 to 31%. More importantly, some of these substances pose a serious threat to the health and well-being of athletes. Common PESs include anabolic-androgenic steroids, human growth hormone, creatine, erythropoietin

and blood doping, amphetamines and stimulants, and beta-hydroxy-beta-methylbutyrate. With recent advances in technology, gene doping is also becoming more conceivable. Sports medicine physicians are often unfamiliar with these substances and thus do not routinely broach the topic of PESs with their patients. However, to effect positive change in the sports community, physicians must educate themselves about the physiology, performance benefits, adverse effects, and testing methods. In turn, physicians can then educate athletes at all levels and prevent the use of potentially dangerous PESs.

Momaya A, Fawal M, Estes R. Performance enhancing substances in sports: a review of the literature. Sports Med. 2015 Apr;45(4):517-31, DOI 10.1007/ s40279-015-03089.

Stimulants are used in sports to enhance performance. These substances work on the central nervous system to increase alertness, concentration, metabolic rate, power, strength, and to decrease fatigue. They include caffeine, cocaine, amphetamines, methamphetamines, ephedrine, pseudoephedrine, MDMA (ecstasy), and phenylephrine.
Caffeine is a performance enhancing stimulant found in numerous products we consume, such as soda, workout supplements, tea, chocolate, and coffee. It has been shown to increase reaction time and delay fatigue in sports like taekwondo. Studies in cyclist have shown faster cycling time trials after caffeine ingestion.
Amphetamines are chemically synthesized, controlled substances that can be used to treat conditions such as narcolepsy and ADHD because they increase alertness and sharpen reflexes. They also increase strength, muscular power, and endurance. However derivatives have been used as drugs of abuse, including ecstasy and MDMA. Amphetamines are banned by the NCAA and Internatinal Olympic Commitee. A recent survey of nearly 21,00 students in grades 8-10 in the United States showed an increased use of amphetamines was found among males who participated in lacrosse and wrestling. These stimulants have accounted for nearly 10% of adverse analytical finding by the World Anti-doping Agency (WADA) and are the most common reason for a positive test in many athletes participating in organized sports.
Similarly, cocaine is a strong central nervous system stimulant and is the most potent stimulant of natural origin. Contrary to popular belief, cocaine does not improve overall sport performance and has severe addiction potential. Several studies have shown that cocaine has no beneficial effect on running times and reduces endurance performance.
Ephedra (ma huang) is a popular herbal supplement that has been used to increase fat metabolism and overall sports performance. It works by enhancing the body's production of noradrenaline (Adrenaline).
Pseudoephedrine is a derivative of ephedrine and is commonly found in over-the-counter cold medicines. It can be chemically modified to methamphetamine and thus have similar endurance, strength- and power-enhancing effects. Phenylephrine is commonly found in over the counter cold medicine and is now used as a substitute for pseudoephedrine.

https://www.sportsmedtoday.com/stimulants-va-163.htm

Anabolic Steroids

„In addition to their strength effects, anabolic steroids have psychiatric side effects, including hostility, aggression, irritability and mood lability."

Reardon, C. L., & Factor, R. M. (2010). Sport psychiatry. A Systematic Review of Diagnosis and Medical Treatment of Mental Illness in AthletesSports Medicine, 40(11), 961-980

Pathological Gambling

„The essential feature of pathological gambling is persistent and recurrent maladaptive gambling behaviour that disrupts personal, family or vocational pursuits. In a survey of 636 college athletes at three universities, Kerber found that almost 15% had problem or

pathological gambling. They reported no control group. An American Psychiatric Association Task Force on Disorders of Impulse Control not Elsewhere Classified reported that slot and poker machines were the favourite gambling activities of athletes. In a literature review, Miller et al. reported that the largest sex difference among addictive behaviours by athletes involved gambling, with many more men than women athletes engaging in gambling."

Reardon, C. L., & Factor, R. M. (2010). Sport psychiatry. A Systematic Review of Diagnosis and Medical Treatment of Mental Illness in AthletesSports Medicine, 40(11), 961-980

However, despite this potential link between sports and gambling, studies in the area have been few. Stillman and co-workers reported that problem gambling may be more prevalent in athletes than in the general population (Stillman et al., 2016), and higher in male athletes than in their female counterparts (Huang et al., 2010). Grall-Bronnec and colleagues reported 8.2% of lifetime prevalence of problem gambling in European professional athletes in a number of team sports (Grall-Bronnec et al., 2016), and this can be compared to the prevalence of problem gambling in the general population, reported to be between 0.7 and 6.5% world-wide, although definitions and instruments have varied across studies (Calado and Griffiths, 2016). However, no research has studied whether problem gambling differs between team sports and individual sports, a relevant research question based on the large involvement of gambling marketing in particularly team sports (Maher et al., 2006).

Håkansson, A., Kenttä, G., & Åkesdotter, C. (2018). Problem gambling and gaming in elite athletes. Addictive behaviors reports, 8, 79-84.

The measure of problem gaming in athletes is a novel approach, but its prevalence in the present setting was low, and associated mainly with problem gambling. Although comparable to general population data, the prevalence of problem gambling in elite athletes is at the upper end of general population prevalence estimates, and with a large gender difference. Involvement in high-level sports may need to be addressed in clinical settings, as well as the link between problem gaming and problem gambling.

Håkansson, A., Kenttä, G., & Åkesdotter, C. (2018). Problem gambling and gaming in elite athletes. Addictive behaviors reports, 8, 79-84.

Further reading

1. Karin Moesch, Göran Kenttä, Jens Kleinert, Cédric Quignon-Fleureth, Sarah Cecil, Maurizio Bertolloc: FEPSAC position statement: Mental health disorders in elite athletes and models of service provision, Psychology of Sport and Exercise, Volume 38, September 2018, Pages 61-71
2. Kristoffer Henriksen, Robert Schinke, Karin Moesch, Sean McCann, William D. Parham, Carsten Hvid Larsen & Peter Terry (2019): Consensus statement on improving the mental health of high performance athletes, International Journal of Sport and Exercise Psychology, DOI:10.1080/1612197X.2019.1570473
3. Reardon, C. L., & Factor, R. M. (2010). Sport psychiatry. A Systematic Review of Diagnosis and Medical Treatment of Mental Illness in AthletesSports Medicine, 40(11), 961-980