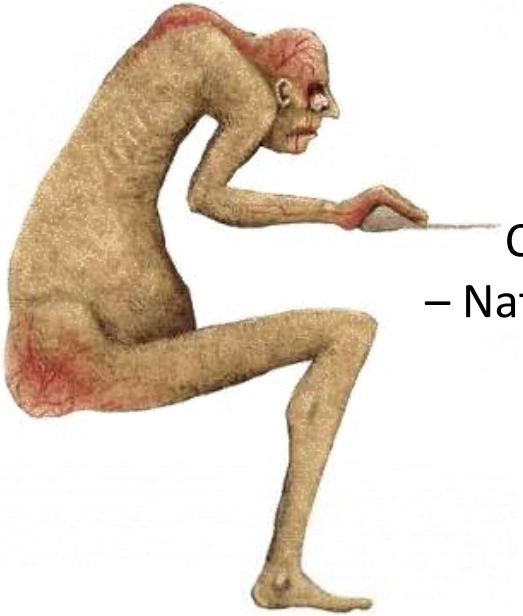
Ergonomic Challenges of Working with Display Screen Equipment



homo computerus

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Challenge 1. Providing ergonomic equipment

Challenge 2. Applying theoretical knowledge in practice

Challenge 3. Reducing sedentary lifestyle

What should a computer workstation look like?

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And what does it look like in reality?

Improper chair




Table too shallow




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And what does it look like in reality?

Incorrect positioning in relation to the window




Monitor set too low




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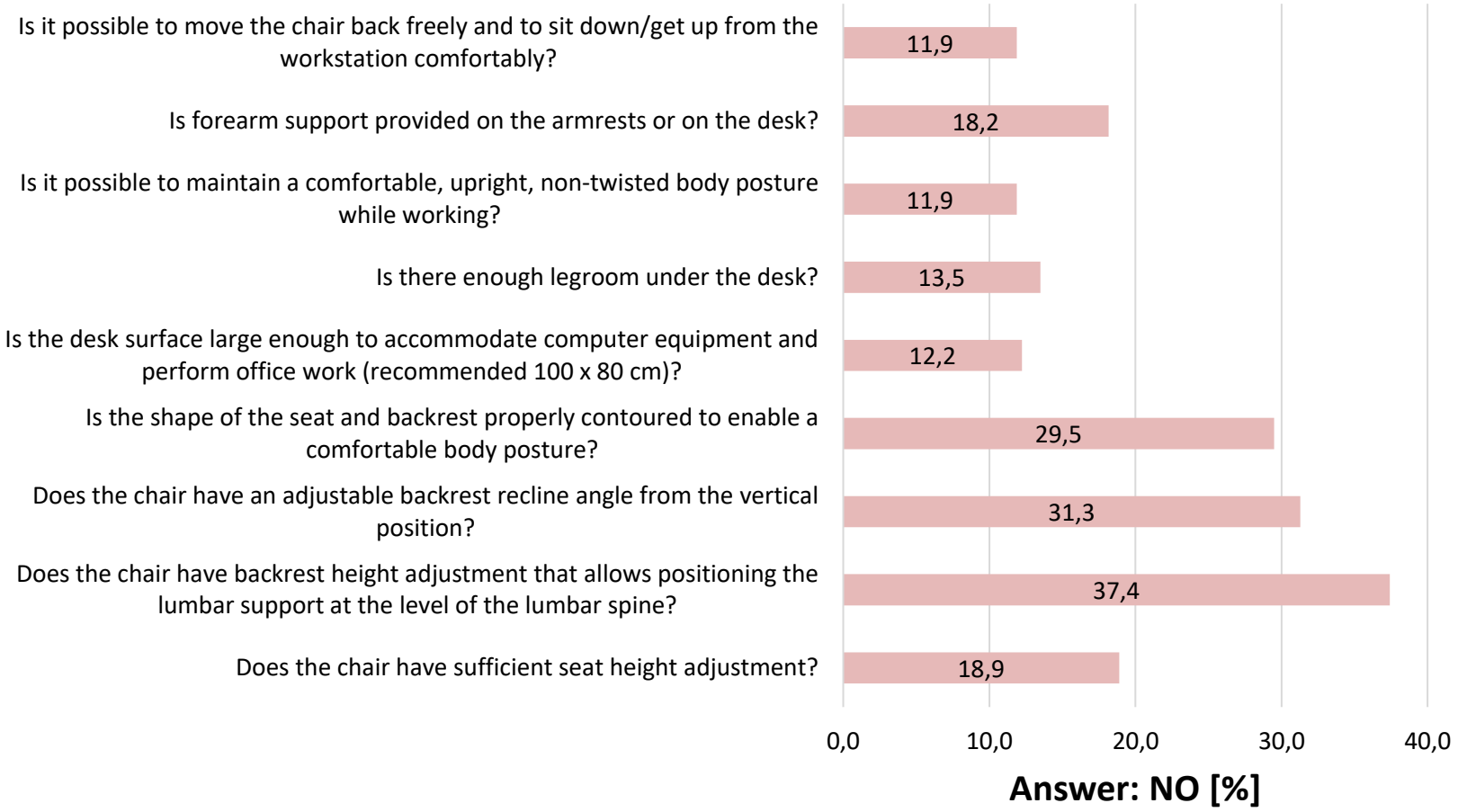
Computer workstation

