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Integrating Cannabis Education into the Athletic Training Curriculum

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Context: Cannabis has become more prevalent in society and requires greater knowledge on the part of the athletic trainer. Objective. The purpose of this paper is to provide a framework for recognizing how cannabis education can be integrated into the athletic training curriculum utilizing the existing accreditation standards. Background. For decades the use of cannabis has been illegal. Athletes who were caught with cannabis in their system were penalized by their respective sport organization body. During the past decade in the United States the federal government has moved toward decriminalization and expungement for those found with and arrested for cannabis possession and/or use. Furthermore, many states have maneuvered toward the legalization of marijuana for both medicinal and adult-use (recreational). The United States is not alone in this movement as other countries such as Canada, Israel, United Kingdom, and Australia have made changes toward their cannabis laws. Professional leagues such as Major League Baseball (MLB), the National Football League (NFL), and the NBA have shifted away from a punitive approach toward cannabis use and toward a health and wellness understanding. Additionally, the National Collegiate Athletic Association's (NCAA) Competitive Safeguards and Medical Aspects of Sports Committee has recently announced its intentions to support removing cannabis from the banned drug list. While both acceptance and accessibility of cannabis products has increased, there remains a need to formally educate stakeholders. The cannabis plant is complex and has been associated with numerous proposed therapeutic benefits. There are also known risks and side effects that have been reported with cannabis use that range from cannabinoid hyperemesis syndrome to psychosis. Description. Example plans of action for cannabis curricular integration are provided and associated with respective CAATE standards. Educational Advantage. Athletic trainers must be at the forefront of cannabis knowledge to provide comprehensive and holistic patient care. Key Words: marijuana, CBD, THC, standards, CAATE
Marijuana Regulation & Background

Under the term “marijuana”, the plant has been classified as a schedule I drug under the Federal Drug Schedule Chart. Schedule I drugs are defined by the United States Controlled Substance Act of 1970 as having no current legal medical use, possessing a high potential for physical and/or psychological dependence, and having a high risk for addiction/abuse. Other drugs classified as Schedule I include heroin, LSD and ecstasy.¹ (Table 1) The Agricultural Improvement Act of 2018, otherwise referred to as “The Farm Bill”, (AIA 2018), amongst many initiatives allowed for hemp-based products to be sold legally within the United States.² Hemp-based products are defined as containing less than 0.3% of Tetrahydrocannabinol (THC), the psychoactive component of the cannabis plant.³ This bill essentially created the vast availability of cannabinoids to include Cannabidiol, otherwise known as “CBD”. While now sold commercially in most states in the U.S., such hemp-based products are not regulated by the Food and Drug Administration (FDA) and are restricted legally from making any beneficially therapeutic claims. While confusion remains, hemp-based products may now be classified as Schedule V, and some pharmaceutical grade cannabidiol medications such as Epidiolex (GW Pharmaceuticals) that is used to treat seizures, are also classified as Schedule V. Other synthetically made pharmaceuticals from cannabinoids include Marinol used to treat nausea and vomiting and Syndros used in the treatment of anorexia associated weight-loss, these are scheduled II and III respectively.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Description</th>
<th>Examples</th>
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| Schedule I     | Defined as drugs with no currently accepted medical use and a high potential for abuse. | - LSD  
- Ecstasy  
- Hallucinogens | - Heroin  
- Marijuana  
- Quaaludes |
| Schedule II    | Defined as drugs with a high potential for abuse, with use potentially leading to severe psychological or physical dependence. Some circumstances can be used for physician supervised medical conditions. | - Morphine  
- Fentanyl  
- Oxycodone  
- Methamphetamine  
- Vicodin  
- Syndros (Dronabinol) | - Adderall  
- Codeine  
- Ritalin  
- Cocaine  
- Cesamet (Nabilone) |
| Schedule III   | Defined as drugs with a moderate to low potential for physical and psychological dependence. Beneficial for treating various illnesses and injuries under physician supervision | - Tylenol with Codeine  
- Anabolic Steroids  
- Marinol (Dronabinol) | - Ketamine  
- Testosterone  
- Hydrocodone |
| Schedule IV    | Defined as drugs with a low potential for abuse and low risk of dependence. Viable options for medical conditions under physician supervision. | - Xanax  
- Tramadol  
- Valium | - Ambien  
- Darvocet  
- Benzodiazepines |
| Schedule V     | Defined as drugs with lower potential for abuse. They may be abused in extremely large quantities but in general, they are not as easy to abuse as the other drug schedules. These are commonly prescribed medications or over-the-counter drugs. | - Codeine-based cough medicine  
- Cannabidiol (< 0.3% THC) | - Robitussin  
- Epidiolex |
| Schedule VI    | Defines as drugs with least potential for harm and abuse, mostly available over-the-counter. Drugs in this category can vary by state and are not necessarily federally classified. | - Aspirin  
- Tobacco  
- Penicillin | - Caffeine  
- Ibuprofen |

