Associations of sedentary behavior, physical activity and cardiorespiratory fitness with pain conditions in children: the PANIC study

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BACKGROUND

Pain among children and adolescents is an important and increasing public health problem in developed countries including Finland. Pain has been observed to restrict school attendance, participation in hobbies and maintenance of social contacts, to reduce appetite and sleep quality, to impair psychosocial and cognitive function, to increase anxiety and depression and to increase the use of health services in children and adolescents. Therefore, it would be important to identify children with risk factors for pain conditions to prevent pain and its consequences since childhood.

OBJECTIVES

We investigated the cross-sectional associations of sedentary behavior, physical activity, cardiorespiratory fitness and body fat content with pain conditions in prepubertal children. The present study is based on part of the baseline data of the Physical Activity and Nutrition in Children (PANIC) Study.

METHODS

Sedentary behavior, physical activity and pain conditions were assessed by questionnaires, cardiorespiratory fitness by maximal cycle ergometer test. The associations of sedentary behavior, physical activity and cardiorespiratory fitness with the risk of any pain, frequent pain, multiple pain, headache, lower limb pain or abdominal pain were analysed using logistic regression adjusted for age.

RESULTS

Children in the highest sex-specific third of sedentary behavior had 1.95 (95% CI 1.20-3.17, p=0.007 for trend across thirds) times higher odds of any pain than children in the lowest third.

Children in the highest sex-specific third of cardiorespiratory fitness had 46% (OR 0.54, 95% CI 0.32-0.91, p=0.019) lower odds of any pain and 50% (OR 0.50, 95% CI 0.28-0.87, p=0.015) lower odds of headache than children in the lowest third.

Children in the highest sex-specific third of body fat percentage had 44% (OR 0.56, 95% CI 0.34-0.93, p=0.023) lower odds of any pain, 49% (OR 0.51, 95% CI 0.30-0.86, p=0.011) lower risk of multiple pain and 48% (OR 0.52, 95% CI 0.31-0.86, p=0.010) lower odds of lower limb pain than children in the lowest third.

Physical activity was not associated with pain conditions.

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CONCLUSIONS

These findings suggest that prepubertal children with high levels of sedentary behavior, low levels of cardiorespiratory fitness and low body fat content have increased likelihood of various pain conditions. This information could be used to develop strategies to prevent chronic pain in childhood.