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# Association between Nature Relatedness and Physical Activity in Adults—A Population-Based Northern Finland Birth Cohort 1986 Study

Pekka Korpelainen<sup>1</sup>, Soile Puhakka<sup>1,2,3</sup>, Maisa Niemelä<sup>2,4,5</sup>, Raija Korpelainen<sup>1,2,4</sup>, and Tiina Lankila<sup>1,3</sup>

<sup>1</sup> Department of Sports and Exercise Medicine, Oulu Deaconess Institute, P.O. Box 365, 90100 Oulu, Finland

<sup>2</sup> Research Unit of Population Health, Faculty of Medicine, University of Oulu, P.O. Box 5000, 90014 Oulu, Finland

<sup>3</sup> The Geography Research Unit, Faculty of Science, University of Oulu, P.O. Box 3000, 90014 Oulu, Finland

<sup>4</sup> Medical Research Center Oulu, Oulu University Hospital and University of Oulu, PO Box 5000, 90014 Oulu, Finland

<sup>5</sup> Research Unit of Medical Imaging, Physics and Technology, University of Oulu, Oulu, Finland



## Background

- Despite the well-known benefits for health nearly third of the world's adult population are not physically active enough.<sup>1, 2, 3</sup>
- Evidence exists on the various benefits of nature exposure and nature relatedness on physical and mental health e.g., through stress reduction and restorative effects.
- Nature relatedness captures affective, cognitive and experiential aspects of individual's connection with nature.<sup>5</sup>
- Natural environments can also promote physical activity.<sup>4</sup>

## Aim of the study

- The aim of this study was to explore the associations between nature relatedness and total leisure-time physical activity at population level.

## Study population

- The study population consisted of the Northern Finland Birth Cohort 1986 participants.
- All those who responded to the nature relatedness and physical activity questionnaires in the follow-up data collection during 2019 - 2020 at the age of 33 years (n = 1995) were included in the study.

## Materials and Methods

- The participants filled in a postal questionnaire including items on:
  - Health and health behaviors
  - Socioeconomic status
  - Nature relatedness (NR) was measured with a questionnaire created for the study purpose. It was modified from and included items from Nisbet & Zelenski (2013)<sup>5</sup> and Lemieux et. al. (2016)<sup>6</sup> and focused on the experiential and active dimension of nature relatedness.
  - Physical activity was self reported with questions on the frequency and duration of light and moderate to vigorous physical activities during leisure time.
  - Weekly averages of metabolic equivalent of task (MET) minutes of light and moderate to vigorous activity were calculated by multiplying the physical activity duration by its mean intensity (light = 3 METs and moderate to vigorous = 5 METs). Total MET-minutes were calculated (light physical activity + moderate to vigorous activity) and used as a dependent variable.
- The data were analyzed by multiple linear regression analysis.

## Results

- The mean weekly total self-reported leisure-time physical activity of the participants was 993 (95% CI 961, 1024) MET-minutes.
- The mean nature relatedness score was 19.7 (range 0-28) (SD 5.4).
- In the unadjusted model, nature relatedness ( $\beta = 27$ , CI 95% 22, 32) was positively associated with weekly total leisure-time physical activity.
- After adjustment for smoking and waist circumference, nature relatedness ( $\beta = 25$ , CI 95% 18, 31) remained a significant determinant of leisure-time physical activity.

## Conclusions

- In this study nature relatedness was positively associated with self-reported total leisure-time physical activity.
- This knowledge that can be utilized in supporting nature relatedness and physical activity of adults for example in land use, education, decision making, and planning of healthier cities.

## References

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Characteristics	All (N=1995)	NR-score lower tertile (< 19) (n = 725)	NR-score middle and upper tertile ( $\geq 19$ ) (n = 1269)	p-value
Gender, male n (%)	746 (37.4)	302 (40.5)	444 (59.5)	0.003
Gender, female, n (%)	1249 (62.6)	424 (33.9)	825 (66.1)	0.003
Age, years (SD)	34.1 (0.6)	34.1 (0.56)	34.1 (0.58)	0.099
Weight, kg (SD)	76.0 (16.9)	79.0 (18.9)	74.3 (15.4)	< 0.001
Height, cm (SD)	170.5 (8.9)	171.6 (8.9)	169.8 (8.8)	0.522
Good self-rated health, n (%)	1510 (75.7)	497 (68.5)	1013 (79.8)	< 0.001
Current alcohol intake (yes), n (%)	1711 (85.8)	649 (89.4)	1062 (83.7)	< 0.001
Current smoking (yes), n (%)	618 (31.0)	250 (34.4)	368 (29.9)	0.339
Spends often time in green areas, n (%)	754 (37.8)	102 (14.0)	652 (51.4)	< 0.001
Nature relatedness, mean (SD)	19.7 (5.4)	13.8 (3.7)	23.2 (2.4)	0.011

Northern Finland Birth Cohorts

