

Physical fitness and cancer

Jacqueline Kerr and colleagues' effort¹ to address the potential mechanisms between physical activity, sedentary behaviour, diet, and obesity, and cancer incidence and mortality, is greatly appreciated.

We share their thoughts on the limitations of deriving data on physical activity and sedentary behaviour from self-reports, and acknowledge the methodological improvement of applying machine-learning methods in the development of accelerometers. However, the behavioural nature of physical activity and sedentary behaviour measures implies that there is high variability across weeks, and accelerometer data are usually based on a 7-day window. Therefore, physical activity and sedentary behaviour observations would be better complemented with the assessment of physical fitness, which is a robust physiological measure and reflects the amount of physical activity of the past 3 months.

Cardiorespiratory fitness and muscular strength are the two most widely studied components of physical fitness because of their strong associations with health outcomes, including risk of cancer mortality. For example, the Cooper Center longitudinal study² showed that the risk of cancer mortality in men across adiposity measures became non-significant (for fat percentage) or attenuated (for body-mass index and waist circumference) when adjusting for cardiorespiratory fitness. When adjusting for adiposity measures, the effect on the association between cardiorespiratory fitness and cancer mortality risk was small; and, physically fit men had lower cancer mortality rates than unfit men with similar adiposity.² Muscular strength is inversely associated with risk of cancer mortality after adjusting for body fat, cardiorespiratory fitness, and physical activity.³ Therefore,

muscular strength adds to the protective effect of cardiorespiratory fitness against cancer mortality.

Kerr and colleagues¹ claim that obesity is a major contributor to cancer. However, there is strong evidence indicating that physical fitness plays a key role in the prevention of cancer, and the association between adiposity and cancer mortality is attenuated when adjusting for physical fitness.^{2,3} Additionally, physical fitness is a stronger predictor of morbidity and mortality than adiposity,⁴ physical activity,⁵ or sedentary behaviours.³ Therefore, when investigating cancer incidence and mortality, measuring physical fitness, particularly cardiorespiratory fitness or muscular strength, is recommended. This knowledge could be crucial for the development of public health policies.

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