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Association of the “Weekend Warrior” and Other Leisure-time Physical Activity Patterns With All-Cause and Cause-Specific Mortality

A Nationwide Cohort Study

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Key Points

Question Does performing the recommended levels of weekly physical activity in 1 to 2 sessions (weekend warrior) vs 3 or more sessions (regularly active) influence mortality?

Findings This large prospective cohort study of 350 978 adults in the US did not find any significant difference in mortality rates between weekend warriors and regularly active participants. Compared with physically inactive participants, active participants (both weekend warrior and regularly active) had lower all-cause and cause-specific mortality rates.

Meaning Adults who perform 150 minutes or more of moderate to vigorous physical activity (or 75 minutes of vigorous activity) per week may experience similar health benefits whether the sessions are spread throughout the week or concentrated in a weekend.

Abstract

Importance It is unclear whether the weekly recommended amount of moderate to vigorous physical activity (MVPA) has the same benefits for mortality risk when activity sessions are spread throughout the week vs concentrated in fewer days.

Objective To examine the association of weekend warrior and other patterns of leisure-time physical activity with all-cause and cause-specific mortality.

Design, Setting, and Participants This large nationwide prospective cohort study included 350 978 adults who self-reported physical activity to the US National Health Interview Survey from 1997 to 2013. Participant data were linked to the National Death Index through December 31, 2015.

Exposures Participants were grouped by self-reported activity level: physically inactive (<150 minutes per week [min/wk] of MVPA) or physically active (\geq 150 min/wk of moderate or \geq 75 min/wk of vigorous activity). The active group was further classified by pattern: weekend warrior (1-2 sessions/wk) or regularly active (\geq 3 session/wk); and then, by frequency, duration/session, and intensity of activity.

Main Outcomes and Measures All-cause, cardiovascular disease (CVD), and cancer mortality. Statistical analyses were performed in April 2022.

Results A total of 350 978 participants (mean [SD] age, 41.4 [15.2] years; 192 432 [50.8%] women; 209 432 [67.8%] Non-Hispanic White) were followed during a median of 10.4 years (3.6 million person-years). There were 21 898 deaths documented, including 4130 from CVD and 6034 from cancer. Compared with physically inactive participants, hazard ratios (HR) for all-cause mortality were 0.92 (95% CI, 0.83-1.02) for weekend warrior and 0.85 (95% CI, 0.83-0.88) for regularly active participants; findings for cause-specific mortality were similar. Given the same amount of total MVPA, weekend warrior participants had similar all-cause and cause-specific mortality rates as regularly active participants. The HRs for weekend warrior vs regularly active participants were 1.08 (95% CI, 0.97-1.20) for all-cause mortality; 1.14 (95% CI, 0.85-1.53) for CVD mortality; and 1.07 (95% CI, 0.87-1.31) for cancer mortality.

Conclusions and Relevance The findings of this large prospective cohort study suggest that individuals who engage in active patterns of physical activity, whether weekend warrior or regularly active, experience lower all-cause and cause-specific mortality rates than inactive individuals. Significant differences were not observed for all-cause or cause-specific mortality between weekend warriors and regularly active participants after accounting for total amount of MVPA; therefore, individuals who engage in the recommended levels of physical activity may experience the same benefit whether the sessions are performed throughout the week or concentrated into fewer days.



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Statistical questions about the study

Marco Huesch, MBBS, PhD | N/a

This study raises several questions.

First, there are 50 or so comparisons being made. Adjustment for multiple comparisons would broaden confidence intervals and render some point estimates insignificant.

Second, some key point estimates (for example, the mortality of weekend warriors as compared to physically inactive participants) already have broad confidence intervals for the hazard ratio that include 1.

Third, other key results (see Tables 4 and 5) have no significant hazard ratios. This doesn't mean that there is no difference between, for example, a low or high intensity or frequency of exercise compared to regular activities. It ...

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