Kids CAN PLAY!

Encouraging children to be active at home, at school, and in their communities

How active are Canadian children?

According to the Canadian Fitness and Lifestyle Research Institute's *Canadian Physical Activity Levels Among Youth* (CAN PLAY) Study, children and youth (between the ages of 5 to 19) took an average of roughly 11,500 steps per day, over the two year period (2005-2007). There has been a slight, yet statistically significant increase in the average steps taken between the first two years of data collection.

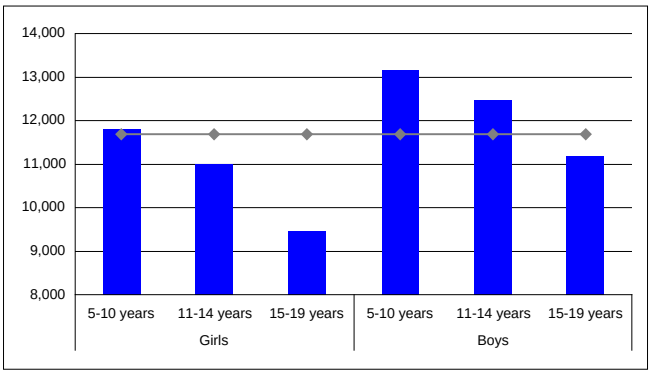
But how many daily steps are sufficient for children and youth's health? No definitive answer has yet been determined; however, several guidelines have been suggested.

- One study suggests that accumulating 12,000 daily steps for 6 to 12 year old girls and 15,000 steps for boys are associated with a healthy weight.[i] Overall, 72% of children and youth do not accumulate sufficient daily steps to meet the sex-specific criteria associated with a healthy body mass index (BMI). There has been a slight increase in the proportion meeting these criteria between year 1 (27%) and year 2 (30%) of collection.
- Another study suggests the equivalent of 12,000-15,000 steps for both boys and girls.[ii] Over the two years, 83% of children and youth do not accumulate at least 15,000 steps daily. The percentage has not changed from year one.
- Canada's Physical Activity Guide (CPAG) for children and youth set a goal that children add 90 minutes of moderate-to-vigorous activity to the incidental activities required by daily living - roughly equivalent to 16,500 steps daily. However, 90% of children and youth do not accumulate enough daily steps associated with the guidelines, which was equivalent in year one and year two.

Age and sex of child Boys take more steps daily steps than girls. Younger children take more steps per day than do teens. Indeed, children aged 5 to 10 take more steps than children aged 11 to 14, who in turn take more steps than those aged 15 to 19. The gender gap that appears overall also appears at every age group. There has been an increase in the average steps among boys between year 1 and year 2. This increase is most apparent among 15 to 19 year old boys.

Girls are more likely than boys to meet the sex-specific criteria associated with a healthy BMI. This is not surprising, given the substantially lower threshold for required daily steps among girls. However, boys are roughly twice as likely as girls to meet the 15,000 steps and the CPAG criteria. The proportion of young people meeting these criteria decreases in successively older age groups. Generally speaking, these age-related decreases appear among both girls and boys.

MEAN NUMBER OF STEPS FOR CHILDREN AND YOUTH
by child's age and gender

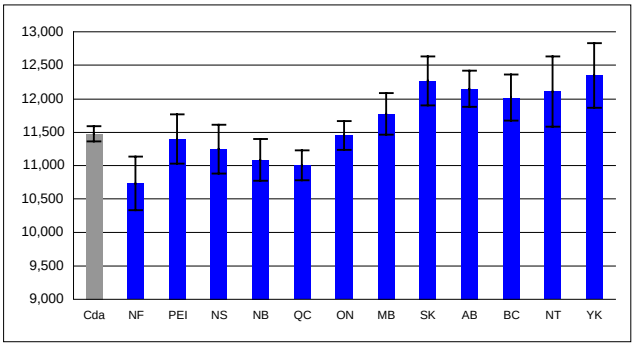


2006-2007 CANPLAY study, CFLRI

Province/Territory Children and youth that reside in Newfoundland and Quebec take fewer steps than an average child, whereas children residing in Saskatchewan, Alberta, British Columbia, and the Yukon take more steps than the average Canadian child.

Children in Newfoundland and Quebec are less likely, whereas those residing in Manitoba, Saskatchewan, Alberta, British Columbia, Yukon, and Northwest Territories are more likely than the average child to meet the BMI-referenced criteria. Children residing in Quebec are also less likely, whereas those in Saskatchewan, Alberta, and Northwest Territories are more likely than the average child to meet the 15,000 step criteria. Similarly, children residing in Quebec are less likely, whereas those in Saskatchewan and Alberta are more likely to meet the CPAG criteria.

