

## 10,000 Daily Steps; the Scientific Support

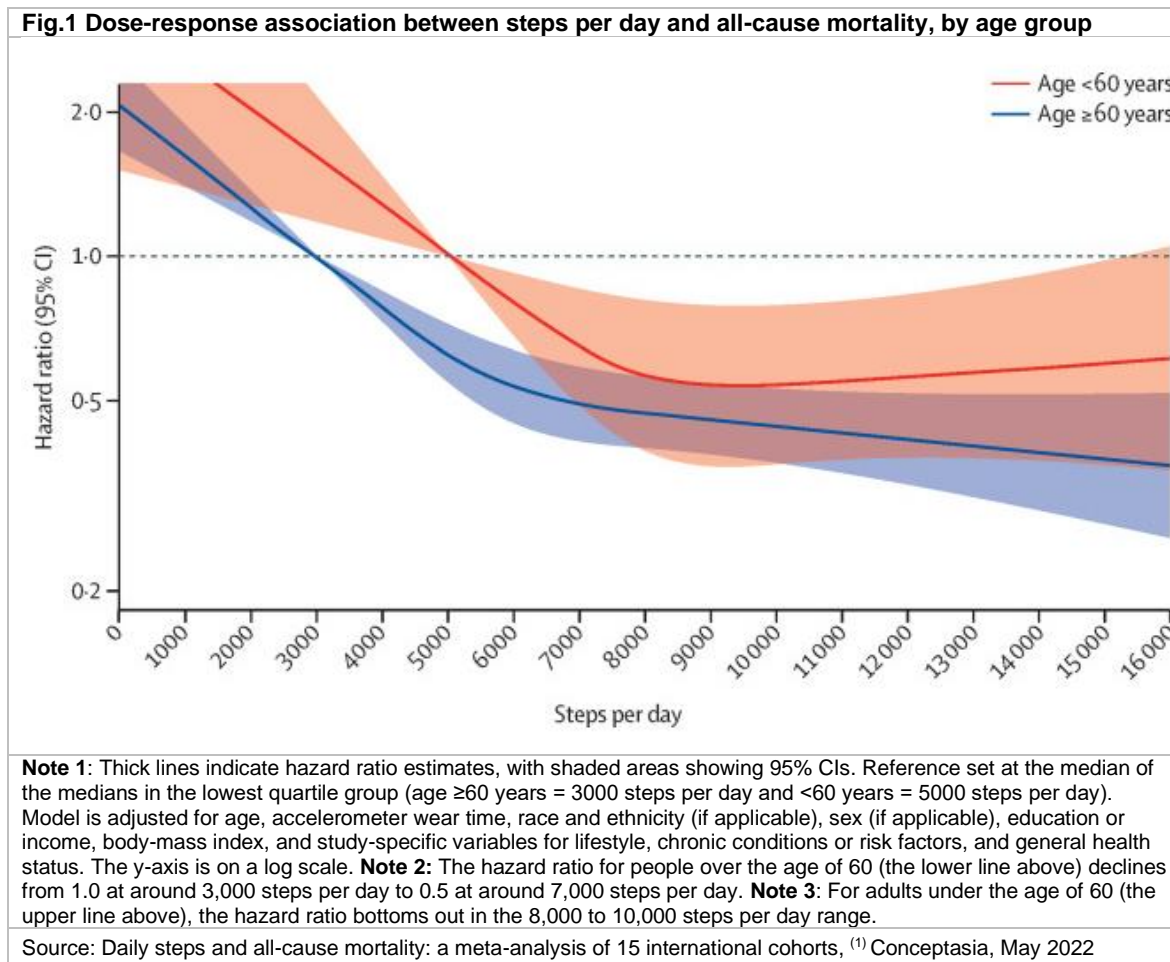
The history of the 10,000 daily steps recommendation appears to go back to 1965. <sup>(1)</sup> The origin of the goal of 10 000 steps per day is unclear. It likely derives from the trade name of a pedometer sold in 1965 by Yamasa Clock and Instrument Company in Japan called Manpo-kei, which translates to “10 000 steps meter” in Japanese. <sup>(2)</sup>

Nonetheless, and despite the prevalence of the 10,000 daily steps recommendation, scientific support has been sparse until now.

The recently released study, *Daily steps, and all-cause mortality: a meta-analysis of 15 international cohorts*, <sup>(1)</sup> supports the benefits of walking by linking it to mortality risk.

- a) For people over the age of 60, increasing daily steps from 3,000 to 7,000 reduces mortality risk by 50%
- b) For adults under the age of 60, the optimum daily steps appear to be 8,000 to 10,000

Please see Fig.1.



