

## *Introduction*

Physical inactivity during childhood has been linked to sedentary behaviours in adulthood.<sup>1</sup> Incorporating regular physical activity during childhood and adolescence may be key in maintaining an active lifestyle through to adulthood, especially given that certain chronic conditions can result from inactive behaviours which begin as early as childhood and adolescence.<sup>2</sup> Non-communicable or chronic diseases are the major cause of death, representing 59% of deaths worldwide.<sup>3</sup> Three preventable factors—changes in diet, physical activity and tobacco use—play a significant impact in reducing chronic disease.<sup>3</sup> Chronic diseases such as type 2 diabetes and hypertension which are more prevalent among individuals with greater body fatness were traditionally observed in adults, however, these now affect obese pre-pubescent children.<sup>4</sup> Besides the prevention of chronic diseases, physical activity also helps youth build healthy bones and muscles, helps develop certain skill sets, helps reduce depression and anxiety, builds confidence, and facilitates social interaction just to name a few.<sup>2</sup> Despite documented benefits of regular physical activity, national statistics reveal that: (1) three out of five Canadian children and youth (aged 5–17) are not active enough for optimal growth and development;<sup>5</sup> (2) children's activity levels decrease with age, going from 49% among grade-school children (aged 5–12) to 36% among teenagers (aged 13–17);<sup>5</sup> (3) girls are less active than boys, where 38% of girls and 48% of boys are considered active enough for optimal health benefits. These sex differences appear for both children and adolescents.<sup>5</sup>

The Health Behaviour in School-Aged Children Study (HBSC) is conducted every four years with Canadian children and youth aged 11, 13 and 15 years. The first of these surveys originated in Canada in 1989/90 and the most recent HBSC survey was conducted in Canada in 2001/02. Although this study is a collaborative effort with the World Health Organization (WHO), it is conducted by the Social Program Evaluation Group at Queen's University in Ontario in partnership with the Public Health Agency of Canada. This report examines physical activity opportunities and relationship to other variables among youth in Canada using the HBSC monitoring tool.

## *Scope of the report*

This report provides an analysis of key data from the 2001/2002 Health Behaviour in School-aged Children Survey. The analyses are descriptive: they describe associations between factors that should not be construed as causal relationships. Any statements implying causality or attribution of effects to physical activity level are based on the cited scholarly literature. The analysis examines differences among physical activity levels from within and outside school and among various levels of sedentary behaviours. Statistics are provided in the detailed tables in Appendix A.

## *Survey background*

The World Health Organization (WHO)'s Health Behaviour in School-Aged Children Study (HBSC) is conducted every four years with children and youth aged 11, 13 and 15 years. The most recent HBSC survey was conducted in Canada in 2001/02. Data were collected from 6688 youth at these ages across Canada. The survey examines a host of factors including family relationships, peer relationships, school climate and setting, and

self-reports on behaviours such as smoking, alcohol and drug use, physical activity, body image, eating patterns, bullying and injury. Details of the survey and its methods can be found in the Public Health Agency of Canada's recently released report entitled "Young People in Canada: their health and well-being".<sup>6</sup>

### *Comparisons with earlier HBSC survey data*

A number of questions in the 2001/02 HBSC were similar to, but sometimes not exactly the same as, those in the previous 1994 HBSC survey. Comparative variables and their definitions are described below in this section.

In the current 2001/02 HBSC study, 11- and 12-year-olds make up 42% of the sample, compared with 37% in the 1994 sample; 13- and 14-year-olds make up 40% of the current sample, compared with 35% in 1994; 15-year-olds make up 18% of the current sample, compared with 29% in 1994. Overall, the group surveyed is younger than the group surveyed in 1994. This is important to note when looking at information in this report compared with the previous report.

### *Structure of the report*

The report provides a synopsis of the findings that may be relevant to policy and decision-makers in designing initiatives to increase physical activity among Canadian adolescents. The Canadian Fitness and Lifestyle Research Institute examined physical activity data from the 1994 HBSC survey in relation to a number of health, achievement and lifestyle factors among Canada's children and youth. This report provides a similar analysis of the most recent data. It provides an examination of the relation between physical activity and physical, and social and psychological well being.

The findings are presented and discussed in five sections:

***Introduction***—discussion of the report, definitions of variables and a summary of key findings.

***Activity Behaviours***—the relation between age, grade, sex, family income, neighbourhood quality and safety, and participation in physical activity outside of school, during class time, during free time at school and sedentary behaviours are examined.

***Well-being***—examines the relationship between physically active and sedentary behaviours and reported health status, body mass index, body image, alcohol consumption, quality of life, self confidence and perceptions of school performance.

