

Brain inflammation linked to muscle fatigue, new study finds

Brain inflammation can lead to muscle fatigue, according to a new study from Washington University School of Medicine. The research offers new hope for treating muscle pain and fatigue in diseases such as Alzheimer's and long Covid.



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In Short

- Brain inflammation reduces energy levels in skeletal muscles, causing fatigue and loss of muscle function
- The study, conducted on fruit flies and mice, identified ways to block this process
- Findings suggest potential treatments for muscle weakness related to brain inflammation

Brain inflammation can lead to loss of muscle function, causing fatigue, according to a new study.

Researchers at Washington University School of Medicine wanted to understand how brain inflammation affects muscles.

They found that proteins released from the inflamed brain reduce energy levels in skeletal muscles, which causes fatigue and loss of muscle function.

It identified ways to block this process, offering new hope for treating muscle pain and fatigue in diseases like Alzheimer's and long Covid.

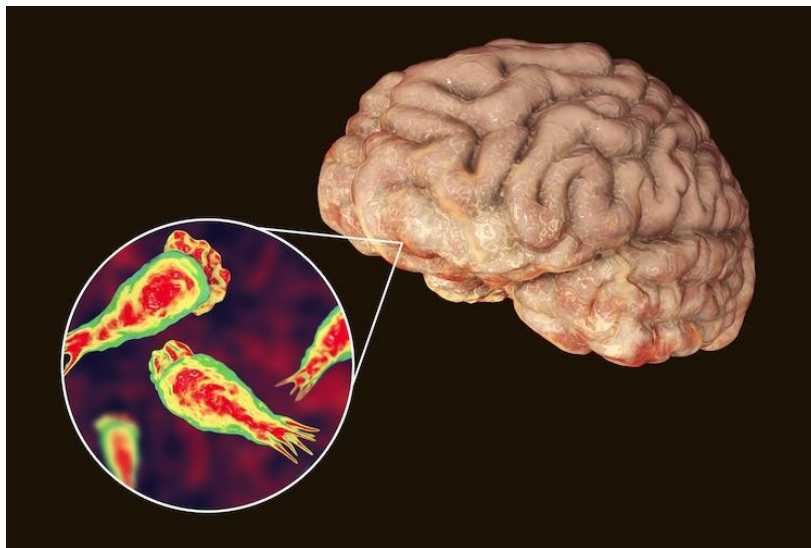
According to the study, inflammation in the brain or neuroinflammation is caused by infections, chronic conditions like Alzheimer's, and normal ageing, disrupts [neural function by changing neuron structures](#).

Although it mainly affects the central nervous system (CNS), it also causes muscle problems.

"This is more than a lack of motivation to move because we don't feel well," explained Dr Aaron Johnson, senior author of the study.

He added, "These processes reduce energy levels in skeletal muscle, decreasing the capacity to move and function normally."

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They discovered that inflammatory proteins in the brain lead to the accumulation of reactive oxygen species, which trigger the production of interleukin-6 (IL-6) in mice.

This, in turn, activates the JAK-STAT pathway in muscles, causing mitochondrial dysfunction and impaired motor function.

Experiments showed that flies and mice with Covid-associated proteins in the brain had reduced motor function.

Flies with these proteins didn't climb as well, and mice didn't run as much or as well. Similar effects were seen with bacterial proteins and the Alzheimer's protein amyloid beta.

"We also see evidence that this effect can become chronic," said Johnson. "Even if an infection is cleared quickly, the reduced muscle performance remains many days longer in our experiments."

The researchers believe these findings are likely relevant to humans.

For instance, inflammatory SARS-CoV-2 proteins have been found in the brains of Covid-19 patients during autopsies, and many long Covid patients report extreme fatigue and muscle weakness long after the initial infection has cleared.

The discovery that the JAK-STAT pathway in muscles reduces mitochondrial energy production hints at potential treatments for muscle weakness related to brain inflammation.

However, why the brain sends a signal that harms muscle function when exposed to these diseases remains unclear.

The researchers speculate it might be a way for the brain to reallocate resources during illness but emphasize the need for more research.

News Source:

<https://www.indiatoday.in/health/story/brain-inflammation-linked-to-muscle-fatigue-new-study-finds-2568065-2024-07-17>