(N = 556; F-51,1%, M-48,9%)



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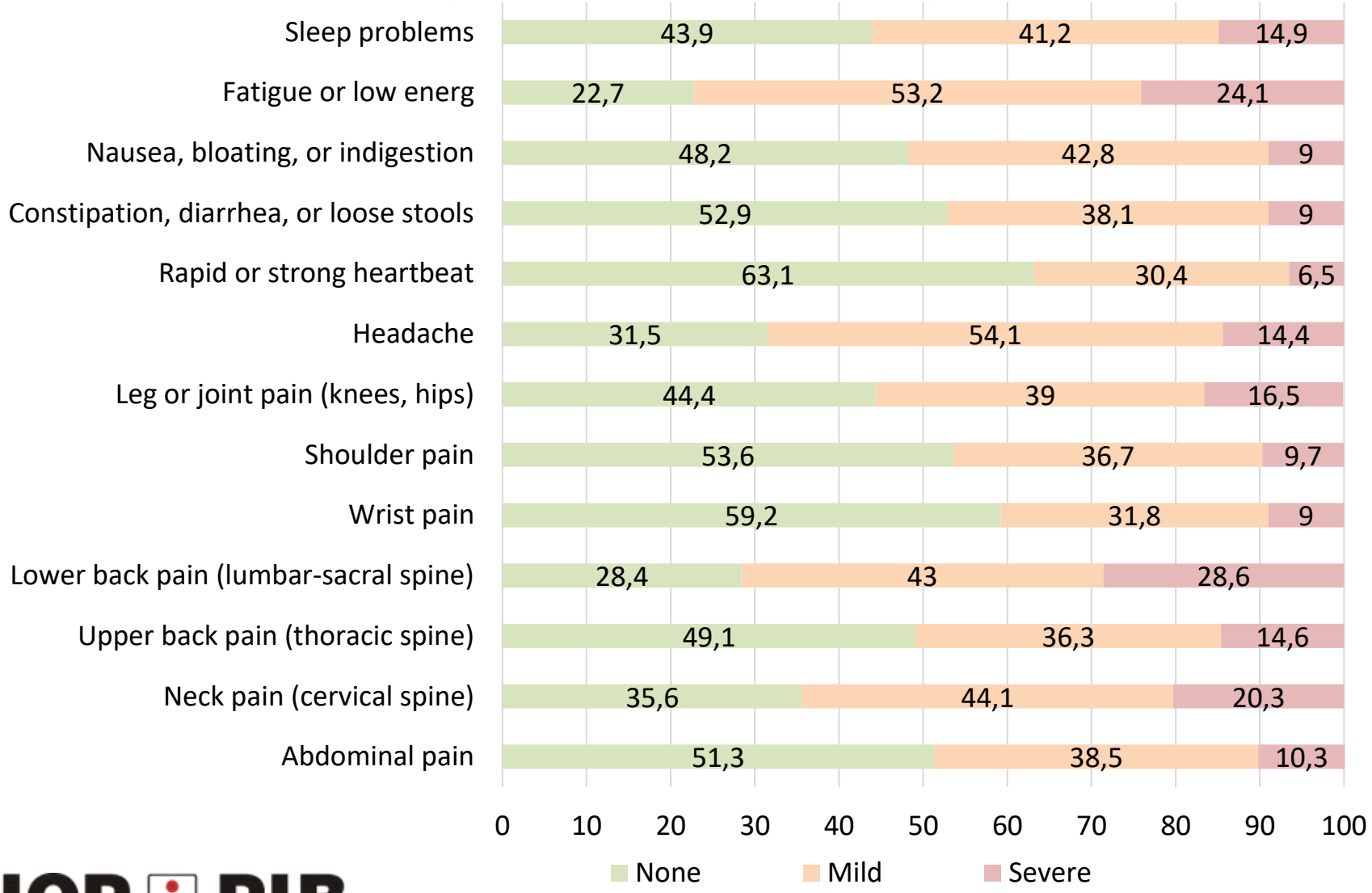
Symptoms experienced by computer users

