Low muscle strength identified as early risk factor for ALS

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Low muscle strength during the later teen years has been identified as a risk factor for much later onset of the neurological disease known as ALS, or amyotrophic lateral sclerosis. A study at Sahlgrenska Academy published in the *Journal of Neurology* also links low blood counts at a young age to ALS.

"One should never overstate conclusions from a first-time study—the results need to be repeated—but we still must say that what we have found is noteworthy," says Maria Åberg, an associate professor of neurobiology and lead author of the article as well as a doctor at Närhälsan in Gothenburg.

The researchers studied Swedish military enlistment data for more than 1.8 million (1,819,817) men in the 1968-2005 period as well as data from the Swedish health care register and mortality register. The majority were 18 years old at the time of enlistment. The follow-up time was up to 46 years.

The group included 526 individuals who developed ALS, a disease that usually occurs after age 50 and involves a successive degradation of the nerves that control muscles. There is no cure, and in most cases patients die after two to five years.

The current study confirms the impression that ALS can be associated with a relatively low body mass index (BMI), even at a young age. The differences, however, were not dramatic. Those who developed ALS had an average BMI of 21.1, compared with 21.9 for the group as a whole.

What stood out instead was the finding that ALS could be associated with low blood counts at military enlistment – in other words, a low proportion of oxygen-carrying red blood cells in the blood. A link was also found between ALS and measured muscle strength in the hands, arms and legs at the time of enlistment.

"Those with the lowest muscle strength had a significant risk of getting ALS 30 years later," Maria notes.

An additional finding concerned the men's physical condition, which in this study did not appear to be a contributing factor.

"Here we found conflicting data. Some of it indicated that the risk increases if you engage in very strenuous exercise while other data suggested that physical activity may even be preventive. But we saw no increase in risk if a person was physically fit or in less good shape."

The study itself is not about the cause and effect of various risk factors. The focus has been on identifying and excluding connections in an unusually large body of data.

"This is a much larger study than those previously done with military enlistment data, and consequently we have been able to see new connections," Maria says. "But we have no answers as to why a particular group has lower muscle strength more than 30 years before becoming sick."

More information: Maria Åberg et al. Risk factors in Swedish young men for amyotrophic lateral sclerosis in adulthood, *Journal of Neurology* (2017). DOI: 10.1007/s00415-017-8719-1

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