

# *Cannabis 2023*

## *Understanding the Role of the Athletic Trainer*



**GREAT LAKES**  
ATHLETIC TRAINERS ASSOCIATION

March 9, 2023 \* Wheeling, Illinois

*Jeff G. Konin, PhD, ATC, PT, FACSM, FNATA*

Disclosures

KC KoninConsulting LLC

SUN  
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BOOST  
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THE  
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Research Funding

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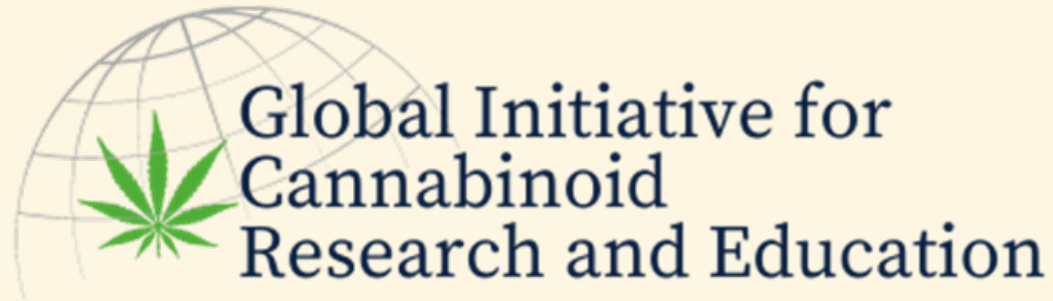
Author

Consultant



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### ***Vision***

Our vision is to produce meaningful cannabinoid-focused research and educational resources that lead transformative innovations locally and globally.

### ***Mission***

The Global Initiative for Cannabinoid Research & Education is committed to high-quality education, contemporary and evidence-based research and creative activity, and collaborative engagement with our local and global communities.

[\*\*https://go.fiu.edu/GlobalCannabis\*\*](https://go.fiu.edu/GlobalCannabis)



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**Derek Lawrance, DAT, ATC - US Soccer Men's National Team**

**Kevin Morley, DAT, ATC - Nashville Predators**

**Steve Walz, DAT, ATC - University of South Florida**

**Aisha Visram, DAT, ATC - Ontario Reign/LA Kings**

**Trisha Dimatteo, DAT, ATC - Mercyhurst University**

**Madison Sikyta, DAT, ATC - Indiana State University**



# NATA CANNABINOID TASK FORCE

NATIONAL ATHLETIC TRAINERS' ASSOCIATION, INC.  
Board of Directors Board Meeting Minutes  
Web Conference  
May 7, 2021

## Board

Tory Lindley, MA, ATC, President  
Kathy Dieringer, EdD, LAT, ATC, President-elect  
Marisa Brunett, MS, LAT, ATC, Vice President  
Chris Hall, MA, LAT, ATC, Secretary/Treasurer  
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Tanya Dargusch, LAT, ATC – absent  
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Craig Voll, PhD, LAT, ATC, PT  
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Amy Callender  
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Meredith Daniels, MPS  
Anita James, CMP  
Lori Marker, CMP, CEM  
Honey Hamilton  
Jessica McCabe  
Katie Scott, MS, ATC

## NATA CANNABINOID PROPOSAL

Vice President Brunett and Dr. Jeff Konin presented the NATA Cannabinoid Proposal to the board. Konin provided a brief background on the project. He presented the request to establish a task force to create resources to address the demand for information related to cannabis and cannabinoid. Konin then reviewed the process of selecting the recommended task force members that were presented in the proposal.

**VOTED: TO APPROVE THE NATA CANNABINOID PROPOSAL AS PRESENTED.**  
**(9,3) PASSED (10-0-0)**



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# NATA CANNABINOID TASK FORCE

Jeff Konin, PhD, ATC, PT, FACSM, FNATA	Florida International University
Joelle Rehberg, DO	Altair Health
Mark Knoblauch, PhD, LAT ,ATC, CSCS	University of Houston
Kevin Morley, DAT, ATC, LAT	Nashville Predators
Tiffany Morton, MS, ATC, LAT	Kansas City Chiefs
James Onate, PhD, AT, ATC	Ohio State University
Donita Valentine, DAT, AT	DC Public Schools

## Selected to ensure:

- **Diverse knowledge of the topic**
- **Ability to Implement tasks quickly**

**Diversity in gender, race, and AT employment settings and includes medical (primary care sports medicine physician & orthopaedic surgeon), AT student, and legal representation**

Eric Quandt, Esq	Quandt Law Firm
Corey Tremble, LAT, ATC, CSCS	Detroit Tigers
Daryl Osbahr, MD	Rothman Orthopaedic Institute, Orlando
Joshua Free	NATA Student Leadership Committee
Marisa Brunett, MS LAT, ATC	NATA Board Liaison
Donna Wesley, MS, LAT, ATC	NATA Board Liaison
Anita James	NATA Staff Liaison



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# NATA CANNABINOID TASK FORCE