MEAN NUMBER OF STEPS FOR CHILDREN AND YOUTH
by province or territory

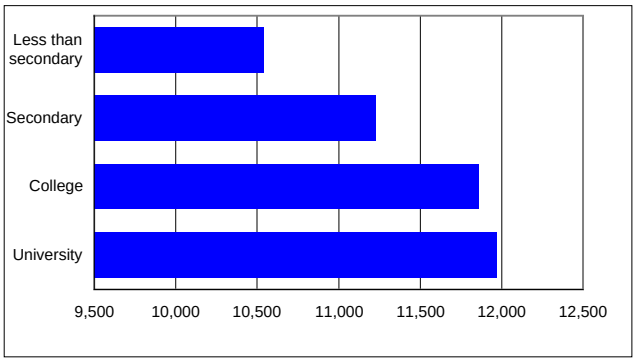


2005/06 and 2006/07 CANPLAY study, CFLRI

Socio-economic and demographic factors

There is a general increase in the number of steps taken with increased level of household income. There is a relationship between children's activity level and the education level of the parent. Children of parents with a college or university education take slightly more than 1,000 more steps than children with parents who have attained less than a secondary school education level.

MEAN NUMBER OF STEPS FOR CHILDREN AND YOUTH
by parent's education level



2006-2007 CANPLAY study, CFLRI

Children in higher income households ($80,000 or more) are more likely than those with lower incomes (<$30,000) to meet the BMI-referenced criteria and the 15,000 step criteria. There is, however, no relationship between meeting the CPAG guidelines criteria and household income.

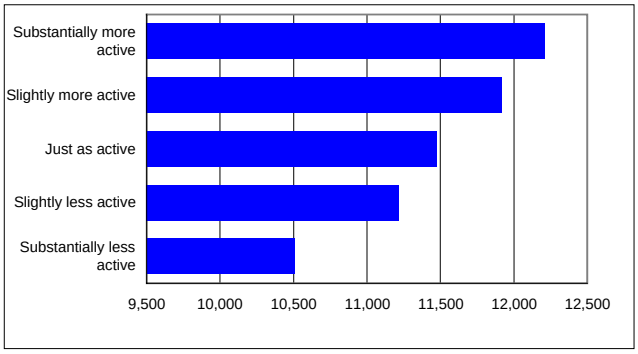
A greater proportion of children whose parents have post-secondary education meet the sex specific BMI-referenced criteria compared to those whose parents have secondary education or less. Similarly, children whose parents hold a university education are more likely to meet the 15,000 step criteria compared to those whose parents have secondary education or less, and are also more likely to meet the CPAG guideline criteria compared to children whose parents have a secondary level education.

Generally speaking, there are no significant differences related to the number of steps taken daily and community size in which the child resides. Nor are there significant differences regarding the attainment of the three criteria and community size.

Parent's Activity Level The activity levels of children are associated with their parent's activity level. Children take more steps daily if their parents rate themselves as more active (slightly or substantially) than if they rate themselves as less active than their peers.

Children with *substantially less* active parents are less likely to accumulate enough daily steps to meet the sex-specific BMI referenced criteria compared to children of more active parents. Similarly, children whose parents are *substantially less* active are less likely to meet the 15,000 step criteria compared to children whose parents are *slightly* or *substantially more* active than others. Children whose parents are *slightly less* active are less likely to meet the CPAG criteria compared to those who parents are *substantially more* active.

MEAN NUMBER OF STEPS FOR CHILDREN AND YOUTH
by parent's activity level



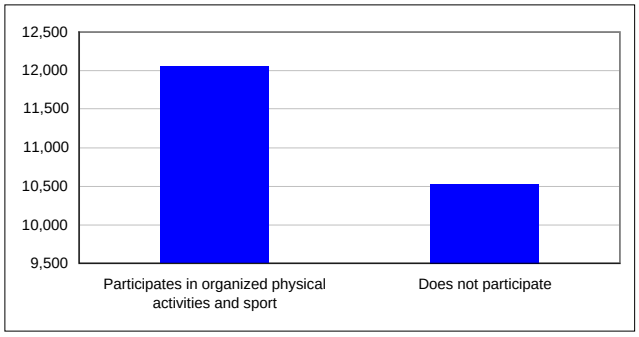
2006-2007 CANPLAY study, CFLRI

Child's participation in organized sport and physical activity

Children and youth who participate in organized physical activity and sport accumulate approximately 1,600 more daily steps that those children who do not participate in these types of organized activities.

Similarly, children and youth who participate in organized physical activity and sport are more likely to meet all three of the criteria compared to those who do not participate—that is, the sex-specific BMI referenced criteria, the 15,000 steps criteria, and the criteria associated with Canada's physical activity guidelines.

