Letters to the Editor

Measurement of physical activity exposure
From DAVID BATTY

Sir—Data from the prospective longitudinal study of Haapanen et al., allows them to address two important issues currently under debate in the field of physical activity epidemiology: (i) the optimal dose of physical activity for protection against incident coronary heart disease, hypertension and diabetes; and (ii) the physical activity-morbidity/mortality association in women. However, their finding that the volume and intensity of physical activity for protection against these conditions is sex- and outcome-specific is questionable; while self-reporting of these outcomes was validated, there is no evidence for the validity nor the reliability of the exposure variable of interest, physical activity.

Physical activity was measured by self-administered questionnaire. While the questionnaire is detailed (it contains 23 questions), a thorough evaluation by firstly, correlating questionnaire data with an appropriate criterion (e.g. aerobic fitness) to determine concurrent validity, and secondly, a repeated administration to assess reliability of data, would be necessary before one could make a judgement on the findings of this study. Methods of quantifying physical activity should be subjected to the same critical evaluation as any other exposure variable.

References

Authors' Response
From NINA HAAPANEN, SEppo MIILUNPALO, ILKKA VUORI, PEKKA OJA and MATTI PASANEN

Sir—A convincing body of epidemiological evidence, including our recent studies, shows that physical inactivity is a risk factor for many major causes of morbidity and mortality. However, Mr Batty raises an important question concerning the absence of commonly accepted, reliable and valid measures of physical activity.

For our recent studies we have evaluated the validity of both the disease outcomes and the physical activity measures used. An index for total leisure time physical activity was constructed from a wide variety of activity questions concerning conditioning exercise, sports, physical recreation, different leisure time and household chores, and commuting to and from work. Besides the type of activities the physical activity index took into account the weekly frequency derived from the questionnaire data. Furthermore, an energy cost coefficient for each activity was derived from the commonly used compendium of Ainsworth et al. In contrast with earlier studies also the seasonal duration of each activity was considered in the construction of the physical activity index.

We have used the physical activity index in several studies and compared the results with those obtained by other measurements of physical activity, especially with global single-item question of leisure time physical activity. In this material the concurrent validity between physical activity index and global leisure time physical activity measurement was fairly good. In addition, from repeated surveys we know that the stability of leisure time physical activity was also high. According to the single-item self-assessment of global physical activity of those participating in vigorous physical activity twice or more a week at baseline, approximately 60% engaged in the same level of activity 5 years later. Similarly, of those participating in light intensity activity at baseline, 80% engaged in the same level of activity 5 years later. The validity of this single-item global physical activity has been found to be good with reference to the results of the 2 km walking test, with which the maximal aerobic power can be estimated.

According to this evidence we believe the physical activity measures we have used are acceptable for epidemiological research even though we agree with Mr Batty that there is a need for further evaluation of physical activity measures as exposure variables.