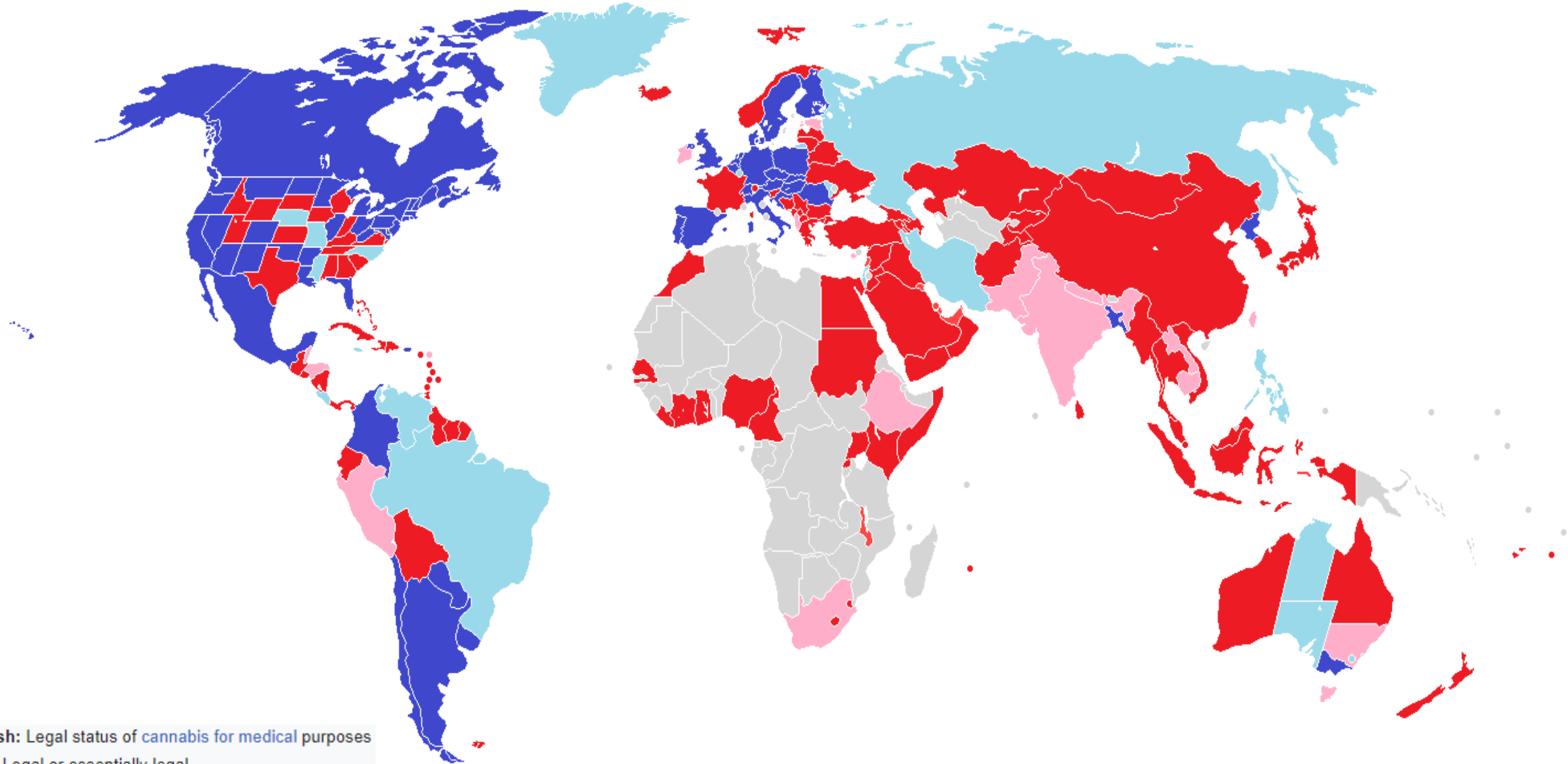
- ▶ **Anatomy & Physiology**
- ▶ **Endocannabinoid system**
- ▶ **Cannabinoid science**
- ▶ **Proposed benefits & risks**
- ▶ **Dosing**
- ▶ **Federal & state laws**
- ▶ **Physician standing orders**
- ▶ **Cannabis terminology**
- ▶ **FDA Classification Schedule**
- ▶ **Social determinants**
- ▶ **Possession and travel**
- ▶ **Cannabis Use Screening**
- ▶ **Policy & Procedure guidelines**
- ▶ **Journal recording**
- ▶ **Interactions with pharmaceuticals**
- ▶ **Product evaluation**
- ▶ **Modes of application**
- ▶ **Qualifying physicians**
- ▶ **Peer-reviewed resources**
- ▶ **Mental health vs. punitive**



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<https://www.nata.org/cannabis-use-resources>






Jan 2023

English: Legal status of **cannabis** for medical purposes

- Legal or essentially legal
- Decriminalized
- Illegal but often unenforced
- Illegal
- No information



[illegible]

-  Adult & medical use regulated program
-  Adult use only no medical regulated program
-  Comprehensive medical cannabis program
-  CBD/Low THC program
-  No public cannabis access program

Limited adult possession and growing allowed, no regulated production or sales: DC

November 2022



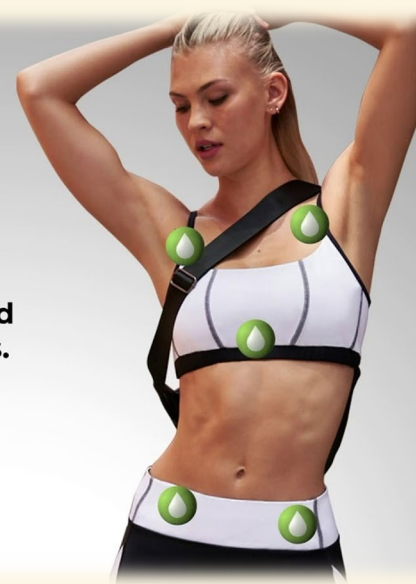
Weed  
NEXT 3 EXITS







This creates multi-layered CBD placements within the garment, strategically designed and placed to align with your muscle groups.

