



FINFIT 2017: population-based study on objectively measured physical fitness, activity, sedentary behavior and sleep in Finland (KunnonKartta 2017)

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Background

The number of studies collecting objectively measured data on physical fitness, physical activity (PA), sedentary behavior (SB) and sleep on population level are scarce.

Purpose

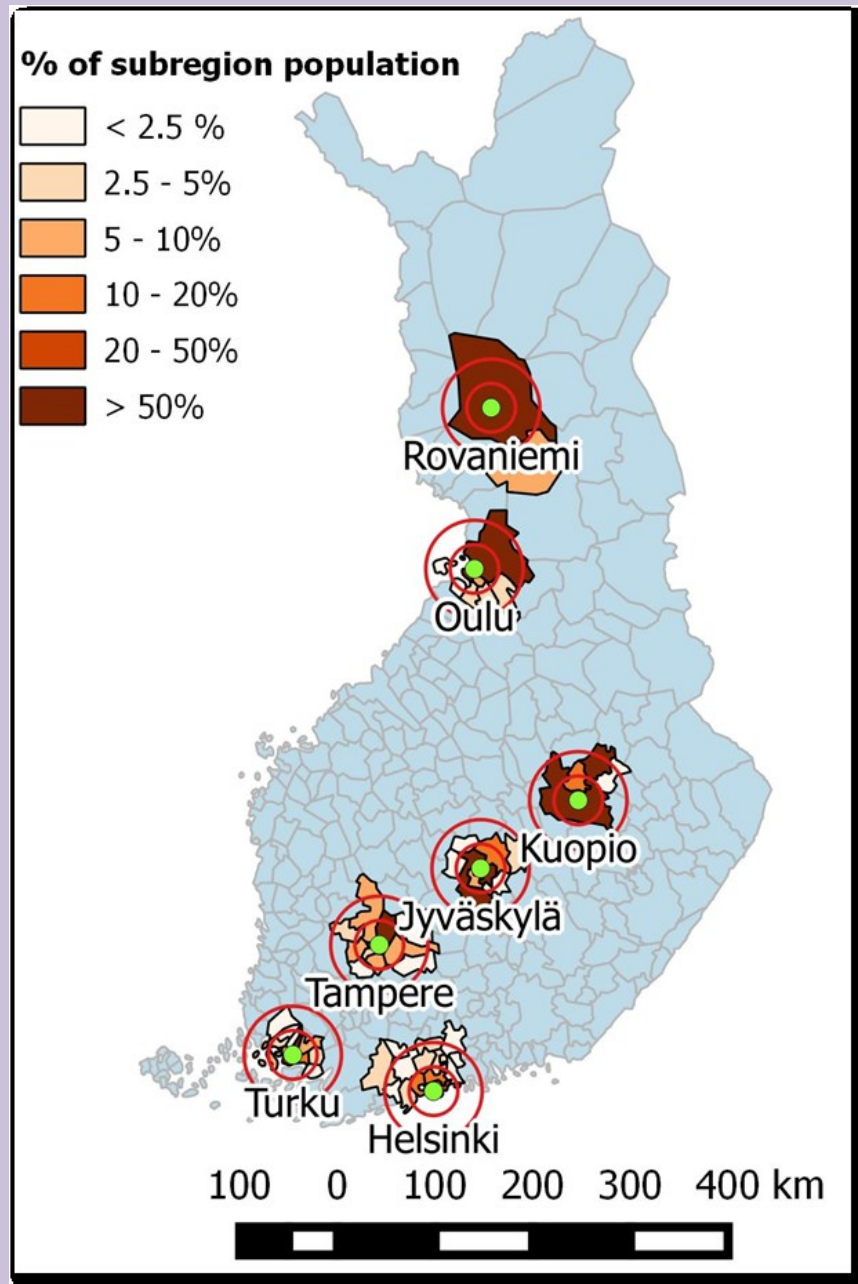
- 1) to measure fitness, PA, SB and sleep objectively in a representative sample of Finnish adults and
- 2) to analyze their dose-response relationships with various health indicators.



Methods

Stratified random sample of 20–69 year-old Finnish men and women (n=10 500)

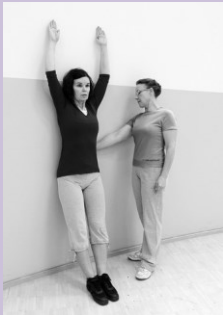
- 1500 participants from each seven subregions
- 150 men and 150 women from each 10-year age group





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Participant's fitness level is assessed at the health examination by three health-related fitness tests



shoulder-neck mobility



modified push-ups



6 minute walk test

In addition, following measurements are performed

- height
- weight
- waist circumference
- blood samples

} Body composition



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Participants' PA and SB during waking hours are measured by a hip-worn triaxial accelerometer (UKK RM42, The UKK Institute, Finland) for seven consecutive days.

For the sleep assessment the accelerometer is removed from hip to wrist.





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Accelerometer data is analysed as mean amplitude deviation (MAD) of the resultant acceleration in 6 s long epochs.

Intensity of activity is based on MAD values converted to metabolic equivalents (MET) and smoothed by using 1 min exponential moving average:

total PA > 1.5 MET

→ MVPA \geq 3 MET

SB (sitting and lying) and standing are based on the low intensity \leq 1.5MET and device orientation in relation to upright position (angle of posture estimation, APE).

Vähä-Ypyä H, Vasankari T, Husu P, Mänttari A, Vuorimaa T, Suni J, Sievänen H. Validation of cut-points for evaluating the intensity of physical activity with accelerometry-based mean amplitude deviation (MAD). PLoS One. 2015 Aug 20;10(8):e0134813.

Vähä-Ypyä H, Vasankari T, Husu P, Suni J, Sievänen H. A universal, accelerometry-based method for accurate intensity-based classification of different physical activities. Clin Physiol Funct Imaging, 2015(35):64-70.

Vähä-Ypyä H, Husu P, Suni J, Vasankari T, Sievänen H. Reliable recognition of lying, sitting and standing with a hip-worn accelerometer. Scand J Med Sci Sport 2017, in press.



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The Coordinating ethics committee of the Hospital District of Pirkanmaa has given an ethical approval for the study (R17030).

The invitations for the study were mailed in September 2017.





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The main **outcomes** of the study are

- fitness test results,
- specific patterns of objectively measured PA and SB,
- sleep quality, and
- their associations with various indicators of
 - health: e.g. cardiovascular and metabolic risk factors (obesity, high blood pressure etc.), symptoms and diseases, musculoskeletal pain and symptoms, cancer and mental health,
 - well-being,
 - workability and
 - costs: sickness absences, health care costs.

In the future, baseline data will be assessed against prospective register-based data on disease incidence, sickness absences and premature retirement. The FINFIT2017 study will be repeated with a stratified random sample every four years.



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Messages for policy and practice

The FINFIT2017 study will provide novel, objective 24/7 data on simultaneously measured fitness, PA, SB, and sleep on population level.

The data can be utilized in elaborating the dose-response relationships of these factors and behaviors with various health outcomes.



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Thank you!

