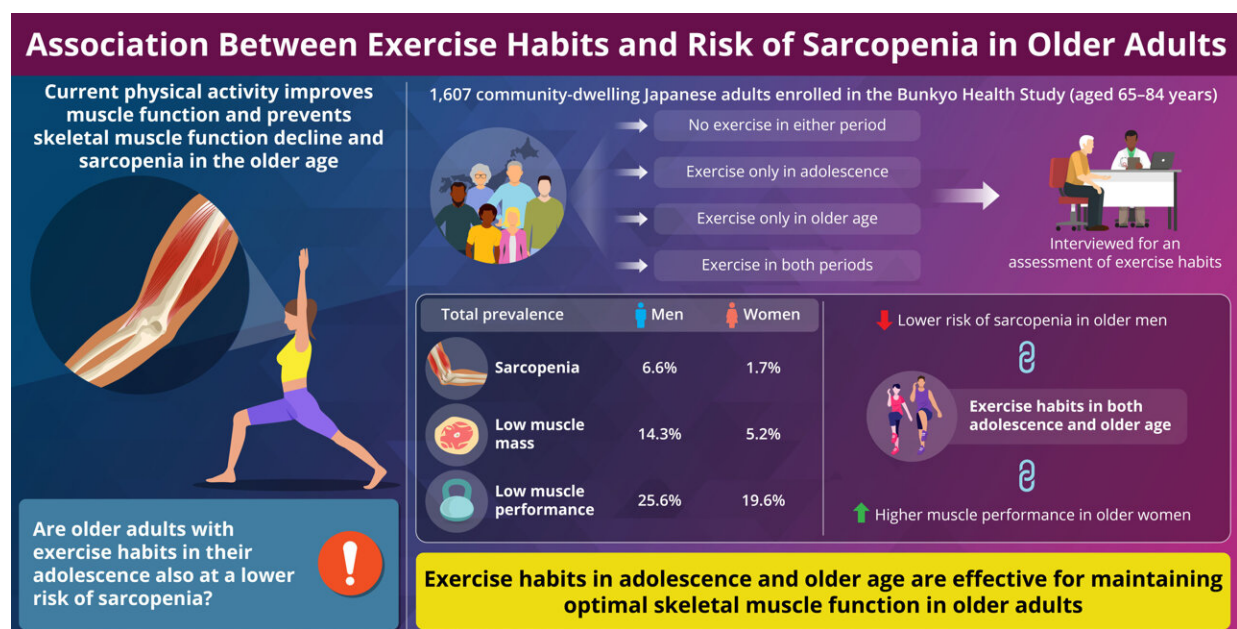



Investigating the effect of exercise habits in adolescence and midlife on the risk of sarcopenia in older age

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Effects of Exercise Habits in Adolescence and Older Age on Sarcopenia Risk in Older Adults: The Bunkyo Health Study
 Tabata et al. (2023) | *Journal of Cachexia, Sarcopenia and Muscle* | DOI: 10.1002/jcsm.13218

 Juntendo University

Researchers from Japan show that regular exercise during adolescence may positively impact skeletal muscle function during older ages, thus lowering the risk of 'sarcopenia' or age-related muscle weakening. Credit: Juntendo University

Muscle function typically improves during adolescence and deteriorates with age. Sarcopenia is one such type of muscle weakening, caused