The study concluded: “Taking more steps per day was associated with a progressively lower risk of all-cause mortality, up to a level that varied by age.”

Until total walking steps, **walking intensity, the stepping rate**, continues to lack clear scientific support. To quote the study: “Our findings were inconclusive when determining if step intensity has additional benefits beyond that associated with total steps.”

## Japan’s step activity is relatively good

The number of steps taken by day is a simple measure of physical activity. With the widespread usage of smartphones with a built-in accelerometry function, worldwide data is becoming available on step activity.

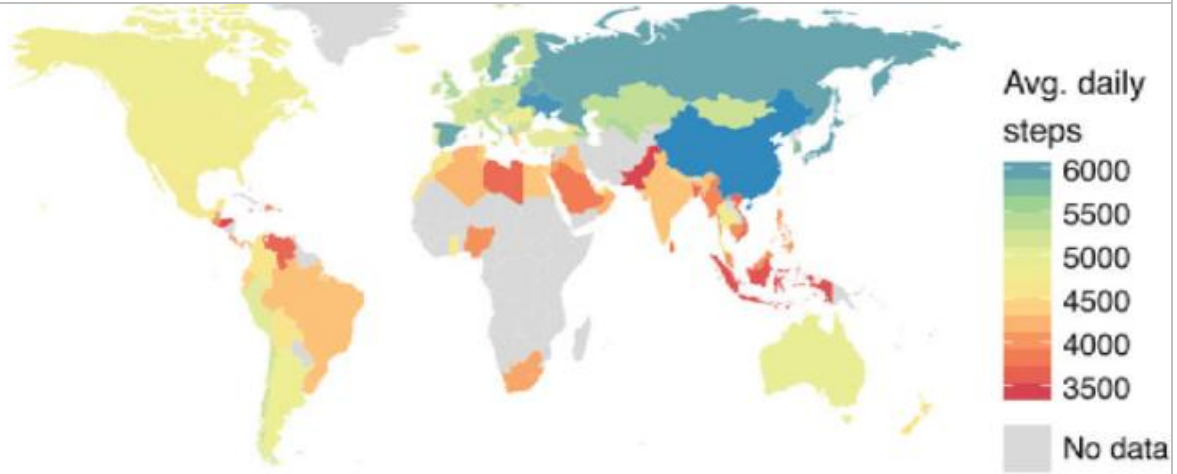
A study <sup>(3)</sup> published before the Covid-19 pandemic and related lockdowns gathered 68 million days of physical activity from 717,527 people across 111 countries, Fig.2. Fig.3 exhibits the data visually.

<b>Fig.2 Japan’s Step Activity – the Highest in the G7</b>			
<b>G7 country</b>	<b>Mean steps</b>	<b>Activity inequality</b>	<b>Obesity prevalence (%)</b>
USA	4,774	0.303	27.7
Japan	6,010	0.248	5.5
Germany	5,205	0.266	14.3
U.K.	5,444	0.288	19.5
France	5,141	0.268	8.9
Italy	5,296	0.275	9.0
Canada	4,819	0.303	22.3
<b>Other countries</b>			
China	6,180	0.245	3.7
India	4,297	0.293	16.3
Brazil	4,289	0.272	18.3
Saudi Arabia	3,807	0.325	26.1
Mexico	4,692	0.279	18.1
Russia	5,969	0.262	10.7
Spain	5,936	0.261	12.3
South Korea	5,755	0.247	5.9
Singapore	5,674	0.249	9.3
Australia	4,941	0.304	21.4
Note: Active inequality measure – the higher the number, the higher the inequality. Obesity prevalence is the % of adults with a BMI above 30%.			
Source: <i>Large-scale physical activity data reveal worldwide activity inequality</i> , <sup>(3)</sup> Conceptasia, May 2022			

Please note that even Japan’s relatively good daily steps of 6,010, the highest amongst G7 countries, is still low relative to optimum levels found in the study *Daily steps and all-cause mortality: a meta-analysis of 15 international cohorts*.