(N = 556; F-51,1%, M-48,9%)



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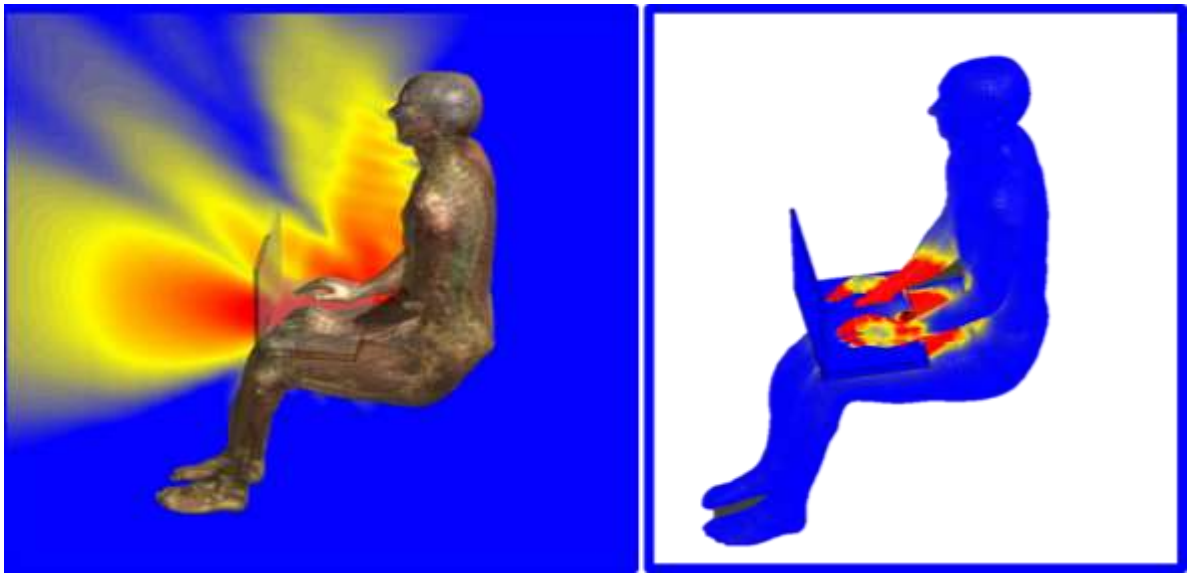
Placing a laptop on the lap
(working on a sofa or in bed)