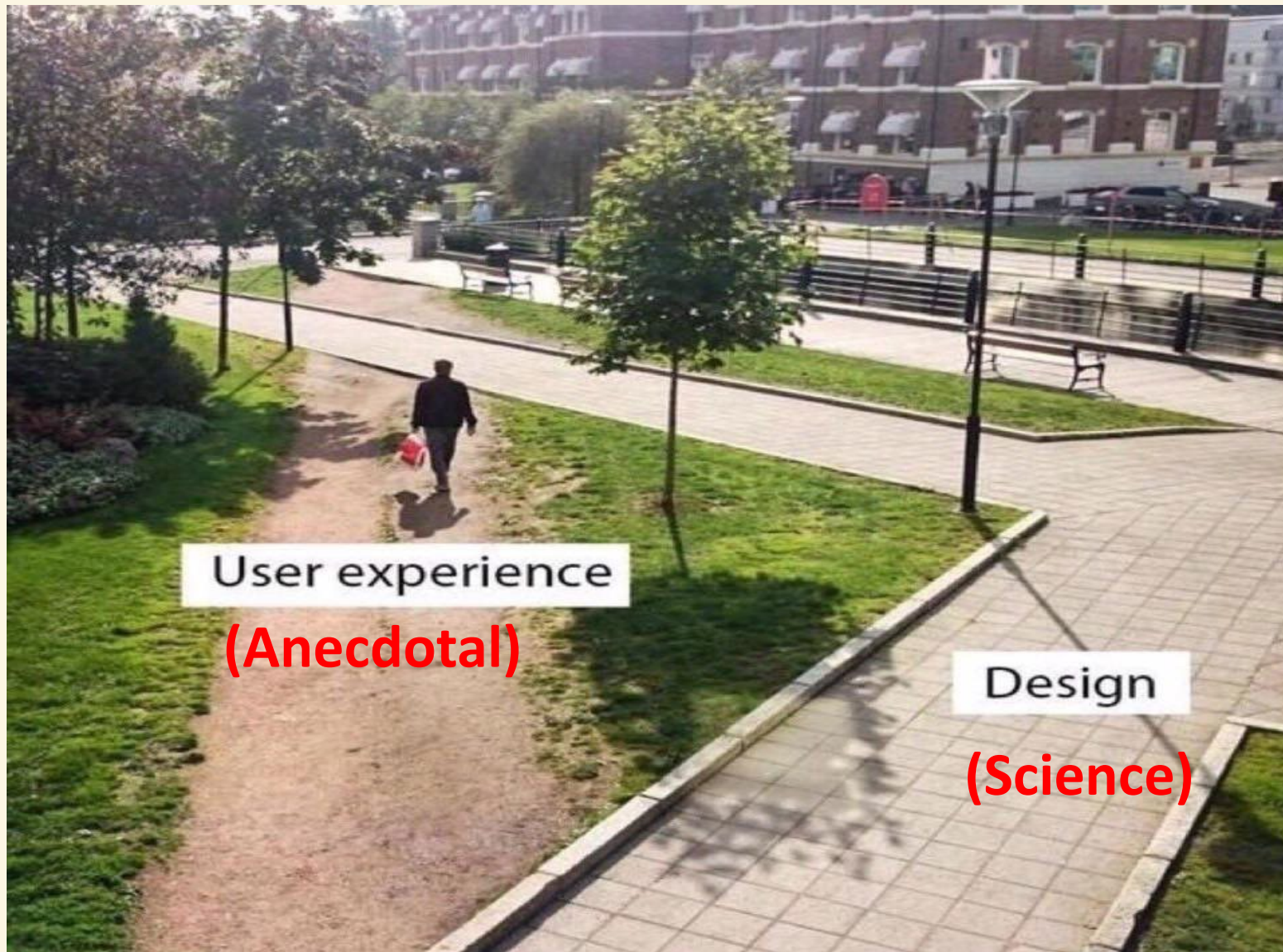


**FIU**

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# CULTURE SHIFT

Punitive

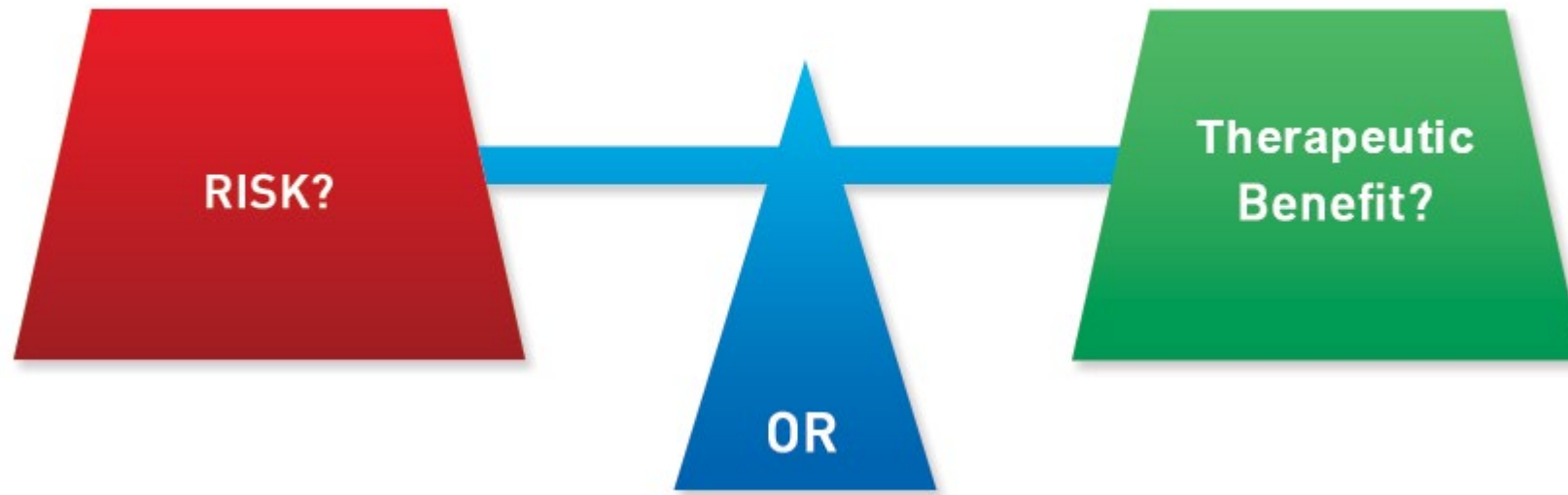


Health & Wellness/ Performance

Ask Yourself:

*Why do we drug test?*

# Past 50 years: Cannabis is bad for you



What are the potential risks, side effects, and benefits?  
How do cannabinoids compare to standard treatments?



**START**

**BACK TO THE BASICS**





# Cannabinoids

- **Phytocannabinoids**: coming from the plant
  - (CBD, THC, 100+) *longer lasting*
- **Endocannabinoids**: self-produced in the body on demand when needed (2-AG, anandamide) and are *short-acting*
- **Synthetic Cannabinoids**: Lab developed (Sativex for nausea, spice, k-2) *regulated or street*

# Cannabis Genus – *The Plant*

## Cannabidiol (CBD)

-nonpsychoactive; doesn't produce a "high"

## Tetrahydrocannabinol (THC) Delta-9

-produces a euphoric sense

Delta 8? Delta 10? CBN?



## Language & Terminology

THCV Tetrahydrocannabivarin – anticonvulsant, anti anxiety

CBC Cannabichromene - neurogenesis

CBG Cannabigerol – anti-inflammatory, analgesia, anti-nausea, decreases proliferation of cancer cells, reduces intraocular eye pressure, Crohn's disease, IBD

CBGV Cannabigerivarin - anticonvulsant

CBDV Cannabidivarin – anticonvulsant

CBCV Cannabichromevarin – anti-inflammatory, antidepressant, antibiotic, analgesic, antifungal

CBDA – Cannabidiolic Acid – anti-anxiety, anti-nausea, Ca, covid

CBN – Cannabinol – weak version of THC (aged non-intox, sleep)



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# Hemp

- Hemp is classified as any part of the cannabis plant containing no more than 0.3% THC in dry weight form (not liquid or extracted form).

on a relative basis) result, depending on how such material is prepared: if the achenes and larger twigs are removed, THC concentrations are of course much higher.

