**Focus & Memory Station**

1 – Memorize names and colors in the sober/abstinence state, then you will do the same procedure again under the simulated influence of marijuana to compare performance, (i.e. standing on the Bosu ball wearing the plastic louvered glasses while listening to loud noises.)

**Discussion:**

Questions to start with: What do we need cognitive resources like, focus and memory, for anyway? Answer: In order to learn new behaviors. Focus allows us to encode memory.

Background: Receptors, specifically endocannabinoid receptors, all over our brain do get disrupted signals from marijuana, so neurotransmitters like acetylcholine, dopamine and norepinephrine which help us focus get blocked or shut out. This leads to disorganized thinking. The effects can last for a while, and tetrahydrocannabinol (THC) can build up in our system.

| **Specimen** | **Detected in System** |
| --- | --- |
| Blood | Up to 12 hours |
| Hair | Up to 90 days |
| Saliva | Up to 24 hours |
| Urine | Up to 30 days, depending on the frequency of use |

\*https://americanaddictioncenters.org/marijuana-rehab/how-long-system-body

**Physical Withdraw Simulation Station**

This station will allow the students to experience physical withdrawal from color. Explain that in order to do this we are going to expose them to a series of colors:

 Scene: Projector, students are sitting down in front of the projection screen.

 1st color: Color white represents you in your normal state, during your average day.

 2nd color: Red is a real intense, pleasurable feeling you get from smoking marijuana.

 3rd color: Green is the opposite of this. A cool color, so withdrawal from the red creates an aversive, negative feeling.

 Start on the white color again. Ask them to focus on the black dot intensely, try to keep the students engaged.

 Shift between white and red slides while telling a story about a marijuana user. Quick flashes in the beginning. For example, Betty is an 8th grader, she likes reading and gymnastics, (white slide.) Recently, she has been smoking marijuana with her friends after school when their parents are not home (red slide.) The day after she goes to school and gymnastics practice, (white color.) The next day she smokes weed again, (red color.) Then back to her daily life (white color.) Then back to a friends house to smoke weed and ask to take some home, (red light.) Back to school the next day, (white color.) Then, the weekend comes and a sleepover with friends, so you smoke some weed. It’s sort of fun, but you smell bad. But you notice that you fall asleep faster, (red color.) Then back to school, more studying and homework. But now you have trouble falling asleep at night, so you smoke weed to try to get to sleep, now you smoking alone, (red color.) Then you go back to school, study, (white color) but you are tired for gymnastics practice so you smoke weed (red color.) Now, you are smoking more often, (white for 2-3 seconds to red for 2-3 seconds… make sure the students are intensely watching the screen and staring at the black dot.) You notice your grades are starting to fall at school, (white color,) so you go home prepared to study hard, and you encounter, (green color) withdrawal and you can’t concentrate.

You need to move quickly between slides in the beginning, if they see the red too much for too long, then they will see the white as blue. They will see a bluish-green because they experience a withdrawal from red.

**Discussion:**

Question: What do drugs of abuse have in common?

 Answer: They have the ability to change our behavior, thoughts, and brain function.

Question: Do all drugs cause the same level of addiction?

 Answer: No, some drugs like methamphetamines you need only use once to get addicted. The length of use, however, can affect the length and severity of withdrawal.

Question: What is the blood-brain-barrier (BBB)?

Answer: The BBB is the specialized system of brain microvascular endothelial cells (BMVEC) that shields the brain from toxic substances in the blood, supplies brain tissues with nutrients, and filters harmful compounds from the brain back to the bloodstream. The use of illicit drugs like (meth, cocaine, fentanyl, etc.), marijuana, and alcohol disrupts BBB integrity, resulting in alterations to cellular function, and contributes to neurotoxicity. All of the drugs of abuse are toxic to our brains, though the degree over the timeline and frequency of use may differ.

Question: What is homeostasis? How does the brain work to keep us going, generally? Give some examples.

 Answer: Homeostasis is the tendency of a system to maintain an internal stability as the result of the coordinated response of its parts to any situation or stimulus that disturbs normal conditions or function. For example, we sweat when we need to cool down. We shiver when we need to heat up. We get thirsty when we need water. When we need more oxygen to wake up, we yawn.

Drugs interrupt this system of signaling the brain uses to keep the body in its optimal state. For some types of drugs the brain may be able to adapt for a while, but eventually the addiction takes over. Frequently, our brains learn how the effect of those drugs work and develop strategies to counter them, often, generating opposite responses. For example, if the immediate effect of the drug is good and pleasant. The brain adapts and when you come down off the drug the feeling is opposite, negative and aversive. This is called the opposite drug response. The symptoms of withdrawal can differ, but the more addicted we become the greater this shift becomes, hence, the colloquial saying, “The higher the highs, and the lower the lows.” Additionally, because the brain’s ability to adapt you need more and more to create the effects.

Question: Do you know what physical withdrawal is? What are aspects you might expect from physical withdrawal?

Answer:

Nausea and vomiting

Headaches

High temperature and/or chills

Heart palpitations

Excessive sweating

Shaking and shivering

Restlessness

Depression

Anxiety

Paranoia

Insomnia

Panic attacks

Irritability and agitation

Intense cravings for the drug

The most severe drug addiction withdrawal symptoms, known as ‘delirium tremens’ (DTs), include:

Visual and/or auditory hallucinations

Seizures

If these symptoms aren’t managed properly, they can result in serious long-term complications and can even be life threatening.

-Symptomatology: Opioids tend to have a very physical, visible withdrawal affect, stimulants tend to involve cravings and urges. Marijuana difficulty in falling asleep is a withdrawal symptom.