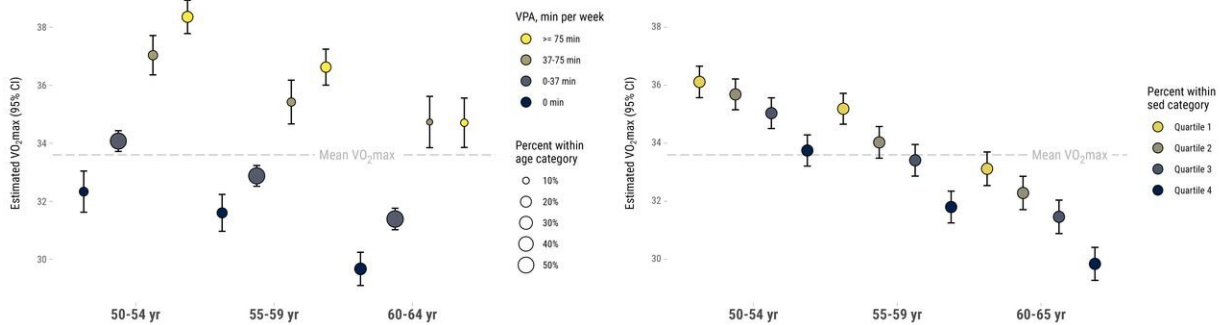


Physical fitness as a demographic watershed

December 22 2022



Mean estimated VO₂max (95% CI) in association with age-group (x-axis) and vigorous physical activity (VPA) level in min/week (left) and percentage of time in sedentary (right). Credit: *BMJ Open* (2022). DOI: 10.1136/bmjopen-2022-066336

Sedentary behavior, a large waist circumference, and advanced age: These factors are clearly associated with inferior physical fitness among people aged 50 to 64. In a study with over 5,000 participants, investigating the correlations in detail, major fitness disparities are shown.

Fitness is a vital factor for performance in sports, but also for the stamina required for exercising and leading an active everyday life. Previous studies have shown a strong connection between good fitness and various sickness and [health outcomes](#), including reduced risk of cardiovascular disease.

The present study, published in the scientific journal *BMJ Open*, involved 5,308 participants aged 50–64, 51% of whom were women. The article describes how maximal oxygen uptake (commonly known as VO₂ max), a common measure of fitness, varies from one [demographic group](#) to another.

The variables evaluated were sociodemographic (age, gender, education, etc.), lifestyle factors, perceived health, body measurements, disease prevalence, and self-appraised [physical activity](#) and sedentariness measured with an accelerometer.

Highly uneven fitness distribution

Every participant completed a cycling fitness test, while wearing an accelerometer on an elastic band around the waist. The purpose was to collect a week's measurements of the frequency, duration, and intensity level of individuals' exertion, both on an everyday basis and during training sessions, if any.

The study's first author is Mats Börjesson, Professor of Sports Physiology at Sahlgrenska Academy, University of Gothenburg.

"The results revealed groups at higher risk of low fitness. These were older and/or foreign-born people with low educational level, large waist size, poor self-perceived health, and a highly sedentary lifestyle, who undertook little high-intensity physical activity, and those who commuted passively by car or [public transport](#)," Börjesson says.

Among the group of men in the study, straitened [personal finances](#) and previous tobacco smoking were also linked to inferior fitness, for which the results overall show an uneven distribution in the population.

One important requirement for an ability to focus various types of input

on boosting fitness in these groups, or take other measures to prevent ill-health, is knowledge of which people have low fitness levels. Such knowledge partly existed before, but was then usually derived from studies of a few participants or select groups, such as men only or people from a specific socioeconomic group.

Valuable for health care and research

More detailed knowledge of fitness disparities among groups provides essential information from a broader perspective. Elin Ekblom Bak is a research fellow in sport science at the Swedish School of Sport and Health Sciences (Gymnastik- och idrottshögskolan, GIH), and the corresponding author of the study.

"This is one of the first studies that has been able to explore the association between physical activity versus [sedentary behavior](#) on the one hand, measured with an accelerometer, and fitness on the other. Sedentariness and high-intensity physical activity were found, independently from each other, to be strongly associated with a low and high fitness level respectively. Altogether, this study provides valuable knowledge for [health care](#) services, as well as for future research and public health efforts," Ekblom Bak says.

More information: Mats Börjesson et al, Correlates of cardiorespiratory fitness in a population-based sample of middle-aged adults: cross-sectional analyses in the SCAPIS study, *BMJ Open* (2022). [DOI: 10.1136/bmjopen-2022-066336](https://doi.org/10.1136/bmjopen-2022-066336)

Provided by University of Gothenburg

Citation: Physical fitness as a demographic watershed (2022, December 22) retrieved 26 April 2024 from <https://medicalxpress.com/news/2022-12-physical-demographic-watershed.html>

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