***Friends and Family***—the relationships between physically active and sedentary behaviours and the number of close friends, time spent with friends, time spent communicating with friends, and perceptions of parental understanding and parental expectations are presented.

## Definitions and Prevalence

**Activity Level** Several questions probed into the physical activity levels of survey respondents. The applicable questions are as follows:

- a) Over the past seven days, on how many days were you physically active for a total of at least 60 minutes per day? 0-7 days
- b) Over a typical or usual week, on how many days are you physically active for a total of at least 60 minutes per day? 0-7 days
- c) About how many hours a week do you usually take part in physical activity that makes you out of breath or warmer than usual in your *class time at school*? None at all, about ½ hour, about 1 hour, about 2 hours, about 3 hours, about 4 hours, about 5 hours, about 6 hours, about 7 or more hours.
- d) About how many hours a week do you usually take part in physical activity that makes you out of breath or warmer than usual in your *free time (example, lunch) at school*? None at all, about ½ hour, about 1 hour, about 2 hours, about 3 hours, about 4 hours, about 5 hours, about 6 hours, about 7 or more hours.
- e) About how many hours a week do you usually take part in physical activity that makes you out of breath or warmer than usual *outside of school* while participating in *lessons or league or team sports*? None at all, about ½ hour, about 1 hour, about 2 hours, about 3 hours, about 4 hours, about 5 hours, about 6 hours, about 7 or more hours.
- f) About how many hours a week do you usually take part in physical activity that makes you out of breath or warmer than usual *outside of school* while participating in *informal activities*, either on your own or with friends? None at all, about ½ hour, about 1 hour, about 2 hours, about 3 hours, about 4 hours, about 5 hours, about 6 hours, about 7 or more hours

To remain comparable with definitions used in examination of the 1994 HBSC data, question e) the number of hours per week spent in structured activity outside of school hours, and question f) the number of hours per week spent in unstructured activity outside of school hours were used. These two data items were examined separately but not found to be different from a more comprehensive activity level variable in terms of influences on the data.

Youth were classified as achieving *higher* levels of physical activity if their combined activity level from structured and unstructured physical activity outside of school hours added to at least seven hours per week. *Moderate* levels were achieved by attaining a combined number of four to six hours per week, while youths who attained less than four hours were classified as attaining *lower* levels of physical activity. No attempt was made to classify youth as sufficiently active for healthy growth and development according to standards, as the nature of the data gathered was not directly comparable.

Overall, one third of youth (34%) report higher levels of physical activity from outside school sources while about half (48%) report moderate levels and one-fifth (19%) report low levels of physical activity.

To create an overall physical activity variable combining the number of hours per week spent in activities outside of school in both structured and unstructured physical activities. The question used in 1994 was:

- Outside school hours: in your free time how many hours a week do you usually exercise so that you get out of breath or sweat?

While this question was broken into two parts in the most recent survey, trend lines looked comparable and a decision was made to compare physical activity trends using these questions. Neither questionnaire specifically examined activity from participation in daily routine such as walking to school, performing errands or chores nor investigated moderate levels of physical activity.

**Physical activity at school** *Class-time physical activity* looked at the number of hours spent in physical activity during class time (question c) while *free-time school physical activity* collected the number of hours spent in physical activity outside of class time at school (question d).

Forty-five percent (45%) of youth reported spending an hour or less per week in physical activity during *class time* while an additional 40% reported spending between two and four hours a week. Only 15% of youth reported spending five or more hours per week in physical activity during class time.

Half of youth (51%) reported spending an hour or less per week in *free time* physical activity at school while 31% spent between two and four hours. Only 18% spent five or more hours per week in this type of activity.

**Sedentary behaviour** The level of sedentary behaviour was derived from adding hours per day spent watching TV, hours doing homework and hours using the computer outside of school hours as collected in the following questions:

- g) About how many hours a day do you usually *watch television* (including videos) in your free time?
  - Weekdays: None at all, about ½ hour a day, about 1 hour a day, about 2 hours a day, about 3 hours a day, about 4 hours a day, about 5 hours a day, about 6 hours a day, about 7 or more hours a day.
  - Weekends: None at all, about ½ hour a day, about 1 hour a day, about 2 hours a day, about 3 hours a day, about 4 hours a day, about 5 hours a day, about 6 hours a day, about 7 or more hours a day.
- h) About how many hours a day do you usually spend *doing school homework* out of school hours?
  - Weekdays: None at all, about ½ hour a day, about 1 hour a day, about 2 hours a day, about 3 hours a day, about 4 hours a day, about 5 hours a day, about 6 hours a day, about 7 or more hours a day.
  - Weekends: None at all, about ½ hour a day, about 1 hour a day, about 2 hours a day, about 3 hours a day, about 4 hours a day, about 5 hours a day, about 6 hours a day, about 7 or more hours a day.
- i) About how many hours a day do you usually *use a computer* (for playing games, emailing, chatting or surfing the internet) in your free time?

