

# PTSD

# IS CANNABIS A VIABLE TREATMENT?

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# THE GOOD NEWS IS THAT MANY PATIENTS FULLY RECOVER FROM PTSD.

## **DR. MIKE HART & JEREMY KOSSEN**

As you likely know from your own personal journey — or that of a loved one or someone close to you — post-traumatic stress disorder (or PTSD as it's more commonly called) can be an incredibly debilitating condition that can affect nearly every aspect of one's life. It can impact relationships, health (physical and emotional), and overall quality of life.

The good news is that many patients fully recover or achieve significant improvement with the right combination of treatments — more often than not, non-pharmacological treatments. Dr. Hart has worked with hundreds of patients who have made remarkable recoveries.

While we discuss cannabis as treatment throughout this eBook, we are not proposing that cannabis alone can “cure” post-traumatic stress.

There is no “magic pill” — or, in this case, a “magic flower.” Those who achieve the best results generally do so through a combination of treatments that often include other therapies (like Cognitive Behavioral Therapy (CBT) and Prolonged Exposure (PE) therapy), lifestyle and dietary changes, meditation and mindfulness exercises, and other modalities.

While this book was written for patients, their loved ones, mental health professionals, policy makers, and anyone interested in this topic, through most of the book, we address the reader as the patient (as that who is we're trying to help, first and foremost).

# Introduction

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While this book was written for patients, their loved ones, mental health professionals, policy makers, and anyone interested in this topic, through most of the book, we address the reader as the patient (as that who is we're trying to help, first and foremost).

We'll address many of the myths surrounding PTSD, but we feel there are two myths that need to be nipped in the bud (pun intended). First, and most important, PTSD is not in your head! It has nothing to do with being weak-minded or strong-minded. There are physiological components that scientists have identified through brain imaging techniques.

In fact, there are actual biomarkers. Scientists have found that PTSD patients have — on average — higher CB1 receptor density and anandamide levels that are 50%+ lower

than individuals without PTSD. (Anandamide is the body's own naturally produced version of THC — the primary constituent in cannabis). Like a lock in key, anandamide attaches to receptors in the brain called CB1 receptors. This may be partly why many PTSD sufferers find relief in cannabis. The good news is that cannabis is not the only thing that can increase anandamide levels — activities like exercise can also increase anandamide levels.

Why some people can recover more quickly after experiencing trauma is unknown, however, what is known is that the physiological underpinnings are very real.

# What is PTSD?

If you're a patient in recovery from post-traumatic stress injury — or PTSD as it's more commonly called — you obviously know what it is. You live with it everyday! But, clinically speaking, how is it characterized?

The diagnosis — PTSD — is defined as: "A pathological anxiety that usually occurs after an individual experiences or witnesses' severe trauma that constitutes a threat to the physical integrity or life of the individual or of another person."<sup>1</sup>

Those who suffer from post-traumatic stress disorder often report similar symptoms, regardless of the traumatic event. Common symptoms (that can be highly disruptive in relationships) include persistent avoidance of people, places, and things that cause the individual significant distress; difficulty experiencing a normal spectrum of emotions; lowered expectations of an individual's ability to live a long and fulfilling life. Sufferers also frequently experience difficulty sleeping or insomnia; irritability and anger; poor concentration; exaggerated responses (hypervigilance) to ordinary events.

The most common reported symptoms include:

- Flashbacks (re-experiencing the event)
- Avoidance
- Agoraphobia
- Numbness
- Hyperarousal
- Negative thoughts

PTSD patients often have disruptive memory processing (enhanced fear learning, impaired fear memory extinction and a propensity to encode false memories), *perceptual priming* and recall memory of negative stimuli, which in some situations could be advantageous, but comes at the expense of processing otherwise neutral information.

It's also not unusual for sufferers to experience a number of physical health effects including drug or alcohol abuse, chronic pain, asthma, hypertension, heart diseases,

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<sup>1</sup> [Is Propranolol Administration Following a Traumatic Event Effective In Reducing Symptoms of Post-Traumatic Stress Disorder?](#)

obesity. PTSD is often accompanied by other disorders including generalized anxiety disorder, major depression, substance use disorder.