Table 1. Federal drug schedule classification
Societal Changes
Despite marijuana maintaining its schedule I classification for decades, the general population has shifted its acceptance toward both medicinal and adult use (recreational). California was the first state in the country to legalize marijuana in 1996 under the Compassionate Use Act. Today, 40 states and the District of Columbia (DC) have legalized some form of marijuana for medical purposes and 23 states and DC have passed laws enabling the purchase of marijuana for adult use purposes. More specific to athletics, Major League Baseball (2019), the National Football League (2021), the National Basketball Association (2023), and the National Collegiate Athletic Association (2022-3) have recently adjusted their policies to raise thresholds for positive tests, removed marijuana from banned substance lists, or stopped testing for marijuana all together.¹⁻⁴ The overarching message has shifted from a punitive approach toward a mental health and wellness intervention that treats marijuana use similar to how alcohol has been addressed.

Knowledge & Perception
The shifting changes of society toward cannabis use places a responsibility on health care providers to possess competence regarding patient education and therapeutic benefit versus risks and complications. Specifically, the athletic trainer who interacts in a variety of settings now have a need to be formally educated on cannabis use. The athletic training education profession must ensure students obtain a robust knowledge of the history and foundation of cannabinoids and their role in delivering potential medical benefits. Athletic training educational programs (ATEP) should set aside time to review all aspects of cannabinoids and develop models of education for the delivery of the most up-to-date information on cannabinoids in the healthcare system. The National Athletic Trainers’ Association provides such resources as developed by the NATA Cannabis Task Force.⁸ (Table 2) A paradoxical shift of cannabinoid usage for athletic trainers in the clinical setting moving from monitoring patients/athletes for punitive effects to recognizing the therapeutic and/or performance-based impact requires effort from ATP faculty to educate future athletic training leaders to support the latest evidence in support of providing the best care for individuals. David et al reported that 38% of faculty in athletic training and physical therapy curriculums include cannabis content, yet only 33% of these individuals received any formal education on the topic.⁹ Athletic trainers are not alone in needing to include such education on the formal curriculum as a 2017 survey of medical schools revealed that a majority of physicians-in-training are not prepared to prescribe medical marijuana.¹⁰ In 2022, David & Konin surveyed athletic training students with 81.7% reporting receiving no formal education related to cannabis even though 74.2% felt it was an important topic to include in the curriculum.¹¹ Of further interest in this study was the fact that very few students surveyed were able to correctly answer questions related to their factual knowledge of cannabis. The authors identified faculty in these programs have limited exposure to cannabis related information and proposed the implementation of formal training for instructors in order to provide better educational opportunities for students. Skjoldahl et al in 2020 surveyed health care professional students and found while 84.8% agreed or strongly agreed understanding cannabis education is important, 84.8% stated having received no formal education on the topic.¹² In 2022, Jacobs et al interviewed medical students and identified four common themes: 1) they possess erroneous beliefs about medical cannabis, 2) they tend to use unreliable sources of information, 3) they possess mixed attitudes toward legalization, and 4) they do have a desire to learn more about medical cannabis.¹³ Konin et al previously reported of the 48 physical therapy
and physical therapist assistant programs in the State of Florida, only 3 programs reported teaching cannabis-related topics in their curriculum and devoted a mere 1-2 hours to the subject matter.14 Pharmacy curriculums have transitioned ahead of most regarding cannabis education with some 62% reporting having already included content matter in their programs as of 2019 and another 23% of programs planning to incorporate in the next 12 months.15 There clearly appears to be a knowledge gap between the educators, students, and clinicians and what patients want to know. Course content and policy manuals need to be updated regarding cannabinoid usage and specific approaches to educate students on evidence-based approaches regarding cannabinoids needs to be strategized and integrated throughout the educational curriculum.

Table 2. Cannabis related resources for the athletic trainer [NATA.org/cannabis-use]

CANNABINOID EDUCATION ALIGNMENT WITH CAATE STANDARDS
The Commission on Accreditation of Athletic Training Education (CAATE) provides the standards for accreditation of professional athletic training programs. The 2020 Standards for Accreditation of professional athletic training programs outlines the specific standards, set at 94 standards as of September 2020, which must be met by all accredited programs in the education of athletic training professionals.16 The CAATE Standards purpose “…is to explicitly define the requirements to achieve and maintain CAATE accreditation of professional athletic training programs”. A review of the CAATE standards shows that knowledge of cannabinoids would align within 17 standards in the education of future athletic training clinicians. A brief example of six standards (Appendix A) for how cannabinoid education is important for future healthcare clinicians and how it can be implemented in an athletic training educational program is the purpose of this section of the paper.