MEAN NUMBER OF STEPS FOR CHILDREN AND YOUTH
by children's participation in organized physical activities and sport



2006-2007 CANPLAY study, CFLRI

Methodology

The 2005-07 *Canadian Physical Activity Levels Among Youth* (CANPLAY) study collected pedometer data on the number of daily steps taken by children and youth, aged 5 to 19 and parental reports of factors influencing participation. CANPLAY is funded by the Public Health Agency of Canada and the provincial and territorial government departments concerned with fitness, active living, leisure, sport, and recreation through the auspices of the Interprovincial Sport and Recreation Council.

Pedometers were chosen to objectively measure the physical activity of children and youth as they are relatively inexpensive compared to other objective measures and the data are well correlated to data collected by accelerometers, observation, and direct measures of energy expenditure.[iii] The pedometer employed in CANPLAY (Yamax NL-2000 and now SW-200) is highly accurate in counting of steps.[iv] Research has shown that reactivity (i.e., change in behaviour when participants' know that they are being "monitored") is not an issue among children wearing pedometers during studies with either sealed[v] or unsealed pedometers[vi]. Another advantage is that CANPLAY data represents a measure of overall total physical activity and does not restrict to measures of single-domain activity.
The disadvantage of pedometers is that they may underestimate activities such as skating and bicycling. Generally, the choice to use pedometers to measure physical activity levels has a number of advantages with minimal limitations.

Over 23,000 Canadian children and youth, aged 5 to 19 years (including oversamples purchased by provinces and territories) were randomly selected and recruited into the study between April 1, 2005 and April 31, 2007. The sample was selected using a random digit dialing method conducted by the Institute for Social Research, York University in Toronto, Ontario.[vii] During the telephone recruitment interview, Canadian parents 20 years and over were asked about their children's patterns and preferences for physical activity and then were informed about the pedometer portion of the study and its procedures. If parents verbally agreed to their children's participation in the pedometer portion of the study, the family was sent a study package in the mail. Children were asked to wear the pedometer for 7 consecutive days and to log each day's steps daily onto a chart. A follow-up letter was sent to prompt return when necessary. Data was entered and 100% verified for accuracy. In Nunavut, children were recruited through the school system and data collectors recorded the step data at completion of the study. The overall compliance rate in the 2005-07 study was 81%.

Recommendations for Action The startlingly high proportion (90%) of Canada's young people who do not accumulate enough daily steps to meet the Canadian physical activity guidelines reaffirms the urgent need for policy-makers to address this issue. Given the relationship between a lifetime of physical inactivity and the development of chronic diseases and the escalating rates of obesity among Canada's young people makes this a great public health concern.

To address this, physical activity needs to be incorporated into all aspects of children's lives.

- **Provide opportunities for organized sport and physical activity** Physical education, and community and school sports are associated with greater levels of physical activity.[viii,ix] Providing opportunities for organized sport and physical activity through these agencies is particularly important for low income children as easy access to these types of opportunities may be limited elsewhere.
- **Increase time spent in unstructured and unorganized play** Children who prefer unorganized activities take 1400 more steps daily than those who prefer neither organized nor unorganized activity.[x] Encouraging children to play outside after school through activity-friendly bylaws (e.g., reduced traffic speeds, parks and green space, etc) is one such strategy. Pedometer-based interventions with feedback are effective, particularly for inactive girls.[xi,xii]
- **Provide active time during recess and lunch** Supervision and access to equipment and play areas at school promotes active play. CIRA Ontario has provided ideas on how to successfully implement a year round program (www.mohawkcollege.ca/external/cira/template/RecessRevival.pdf).
- **Promote active commuting** A 15-minute walk to and from school has the potential to add 15,000 steps to children's activity over a typical week. Go for Green has a number of initiatives to promote active and safe routes to school (www.goforgreen.ca/asrts).
- **Decrease screen time** Canada's physical activity guidelines for children and youth recommends decreasing screen and sedentary time. Consistent with research,[xiii] programs have been developed to reduce TV time allowing more time for active pursuits. (www.tvturnoff.org, www.lin.ca/resource/html/ac950.pdf).

[i] Tudor-Locke C, Pangrazi RP, Corbin CB, Rutherford WJ, Vincent SD, Raustorp A, Tomson LM, & Cuddihy TF. (2004). BMI-referenced standards for recommended pedometer determined steps/day in children. *Preventive Medicine*: 38(6); 857-864.

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ISBN 1-895724-47-3

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[xii] Pangrazi, RP, Beighle, A, Vehige, T, Vack, C, & Arizona County Health Department Coordinators (2005). The impact of the Promoting Lifetime Activity for Youth Intervention Program on children's physical activity, body mass index, and attraction to physical activity. [On-line] Available at: http://www.azdhs.gov/phs/physicalactivity/pdf/play_study_summary_rev_2005.pdf

[xiii] Salmon J, Hume C, Ball K, Booth M, & Crawford D.(2006) Individual, social and home determinants of change in children's television viewing: the Switch-Play intervention. *J Sci Med Sport.* 9(5):378-87.