11.5% of users worked for more than 100 minutes a day

12.8% of users worked for 50–99 minutes

12.2% of users worked for 1–49 minutes



Computer model of electromagnetic radiation emitted by a laptop's Wi-Fi/Bluetooth antenna *(Zradziński P., Karpowicz J., Gryz K.)*

EMG and goniometers analysis

V1 - Free sitting position on an office chair

V2 -Sitting position on an office chair

V3 - Sitting position on a saddle chair

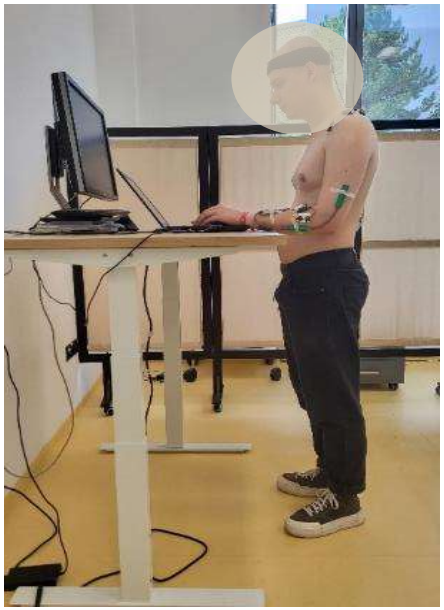
During variant V1 we observed:

- Greater tension in the right and left extensor carpi radialis muscles compared to the other variants
- Lower tension in the right and left trapezius muscles compared to variant V3 (with the use of a saddle chair)
- Greater forward head tilt angle compared to the other variants
- Smallest angles at the right and left elbow joints compared to the other variants

EMG and goniometers analysis

V1 – Free-standing position

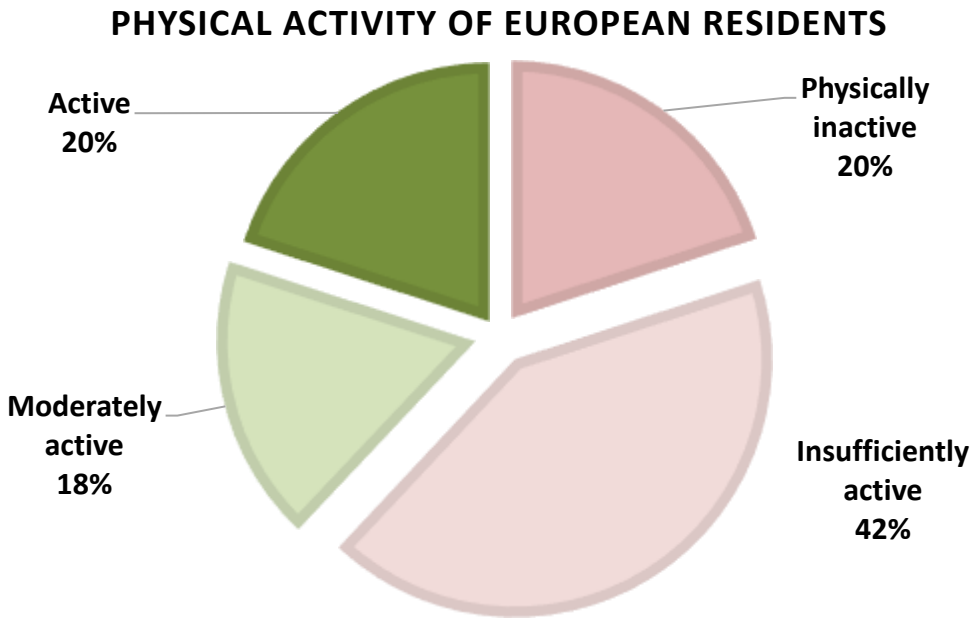
V2 –Standing position



During the free-standing position, we observed:

- Greater tension in the right trapezius muscle
- Lower tension in the right erector spinae muscle
- Reduced forward head tilt

Reducing sedentary lifestyle



Low physical activity accounts for:

