

# Inactivity reduces people's muscle strength

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New research reveals that it only takes two weeks of not using their legs for young people to lose a third of their muscular strength, leaving them on par with a person who is 40-50 years their senior. The Center for Healthy Aging and the Department of Biomedical Sciences at the University of Copenhagen conducted the research.

Time and again, we are told that we need to stay physically active and exercise daily. But how quickly do we actually lose our muscular strength and [muscle mass](#) if we go from being averagely active to being

highly inactive? For example when we are injured, fall ill or simply take a very relaxing holiday. Researchers from the University of Copenhagen have examined what happens to the muscles in younger and older men after a period of high inactivity, by way of so-called immobilization with a leg pad.

## **Both older and younger people lose muscular strength**

"Our experiments reveal that inactivity affects the muscular strength in young and older men equally. Having had one leg immobilized for two weeks, [young people](#) lose up to a third of their muscular strength, while older people lose approx. one fourth. A young man who is immobilized for two weeks loses muscular strength in his leg equivalent to ageing by 40 or 50 years," says Andreas Vigelsoe, PhD at the Center for Healthy Aging and the Department of Biomedical Sciences at the University of Copenhagen.

## **Young people lose twice as much muscle mass**

With age, our total muscle mass diminishes, which is why [young men](#) have approx. one kilogram more muscle mass in each leg than older men. Both groups lose muscle mass when immobilized for two weeks - young men lose 485 grams on average, while [older men](#) lose approx. 250 grams. The participants' physical fitness was also reduced while their one leg was immobilized in a pad.

"The more muscle mass you have, the more you'll lose. Which means that if you're fit and become injured, you'll most likely lose more muscle mass than someone who is unfit, over the same period of time. But even though older people lose less muscle mass and their level of fitness is reduced slightly less than in young people, the loss of muscle mass is presumably more critical for [older people](#), because it is likely to have a

greater impact on their general health and quality of life," says Martin Gram, researcher at the Center for Healthy Aging and the Department of Biomedical Sciences, explains.

## Cycling is not enough

After two weeks of immobilization, the participants bicycle-trained 3-4 times a week for six weeks.

"Unfortunately, bicycle-training is not enough for the participants to regain their original muscular strength. Cycling is, however, sufficient to help people regain lost muscle mass and reach their former fitness level. If you want to regain your [muscular strength](#) following a period of inactivity; you need to include weight training," Andreas Vigelsee states.

"It's interesting that inactivity causes such rapid loss of muscle mass, in fact it'll take you three times the amount of time you were inactive to regain the muscle mass that you've lost. This may be caused by the fact that when we're inactive, it's 24 hours a day," Martin Gram concludes.

These results have just been published in the scientific *Journal of Rehabilitation Medicine*.

**More information:** [www.medicaljournals.se/jrm/con ...  
0.2340/16501977-1961](http://www.medicaljournals.se/jrm/con...0.2340/16501977-1961)

Provided by University of Copenhagen

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