Symptoms generally develop within six months of the traumatic event (although a significant delay in onset is not uncommon). When symptoms persist for more than three months, the condition is considered Chronic PTSD. After an individual experiences a traumatic event, it's very common for them to experience any (or all) of these symptoms. However, the symptoms only meet the criteria of PTSD if the symptoms persist for more than more than three months.

## How Prevalent is PTSD?

If you have PTSD, you're definitely not alone. The rate among populations exposed to military combat is estimated to be as high as 30%. The Department of Veteran Affairs reports 11-20% of veterans from the Iraq War, 10% from the Persian Gulf War, and 30% from Vietnam are afflicted with PTSD. Each year, PTSD affects 5.2 million people in the United States.<sup>2</sup>

Beyond those who've experienced combat, in the U.S., at least 3.5% of the population currently meets the diagnostic criteria for PTSD. The number may actually be as much as three times this figure (or more), as most people suffering go undiagnosed (or misdiagnosed). Incredibly, 9% of Americans will experience PTSD symptoms in their lifetime.<sup>3</sup>

While the reasons for such high rates remain a mystery (or explanations controversial), the U.S. has one of the highest rates of PTSD in the world. Reported figures put the rate at 0.4-1.0% of the global population<sup>4</sup>. In part, the lower numbers may have to do with less awareness or stigmatization.

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<sup>2</sup> Veterans Administration [ww.ptsd.va.gov](http://ww.ptsd.va.gov)

<sup>3</sup> American Psychological Association <http://www.apa.org/research/action/ptsd.aspx>

<sup>4</sup> Global Burden of PTSD, World Health Organization  
[http://www.who.int/healthinfo/statistics/bod\\_posttraumaticstressdisorder.pdf](http://www.who.int/healthinfo/statistics/bod_posttraumaticstressdisorder.pdf)

# What Types of Trauma Cause PTSD?

Many people only associate PTSD with combat-related trauma. Certainly, PTSD affects those who were exposed to trauma at a disproportionately higher rate than the general population, however, exposure to virtually any traumatic event may trigger PTSD.

While PTSD is highly prevalent among veterans who served in military combat, the condition also affects victims of trauma and abuse (in alarming numbers). An estimated 10.4% percent of women in the U.S. and 5% of men will experience PTSD at some point in their lives.

In one study, University of California researchers looked at predictors of PTSD among adults, comparing men and women<sup>5</sup>. Their findings may surprise you.

## Risk Rates for Men

For men, the traumatic event most likely to cause PTSD is rape. 65 percent of men in the study (of 5,877 men and women across the U.S.) who reported having been raped developed clinically diagnosed PTSD.

The other highest risk traumatic events for men include:

- Combat (38.8%)
- Childhood neglect (23.9%)
- Childhood physical abuse (22.3%)
- Sexual abuse (12.2%)

## Risk Rates for Women

Researchers found an overlap between men and women in the study. Both men and women who had experienced rape were the most likely to develop PTSD. 45.9% of women reported a rape as the most upsetting traumatic event they had experienced went on to develop PTSD.

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<sup>5</sup> Ozer, E.J., Best, S.R., Lipsey, T.L., & Weiss, D.S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin*, 129, 52-73.



The other highest risk traumatic events for women include:

- Threatened with a weapon (32.6%)
- Sexual abuse (26.5%)
- Physical attack (21.3%)
- Childhood physical abuse (48.5%)
- Childhood neglect (19.7%)

Consistent with the University of California study, according to the National Center for PTSD<sup>6</sup>, the most common types of trauma (with distinguishing between men and women) associated with PTSD are as follows:

- Combat
- Physical and sexual abuse or assault
- Sexual or physical abuse during childhood or adolescence
- Learning about the violent or accidental death or severe injury of a family member or loved one
- Serious accidents (e.g. car crash)
- Terror attacks
- Natural disasters
- Exposure to other terrifying and life-threatening events

After an individual experiences one of these events, it's quite common to respond with fear, horror, and helplessness. But, even learning about death or serious injury of a family member, loved one or close friend, can cause an individual to develop PTSD.