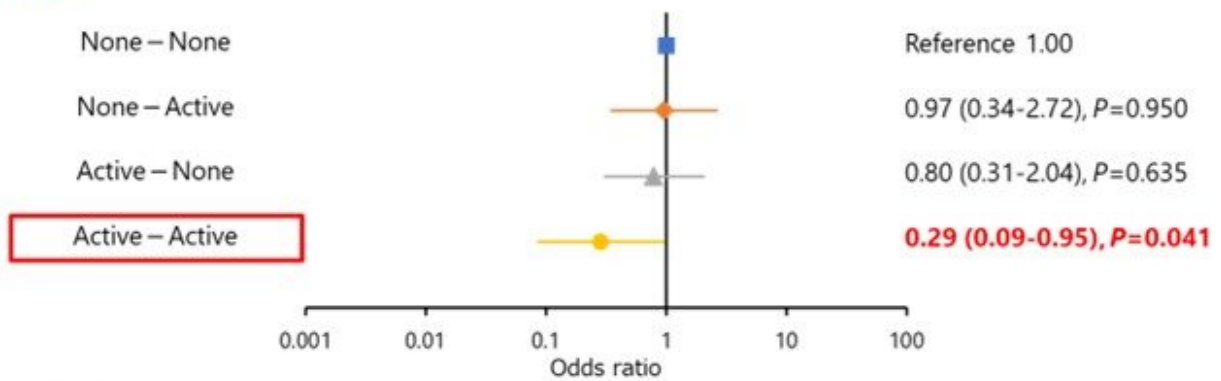
primarily by the natural aging process. As compared to other ethnicities, Asians with a relatively low body mass index (BMI) are more likely to develop sarcopenia as they grow older. The condition significantly impacts their quality of life, and thus, it is crucial to have strategies that prevent its onset.

In a new study published in the *Journal of Cachexia, Sarcopenia and Muscle*, a research team led by Associate Professor Yoshifumi Tamura from the Faculty of International Liberal Arts, Juntendo University, including Dr. Hiroki Tabata, Dr. Ryuzo Kawamori and Dr. Hirotaka Watada of the Sportology Center, and Department of Metabolism & Endocrinology, Juntendo University, Graduate School of Medicine investigated whether the habit of exercising and being physically active not only during older ages, but also during adolescence lowered the risk of [sarcopenia](#) at an older age.

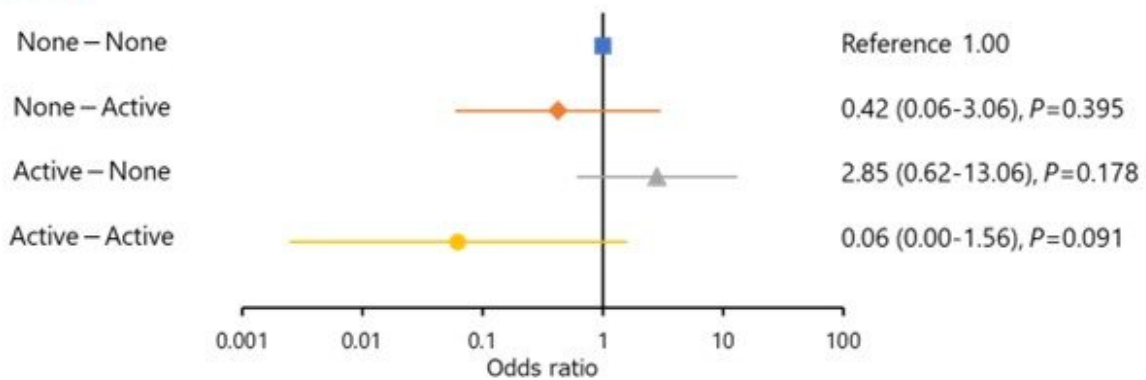
"Preventing sarcopenia is an important strategy for preventing disability and the need for long-term care in the older age. By establishing the association, we can move one step closer to reducing risk factors of sarcopenia in older Japanese adults," says Prof. Tamura.

The team assessed the [exercise habits](#) of 1,607 community-dwelling Japanese adults with comprised 679 males and 928 females aged 65–84, as part of the "Bunkyo Health Study." The participants underwent a complete health examination, including measurements of skeletal [muscle](#) index, handgrip strength, and gait speed.

Men



Women



*Adjusted for age, BMI, years of education, smoking history, protein intake, presence of type 2 diabetes, cardiovascular disease, osteoporosis, and exercise habit index from young to middle age. The odds ratio of sarcopenia was 0.29 times lower in the group of men with exercise habits in both middle and high school years and in old age (present) compared to the group without exercise habits in both periods. Credit: Hiroki Tabata from Juntendo University

