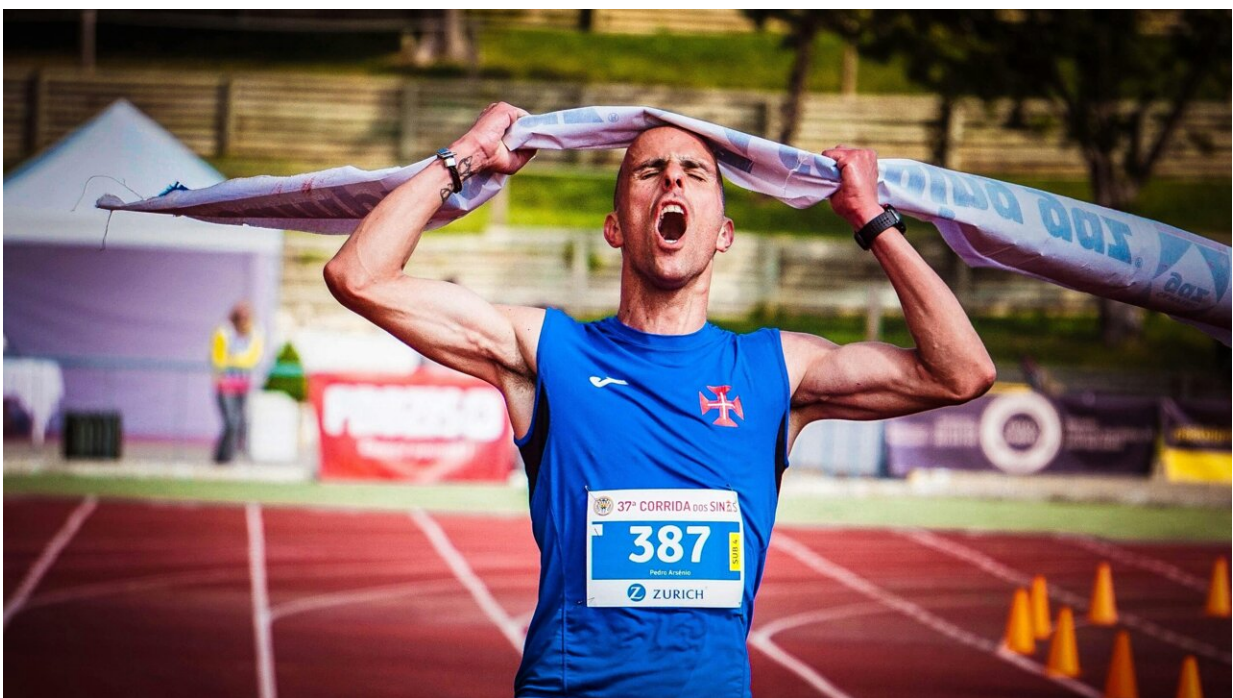


# Under 4-minute milers' longevity shows that extreme exercise doesn't seem to curb lifespan

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Credit: RUN 4 FFWPU from Pexels

Extreme exercise doesn't seem to shorten the lifespan as is widely believed, suggest the findings of a study on the longevity of the first 200 athletes to run a mile in under 4 minutes, and published in the *British Journal of Sports Medicine*.

They outlive the general population by several years, shows the study, which marks the 70th anniversary of the seminal achievement of Roger Bannister, who was the first person to run a mile in under 4 minutes in May 1954.

While regular moderate exercise is considered a pillar of healthy aging, it has long been thought that exposing the body to bouts of extreme endurance exercise may push it too far and shorten [life expectancy](#), say the researchers.

The repeated bouts of near-maximal to maximal exercise performed by mile runners makes them a unique group in which to test the potential impact of extreme intense exercise on longevity, the researchers explain.

They therefore scrutinized a compendium of 1,759 athletes who had run a mile in under 4 minutes as of June 2022, and extracted the details of the first 200 to do so, on the grounds that they would be at an age that would either match or exceed the typical life expectancy for their generation.

The runners' longevity was tracked, using publicly available information, from the exact date of their first successful attempt at breaking the 4-minute mile to either the age of 100, the end of 2023, or death, to find out the average difference in life expectancy between them and the general population, matched for age, sex, and nationality.

This difference was calculated as the observed life years for a runner minus their population-matched life expectancy. This number was then averaged across all 200.

The first 200 runners to break the 4-minute mile spanned a period of 20 years from 1954 to 1974. They came from 28 different countries across Europe (88), North America (78), Oceania (22) and Africa (12).

They were born between 1928 to 1955, and were aged 23, on average, when they ran the mile in under 4 minutes, with times ranging between 3:52.86 and 3:59.9 minutes. Of the total, 60 (30%) had died and 140 were alive at the time of the analysis. The average age at death was 73, but ranged from 24 to 91, while the average age of the surviving runners was 77, ranging from 68 to 93.

Information on cause of death wasn't known for most of the athletes, but of the seven who died before the age of 55, six were due to trauma or suicide and one was due to pancreatic cancer.

The analysis revealed that the under 4-minute milers lived nearly 5 years beyond their predicted life expectancy, on average, based on sex, age, year of birth, age at achievement, and nationality.

When factoring in the decade of completion, those whose first successful attempt was in the 1950s lived an average of 9 years longer than the general population during an average tracking period of 67 years. Those whose first successful attempt was in the 1960s or 1970s lived 5.5 years and nearly 3 years longer during an average tracking period of 58 and 51 years, respectively.

General improvements in life expectancy secondary to advances in the diagnosis and treatment of several major diseases might explain this particular trend, suggest the researchers.

They acknowledge that they didn't have any information on the lifelong exercise habits (or other health behaviors) of the 200 athletes included in the study, so weren't able to determine the precise relationship between lifelong exercise dose and longevity.

Additionally, comparison against the general population precluded assessment of how other [lifestyle factors](#), such as diet and smoking,

[cardiometabolic risk factors](#), and other potentially influential medical factors, such as [high blood pressure](#) and high cholesterol, might affect longevity. Finally, the study included only men, as no woman has yet to run a mile in under 4 minutes.

Nevertheless, the researchers say, "This finding challenges the upper ends of the U-shaped exercise hypothesis (as it relates to longevity) and, once again, reiterates the benefits of exercise on the lifespan, even at the levels of training required for elite performance."

Although the effort required in this group might seem to be less than that of endurance athletes, the high aerobic and anaerobic requirements of middle distance events, such as the mile, necessitate putting in relatively high training volumes of around 9–12 hours or 120–170 km a week, the team explains. While all this raises the possibility of pushing the body beyond its limits, particularly from an intensity perspective, this doesn't seem to affect lifespan, and if anything seems to prolong it, they add.

The physiological explanations for the extended lifespan are yet to be fully identified, say the researchers, but suggest that these likely reflect the positive adaptations of endurance [exercise](#) on cardiovascular, metabolic, and immune-related health and function.

A healthy lifestyle and genes may also have a role, they point out, as 20 sets of brothers, including six sets of twins and father and son combinations, were among the first 200 runners to break the 4-minute mile.

**More information:** Outrunning the grim reaper: longevity of the first 200 sub-4 min mile male runners, *British Journal of Sports Medicine* (2024). [DOI: 10.1136/bjsports-2024-108386](https://doi.org/10.1136/bjsports-2024-108386)

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