CAATE Standard #8: Planned interprofessional education is incorporated within the professional program
Example Plan of Action: Create interprofessional discussions with pharmacy, medical, social work, physical therapy, physician assistant, nursing, public health, psychology, business, and law professionals and students concerning cannabinoids and its role in the healthcare system. Understanding the historical roadblocks for delivering information on the use of cannabinoids from a societal perspective relative to healthcare requires a complex system of interprofessional knowledge to view the issue from various perspectives. Conducting a mock debate for a ruling on a professional sports league cannabinoid related legal issues and mixing debate teams with professionals and students from athletic training, business, law, and pharmacy would provide a valuable
interprofessional experience along with creating more knowledge and questions to propose concerning cannabinoid use in professional sports.

CAATE Standard #55: Students must gain foundational knowledge in statistics, research design, epidemiology, pathophysiology, biomechanics and pathomechanics, exercise physiology, nutrition, human anatomy, pharmacology, public health, and health care delivery and payor systems.

*Example Plan of Action:* Utilizing cannabinoid educational content in didactic courses requires educators to seek the most up-to-date information available concerning anatomical, physiological, healthcare, and legal issues amongst many other pieces of information. Educators can utilize the NATA.org/cannabis-use Cannabis Related Resources for the Athletic Trainer (Table 2) as foundational information for cannabis related information concerning terminology, history, physiology, or legal classifications and more. Educators must stay current as the legal system is continually changing ranging from the NCAA to professional sports leagues to medical use per state. A plan for continually staying current on the everchanging landscape of cannabinoids requires didactic planning across disciplines to provide students and clinicians the most pertinent and timely information for high quality patient care.

CAATE Standard #56: Advocate for the health needs of clients, patients, communities, and populations

*Example Plan of Action:* Advocacy encompasses activities that promote health and access to health care for individuals, communities, and the larger public. Creating opportunities for community discussions, university open forums, and state and national meetings to teach students how to advocate for informed healthcare needs of various patient populations and their desires for healthcare options is important. The utilization of cannabis related care is not in the mainstream of healthcare due to various circumstances, yet can be utilized as a foundational area to teach students how to gain a better understanding of various viewpoints and learn skills to help with healthcare advocacy development relative to cannabis use in the healthcare system.

CAATE Standard #58: Incorporate patient education and self-care programs to engage patients and their families and friends to participate in their care and recovery

*Example Plan of Action:* Providing opportunities for students to help patients and their support systems to actively engage in health literacy education and proper self-care is important to the development of healthcare professionals. Incorporating the development of patient education resources (e.g., pamphlets, powerpoints, and video modules) regarding cannabinoids is important in the development of professional healthcare provider. Creating unique opportunities to partner with community-based patient education and self-care programs will enable educators to provide real-world experiences for students in patient education on a topic that has everchanging rules and laws with stigmatized viewpoints relative to cannabis. Such programs also provide an opportunity for students to enhance public speaking skills. One simple activity is to teach students how to read and interpret certificate of analysis that accompany many hemp-based products.

CAATE Standard #66: Practice healthcare in a manner that is compliant with the BOC Standards of Professional Practice and applicable institutional/organizational, local, state, and federal laws, regulations, rules, and guidelines

*Example Plan of Action:* Knowledge of applicable institutional/organizational, local, state, and federals laws, regulations, rules, and
guidelines is a difficult task in a constantly evolving healthcare world. Developing skills to access the best resources and instructing students on a framework for obtaining and evaluating laws, rules, regulations, and guidelines is quite important to the development of the student. Laws pertaining to use, recommendations, prescription, dispensing, application, and dosage is relative to each location of care. Staying up-to-date is nearly impossible with the ever changing rules concerning cannabis, but developing a systematic framework for acquiring knowledge and asking questions should be taught and encouraged across the healthcare field. The utilization of cannabis education is a prime opportunity for educators to institute a framework of obtaining knowledge regarding laws, rules, and regulations across various landscapes of patient care.

CAATE Standard #74: Educate patients regarding appropriate pharmacological agents for the management of their condition, including indications, contraindications, dosing, interactions, and adverse reactions

Example Plan of Action: Potentially the most important standard for cannabinoid education focused on the utilization of appropriate pharmacological agents and their impact on client/patients healthcare and performance. Educating students on the potential benefits and adverse interactions of cannabinoids requires an understanding of the pharmacological underpinnings of the endocannabinoid system and medication interactions. Courses in physiology, pharmacology, therapeutic rehabilitation, and general medicine are prime opportunities for educators to provide cannabinoid knowledge for empowering students with the abilities to properly educate patients concerning the pharmacological properties of cannabis and its proper use in the healthcare system. Recognizing conditions like cannabis-induced psychosis, and cannabinoid hyperemesis syndrome (CHS) can be helpful.

