Higher physical activity levels associated with reduced respiratory infection susceptibility in children

January 23 2023

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Higher levels of daily physical activity are associated with reduced susceptibility to upper respiratory tract infections such as the common

cold, suggests a study of 104 Polish children published in *Pediatric Research*.

Wojciech Feleszko, Katarzyna Ostrzyżek-Przeździecka and colleagues measured the physical activity levels and symptoms of upper respiratory tract infections of children aged between 4 and 7 in the Warsaw city region between 2018 and 2019. Participants wore a pedometer armband 24 hours a day for 40 days to measure their activity levels and sleep duration.

Parents reported their children's symptoms of upper respiratory tract infections—such as coughing or sneezing—using daily questionnaires for 60 days. Using a second questionnaire, parents reported on their children's vaccinations, participation in sport, whether they had siblings, and their exposure to smoking and pet hair.

The authors found that as the average daily number of steps taken by children throughout the study period increased by 1,000, the number of days that they experienced symptoms of upper respiratory tract infections decreased by an average of 4.1 days. Additionally, children participating in three or more hours of sport per week tended to experience fewer days with respiratory tract infection symptoms than those not regularly participating in sports.

Higher activity levels at the beginning of the study were associated with fewer days with respiratory tract infection symptoms during the following six weeks. Among 47 children whose average daily number of steps was 5,668 during the first two weeks of the study period, the combined number of days during the following six weeks that these children experienced upper respiratory tract infection symptoms was 947.

However, among 47 children whose initial average daily steps numbered

9,368, the combined number of days during the following six weeks that these children experienced respiratory symptoms for was 724. The authors did not identify associations between upper respiratory tract infection symptoms and sleep duration, siblings, vaccinations, or exposure to pet hair or smoking.

The authors speculate that higher physical activity levels could help reduce infection risk in children by reducing levels of inflammatory cytokines—which are associated with chronic inflammation and disease—and by promoting immune responses involving T-helper cells. They also suggest that skeletal muscles could release small extracellular vesicles that modulate immune responses following exercise.

However, they caution that future research is needed to investigate these potential mechanisms in children. They add that the observational nature of their study does not allow for conclusions about a causal relationship between physical activity levels and susceptibility to upper respiratory tract infections.

More information: Wojciech Feleszko, Association of low physical activity with higher respiratory tract infections frequency among pre-school children, *Pediatric Research* (2023). DOI: 10.1038/s41390-022-02436-7.
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