- 21–25% of the burden of breast and colon cancer
- 27% of the burden of type 2 diabetes
- 30% of the burden of ischemic heart disease

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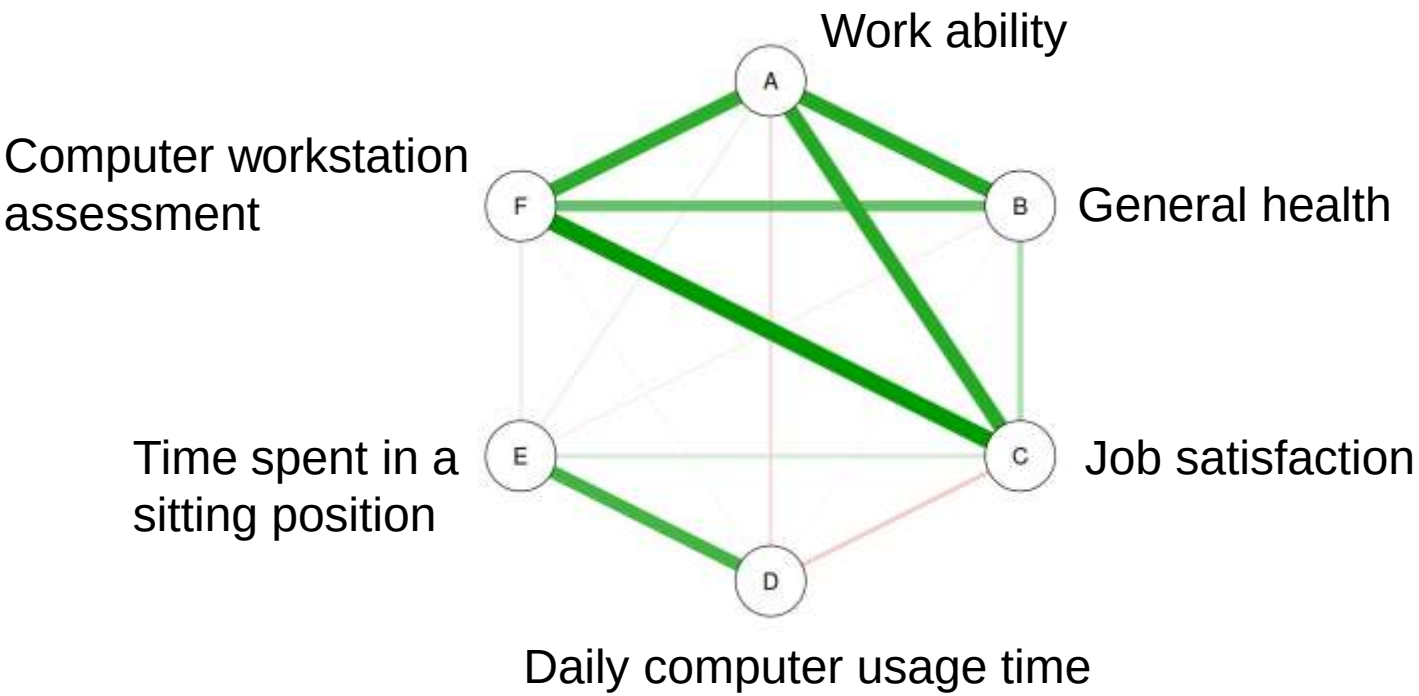
Global health risks: mortality and burden of disease attributable to selected major risks. Geneva, World Health Organization, 2009

