

# Brain Health

Marijuana use directly affects brain function — specifically the parts of the brain responsible for memory, learning, attention, decision-making, coordination, emotions, and reaction time.<sup>1,2</sup>

## What are the short-term effects of marijuana on the brain?

Recent marijuana use (defined as within 24 hours) in youth and adults has an immediate impact on thinking, attention, memory, coordination, movement, and time perception.<sup>1</sup>


## What are the long-term effects of marijuana on the brain?

Marijuana affects brain development. Developing brains, such as those in babies, children, and teenagers, are especially susceptible to the harmful effects of marijuana and tetrahydrocannabinol (THC).<sup>1,2</sup> Although scientists are still learning about the effects of marijuana on developing brains, studies suggest that marijuana use by mothers during pregnancy could be linked to problems with attention, memory, problem-solving skills, and behavior in their children.<sup>3-9</sup>

Using marijuana before age 18 may affect how the brain builds connections for functions like attention, memory, and learning.<sup>10</sup> Marijuana's effects on attention, memory, and learning may last a long time or even be permanent,<sup>11</sup> but more research is needed to fully understand these effects. Youth who use marijuana may not do as well in school and may have trouble remembering things.<sup>1,6,12,13</sup>

The impact of marijuana use on the brain depends on many factors, including:

- Amount of tetrahydrocannabinol (THC) in marijuana (in other words, the concentration or strength),
- How often it is used,
- Age of first use, and
- Whether other substances (for example, tobacco and alcohol) are used at the same time.

Long-term impacts on the brain may also be caused by something other than marijuana, such as genetics, the home environment, or other unknown factors.<sup>14</sup> The National Institute on Drug Abuse is conducting a large long-term study (the [Adolescent Brain Cognitive Development study](#) , or ABCD study) to better understand the role marijuana and other substances play in adolescent brain development.

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### References

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## Heart Health

Marijuana can make the heart beat faster and can make blood pressure higher immediately after use.<sup>1,2</sup> It could also lead to increased risk of stroke, heart disease, and other vascular diseases.<sup>3-7</sup> Most of the scientific studies linking marijuana to heart attacks and strokes are based on reports from people who smoked marijuana (as opposed to other methods of using it). Smoked marijuana delivers tetrahydrocannabinol (THC) and other cannabinoids to the body. Marijuana smoke also delivers many of the same substances researchers have found in tobacco smoke—these substances are harmful to the lungs and cardiovascular system.<sup>8,9</sup>

It is hard to separate the effects of marijuana chemicals on the cardiovascular system from those caused by the irritants and other chemicals that are present in the smoke. More research is needed to understand the full impact of marijuana use on the cardiovascular system to determine if marijuana use leads to higher risk of death.

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### References

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# Lung Health

In many cases, marijuana is smoked in:

- joints (hand-rolled cigarettes),
- bongos (pipes or water pipes),
- bowls, or
- blunts (cigars or cigar wrappers that have been partly or completely refilled with marijuana).<sup>1,2</sup>

Smoked marijuana, regardless of *how* it is smoked, can harm lung tissues and cause scarring and damage to small blood vessels.<sup>3,4</sup>

Smoke from marijuana has many of the same toxins, irritants, and carcinogens (cancer-causing chemicals) as tobacco smoke.<sup>5</sup> Smoking marijuana can also lead to a greater risk of bronchitis, cough, and mucus production,<sup>6-10</sup> though these symptoms generally improve when marijuana smokers quit.<sup>3, 11</sup>

More research is needed to understand the specific effects marijuana smoking may have on lung cancer and other respiratory diseases like emphysema (lung condition that causes shortness of breath) and chronic obstructive pulmonary disease ([COPD](#)).

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## References

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# Mental Health

Marijuana use, especially frequently (daily or nearly daily) and in high doses, can cause disorientation and sometimes unpleasant thoughts or feelings of anxiety and paranoia.<sup>1</sup>

People who use marijuana are more likely to develop temporary psychosis (not knowing what is real, hallucinations, and paranoia) and long-lasting mental disorders, including schizophrenia (a type of mental illness where people might see or hear things that are not really there).<sup>2</sup> The association between marijuana and schizophrenia is stronger in people who start using marijuana at an earlier age and use marijuana more frequently.

Marijuana use has also been linked to depression; social anxiety; and thoughts of suicide, suicide attempts, and suicide.<sup>1</sup>

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## References

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