Wearable-measured activity behaviors in work and leisure domains and their combined associations with health (DOACT)

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Leisure-time physical activity (PA) improves health and reduces the risk of many preventable diseases. Occupational physical activity on the other hand has been shown to increase the risk of preventable diseases and mortality. DOACT project will reveal how the amount and patterns of physical activity, sedentary time, and sleep during leisure-time and at work associate with health. The project is carried out in the University of Oulu. The study population comprises more than 7,000 working-aged members of the Northern Finland Birth Cohorts 1966 and 1986. Detailed information on their activity behaviors, health and occupational factors have been collected through activity monitoring, clinical measurements and questionnaires. DOACT project will use novel statistical methods to properly examine the codependent associations of 24-hour activity behaviors and health, including risk of cardiovascular disease, lifestyle related cancers, and disease mortality in midlife.

The project supports the call themes of promoting a physically active lifestyle and ensuring equal access to physical activity **by revealing the patterns of occupational and leisure-time activity behaviors, their interrelationship nature and domain-specific health effects.** This is especially important for occupational groups with demanding activity patterns, such as physically strenuous tasks or prolonged activities, like those performed by construction and healthcare workers. These activity patterns have been associated with lower levels of leisure-time physical activity and poor health.

The current PA guidelines do not recognize the possible hazards of occupational activity behaviors. Physically demanding jobs are often linked to lower levels of education and income, as well as a clustering of unhealthy lifestyle habits, making these occupational groups particularly vulnerable to lifestyle-related diseases. These groups could greatly benefit from activity guidelines that are specific to their occupational demands.

DOACT produces new knowledge about the independent roles of physical activity in leisure and occupational domains on health for the first time in a large population-based setting. This knowledge supports evidence-based decision making and enables to plan effective tailored interventions for improving health with PA, particularly for occupational groups with high risk of lifestyle diseases.

Main publications:

Niemelä, M, Maijala, A, Nauha, L, Jämsä, T, Korpelainen, R and Farrahi, V. Associations of Wearable Ring Measured Sleep, Sedentary Time, and Physical Activity With Cardiometabolic Health: A Compositional Data Analysis Approach. Scand J Med Sci Sports, 2024; 34: e14710. doi:10.1111/sms.14710 https://pubmed.ncbi.nlm.nih.gov/39164958/

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