Spearman’s correlations of selected ergonomic variables with health indicators



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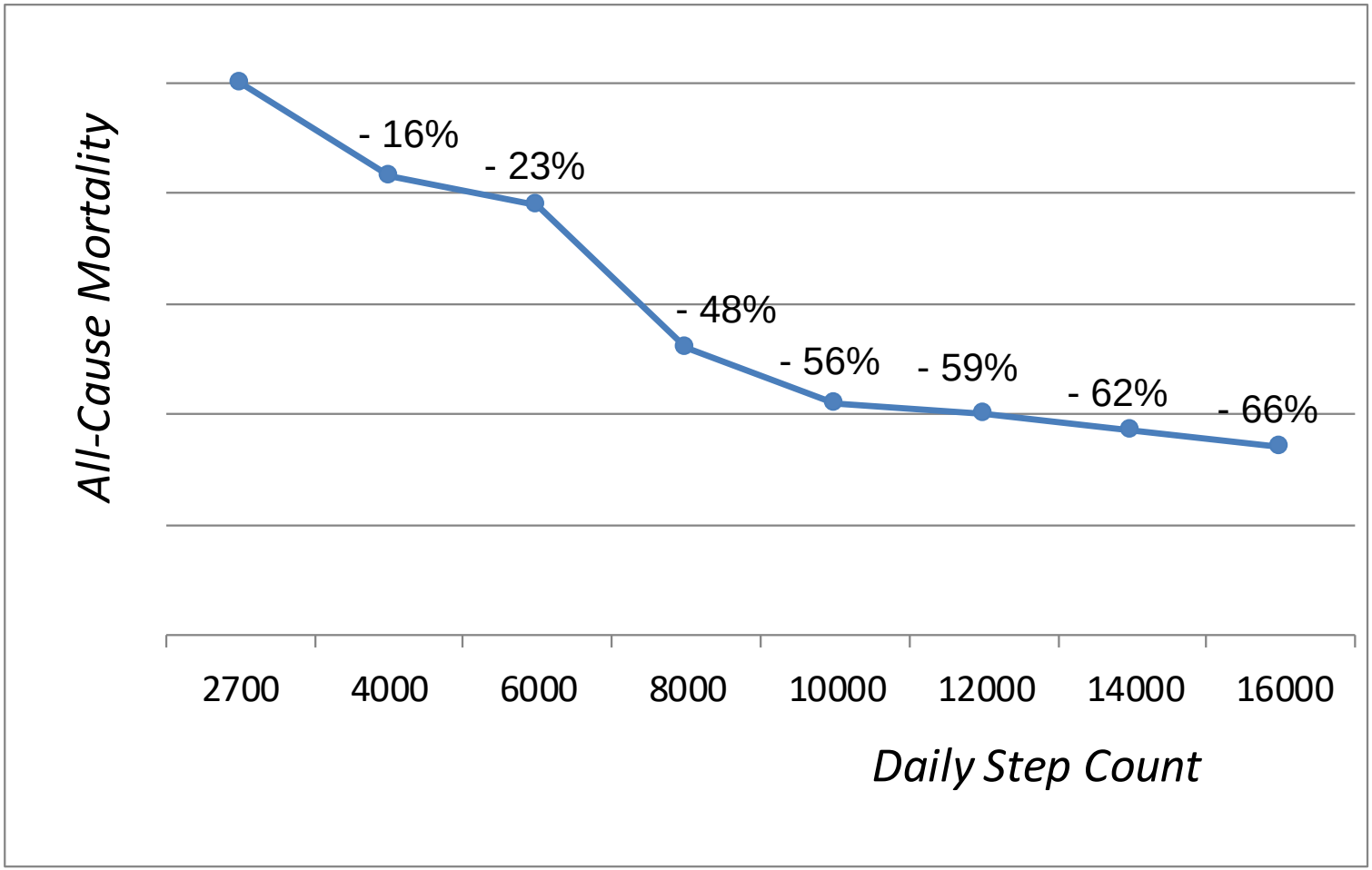
Daily Step Count and All-Cause Mortality



Jayedi A, Gohari A, Shab-Bidar S. Daily Step Count and All-Cause Mortality: A Dose-Response Meta-analysis of Prospective Cohort Studies. Sports Med. 2022 Jan;52(1):89-99. doi: 10.1007/s40279-021-01536-4. Epub 2021 Aug 21. PMID: 34417979.

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Thank you for your attention

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