What's interesting about PTSD is the role of memory and fear conditioning in the pathology. A significant amount of research has emerged over the years that demonstrates how quite possibly a disproportionate amount of an individual's processing resources become dedicated to detecting potential threats and, in fact, interpreting stimuli (that should be perceived as completely neutral) as threatening.

How does this affect people? Often a sufferer's attention shifts away from normal cognitive (or brain) functioning. They may experience attention and memory deficits or high levels of anxiety and stress. Anxiety and stress are normal adaptive response in humans, but in those with PTSD the symptoms are more often than not, maladaptive

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<sup>6</sup> [National Center for PTSD](#)

responses. And, in fact, these symptoms can cause debilitating effects on physical and emotional health.

## Are Some People at Higher Risk for PTSD Than Others?

There's a myth that PTSD is all in our heads, that it only affects people who are not emotionally equipped to handle trauma. It's understandable why some people may think this. After all, why doesn't everyone who is exposed to trauma develop PTSD? However, in recent years we've begun to develop a better understanding of the physiological factors that are involved in PTSD.

Given the interplay between cognitive effects and healthy emotional regulation, researchers hypothesize that major parts of the brain are also involved. The amygdala and hypothalamus, for example, are vital to processing memories and modulating fear and anxiety, and likely play a significant role in the symptomatology of PTSD.

In 2013 a team — comprised of researchers from the schools of medicine at NYU, Yale, Harvard, and the University of California at Irvine — discovered that individuals with PTSD have an endocannabinoid deficiency.<sup>7</sup> Researchers used brain imagery to compare PTSD patients with healthy individuals (with and without lifetime histories of trauma). They found that the PTSD group had on average anandamide levels that were 53.1% lower than individuals who had been exposed to trauma at some point in their lives (but were otherwise healthy). More strikingly, 58.2% lower anandamide levels than healthy individuals with no history of trauma.

The PTSD patients also had lower cortisol levels and a higher density of CB1 receptors. The reason for the increase in receptors is likely that the body's endocannabinoids (our naturally produced cannabinoids) produce an adaptive response in order to more efficiently exploit the depressed levels of anandamide. The researchers' findings supporting the growing body of evidence implicating alterations of CB1 receptor-mediated anandamide signaling in PTSD. Further, their findings may help explain one of the reasons many PTSD patients find relief in cannabis (given the fact THC mimics anandamide). This is a promising neurological model to help us develop cannabinoid-derived medications to treat PTSD. Likewise, that we have biomarkers

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<sup>7</sup> [Elevated Brain Cannabinoid CB1 Receptor Availability in Posttraumatic Stress Disorder: A Positron Emission Tomography Study](#)

that can help us diagnose PTSD is a tremendous advance in science. (Researchers were able correctly identify nearly 85% of the PTSD cases based on brain imagery.)

**Are individuals with an endocannabinoid deficiency at higher risk for developing PTSD?**

It certainly seems plausible. In the same study, researchers found that women — even under non-stress conditions — have more densely populated CB1 receptors than men. This might provide a neurobiological explanation for why women experience PTSD at nearly twice the rate as men following traumatic exposure. Thus far, there hasn't been any research to compare anandamide levels and CB1 receptor density before and after exposure to combat, which could help determine if those who later develop PTSD had an endocannabinoid deficiency prior to combat. This type of research would help validate speculation that an endocannabinoid deficiency increases a soldier's PTSD risk.

