

To: Transport & Health Policy Makers, & Practitioners
From: Prof Adrian Davis, TRI, Edinburgh Napier University
Date: 9th March 2020
Subject: Essential Evidence 4 Scotland No. 24 The common cold, physical activity and immune function

Top Line: Physical fitness and physical activity are strongly linked with lower risk of ill-health from infections such as the common cold. Walking and cycling, as routine physical activities, provide increased protection against such causes of ill-health through enhanced immune function.

Lifestyle habits and demographic factors such as mental stress, lack of sleep, poor nutrient and energy status, and old age have all been associated with impaired immune function and/or elevated risk of infection. This includes upper respiratory tract infection (URTI). URTI commonly includes: tonsillitis, laryngitis, and the common cold. The average adult has a common cold 2–4 a year while for children it is between 6–10 times. Minor illnesses are identified by employers as the most common causes of short-term absence with colds and flu as the single most common cited reason for work absence.¹

Physical activity has been shown in many studies to improve the body's immune function including in older adults and those with existing disease.² In a study of the effect of physical activity on risk of URTI, 1002 male and female, 18–85 years of age, were recruited via mass advertising from the community, and completed all requirements for the 12-week study.³ Half of the subjects were studied during a 12-week period (Jan–April) and the second half (Aug–Nov). Information on dietary patterns was obtained through a semi-quantitative food frequency questionnaire. Perceived physical fitness levels were reported. Subjects responded using a 10-point Likert scale, with 1 denoting 'not at all physically fit', 5 'somewhat physically fit' and 10 'extremely physically fit'. Responses to this question used in prior studies link well with measures of objective physical fitness, perceived well-being and sleep habits. Leisure-time exercise frequency habits and recent exposure to stressful events were also assessed. The mean number of URTI days during the 12-week study periods differed significantly between the winter and autumn groups. The relationship between perceived physical fitness level and URTI measures was nearly identical in that near-daily aerobic activity and the perception of being physically fit have a strong influence on URTI frequency and symptoms. After controlling for confounding influences such as weight and lifestyle factors, total days with URTI during the 12-week study were 43–46% lower in the high versus low groups for aerobic physical activity and perceived physical fitness level.

High perceived physical fitness and near-daily aerobic physical activity show an important relationship of reduced URTI frequency. These data are consistent with government guidelines recommending the general public to include physical activity within their daily routines to improve health. Perceived fitness and exercise frequency ranked second only to older age in the number of days with URTI during the winter and autumn seasons.

¹ CBI/Pfizer, 2010. On the path to recovery: Absence and workplace health survey 2010. London.

² Simpson, R. et al, 2020. Can exercise affect immune function to increase susceptibility to infection, *Exercise Immunology Review*, 26: 8-22.

³ Nieman, D., Henson, D., Austin, M., Shaw, W. 2010 Upper respiratory tract infection is reduced in physically fit and active adults, *British Journal of Sports Medicine*, on-line 10.1136/bjsm.2010.077875