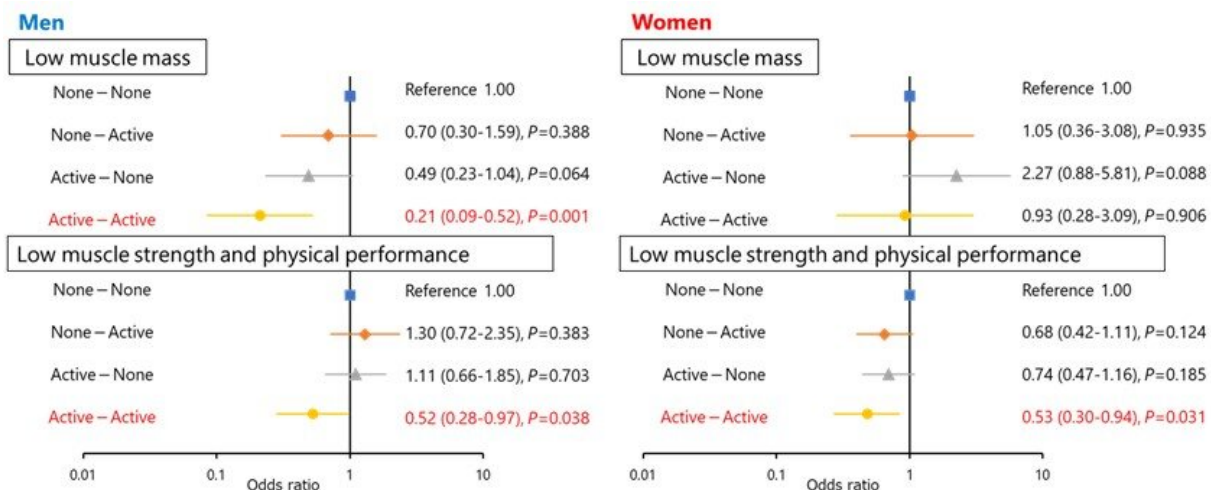
They were further divided into four groups based on their exercise habits in adolescence and older age: no exercise in either period, exercise only in adolescence, exercise only in older age, and exercise in both periods. Multivariate-adjusted logistic regression models were used to estimate the odds ratios (ORs) for the prevalence of sarcopenia in each group. Low muscle performance was defined as low muscle strength and/or low

gait speed.

Of the total participants, 6.6% of the men and 1.7% of the women had sarcopenia. Low muscle mass was prevalent in 14.3% of the men and 5.2% of the women, while low muscle performance was recorded in 25.6% of the men and 19.6% of the women.

In men, the ORs for sarcopenia, low muscle mass, and low muscle performance were significantly lower in the group that exercised during adolescence and older age. In contrast, in women, the OR for low muscle performance was significantly lower in those who exercised during their adolescence and older age.

The study indicated that older men who exercised in their adolescence and older age were at a lower risk of sarcopenia and had better muscle mass and muscle performance. In contrast, older women with exercise habits during these phases of their lives were at a lower risk of poor muscle performance.



*Adjusted for age, BMI, years of education, smoking history, protein intake, presence of type 2 diabetes, presence of cardiovascular disease, presence of

osteoporosis, and exercise habit index from youth to middle age. Compared to the group with exercise habits in both middle and high school and in old age (present) who did not have exercise habits in both periods, the ORs for the possession of reduced muscle mass and reduced muscle strength and physical function were 0.21 times and 0.52 times lower for men and 0.53 times lower for women, respectively than for the group with exercise habits in both periods, and the odds ratio for the possession of reduced muscle strength and physical function was the ORs were low. Credit: Hiroki Tabata from Juntendo University

"We would like to emphasize that exercising not only during old age but also during adolescence, i.e., junior and high school, may influence the maintenance of skeletal muscle function in old age," explains Prof. Tamura.

It is concerning that in Japan, the rate of exercise implementation has been shown to be highest during junior [high school](#) and then rapidly decreases with age. So, how do we address this problem?

Prof. Tamura responds, "By creating the awareness that inculcating the habit of exercising during adolescence, people can prevent several problems in their older ages. In the long run, exercising during adolescence has the potential to improve the quality of life of the older adults by providing maintenance of their skeletal [muscle function](#)."

More information: Hiroki Tabata et al, Effects of exercise habits in adolescence and older age on sarcopenia risk in older adults: the Bunkyo Health Study, *Journal of Cachexia, Sarcopenia and Muscle* (2023). [DOI: 10.1002/jcsm.13218](https://doi.org/10.1002/jcsm.13218)

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