

Aerobic fitness has decreased in boys and girls have become stronger, 2016 to 2019

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Measured obesity, waist circumference and fitness among Canadians

Obesity is a serious chronic disorder that is highly prevalent in North America and Europe. Not limited to adults, this major health problem has been affecting children and youth over the past several decades. Being overweight or living with obesity as a youth is associated with an increased risk of severe obesity in adulthood, which increases the risk of high blood pressure, heart disease, cancer and diabetes, among other conditions, and decreases quality of life. Physical fitness is considered an important indicator of overall health among children and adults.

Recent combined results from the Canadian Health Measures Survey (CHMS) from 2016 to 2019 are compared with earlier data collected from 2007 to 2011. Results show stability in the prevalence of obesity and a significant decrease of overall aerobic fitness among boys and an increase in grip strength and flexibility among girls. The data used in this analysis are derived from direct physical measurements with respondents.

The COVID-19 pandemic has led to substantial changes in the health behaviours of Canadians. The vulnerable populations who are at a greater risk of COVID-19 may include older adults, people with chronic medical conditions, people who are immunocompromised and people living with obesity. The CHMS data collected from 2016 to 2019 represent important baseline data on the obesity and fitness levels of Canadians prior to the start of the COVID-19 pandemic.

Aerobic fitness decreased in boys aged 8 to 14

Aerobic fitness reflects one's ability to perform physical activity, and is positively associated with a reduction in risk for several chronic diseases including diabetes, heart disease and metabolic syndrome. In youth specifically, aerobic fitness is positively associated with a lower risk of anxiety, mood, self-esteem and depression disorders. Aerobic fitness was assessed using a standard step test. The heart rate response to the test is used to determine how much oxygen an individual can intake per minute of exercise relative to their body weight. The categories of aerobic fitness include "needs improvement," "fair," "good," "very good," and for adults only, an "excellent" category.

Overall, 31% of 8 to 14 year olds were categorized as having a "needs improvement" aerobic fitness level from 2016 to 2019, compared with 23% from 2007 to 2011. Those categorized as "fair" were the largest group (41%) for both time periods. The proportion of boys with "good/very good" aerobic fitness went from 49% in 2007 to 2011, to 37% in 2016 to 2019. The aerobic fitness levels amongst girls, however, has remained stable over the same time period.

From 2016 to 2019, about 31%, 33%, 32% and 5% of Canadian men and women aged 15 to 69 were categorized as having a "needs improvement", "fair", "good/very good" and "excellent" aerobic fitness rating, which is consistent with results for 2007 to 2011 (28%, 33%, 35% and 5%).

Girls have become stronger and more flexible since 2007

Low hand grip strength is associated with an increased risk of hypertension, type 2 diabetes and cardiovascular disease.

The grip strength and flexibility of boys aged 6 to 14 has remained relatively stable from 2007-2011 to 2016-2019. The grip strength of girls aged 6 to 14 has improved over the past decade. The proportion of girls obtaining an "above average" result in 2016 to 2019 was 23%, compared with 16% in 2007 to 2011. More girls in 2016 to 2019 also had "above average" flexibility (28%) compared with 2007 to 2011 (18%).



Grip strength among the adult population (aged 20 to 69) has remained fairly stable from 2007-2011, to 2016-2019, for both men and women. The proportion of adults obtaining a "very good/excellent" result in both time periods was just over 30%, while those who had grip strength categorized as having a "needs improvement" rating was about 23% in both time periods.

Body Mass Index among children and adults has remained stable since 2007

Body Mass Index (BMI) is an indicator of total body fat in many individuals and is considered an indicator of health risk for high blood cholesterol, high blood pressure, type 2 diabetes, cancer, stroke and other chronic conditions. Overweight and obese children are more likely to be living with obesity as adults.

For the period of 2016 to 2019, the majority (72%) of Canadian children and youth aged 6 to 17 had a BMI that was in the normal range. Slightly more than 9% were obese and 14% were overweight.

Adult men (39%) were more likely to be overweight than adult women (30%) in 2016 to 2019, which was similar to results for 2007 to 2011 (42% for males and 29% for females). However, roughly equal proportions of both sexes were rated as obese in 2016 to 2019 (27% for males and 24% for females), which is consistent with results for 2007 to 2011 (26% and 24% respectively).

Moving beyond the BMI, abdominal obesity, as reflected by a high waist circumference, may be a better predictor of disease and death than BMI. A high waist circumference is associated with a higher risk of type 2 diabetes and cardiovascular disease.

Waist circumference remained stable from 2016 to 2019 compared with results for 2007 to 2011. The majority of youth aged 15 to 19 were in the "excellent" category (73% for males and 60% for females), while 10% of males and 19% of females were in the "needs improvement/fair" category. Among the 20 to 39 age group, around half were in the "excellent" category (57% for males and 43% for females), while 23% of males and 32% of females were in the "needs improvement/fair" category. By the ages of 60 to 69, 31% of males and 18% of females classified as "excellent," while 49% of males and 66% of females classified as "needs improvement/fair."

Note to readers

The Canadian Health Measures Survey (CHMS) is currently the only ongoing nationally-representative data source for measured physical fitness in Canada and thus represents an important mechanism to track changes in fitness levels.

The 2016 to 2019 reference period refers to combined results from Cycle 5 (2016 and 2017) and Cycle 6 (2018 and 2019) of the CHMS. The 2007 to 2011 reference period refers to combined results from Cycle 1 (2007 to 2009) and Cycle 2 (2009 to 2011) of the CHMS.

The target population for the CHMS consists of persons 3 to 79 years of age living in the 10 provinces. The observed population excludes: persons living in the three territories; persons living on reserves and other Aboriginal settlements in the provinces; full-time members of the Canadian Forces; the institutionalized population and residents of certain remote regions. Altogether these exclusions represent approximately 3% of the target population.

The Body Mass Index (BMI) is calculated by dividing weight in kilograms by height in metres squared, and is based on physical measurement of height and weight rather than self-reported data.

Age groups used in this publication are based on the sampled age groups, and the standard ranges of norms available for specific age groups:

- *BMI norms for respondents aged less than 18, and 18 to 79.*
- *Waist circumference classification for those aged 15 to 69.*
- *Aerobic fitness norms for respondents aged 8 to 14, and 15 to 69.*
- *Grip strength norms for respondents aged 6 to 14, and 15 to 69.*
- *Sit and reach (flexibility) norms for respondents aged 6 to 14, and 15 to 69.*

Survey weight and bootstrap weight files and instructions are available for combining Cycle 6 CHMS data (where possible) with equivalent data from Cycles 1 to 5.

Available tables: [13-10-0319-01](#) and [13-10-0373-01](#).

Definitions, data sources and methods: survey number [5071](#).

Re-release of Cycle 5 household data file with new data on the use of steroids is now available.

The environmental lab data are re-released with new sub-sample file and weights for the following metals measured in urine: cadmium, lead, selenium and total mercury.

Anthropometry measures of the household population (13-10-0319-01) is now available.

Overweight and obesity based on measured body mass index, by age group and sex (13-10-0373-01) is now available.

For more information, or to enquire about the concepts, methods or data quality of this release, contact us (toll-free 1-800-263-1136; 514-283-8300; STATCAN.infostats-infostats.STATCAN@canada.ca) or Media Relations (613-951-4636; STATCAN.mediahotline-ligneinfomedias.STATCAN@canada.ca).