# How is PTSD Diagnosed?

Trained mental health professionals employ a 30-60 minute interview [assessment](#) called the [Clinician-Administered PTSD Scale](#) (CAPS) that corresponds to the DSM criteria. There are three versions of the CAPS-5 corresponding to different time periods: past week, past month, and worst month (lifetime)

A few of the questions they may ask include:

- In the past month, have you had any unwanted memories of [the traumatic event] while you were awake (not counting dreams or nightmares)?
- Are these unwanted memories, or are you thinking about [the traumatic event] on purpose?
- To what degree do these memories bother you?
- Are you able to put them out of your mind and think about something else?
- How often have you had these memories in the past month?

## PTSD Self-Screening

While it's important to be professionally diagnosed, self-screening can be helpful. The Veteran's Administration's [Center for Post Traumatic Stress Syndrome](#) created a simple self-screening to help patients determine if they need to seek the help of a professional:

"In the past month, I experienced three or more of the following":

- Nightmares or intrusive thoughts regarding the event
- Avoid people, places or things that remind you of event or frequently try not to think about the event
- Always on guard or hyperarousal (easily startled)
- Feel numb or detached from your surroundings or people
- Feelings of guilt or blame for the event

## DSM Criteria

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (better known as the DSM-V) is the "bible for psychiatrists." Some important changes were made in the most current edition (compared to DSM-IV, the previous edition). Most notably, PTSD was separated from the original class of anxiety disorders into a new class of "trauma and stressor-related disorders." According to the American Psychiatric Association, the rationale for the creation of this new class was based on "clinical recognition of variable expressions of distress as a result of traumatic experience."

Further, PTSD symptoms are now divided into four clusters instead of three (also referred to as "Criteria"):

- **Intrusion (Cluster B):** Reliving traumatic events through recurrent intrusive and involuntary memories, flashbacks and traumatic nightmares.
- **Avoidance (Cluster C):** Persistent effort to avoid distressing stimuli (people, places, things)
- **Negative Alterations in Cognitions and Mood (Cluster D):** Adverse cognitive effects (including memory, attention, planning and problem solving) starting after the traumatic event.
- **Alterations in Arousal and Reactivity (Cluster E):** The appearance of a heightened fear framework that impedes a person's ability to process non-threatening stimuli.

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### Cluster B - Intrusion

Reliving traumatic events through aversive memories and nightmares, avoiding normal events. The traumatic event is persistently re-experienced in the following way(s): (one required)

- Recurrent, involuntary, and intrusive memories
- Traumatic nightmares
- Dissociative reactions (e.g., flashbacks)
- Intense or prolonged distress after exposure to traumatic reminders

- Marked physiologic reactivity after exposure to trauma-related stimuli

## **Cluster C - Avoidance**

A common coping mechanism for people with PTSD is to avoid thinking about the traumatic event, to feel emotions about the event, or engage with environmental stimuli that may remind them of the event. According to the DSM, one of the following “persistent effortful avoidance of distressing trauma-related stimuli after the event” must be present for a PTSD diagnosis:

- Trauma-related thoughts or feelings
- Trauma-related external reminders (e.g., people, places, conversations, activities, objects, or situations)

## **Criteria D - Negative Alterations in Cognitions and Mood**

Produces measurable long-term cognitive effects including memory, attention, planning and problem solving. Negative alterations in cognitions and mood that began or worsened after the traumatic event: (two required)

- Inability to recall key features of the traumatic event.
- Persistent and negative beliefs and expectations about oneself or the world (e.g., “The world is a dangerous place,” “I am a bad person.”)
- Persistent and distorted blame of self or others
- Persistent negative emotional state (e.g., fear, horror, anger, guilt, or shame).
- Markedly diminished interest in (pre-traumatic) significant activities.
- Feeling alienated from others (e.g., detachment or estrangement).
- Constricted affect: persistent inability to experience positive emotions.

