A Literature Review:

Substance Abuse and Addiction in the Athletic Population

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Introduction:

Substance abuse affects athletes of all ages and competitive levels; high school, collegiate, professional, and retired athletes. Is substance abuse in athletics as bad as we think? A healthy lifestyle can improve the performance of an athlete by five to six percent and substance abuse can hinder performance by as much as 11%..

High School:

- At least half of the high school students enrolled in the United States consume alcohol or engage in binge drinking.
- Caucasian adolescents consume more alcohol and are at an increased risk of nonmedical opioid use.
- Students in team sports show a higher level of alcohol abuse.
- Adolescents in sports have a higher risk of opioid abuse due to risk of injury.
- Highly competitive sport organizations have athletes sharing medication.
- Football players and wrestlers are at a greater risk.

National Collegiate Athletic Association (NCAA):

- List of banned substances is never complete and is always changing.
- Banned substances include: stimulants, anabolic agents, alcohol and beta blockers (rifle only), diuretics and masking agents, narcotics, cannabinoids, peptide hormones, growth factors, related substances and mimetics, hormone and metabolic modulators, and beta-2 agonists.
- Athletes caught using banned substances will be held accountable and face consequences.
- Some banned substances can be allowed with permission from a Physician

National Football League (NFL):

- Strict drug policy – any player with a known history can be tested at any time.
- 68% of NFL players will report an injury in a given year.
- NFL players misuse painkillers at a 4:1 ratio when compared to the general population.
- John Barr – "Outside the Lines" – 644 former NFL players were interviewed about drug abuse.
  - 52% admitted to drug abuse
  - 71% of them admitted to misuse
  - 63% reported getting access to drugs through teammates, trainers, coaches, doctors, drug dealers
  - 2.2% revealed someone tried to address their substance problem
- Caucasians have a higher abuse rate.
- Offensive linemen are more likely to use compared to other positions.
- Athletes that report knee injuries, three or more injuries, and undiagnosed concussions have an increased risk.
- 1996 – Brett Favre's hydrocodone-acetaminophen (Vicodin) dependency.
- 2011 – Jay Cutler (Chicago Bears) tore his medical collateral ligament (MCL) and tried to return to game after getting painkillers from the medical team.
- NFL is after profits, the players are their pawns.

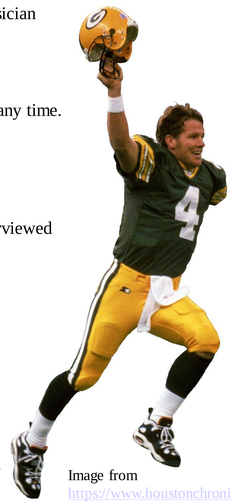

Image from https://www.houstonchronicle.com/sports/superbowl/article/No-14-The-Pack-is-back-10799467.php

Retired Athletes:

- Increase in substance abuse among the retired athletic population.
- 1994 - Taylor and Ogilvie's model to help athletes adapt to retirement – psychological factors.
- Voluntary retirement = positive transition; involuntary retirement = potential negative impacts.
- Case Study – Hockey player.
  - Career ending injury led to this athlete consuming 20-25 drinks a day and ending up in the hospital.

Drug Schedules:

- Comprehensive Drug Abuse Prevention and Control Act of 1970 is responsible for all monitoring and procedures followed by those that manufacture, distribute, prescribe, dispense controlled substances. Also known as Controlled Substance Act (CSA).
- Factors – potential for abuse, risk to the public health, potential physical or psychological dependence.

DEA schedule	Abuse potential	Examples of drugs covered	Some of the effects	Medical use
I	highest	heroin, LSD, hashish, marijuana, methaqualone	unpredictable effects, severe psychological or physical dependence, or death	no accepted use; some are legal for limited research use only
II	high	morphine, PCP, cocaine, methadone, methamphetamine	may lead to severe psychological or physical dependence	accepted use with restrictions
III	medium	codeine with aspirin or Tylenol®; some barbiturates; anabolic steroids	may lead to moderate or low physical dependence or high psychological dependence	accepted use
IV	low	Darvon®, Talwin®, Equanil® Valium®, Xanax®	may lead to limited physical or psychological dependence	accepted use
V	lowest	over-the-counter or prescription cough medicines with codeine	may lead to limited physical or psychological dependence	accepted use

Image from Korsmeyer & Kranzler, 2009

- Schedule I substances require approval from the Food and Drug Administration (FDA).
- Schedule II substances are closely monitored by a medical practitioner.
- Under federal, all controlled substances must have a warning label that states: "Caution: Federal law prohibits the transfer of this drug to any person other than the patient for whom it was prescribed.".

