

Lifelong female exercisers benefit from better muscle function

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Exercising throughout a woman's life may help preserve muscle power during the aging process, according to recent research. The study, the first to examine the effects of lifelong aerobic exercise on a woman's

muscles as she ages, is published in the *Journal of Applied Physiology* and was chosen as an APSselect article for January.

Cultural shifts in the past 50 years surrounding the inclusion of [women](#) in professional and elite athletics have led to more women being physically active for long periods of their lives. In fact, women outnumber men in organized running competitions. However, even with more women becoming involved in lifelong exercise habits—on both recreational and competitive levels—the significance of exercise over a [woman's](#) total lifespan has not been well-studied. Learning more about the effects of aerobic training on the muscles at a [cellular level](#) can help scientists better understand how [physical activity](#) slows various aspects of aging.

Researchers from Ball State University in Muncie, Ind., analyzed [muscle strength](#), power and the size and type of [muscle](#) fibers in the thigh muscles of three groups of women:

- One group was over the age of 70 and had exercised consistently for almost 50 years ("older exercisers").
- One group had an average age of 25 and were also regularly physically active ("younger exercisers").
- A third group was over the age of 70 and did not regularly exercise ("nonexercisers").

The older exercisers had more slow-twitch muscle fibers that contribute to endurance and help use energy more efficiently than both their nonexercising counterparts and young exercisers. The size of the slow-twitch fibers was consistent among the three groups. Compared to the younger exercisers, both groups of older women had smaller fast-twitch fibers—the type of muscles that contribute more to power than endurance.

The older exercisers had more power in the slow-twitch muscle fibers and preserved power in the fast-twitch muscle fibers when compared with the nonexercisers. Typically, fast-twitch muscle fiber function declines with age. These results "are unique and provide new insights into aging skeletal plasticity in women on the myocellular level," the authors wrote. "Future research should consider other modes of exercise (i.e., resistance exercise) and the potential wide range of benefits across multiple physiological systems with lifelong exercise."

"Single-muscle fiber contractile properties in lifelong aerobic exercising women" is published in the *Journal of Applied Physiology*.

More information: Kevin J. Gries et al. Single-muscle fiber contractile properties in lifelong aerobic exercising women, *Journal of Applied Physiology* (2019). [DOI: 10.1152/jappphysiol.00459.2019](https://doi.org/10.1152/jappphysiol.00459.2019)

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