## **Criteria E - Alterations in Arousal and Reactivity**

Heightened fear framework can impede a person's ability to process non-threatening stimuli. Trauma-related alterations in arousal and reactivity that began or worsened after the traumatic event: (two required)

- Irritable or aggressive behavior
- Reckless or destructive behavior
- Hypervigilance

- Exaggerated startle response
- Problems in concentration
- Sleep disturbance

# PTSD & the Body's Own Cannabinoid System

The endocannabinoid (eCB) system — our body's own cannabinoid system — through activation of two receptors (CB1 and CB2) exerts powerful effects on our physical and emotional states. Animal and human studies have shown how PTSD patients have deficiencies in their endocannabinoid system. In fact, brain scans of PTSD patients show a significant reduction in anandamide (a natural cannabinoid produced in the body that acts similarly to THC, also called the "bliss molecule) and an increase in CB1 receptors. (The increase in CB1 receptors is likely the body's adaptive response to better utilize the less anandamide available.)

Between CB1 and CB2 — the two conclusively identified cannabinoid receptors — CB1 appears to play the most influential role in PTSD:

- **Response to environmental threats:** CB1 receptor signaling plays an important role in ensuring appropriate responses to perceived environmental threats and processing of aversive memories (that underlie PTSD)
- **Decrease in anxiety:** Increased levels of "anandamide" — a natural cannabinoid produced in the body that acts similarly to THC (also called the "bliss molecule") — and enhanced CB1 receptor signaling is associated with a decrease in anxiety and healthy fear memory extinction. Cannabidiol (CBD) appears inhibit activity of an enzyme ([FAAH](#)) that is known to degrade 2-AG and anandamide, which could elevate anandamide and 2-AG levels.

Researchers from NYU Langone Medical Center uncovered the relationship between CB1 receptor density (in the brain) and PTSD. flashbacks, nightmares, emotional instability. CB1 receptors play a vital role in memory formation, pain sensory, appetite, and mood. Animal studies have helped us understand how compounds found in cannabis (and naturally occurring chemicals in the endocannabinoid system) activate CB1 receptors to influence memory and reduce anxiety.

Alexander Neumeister who heads the molecular imaging program at NYU School of Medicine used brain imaging to show that individuals suffering from PTSD have significantly lower concentrations of anandamide (an endocannabinoid). "That's a problem. There's a consensus among clinicians that existing pharmaceutical



treatments such as antidepressants simply do not work. In fact, we know very well that people with PTSD who use marijuana — a potent cannabinoid — often experience more relief from their symptoms than they do from antidepressants and other psychiatric medications. Clearly, there's a very urgent need to develop novel evidence-based treatments for PTSD."

Their study revealed that those with PTSD (particularly women) had greater CB1 receptor density (19.5% on average) in parts of the brain associated with fear and anxiety than the control group (participants without PTSD), and lower levels of anandamide (58.2% lower on average) which activates CB1 receptors. The reason for the inverse relationship between receptor density and anandamide levels is because, "this helps the brain utilize the remaining endocannabinoids."

## How Can Cannabis Help Treat PTSD?

"Cannabis is a [traumatic] memory eraser," [reports](#) Michael Krawitz, the head of Veterans for Medical Cannabis Access. "It's been found effective in nightmare cessation, too," explaining how flashbacks are common among vets who've seen serious combat, and that too often patients are opiates or benzodiazepines for PTSD, leaving them "feeling like zombies" and at risk of addiction. In contrast, Krawitz claims cannabis allows them to function normally. While his observations may be based on personal experience, Krawitz and other veterans have an increasing body of evidence supporting them.

Brazilian researchers conducted an [animal study](#) (using rodents) of cannabidiol (CBD) — the most prominent non-psychoactive ingredient in cannabis — that supports accumulating evidence that the endocannabinoid system exerts a powerful influence over our emotional state, and that elevating eCB levels can reduce anxiety, while facilitating extinction of fear memories. The authors note given the volume of studies demonstrating CBD's effectiveness, tolerability and favorable safety profile in humans, CBD could play a viable role as a supplement to exposure-based psychotherapies for anxiety disorders like PTSD in which the retention of traumatic memories worsens symptoms.