It will be noted that we arbitrarily adopt a concentration of 0.3%  $\Delta^9$ -THC (dry weight basis) in young, vigorous leaves of relatively mature plants as a guide to discriminating two classes of plants. This is based on standard-grown material in Ottawa in gardens, greenhouses and growth chambers, and of course on our analytical techniques. Dr. C. E. Turner, who has conducted extensive

Small & Cronquest,  
A Practical & Natural Taxonomy for Cannabis,  
Taxon, 1976





# Full-Spectrum vs. Isolate vs. Broad-Spectrum

**CBD Isolate** – the most basic form of CBD – pure isolated CBD with no other cannabinoids or terpenes

*Difficult to make as all other components must be extracted - no THC*

**Full-Spectrum** – contain the full range of extracted cannabinoids

*Contains THC*

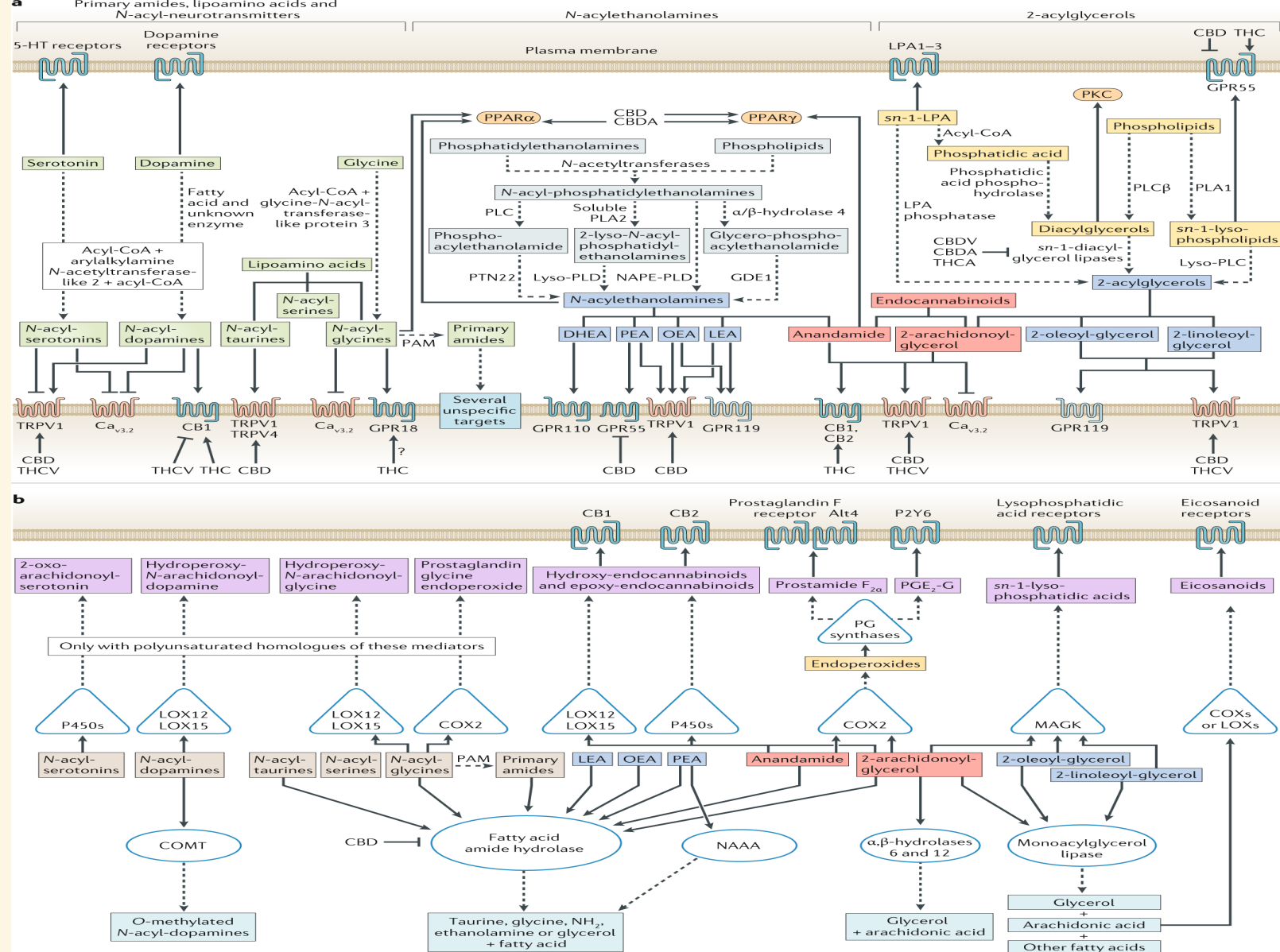
*Entourage effect*

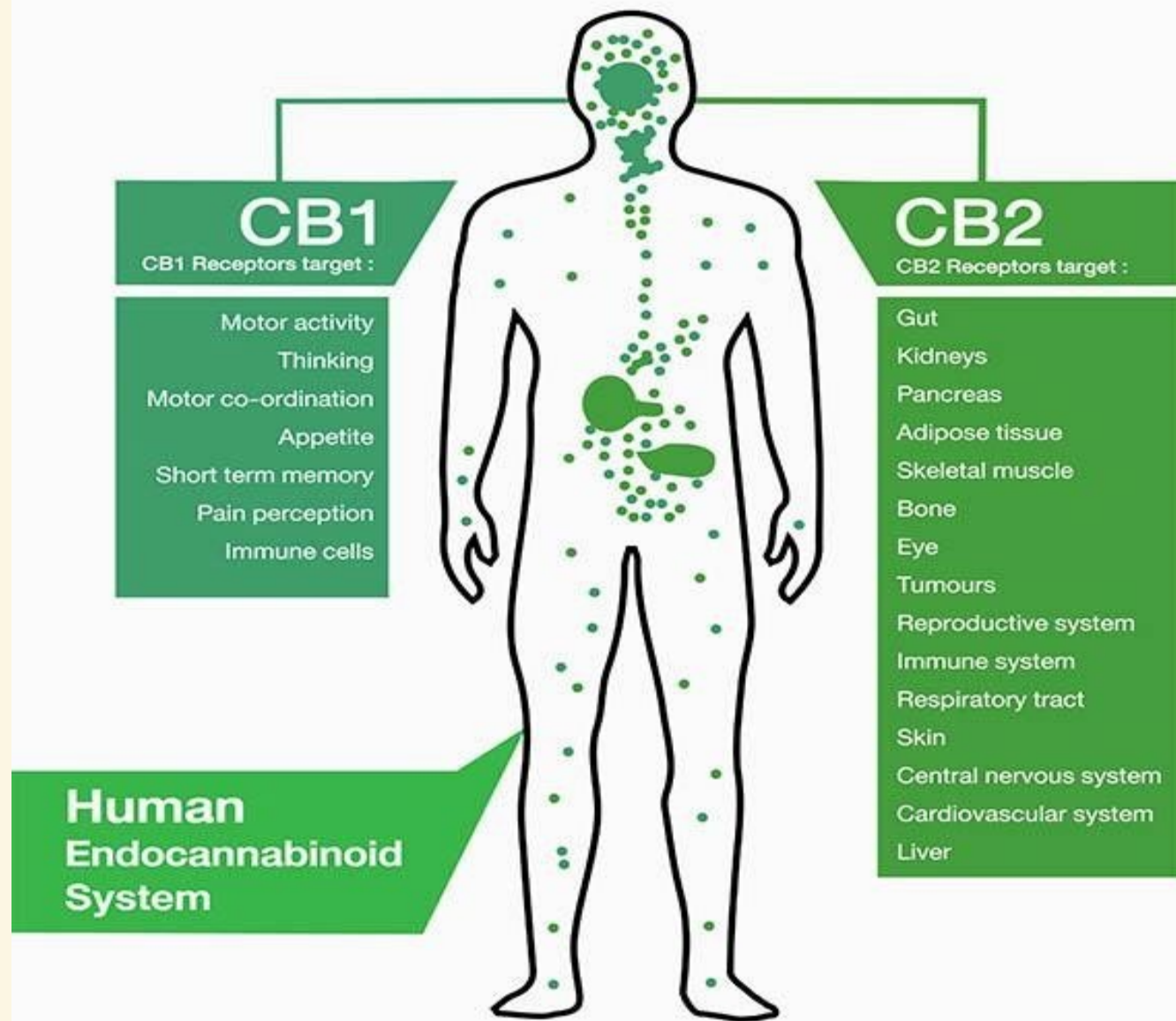
**Broad-Spectrum** – contains a range of cannabinoids without THC



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# Endocannabinoid System

## Endocannabinoids

Anandamide

2-AG

Receptors: CB1, CB2

## Phytocannabinoids

THC

CBD

CBN

CBG

Receptors: CB1, CB2

5-HT(CBD)



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# Why should an athletic trainer care about all of this?



## Why does an athletic trainer need to know about cannabis ?



# Cannabis Content in the Curriculum

- **38% AT/PT faculty report teaching cannabis in curriculum, 75% with no formal education** (*David, Farris, Kerr, Rosenthal, Singe, Konin German Sports Medicine Summit, 2021, IJAHSF 2023*)
- **3 PT (0 PTA) programs in Florida report inclusion of 1-2 hrs cannabis-related content** (*Konin, David, Farris FPTA Virtual 2021*)
- **75% students in healthcare degrees believe it is important to study cannabis formally** (*Skjoldahl, Odai & Konin NATA Virtual, 2019*)
- **62% Pharmacy schools incorporate, 23% more within next year** (*University of Pittsburgh survey, 2019*)
- **9% medical schools incorporate, 89,5% of residents unprepared to prescribe cannabis, 35% unprepared to answer patient questions** (*Washington University Study 2017*)
- **58% medical knowledge accuracy (39% - 78%) of physicians** (*Kruger, Mokbel, Clauw, Noehnke, Cannabis Cannabinoid Res 2021*)



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## Growing demand for qualified employees in cannabis industry supply chain