- Weekdays: None at all, about ½ hour a day, about 1 hour a day, about 2 hours a day, about 3 hours a day, about 4 hours a day, about 5 hours a day, about 6 hours a day, about 7 or more hours a day.
- Weekends: None at all, about ½ hour a day, about 1 hour a day, about 2 hours a day, about 3 hours a day, about 4 hours a day, about 5 hours a day, about 6 hours a day, about 7 or more hours a day.

Almost half of all youth (48%) report spending at least six hours a day in sedentary activities such as watching TV, doing homework and using a computer outside of school hours. Less than 10% reported spending less than three hours per day and the remaining 45% reported spending between three and six hours in these activities.

**Perceived income** When asked how well off they think their family is, 9% of youth say their families were “not very well off” or “not at all well off” (which was classified as lower income), 34% say their families had an average income (average income), and 58% say their families were “quite well off” or “very well off”(higher income).

**Safe neighbourhoods** When youth were asked how often they felt safe in their neighbourhood, most youth (69%) reported that they “always” felt safe in their neighbourhood, while one-quarter reported that they felt safe “most of the time”, and 5% said they “never” felt safe, or only felt safe “sometimes”.

**Neighbourhood is a good place to live** Most youth feel that they live in a good neighbourhood. Six in ten youth say that their neighbourhood is a “really good” place to live (61%), while another quarter (24%) say that their neighbourhood is a “good” place to live. Only 15% say that their neighbourhood is just “okay”, or that it is “not that good”, or “not good at all”.

**Body mass index** In this study, youth were classified as healthy weight, overweight, or obese by first calculating body mass index and then using age-appropriate cut-off points for the BMI measure as defined by an international definition of child overweight and obesity.<sup>7</sup> No cut-off points were available for an underweight classification.

Overall, 81% of youth report height and weight that classify them at a healthy weight, 15% are overweight and 4% are obese.

## ***Key Findings***

Youth who participate in the highest levels of physical activity outside of school hours are more likely to:

- be boys;
- report that their families are well off;
- live in neighbourhoods where they feel safe and where they feel is a good place to live;
- report they are in excellent health;
- be a healthy weight;
- have a positive body image,
- rate their quality of life highly;
- have a greater self-confidence;
- believe that their teacher thinks their academic performance is very good;

- report having three or more close friends of the same sex and of the opposite sex;
- spend greater number of days right after school, and evenings, with friends;
- communicate with their friends by phone or computer more often;
- report that their parents understand them;
- agree that what parents think is important; and,
- report consumption of alcohol.

Youth who report fewer hours in sedentary behaviour per day are more likely to:

- be girls;
- report they are in excellent health;
- be a healthy weight;
- rate their quality of life highly;
- say they feel self-confident;
- communicate with their friends by phone or computer less often; and,
- disagree that their parents expect too much from them at school.

Youth who report greater levels of class time physical activity are more likely to:

- be in grade 9 or 10;
- be boys;
- report they are in excellent health;
- rate their quality of life highly;
- say they feel self-confident;
- report that their parents expect too much at school;
- report having three or more close friends of the same sex, if they are boys;
- report having three or more close friends of the opposite sex;
- spend greater number of days right after school, and evenings with friends;
- spend greater amount of time communicating with friends by electronic means;
- believe that what their parents think is important; and,
- report having tried alcohol.

Youth who spend more time in free time physical activity at school are more likely to:

- be boys;
- report they are in excellent health;
- be of normal body weight and believe that their body is about the right size;
- rate their quality of life highly;
- say they feel self-confident;
- report having three or more close friends of the same sex if they are boys;
- report having three or more close friends of the opposite sex;
- spend greater number of days right after school, and evenings with friends;
- spend more time communicating with friends by electronic means;
- believe that what their parents think is important; and,
- think that their parents expect too much of them.

## ***Implications***

The CFLRI published a report entitled *Increasing physical activity: Supporting children's participation*<sup>5</sup>, detailing the findings of the 2000 Physical Activity Monitor (2000 PAM). The 2005 report, which examines many of the same topics over time, will be released starting in July 2006. It presents suggestions for change and policy implications of findings. In addition to the suggestions at the end of each section in this report, the 2000 Physical Activity Monitor report provides an excellent resource for developing initiatives for supporting the physical activity of children and youth.