A 2009 case series published in the Neuroscience and Therapeutics journal, assessed 47 patients who didn't respond to treatment to prevent recurrent nightmares. They were given nabilone (synthetically-derived THC). 28 experienced complete cessation of nightmares. 6 experienced a reduction. 72% of patients experienced improvements. (However, only four out of 32 were able to discontinue use of nabilone without nightmares returning.)

Building on the foundational knowledge established from earlier animal and human studies, an Israeli study (published in 2010) tracked 80 PTSD patients over three years and found most patients who used cannabis experienced an improvement in quality of life and a reduction in pain scores (with no adverse events reported). (Reznik). A 2012 Israeli pilot study of 29 male combat veterans suffering from PTSD receiving smokable cannabis (THC (23%) and CBD (>1%)) found on average an approximately 40% reduction in PTSD scores (based on the CAPS assessment).

A [study](#) of PTSD patients in New Mexico that also used the CAPS assessment to quantify results, showed patients reported more than a 75% reduction in all three DSM-IV PTSD symptom clusters (reexperiencing the traumatic event; avoidance of cues that reminded them of the event; and, hyperarousal such as sleep disturbances and exaggerated responses to stimuli). While the group was comprised of patients who had previously found cannabis beneficial (increasing risk of study bias), the authors claimed their findings were consistent with significant findings from preclinical studies demonstrating the eCB system's influential role in emotional regulation and memory processing.

# Treating PTSD

In Dr. Hart's practice, the goal of treatment for post-traumatic stress is twofold:

**Symptom management:** First, we help patients relieve these symptoms so they can get back to their life, so they can start feeling a little normal again, to help them sleep, to help them digest their food, to help them relax. We need something that's going to work quickly and effectively.

**Address the causes:** Of equal importance, we address the cause of the post-traumatic stress and help release the stored trauma from the body so that they can truly get back to a state of health.

The relief patients experience has been impressive: both the relief of suffering and the true healing that patients have experienced when using medical cannabis to treat post-traumatic stress. It helps with almost all of the negative symptoms of post-traumatic stress. It promotes sleep. It helps patients relax. It brings patients into the present moment and enables them to stop thinking over and over again about those old traumatic memories or the old feelings of trauma, even the pain from trauma. All of those symptoms diminish when using cannabis.

Teaching people with PTSD practical approaches to coping with what can be very intense and disturbing symptoms has been found to be another useful way to treat the illness. Specifically, helping sufferers learn how to manage their anger and anxiety, improve their communication skills, and use breathing and other relaxation techniques can help individuals with PTSD gain a sense of mastery over their emotional and physical symptoms.

The health-care professional might also use exposure-based cognitive behavioral therapy by having the person with PTSD recall their traumatic experiences using images or verbal recall while using the coping mechanisms they learned. Individual or group cognitive behavioral psychotherapy can help people with PTSD recognize and adjust trauma-related thoughts and beliefs by educating sufferers about the relationships between thoughts and feelings, exploring common negative thoughts held by traumatized individuals, developing alternative interpretations, and by practicing new ways of looking at things. This treatment also involves practicing learned techniques in real-life situations.

Eye-movement desensitization and reprocessing (EMDR) is a form of cognitive therapy in which the health-care professional guides the person with PTSD in talking about the trauma suffered and the negative feelings associated with the events, while focusing on the professional's rapidly moving finger. While some research indicates this treatment may be effective, it is unclear if this is any more effective than cognitive therapy that is done without the use of rapid eye movement.

Helping PTSD sufferers maintain their employment and other tasks of their daily lives is an important part of treatment. Occupational therapy (OT) is an important treatment modality in that regard, in that it focuses on rehabilitation and recovery through participation in activities. This can range from assisting helping people with PTSD regain independence in basic self-care to helping them reintegrate into previously held work and community roles.

Another potentially powerfully positive activity-based intervention for individuals with PTSD can be the use of a service dog. Particularly toward the completion of more conventional treatments, service dogs have been found to be effective in improving PTSD sufferers' sense of safety, responsibility, optimism, and self-awareness.

