Medical Xpress

Study finds physically demanding occupations can lead to risk of cognitive impairment

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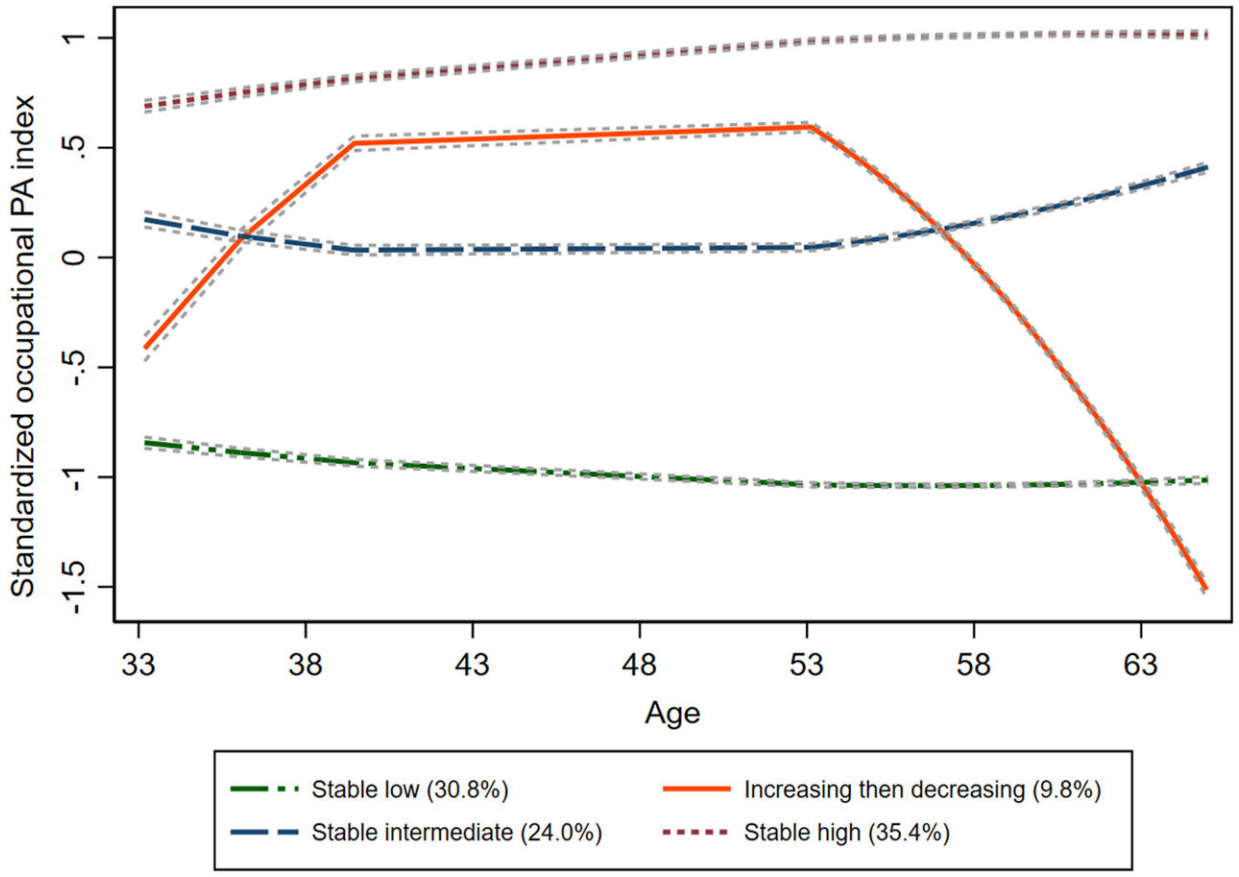

Trajectory plot of standardized occupational physical activity (PA) at ages 33–65 years showing four distinct trajectory groups: (1) stable low occupational PA, (2) increasing then decreasing occupational PA, (3) stable intermediate occupational PA, and (4) stable high occupational PA. A standardized occupational PA score of zero is equivalent to a score of 3.06 on the occupational PA index in O∗NET.

One SD is equivalent to a 0.93 point increase or decrease on the unstandardized occupational PA index. The dashed gray lines surrounding each trajectory are 95% confidence intervals on the estimated probabilities of group membership. Percentages in the legend represent the estimated group probability. For data on each participant's trajectory per occupational PA group, see Figure S2, and for the distribution of the occupational PA index in the sample, see Figure S3. Typical occupations for the occupational PA groups can be found in Tables S5 and S6. Credit: *The Lancet Regional Health - Europe* (2023). DOI: 10.1016/j.lanepe.2023.100721

Working consistently in an occupation with medium or high occupational physical activity was linked to an increased risk of cognitive impairment, according to a new study by the Norwegian National Centre of Ageing and Health and Columbia Mailman School of Public Health and the Butler Columbia Aging Center.

The results show the importance of developing strategies for individuals in physically demanding occupations to prevent cognitive impairment. The findings are published in *The Lancet Regional Health—Europe*.

"It is critically important to understand how workplace physical activity levels relate to cognitive impairment and dementia," observed Vegard Skirbekk, Ph.D., professor of Population and Family Health at Columbia Public Health. "Our work also highlights what is called the physical activity (PA) paradox—the association of leisure time physical activity with better cognitive outcomes, and how work related physical activity can lead to worse cognitive outcomes."

Until now prior studies on occupational physical activity and dementia had been limited. Earlier studies have typically assessed occupation at a single time-point in the individual's career—often close to retirement—and have mainly been self-reported.

"Our findings extend those from previous studies by incorporating a life-course perspective into research on occupational physical activity and cognitive impairment," said Skirbekk. "Whereas previous studies have also mainly focused on a single measurement of occupation, we include occupational trajectories from ages 33–65 to give a broader picture of the occupational histories of the participants and how these relate to risk of cognitive impairment in later adulthood."

Skirbekk observes that the preclinical period of dementia may start up to two decades prior to symptom onset, therefore, a life-course approach where different occupations during the working life course are taken into account could provide more accurate information on the complex relationships between occupational characteristics and cognitive impairment.

Using one of the world's largest population-based studies of dementia, the HUNT4 70+ Study, researchers assessed the association of occupational physical activity at ages 33–65 with risk of dementia and mild cognitive impairment at ages 70+.

Included in the analysis were 7005 participants, 902 who were clinically diagnosed with dementia and 2407 diagnosed with mild cognitive impairment. Skirbekk and colleagues assessed the association of trajectories of occupational physical activity at ages 33–65 with risk of dementia and mild cognitive impairment at ages 70+. Of the 7005 participants half were women.

Risks for dementia and mild cognitive impairment among the 70 year-old and over population were 15.5 percent among those with physically demanding work in the latter part of the working life, but only 9 percent among those with jobs that had low physical demands.

"Our results particularly underscore the need to follow up on individuals

with high lifetime occupational, physical activity as they appear to have a greater risk of developing dementia," noted Skirbekk.

"Future research should assess how occupational physical activity and interventions to reduce occupational physical activity or technological changes leading to altered activity, in combination with other characteristics of the job, relate to dementia and mild cognitive impairment risk in older ages. This will further our understanding of the association between occupational histories and cognitive impairment."

More information: Ekaterina Zotcheva et al, Trajectories of occupational physical activity and risk of later-life mild cognitive impairment and dementia: the HUNT4 70+ study, *The Lancet Regional Health—Europe* (2023). DOI: 10.1016/j.lanepe.2023.100721

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