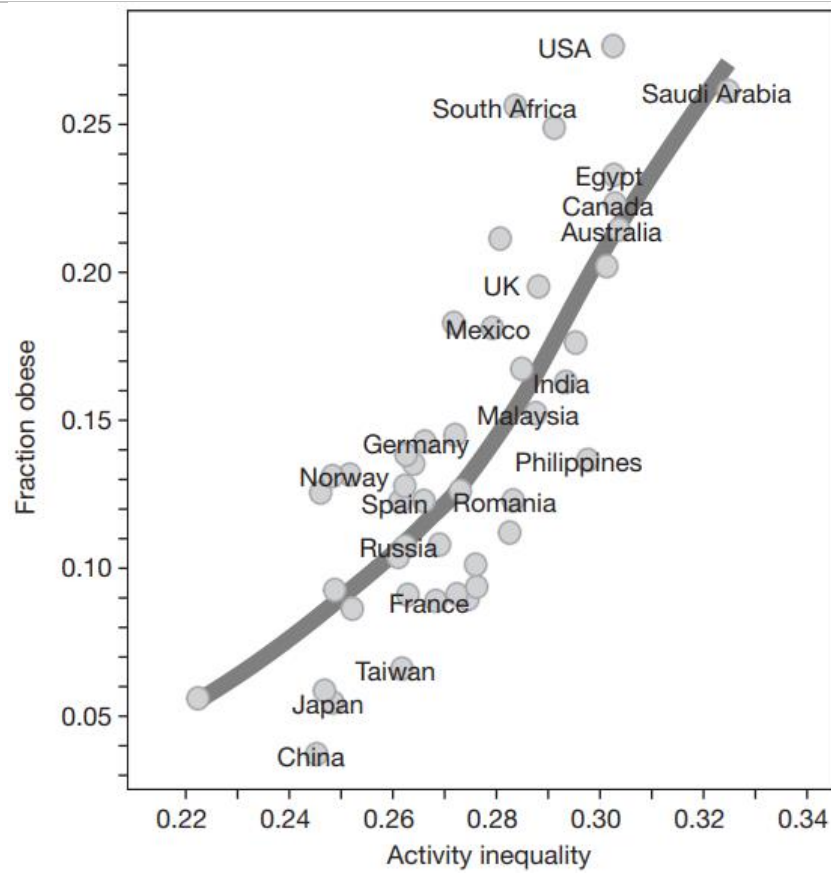
The study examined how step activity varied inside countries (a measure of step inequality) and the relationship to the prevalence of obesity, Fig.4. Activity inequality had a stronger relationship with obesity than mean steps. The authors note that activity inequality is associated with reduced activity, particularly in females. The authors also note that the results are independent of a country’s income level.

**Fig.3 Mean Daily Steps, 111 countries with at least 100 users**



Source: *Large-scale physical activity data reveal worldwide activity inequality*, <sup>(3)</sup> Conceptasia, May 2022

**Fig.4 Activity Inequality is Associated with Obesity**



Source: *Large-scale physical activity data reveal worldwide activity inequality*, <sup>(3)</sup> Conceptasia, May 2022

## The benefits of walking

There are many factors driving the decline in mortality risk from increased step activity. The government of Canada focusses on the impact of walking on cardiovascular and musculoskeletal systems, <sup>(4, 5)</sup> by:

- 1) Reducing the risk of coronary disease and stroke
- 2) Lowering blood pressure
- 3) Reducing cholesterol levels in blood
- 4) Increasing bone density, hence preventing osteoporosis
- 5) Managing the negative effects of osteoarthritis
- 6) Easing back pain

A Harvard Medical School study <sup>(6)</sup> goes further, concluding that walking also helps to protect against dementia, peripheral artery disease, obesity, diabetes, depression, colon cancer, and even erectile dysfunction. <sup>(5)</sup>

A comprehensive easy to understand website on the benefits of walking is provided by the UK National Health Service:

<https://www.nhs.uk/live-well/exercise/running-and-aerobic-exercises/walking-for-health/>

Walking also had benefits for mental resiliency. <sup>(5)</sup>

### References:

- 1) *Daily steps and all-cause mortality: a meta-analysis of 15 international cohorts*, by Amanda E Paluch, Shivangi Bajpai, Prof David R Bassett, Prof Mercedes R Carnethon, Prof Ulf Ekelund, Prof Kelly R Evenson, et al., published in *The Lancet*, March 2022
- 2) *Association of Step Volume and Intensity with All-Cause Mortality in Older Women*, by Min Lee, corresponding author, Eric J. Shiroma, Masamitsu Kamada, David R. Bassett, Charles E. Matthews, and Julie E. Buring, May 2019
- 3) *Large-scale physical activity data reveal worldwide activity inequality*, by Tim Althoff, Rok Sosič, Jennifer L. Hicks, Abby C. King, Scott L. Delp & Jure Leskovec, July 2017
- 4) "Walking - Still Our Best Medicine", *Canadian Centre for Occupational Health and Safety*, January 8, 2016 - <https://www.ccohs.ca/oshanswers/psychosocial/walking.html>
- 5) *10 Good Reasons to Go for a Walk*, by Thierry & Mary Anne Malleret, 2017
- 6) "Walking: Your steps to health", Harvard Medical School, August 2009 - [http://www.health.harvard.edu/newsletter\\_article/Walking-Your-steps-to-health](http://www.health.harvard.edu/newsletter_article/Walking-Your-steps-to-health)