Families of PTSD individuals, as well as the sufferer, may benefit from family counseling, couples counseling, parenting classes, and conflict-resolution education. Family members may also be able to provide relevant history about their loved one (for example, about emotions and behaviors, drug abuse, sleeping habits, and socialization) that people with the illness are unable or unwilling to share.

Directly addressing the sleep problems that can be part of PTSD has been found to not only help alleviate those problems but to thereby help decrease the symptoms of PTSD in general. Specifically, rehearsing adaptive ways of coping with nightmares (imagery rehearsal therapy), training in relaxation techniques, positive self-talk, and screening for other sleep problems have been found to be particularly helpful in decreasing the sleep problems associated with PTSD.

# Live A Healthy Lifestyle

Cannabis alone, is generally not enough to treat symptoms of PTSD. Cannabis can be effective for treating symptoms in the moment, but in order to truly recover and heal, you will need to incorporate other lifestyle factors in your treatment plan.

Unfortunately, some patients' PTSD is so severe that they find it difficult to practice basic lifestyle treatments. But let's be very clear: If you cannot change your lifestyle, you are unlikely to overcome your symptoms of PTSD - that is the unfortunate truth.

So, logically, what physicians need to do, is to get patients healthy enough mentally so they are able to perform lifestyle treatments such as exercise. The good news is that many patients report that cannabis has been helpful in initiating some of these lifestyle practices.

What are some lifestyle changes that can be used to treat PTSD?

The most obvious change that comes to mind is physical exercise. In fact, if you are a runner, you can get the same "high" that you would get from using cannabis. This is due to the fact that you are replacing your anandamide levels naturally (1) (remember from **chapter 3** that anandamide levels are lower in patients who suffer from PTSD. And anandamide is very important for your overall well-being, the word "ananda" literally means joy, bliss, delight."

But how has physical exercise been shown specifically to help patients with PTSD?

Physical exercise has also been shown to be effective specifically for the treatment of PTSD. A recent meta-analysis pooled together several randomized controlled trials which showed that physical exercise is effective for treating depressive symptoms in patients with PTSD. "PA was significantly more effective compared to control conditions at decreasing PTSD and depressive symptoms among people with PTSD."

The difficulty with most people with PTSD is not laziness, it's that their mental health state prevents them from initiating exercise. Many veterans in my practice have

reported that using cannabis has helped significantly with exercise. Veterans are not the only people who have found cannabis to be effective for exercise. In fact, former NFL running back Ricky Williams has opened a cannabis-friendly gym to address this issue. Ricky Williams states that in his new gym you can get “yoked and toked.”

## Final Considerations

With low toxicity (there have been no overdose deaths directly attributed to cannabis consumption), a lower risk of abuse compared to alcohol and many other drugs, and few side effects, the safety profile of cannabis is favorable.

However, it's important to consider that drug and alcohol use disorders are common among those suffering from PTSD, so any patient using cannabis or any other substance should be aware of this elevated risk, and closely monitor their use to ensure therapeutic use doesn't evolve into misuse or dependency.

Further, we don't fully understand the potential long-term consequences or risks of using cannabis to treat PTSD. Most studies have been short in duration, so we have little long-term data. However, evidence does suggest that heavy use of cannabis over a long period of time could lead to down-regulation of CB1 receptors. What does that mean? You would *need* cannabis to compensate for this deficiency, which increases one's chances of developing a dependency. Likewise, down-regulation of the CB1 receptor can increase the risk of developing depression.

Ultimately, the decision to treat PTSD with cannabis is a personal one that should be done in consult and supervision of a physician who is knowledgeable about cannabinoid therapies. Further, as a safeguard against becoming too reliant on THC-rich cannabis, patients may want to consider taking periodic breaks ("cannabis holidays"). But, rather than eliminating cannabis completely, one can consider using CBD. CBD, used independently, can be highly useful in treating PTSD and anxiety and while relaxing, doesn't produce a "high."



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