



Some is better than none!

Association of physical activity pattern and mortality

To reduce mortality from all causes the WHO guidelines [1] make clear recommendations for men and women aged 18 to 64 years to perform moderate leisure time activity for at least 150 Minutes weekly or 75 Minutes of vigorous-intensity activity or combinations thereof. The minimum duration per session suggested is 10 Minutes, additionally muscle-strengthening activity is recommended on two days a week, involving major muscle groups. For additional health benefits, moderate activity should be increased to 300 or 150 Minutes with moderate or vigorous-intensity, respectively. The frequency of activity is not specified. In the Harvard Alumni Health Study, Lee et al. [2] investigated the risk of mortality in so-called ‘weekend warriors’, people who choose to do all their exercise in one or two sessions. They showed that even moderate exercise was associated with reduced mortality in this male cohort (RR = 0.41; 95% CI 0.21–0.81); however, the effect diminished upon presence of at least one major cardiovascular risk factor.

O’Donovan et al. recently published a pooled analysis of household-based surveillance studies on 11 population cohorts to investigate physical activity patterns regarding the risk for all-cause, cardiovascular, and cancer mortality [3]. The data recorded from 63,591 adults >40 years (45.8% male) were derived from the Health Survey for England (HSE) and the Scottish Health Survey (SHS) from 1994–2012. Of all individuals, 39,947 (62.8%) were classified as inactive at baseline and further set as reference. Moreover, 14,224 (22.4%) were classified as insufficiently active (less activity than recommended by the WHO), 2,341 (3.7%) as “weekend warriors” (activity recommended by the WHO, one or two sessions weekly), and 7,079 (11.1%) as regularly active (activity recommended by the WHO, more than three sessions weekly).

Compared to the inactive group (Hazard ratio HR = 1), risk of all-cause mortality was similarly reduced at all three activity levels: insufficient active HR 0.69, weekend warriors HR 0.70, and regularly active 0.65. Risk reduction of all-cause mortality by activity was greater in women compared to men on all three activity levels. Cardiovascular mortality decreased with increasing activity level: insufficient active HR 0.63, weekend warriors HR 0.60, and regularly active HR 0.59 when compared to inactive participants. However, in direct reference to the insufficient active, neither weekend warriors nor the regularly

active could maintain a significant improvement. Cancer mortality was slightly decreased in insufficient active (HR 0.86) and in regularly active (HR 0.79), but did not reach statistical significance in the weekend warrior group if adjusted for risk constellation (HR 0.82; 95% CI 0.63–1.06).

Major limitations of the study might be its questionnaire-based character with self-reported physical activity. Furthermore, baseline characteristics showed higher cardiovascular risk factors in the inactive group (e.g. currently smoking 25% vs. 15.8% in the active group) and lack of detailed information about other cardiovascular risk factors (e.g. diabetes, renal insufficiency, heart failure) and arteriosclerotic co-morbidities at baseline.

However, in another large population-based study on 661,137 U.S. American and European participants, Arem et al. [4] observed a 20% mortality risk reduction by regular physical activity below WHO recommendations.

Therefore, giving the benefit of a doubt to all weekend warriors out there: Some is better than none!

References

1. World Health Organization. Global recommendations on physical activity for health. <http://www.who.int/dietphysicalactivity/publications/9789241599979/en/>. Published 2010. Accessed November 10th, 2017.
2. Lee IM, Sesso HD, Oguma Y, Paffenbarger RS Jr. The “weekend warrior” and risk of mortality. *Am J Epidemiol.* 2004;160(7):636–41.
3. O’Donovan G, Lee IM, Hamer M, Stamatakis E. Association of “Weekend Warrior” and Other Leisure Time Physical Activity Patterns With Risks for All-Cause, Cardiovascular Disease, and Cancer Mortality. *JAMA Intern Med.* 2017 Mar 1;177(3):335–42.
4. Arem H, Moore SC, Patel A, Hartge P, Berrington de Gonzalez A, Viswanathan K, et al. Leisure time physical activity and mortality: a detailed pooled analysis of the dose-response relationship. *JAMA Intern Med.* 2015;175(6):959–67.

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