Patterns of physical activity over 22 years and mortality: the HUNT Study, Norway

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BACKGROUND

The majority of studies relating physical activity (PA) to mortality have assessed PA using one baseline measure. Important questions in a preventive perspective are whether you can compensate for prior physical inactivity by taking up PA at a later stage in life and whether being physically active earlier in life can confer benefits even if you become inactive later. We investigated how patterns of PA over 22 years associated with all-cause and cardiovascular disease (CVD) mortality.

METHODS

We used data from the prospective population-based HUNT Study in Norway, including 10,491 men and 12,655 women aged = 20 years who participated at HUNT in 1984-86 and 2006-08. PA was categorised into inactive, < 2 h/week or = 2 h/week, making nine categories of patterns of PA over 22 years. All-cause and CVD mortality were assessed from the national Cause of Death Registry, with follow-up until the end of 2013. We used Cox regression to estimate adjusted hazard ratios (HRs) with 95% confidence intervals (CIs) for all-cause and CVD mortality within categories of PA patterns, compared to the reference category of individuals who reported 2 h/week at both examinations. Estimates were adjusted for baseline age, sex, body mass index, smoking, education level and blood pressure.

RESULTS

Individuals who were inactive in both 1984-86 and in 2006-08 had increased risk of all-cause mortality (HR 1.99, 95% CI 1.48-2.67) and CVD mortality (HR 2.68, 95% 1.47-4.86) compared to those who were physically active = 2 h/week at both examination. The HRs for all-cause and CVD mortality were 1.60 (1.22-2.15) and 1.90 (1.06-3.42), respectively, for those who reported PA of < 2h/week at both examinations. Individuals who went from being physically active in 1984-86 to inactive in 2006-08, had a comparable risk of all-cause and CVD mortality as those who were inactive at both examinations. Overall, the mortality risk was still increased in those who took up PA between the two examinations, compared to the reference category.

DISCUSSION

Individuals who remained physically inactive or who decreased their PA over 22 years had substantially increased all-cause and CVD mortality risk. Taking up PA only attenuated the risk but a high level of sustained PA was associated with the lowest risk.
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