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Cannabis  
legalization  
is a

**Racial  
Justice  
Issue**



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# U.S.A. Drug Schedule Chart

As Defined by the U.S. Controlled Substances Act

Classification	Description	Drug Examples	
<b>Schedule 1</b>	No current legal medical use High potential for physical and/or psychological dependence High risk for addiction/abuse	<ul style="list-style-type: none"> <li>• Heroin</li> <li>• GHB</li> <li>• LSD</li> <li>• <b>Marijuana</b></li> <li>• MDMA/Ecstasy</li> </ul>	<ul style="list-style-type: none"> <li>• Mescaline</li> <li>• Methaqualone</li> <li>• Peyote</li> <li>• Psilocybin</li> </ul>
<b>Schedule II</b>	Restrictive legal medical use High potential for physical and/or psychological dependence High risk for addiction/abuse	<ul style="list-style-type: none"> <li>• Adderall</li> <li>• Cocaine</li> <li>• Codeine</li> <li>• Crystal Meth</li> <li>• Demerol</li> </ul>	<ul style="list-style-type: none"> <li>• Morphine</li> <li>• Opium</li> <li>• OxyContin</li> <li>• PCP</li> <li>• Percocet</li> </ul>
<b>Schedule III</b>	Accepted legal medical use Low/Moderate potential for physical dependence Moderate/High potential for psychological dependence Moderate risk for addiction/abuse	<ul style="list-style-type: none"> <li>• Anabolic Steroids</li> <li>• Ketamine</li> <li>• Lorcet</li> </ul>	<ul style="list-style-type: none"> <li>• Aspirin (w/codeine)</li> <li>• Testosterone</li> <li>• Vicodin</li> </ul>
<b>Schedule IV</b>	Accepted legal medical use Low potential for physical and/or psychological dependence Low risk for addiction/abuse	<ul style="list-style-type: none"> <li>• Ambien</li> <li>• Atvian</li> <li>• Equanil</li> <li>• Rohypnol</li> </ul>	<ul style="list-style-type: none"> <li>• Talwin</li> <li>• Xanax</li> <li>• Valium</li> </ul>
<b>Schedule V</b>	Accepted legal medical use Limited potential for physical and/or psychological dependence Low risk for addiction/abuse	<ul style="list-style-type: none"> <li>• Codeine-based cough medicines (Robitussin)</li> <li>• Cannabidiol (CBD) - 2018 Update</li> </ul>	
<b>Schedule VI (Unscheduled)</b>	Over-the-counter availability Legal without a prescription	<ul style="list-style-type: none"> <li>• Alcohol</li> <li>• Aspirin</li> <li>• Caffeine</li> </ul>	<ul style="list-style-type: none"> <li>• Nitrous Oxide</li> <li>• Nyquil</li> <li>• Tobacco</li> </ul>