NCAA Drug Testing:

- 1986 - NCAA implemented random testing for performance enhancing substances and recreational drugs (Division I only).
- 1990s – testing expanded to all divisions.
- Year round testing, testing at championship events and post-season bowl games.
- An athlete selected for testing must complete the test before being allowed to compete.
- A positive test or proof of distribution results in the institution's entire athlete population being tested.
- Positive tests are cause for loss of eligibility in the NCAA.

Treatment:

- DSM-5 highlights criteria for opioid use disorder. Must meet at least two criteria within twelve month period. A few of the criteria are as follows:
  - Opioids taken in larger amounts over longer period of time.
  - Craving, strong desire to use opioids.
  - Failure to fulfill obligations due to opioid use.
  - Experience withdrawal.
  - Use in dangerous situations and environments.
- Important for a treatment plan to be established and to educate the individual about potential symptoms of withdrawal. Worst case scenario: withdrawal can be fatal.
- Medication assisted treatments.
  - Methadone, buprenorphine, and naltrexone.
  - Naloxone (Narcan) can be used to treat addiction in addition to an overdose.
  - Other medications to treat symptoms of withdrawal.
    - Symptoms include anxiety, sweating, vomiting, depression, seizures, and hallucinations.
- Methadone has been associated with fatal cardiac arrhythmias, informed consent required to receive prescription. A baseline electrocardiogram is recommended to evaluate potential risks.
- Cognitive behavioral therapy and mindfulness-based relapse prevention have been used to treat addiction.
- Acupuncture – works as an electrical activator that stimulated the production of endorphin and encephalin.
- Patient assessment and monitoring is important in the treatment of abuse.
- 12-step rehabilitation programs.
- Alcohol Anonymous (AA) and Narcotics Anonymous (NA).

Alcohol:

- Acts by entering the blood and spreading throughout body. There's a reduction in motor coordination and reflexes when it reaches the central nervous system.
- Creates a state of euphoria and loss of inhibitions.
- Increases levels of dehydration during physical activity.
- Main source of water loss in athletes comes from plasma. This loss decreases blood supply, oxygen, and delivery of nutrients to muscles resulting in decreased physical and psychological performance.

Tobacco:

- Estimated 5% of athletes use tobacco.
- Smoking prior to or following activity can effect one's respiratory capacity leading to a decline in performance.
- 20-30% decline in cardiovascular activity = decreased mucus production.
- Atherosclerosis – fatty plaque build-up in arteries.
- Oxidative Stress – damage on cellular level. Destruction of cell walls and changes to DNA.

Cocaine:

- Recreational drug; not as prevalent as it used to be.
- 1980s – cocaine use in high schools was at 17%, down to 2% by 1990s.
- 1986 – famous basketball and football players were dying from cocaine abuse.
- Fame, fortune, free time, sense of invincibility.
- Interference with the brain's neurotransmitters; dopamine and noradrenaline.
- Can put an athlete at risk for hyperthermia.
- Abuse can cause abnormal hearth rhythms, seizures, brain bleeds, various cardiac effects, sudden death.
- Easily detected in a urine sample.

Marijuana:

- Controversial substance, legalized for recreational use in some states and medical use in all.
- 1986 – first put on the list of prohibited substances.
- World Anti-Doping Agency (WADA) lists cannabis as prohibited during the sport season.
- Main active drug is delta-9-tetrahydrocannabinol (THC).
- No proven risks to health, pharmacological effects include an increased heart rate and blood pressure, decreased cardiac output, and decreased psychomotor activity.
- Reduces alertness, reaction time, and impair memory.
- Muscle fatigue is accelerated which decreases the length one can withstand exercise.

References: ***Additional references available upon request***

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