

## Study: No decline in running economy for older runners

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Runners over the age of 60 are the fastest-growing group in the sport. A new study from the University of New Hampshire suggests that their running can remain fast as they age, too.

The study, published in the *Journal of [Strength and Conditioning Research](#)*, found that the running economy - how efficiently the body uses oxygen at a certain pace - of older runners was no different than that of younger runners. "That really jumped off the page. It was surprising, but in a good way," says lead author Timothy Quinn, who is an associate professor of exercise science at UNH.

Yet in general older runners are slower than younger ones, which is why races segment competitors by age. Moderating the good news about running economy, Quinn and his colleagues found that maintaining this running economy came at a higher "cost" to senior runners. Their VO<sub>2</sub> max, which measures the body's capacity to transport and use oxygen during exercise, was significantly lower than their younger peers, as were their maximal heart rates.

"For the runners over age 60, it's physiologically more difficult to run at that speed, even though the absolute oxygen uptake value is the same as a younger runner," says Quinn. In other words, it will feel harder.

Working with competitive male and female distance runners who had all finished first, second or third place in their age categories in large local road races, the researchers grouped their subjects as young (18-39

years), master (40-59 years) and older (60 years and over). In addition to running economy, Quinn and co-authors, who include former UNH exercise science graduate student and instructor Michelle Manley and former clinical assistant professor Allison MacKenzie (now at the University of Buffalo), looked at other factors - strength, power, and flexibility -- that might explain how running performance declines with age.

The older runners fared significantly worse than younger ones on all three measures, helping pinpoint the sources of age-related performance declines. Strength, in particular upper-body strength, is necessary to propel runners uphill and to hasten leg turnover, says Quinn. Muscle power - how fast that strength is generated - governs the speed at which runners can change speed or direction or run up hills. And flexibility, measured in this study with a sit-and-reach test to assess hamstring and lower back flexibility, correlates with stride length and step frequency.

These findings should by no means suggest that older runners should hang up their sneakers, the researchers say. "Strength declines with age, but you can minimize that if you do strength training. It doesn't take a lot to maintain strength," says Quinn. "We need to set up programs that enhance strength, especially upper-body strength, and power. They'll be better runners for it."

Quinn, who has done research on running, cardiovascular function, and fitness throughout his two-decade career at UNH, hopes to measure this same group of runners over time, launching a longitudinal study that will shed new light on the performance of [runners](#) as they [age](#).

**More information:** An abstract of the study, "Aging and Factors Related to Running Economy," is available to download here: [journals.lww.com/nsca-jscr/Ful...nning\\_Economy.5.aspx](http://journals.lww.com/nsca-jscr/Ful...nning_Economy.5.aspx).

Provided by University of New Hampshire

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