Media Center **2/25/2022** 10:30:00 AM | Chris Radford

## Committee adjusts THC test threshold

NCAA adopts level set by World Anti-Doping Agency

### Related Stories



03.04.22  
Oklahoma to host women's gymnastics South Central Regional



03.04.22  
Appeals process proposed for football players called for targeting in second half



03.04.22  
Former Clark Atlanta men's basketball head coach provided impermissible benefits



03.02.22  
NCAA violations occurred in St. Scholastica's men's ice hockey program



03.01.22  
NCAA releases COVID-19 guidance for DI basketball championships

# Performance Messaging

- **No improvement with aerobic performance** (Kennedy, J Sci & Med Sport, 2017)
- **Decreased Physical Work Capacity** (PWC), decreased max workload, **decreased exercise duration**, decreased CV measures, earlier angina, and **increased RPE** (Kennedy, J Sci & Med Sport, 2017, Ware et al, Clin J Sports Med, 2018)
- **Decreased physiological work capacity and reduced maximal exercise duration** (Gillman 2015)
- **Coordination & judgment impaired** (Ware et al, Clin J Sports Med, 2018)
- **Reaction time, learning, & memory impaired** (Kennedy, J Sci & Med Sport, 2017, Ware et al, Clin J Sports Med, 2018)

# “Cannabis” & Performance

- ▶ ***Studies of sufficient rigor*** and validity to conclusively declare ergogenic or ergolytic potential in athletes ***are lacking***. The beneficial effects of CBD on sleep quality, pain, and mild traumatic brain injury ***may be*** of particular interest to certain athletes. However, research in each of these respective areas has yet to be thoroughly investigated in athletic populations. *Burr et al Sports Medicine 2021*
- ▶ ***No evidence*** exists for ergogenic or ergolytic effects from ***chronic cannabis consumption***. In some sports, advantages may plausibly be conveyed by psychotropic enhancement or ***pain reduction***. *Kramer et al J Cann Res 2020*
- ▶ ***CBD – evidence in animal studies, lacking human clinical trials – anti-inflammatory, analgesis, anti-anxiety. Sleep***, metabolic, cardiovascular function. *McCartney et al Sports Medicine Open 2020*
- ▶ ***“Athletes are difficult to study! The more elite, the more difficult.”***





**Aren't these performance enhancers?**

# Marijuana Versus Alcohol

## Marijuana

“Works faster”

“Costs less”

“Safer”

“Easier to carry around/conceal”

“Better to wind down/relax”

## Alcohol

“Leaves a hangover”

“Adds calories”

“I don’t like beer”







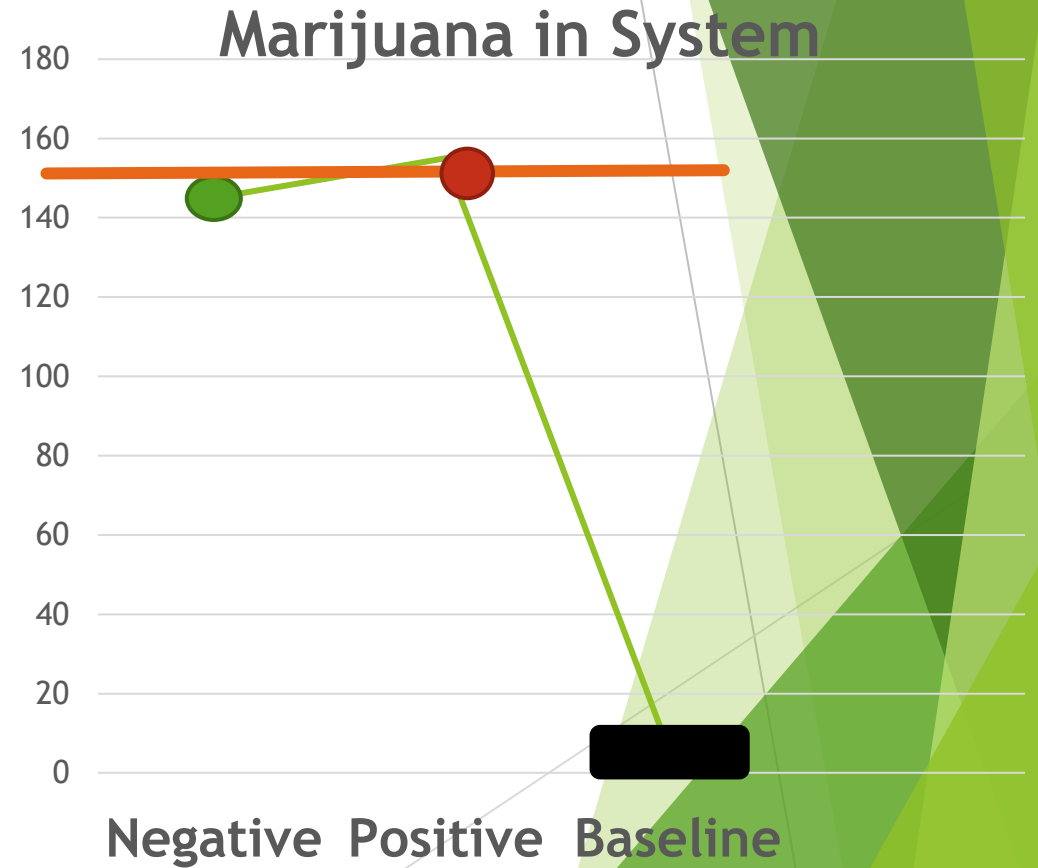
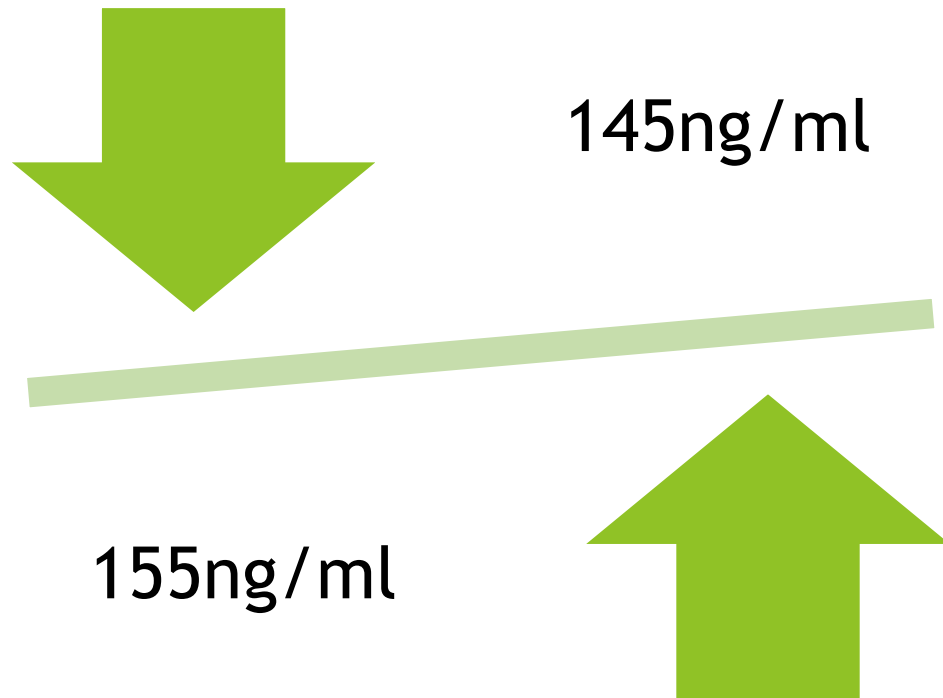
**You are the voice of trust**  
**This is a good thing, keep it this way with cannabis inquiries**



