AGE AND SEX DIFFERENCES IN THE PHYSICAL ACTIVITY LEVELS OF SCHOOLCHILDREN, 11-18 YEARS

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INTRODUCTION

Physical activity is an important health-related behaviour for children, because a) it enhances social, physical and cognitive development and quality of life, b) it may modify the evolution of health risk factors and minimise the risk of future degenerative disease, and c) it may establish a healthy behaviour at an early stage of life which may continue into adult life. Accordingly, physical activity guidelines for the 11-18 year age group have been proposed (Sallis and Patrick, 1994). Guideline 1 recommends the accumulation of 30 minutes of moderate intensity activity per day, and guideline 2 recommends 3 sessions of vigorous activity per week. The purpose of this study was to assess the physical activity patterns of a large, representative sample of schoolchildren with emphasis on the proportion of children who achieve the health-related guidelines.

METHODS

The Northern Ireland Health and Fitness Survey (Riddoch et al, 1991) assessed the fitness, physical activity, lifestyles, diet and attitudes of 3,211 children (1540 boys, 1671 girls) ages 11-18 years. A stratified, two-stage probability sample, representative of the post-primary school-aged population of Northern Ireland, was selected. This constituted approximately 200 children in each of 16 age/sex groups, who were surveyed during the course of one school year. An overall response rate of 74% was achieved. Both 'moderate' and 'vigorous' physical activity (min./wk.) were assessed by 7-day recall (Riddoch, 1990). Moderate activity was defined as 'causing slight breathlessness', and vigorous activity as 'causing considerable breathlessness'. From this data the proportion of children achieving the guidelines were calculated. Differences in activity levels between sex groups were analysed by the t-test for independent samples. Differences between age groups were assessed using one-way analysis of variance, with post-hoc Scheffe tests. Two-way (2x8) analysis of variance was use to assess age and sex interactions. Differences in proportions of children achieving the guidelines were analysed by the chi-square ($\chi^2$) test.

RESULTS

Overall, boys were more active than girls for moderate activity, (330+318 v 242+259 min./wk, PO.001), and also for vigorous activity (168+249 v 75+151 min./wk., PO.001). A significant main effect for age for boys and girls was observed for moderate activity ^7,3098= 16.00, PO.001), with post-hoc analyses indicating that older children, particularly the 17-18 year-olds, were significantly (PO.05) less active than younger children. No significant main effect for age was seen for vigorous activity. Two-way interactions (age and sex) were not significant (P>0.05) for boys or girls. The proportion of boys achieving guideline 1 was significantly greater than the proportion of girls (66.4% v 54.8%; $\chi^2(i)=44.00, P<0.001$). Proportions of children achieving guideline 1 also differed significantly by age ($\chi^2(7)=l 1.52; PO.001$). The proportion of boys achieving guideline 2 was significantly greater than the proportion of girls (32.0% v 15.0%; $\chi^2(i)=126.48, PO.001$). Proportions of children achieving guideline 2 also differed significantly by age ($\chi^2(7)=14.82; PO.05$). Figures 1 and 2 give the distribution of children achieving guidelines 1 and 2 by age and sex.
DISCUSSION

In this sample of children, moderate activity levels peak at 13-14 years, and then decline markedly to the age of 18 years. Although this study is not prospective in design and may be subject to cohort effects, there are clear differences between the younger and older children, with less than half of the older children achieving the criterion level. Moderate activity levels are significantly lower for girls than for boys, but the differences are not large. However, vigorous activity is far lower in girls. These data suggest that sex differences in activity may be due to reduced levels of vigorous activity in girls, rather than moderate activity. This difference may be inconsequential in health terms if the levels of moderate activity are adequate. Although the majority of children achieved guideline 1, far fewer children achieved guideline 2, and it is particularly noticeable that only half as many girls achieved this level compared to boys. Of particular importance is the finding that only a minority of the older children achieve these guidelines. If this pattern is maintained into adult life, these children's health may be significantly compromised.

In conclusion, there are marked age and sex related differences in activity levels in this sample of children. Whereas the majority of children may be sufficiently active up to the age of about 14 years, this is not maintained, raising the possibility that future health status may be adversely affected.

REFERENCES