ATHLETIC TRAINING EDUCATION STUDENT POLICY

All athletic training education programs should consider establishing policies and procedures regarding student use of various cannabinoids while in the classroom and during clinical education experiences. Such policies should consider first and foremost the safety and well-being of each student, and individuals who will interact with students – especially patients and athletes. State laws, academic institution policies, and clinical site rules should also be taken into account. It is highly recommended that faculty take the time to become educated on all aspects of cannabis that may impact a student’s experience while in the curriculum prior to developing policy on the topic. This includes but is certainly not limited to a student who may possess a legally qualified medical marijuana card. As with all policy, student’s rights must be considered and adhered to. Lastly, all policy and procedure should be reviewed and approved by the respective institution’s legal counsel prior to implementing.

CONCLUSION

Athletic trainers have a responsibility to stay abreast with cannabis-related information as there is an increased use amongst patients with the federal, state, and organizational laws and rules changing toward greater acceptance. Cannabis education can be integrated into an athletic training curriculum with faculty being prepared to teach this content. This paper provides examples of how to successfully integrate the material so graduating students are prepared to comprehensively understand how cannabis impacts patients.

REFERENCES


### Appendix A. Selected CAATE Standard Description, Plan, and Teaching Example

<table>
<thead>
<tr>
<th>CAATE Standard #</th>
<th>Description</th>
<th>Plan</th>
<th>Teaching Example</th>
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<tbody>
<tr>
<td>8</td>
<td>Planned interprofessional education is incorporated within the professional program.</td>
<td>Ongoing discussions with pharmacy, medical, social work, public health, business, law, nursing, etc...students concerning cannabinoids is important to advances in healthcare and providing optimal client/patient care.</td>
<td>Conduct a mock debate for ruling on a professional athletes use of cannabinoids with mixed teams consisting of pharmacy and athletic training students.</td>
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<tr>
<td>55</td>
<td>Students must gain foundational knowledge in statistics, research design, epidemiology, pathophysiology, biomechanics and pathomechanics, exercise physiology, nutrition, human anatomy, pharmacology, public health, and health care delivery and payor systems.</td>
<td>Foundational knowledge base of the pharmacology and public health relative to cannabinoids and its impact on the human body system is important for future clinicians.</td>
<td>Didactic assessment of pharmacologic foundations of cannabinoids utilizing test and/or essay assignments.</td>
</tr>
<tr>
<td>56</td>
<td>Advocate for the health needs of clients, patients, communities, and populations.</td>
<td>Knowledge of cannabinoids will allow students to be informed and become a leading healthcare advocate for client/patient care</td>
<td>Develop cannabinoid patient materials for distribution to properly educate the public on proper utilization of cannabinoids and common myths and mistakes need to be addressed.</td>
</tr>
<tr>
<td>58</td>
<td>Incorporate patient education and self-care programs to engage patients and their families and friends to participate in their care and recovery.</td>
<td>Design patient education and self-care programs</td>
<td>Create a simulation scenario whereby a student distributes patient education material and informs a mock patient on proper cannabinoid usage during their recovery process.</td>
</tr>
<tr>
<td>66</td>
<td>Practice health care in a manner that is compliant with the BOC Standards of Professional Practice and applicable institutional/organizational, local, state, and federal laws, regulations, rules, and guidelines.</td>
<td>Applicable laws and regulations include (but are not limited to) the following: • Requirements for physician direction and collaboration • Mandatory reporting obligations • Health Insurance Portability and Accountability Act (HIPAA) • Family Education Rights and Privacy Act (FERPA) • Universal Precautions/OSHA Bloodborne Pathogen Standards</td>
<td>Didactic assessment of applicable laws and regulations, along with mock trials through interaction with law school acting as an expert witness in clinical athletic training care relative to cannabinoids.</td>
</tr>
<tr>
<td>74</td>
<td>Educate patients regarding appropriate pharmacological agents for the management of their condition, including indications, contraindications, dosing, interactions, and adverse reactions.</td>
<td>Perhaps the most important standard for cannabinoid education focuses on appropriate pharmacological agents and their impact on client/patients as well as any potential facilitory/adverse interactions that cannabinoids have when used with other medications.</td>
<td>Didactic assessment and simulated live patient interaction to provide educational content to a patient.</td>
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