**“This guy in my dorm gave me this stuff, is it any good?”**

**Use the Medical Staff!**

It is not about a positive test  
It is about your performance



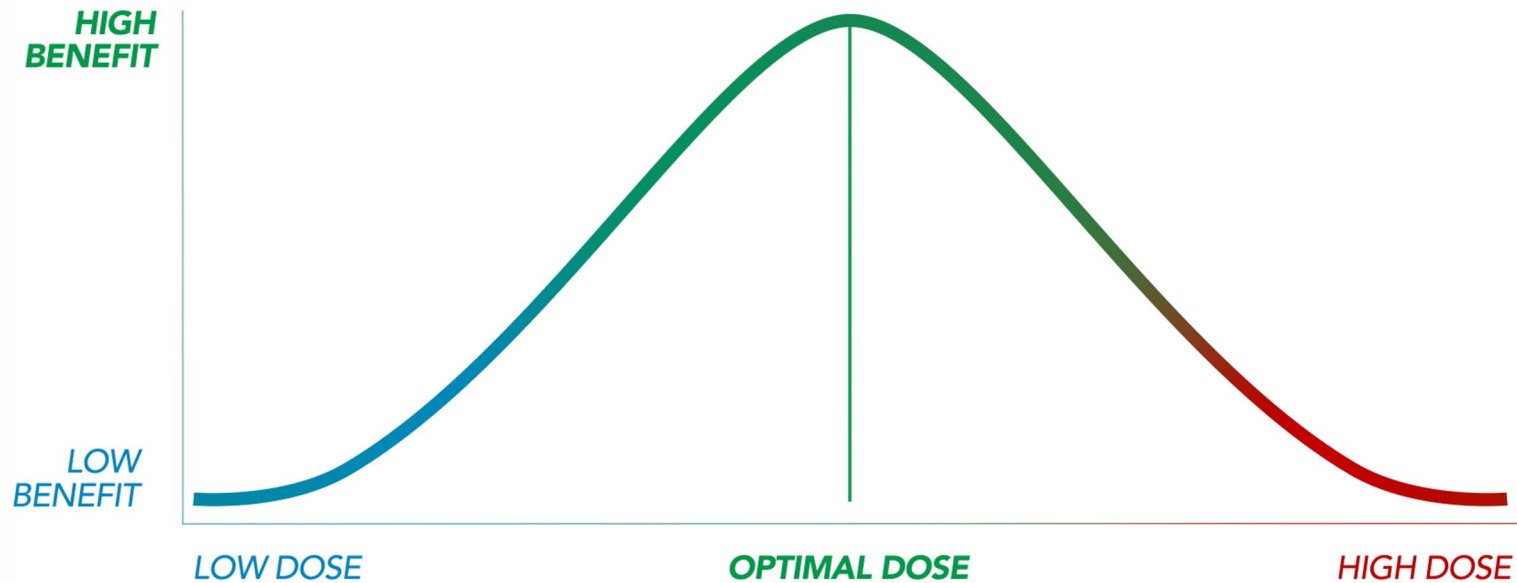
# Anxiety

- ▶ Feeling of calmness & relaxation (Kennedy, J Sci & Med Sport, 2017)
- ▶ Facilitates relaxation and reduced anxiety (Ware et al, Clin J Sports Med, 2018)
- ▶ Low-dose THC (7.5-12.5mg) can reduce stress/anxiety (Childs et al, Drug Alcohol Dep 2017)\* **Higher doses of THC increase anxiety**





# Dose Response Curve



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# Vaping



- ▶ Do you know **EXACTLY** what is in your cartridge? Toxic chemicals within each cartridge
- ▶ Coughing, dry mouth, **shortness of breath**, headaches, throat irritation, nausea, **increased heart rate** (**PERFORMANCE DIMINISHING**)
- ▶ The propylene glycol, formaldehyde, **diacetyl**, and acrolein lead to irreversible lung damage (***Bronchiolitis Obliterans BO - Popcorn Lung, Kreis et al NEJM 2002***)
- ▶ Exposure for just 3 days can cause sufficient lung damage (2019 study Univ of Rochester)



# Injury Recovery



Wrong  
Routes

Late off  
the blocks

Mis-timed  
Header

“Fatigued”

*Slower reaction times*  
*Increased levels of exertion*  
*Impacted memory recall*  
*Delayed injury healing*

**Words Matter**  
**Examples Resonate**

Pulled  
Muscles

Dropped  
Passes

Strikeouts

Movement  
Penalties

Positioning

Blown  
Assignments

Improvement over last 9 months in terms of controlling use...but last two tests have shown high THC concentrations

-MUST UNDERSTAND HOW HIGH USE IMPACTS HIS DEVELOPMENT AND PERFORMANCE **Educate**

-BETWEEN SEPTEMBER 2020 AND MARCH OF 2022 HE GAINED LESS THAN ONE POUND OF MUSCLE.

-DURING THIS PERIOD THE AVERAGE THC IN HIS SYSTEM ON DRUG TESTS WAS 142 nanograms **Impairment**

-BETWEEN MAY 2022 AND NOVEMBER 22, HE GAINED 11 POUNDS OF MUSCLE.

-DURING THIS PERIOD THE AVERAGE THC IN HIS SYSTEM ON DRUG TESTS WAS 46 nanograms **Gains**

**-CONCLUSIONS:**

-HIS MUSCLE DEVELOPMENT AND THEREBY HIS OVERALL POWER IS CLEARLY IMPACTED BY HEAVY USE

-RECOMMEND DETOX PROGRAM, WEEKLY TESTING AND MEETINGS WITH DR. KONIN

**Assessment, Intervention, Education**

# Cannabinoid Hyperemesis Syndrome (CHS)

- ▶ Characterized by symptoms of cyclic abdominal pain, nausea, and vomiting
- ▶ Possibly triggered by stress and/or fasting

## ▶ Phases

### ▶ Prodromal

- ▶ ***Early am nausea & abdominal pain***

### ▶ Hyperemetic

- ▶ ***Ongoing nausea, intense vomiting***

- ▶ Relieved with hot showers

### ▶ Recovery

- ▶ Can be days to months

*Sorenson et al 2017, Pergolizzi 2018, Leu 2021, Chu 2022, Stumpf et al 2021*



**Cannabinoid  
Hyperemesis  
Syndrome**







<https://www.youtube.com/watch?v=scj7ZVrL8zM>

## Cannabinoid Hyperemesis Syndrome (CHS)

# Interactions with Medications

- ▶ CBD lipid-soluble is metabolized in the liver, therefore inhibiting or facilitating the effects of other clinically prescribed medications
- ▶ CBD itself may have an effect on cannabis use disorder and opiate addiction (*Pisanti et al 2017, Campos et al 2016, Consroe et al 1982*)
- ▶ CBD may contribute to additional blood thinning -Increased risk of bleeding complications (*Chen et al, Clin Pharmacol Ther 2003, Grayson et al, Epilepsy Behav case report 2017, Thomas et al J Cannabis Res 2022*)
- ▶ CBD consumed with alcohol leads to impairments of psychomotor performance (*Robinson et al 1993*)

**“Start low and go slow” approach**

*Balachandran, Elsohly & Hill, J Gen Intern Med, 2021*



The One Time  
You Should  
**NOT** Use  
Cannabis...

Abdullah & Brull 2020, Chiu & Mehta 2021)



# THC Related Psychosis

- SR 2005-2016 26 SR's and MA's
- Psychotic illness arises more frequently, and with **earlier onset**, in cannabis users compared to non-users
- Dose-dependent risk of developing psychotic illness – **“heavy use”**
- More commonly seen with **chronic inhalation** from **earlier ages**

*Hasan et al, Eur Arch Psychiatry Clin Neurosci 2019*

*Rogni et al Acta Psychiatr Scan 2019*

**Directly related to higher THC content. Earlier age onset, more frequent use, direct inhalation all increase chances for psychotic phases**

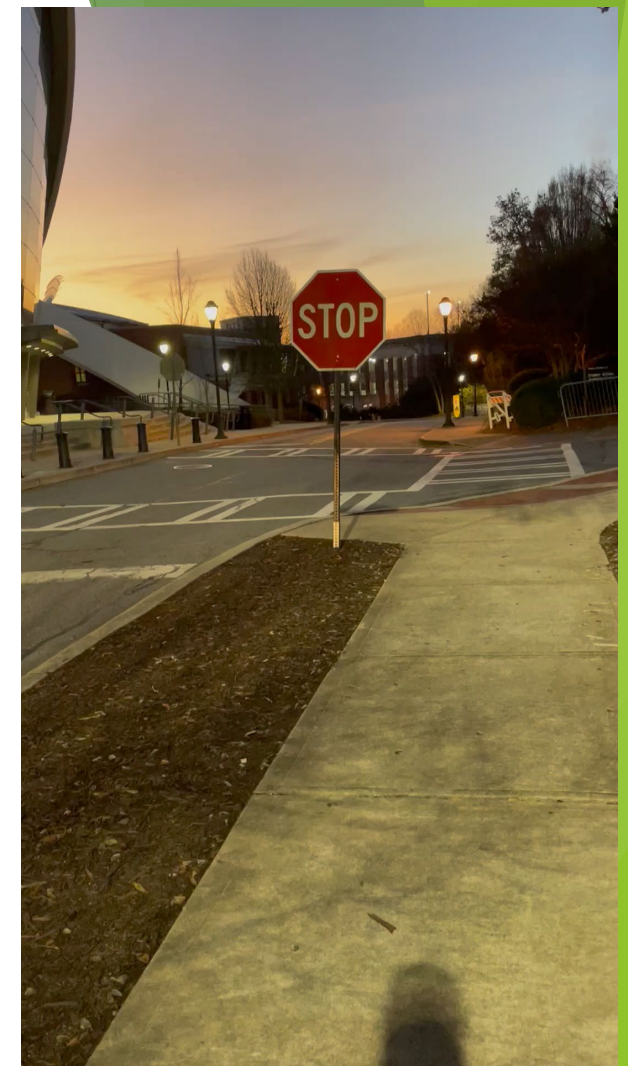


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# Timing (& dosage) is Everything

## *Wurz & DeGregori Scientific Reports 2022*



*What is the relationship between THC levels in the bloodstream and one's ability to perform?*

# Performance & Side Effects Language

One MUST differentiate between the cannabinoids being referred to in a statement

“Helps with”

“Interferes with”

“Increases”

“Decreases”

“Speeds Up”

“Slows Down”

Use a “Vitamin” language for cannabinoids

Identify dosage

Specify mode of application

*Be an accountable professional*



# Where can you teach cannabis in the curriculum?

## *Didactic and Clinical Education, Integrated Across the Curriculum*

- ▶ **Anatomy** – ECS in brain and throughout body
- ▶ **Physiology** – Endocannabinoids, agonistic/antagonistic/allosteric receptor binding
- ▶ **Pathology** – Endocannabinoid deficiency, symptom-based
- ▶ **Pharmacology** – THC vs CBD vs Terpenes, endo vs phyto vs synthetic
- ▶ **Ethical & Legal** – Federal & state laws, employment regulations
- ▶ **Clinical courses** – Appropriate conditions, interactions w/ interventions
- ▶ **Public Health** – Short/Long-term side effects, societal & cultural issues
- ▶ **Patient/Practitioner Interaction** – Education & advice, appropriate referral, certificate of analysis

# What's Next?



**Science must catch up to reality**

**Until then we must deal with the reality**

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