

EVIDENCE SYNTHESIS BRIEFING NOTE

TOPIC: IMPACT OF PHYSICAL ACTIVITY ON MENTAL HEALTH OUTCOMES DURING THE COVID-19 PANDEMIC, INCLUDING IN AT-RISK POPULATIONS

Information finalized as of December 6, 2021.^a This Briefing Note was completed by the Research, Analysis, and Evaluation Branch (Ministry of Health) based on information provided by a member of the COVID-19 Evidence Synthesis Network. Please refer to the [Methods](#) section for further information.

Purpose: This note summarizes scientific evidence and jurisdictional information on the impact of physical activity (PA) on mental health of children, adolescents, adults, seniors, and at-risk populations during the COVID-19 pandemic and associated public health measures, i.e., lockdowns.

Key Findings:

- **Increased Sedentary Behaviour is Associated with Depression/Anxiety:** A systematic review and meta-analysis (October 2021) on the impact of the COVID-19 pandemic on sedentary time and sedentary behaviour showed that increased time spent in sedentary activities was negatively correlated with global mental health, depression, anxiety, and quality of life, irrespective of age. However, children (<18 years) were more negatively affected than adults or older adults (>65 years), highlighting this population as a key intervention target. Other research showed a relationship between decreased PA and poor mental health outcomes among children, adolescents, adults, college students, professional athletes, and seniors.
 - Canada: Canadian women (aged 18-29) reported they were less physically active and more sedentary during the pandemic than they were six-months before and had increased psychological stress and moderate symptoms of anxiety and depression.
 - Australia/France/UK/US: Lockdowns were associated with declines in mental health that were more pronounced in women, due to their competing demands of full-time work, home schooling, and domestic responsibilities.
- **Moderate to Vigorous PA (MVPA) is Associated with Less Depression and Anxiety:** According to a systematic review (August 2021), early evidence suggests that people (age 6-70; 68% female) who regularly performed PA with higher volume and greater frequency and maintained their PA routines, demonstrated fewer symptoms of depression and anxiety. Those reporting a higher total time spent in MVPA had 12-32% lower chances of presenting depressive symptoms and 15-34% of presenting anxiety.
- **At-Risk Populations:** Two studies demonstrated that household income/low socioeconomic status (i.e., less than \$60,300 in household income) and race/ethnicity were associated with lower levels of PA and increased psychological distress. In Canada, health equity considerations to support PA include improving the built environment (e.g., access to parks), particularly in historically underserved and underinvested communities.

Analysis for Ontario: Researchers at SickKids Hospital reported a strong association between time spent engaged in online learning and depression and anxiety among school-age children (six to 18 years old). The more time students spent online learning, the more symptoms of depression and anxiety they experienced.

Implementation Implications: Adopting positive coping strategies including PA to mitigate distress can have important implications for public health policy and practice during pandemic times, emphasizing the importance of accessible mental health resources for those experiencing psychological distress.

^a This briefing note includes current available evidence as of the noted date. It is not intended to be an exhaustive analysis, and other relevant findings may have been reported since completion.

Supporting Evidence

[Table 1](#) summarizes scientific evidence and jurisdictional information that was collected on December 5-6, 2021 on the impact of physical activity during COVID-19 including sedentary behaviours on mental health for children, adolescents, adults, seniors, and at-risk populations such as those with chronic health conditions, and/or low socioeconomic status (SES) in the following jurisdictions: Alberta, Australia, Austria, Brazil, British Columbia (BC), Canada, France, Latin America, Ontario, Switzerland, the United Kingdom (UK), and the United States (US).

Table 1: Impacts of Physical Activity on Mental Health During COVID-19

<p>Scientific Evidence</p>	<p>A literature search on the impact of physical activity (PA) and sedentary behaviours on the mental health of children, adolescents, adults, and at-risk populations during COVID-19 identified four systematic reviews, four reviews, 15 articles, and seven documents from the grey literature. The findings are summarized as follows:</p> <ul style="list-style-type: none"> • Increased Sedentary Behaviour is Associated with Depression/Anxiety, Especially in Children: A systematic review and meta-analysis (October 2021) on the impact of the COVID-19 pandemic on the amount of time spent being sedentary and engaging in sedentary behaviours (i.e., any activity in a seated or reclined posture expending ≤ 1.5 metabolic equivalents) showed that increased time spent in sedentary activities was negatively correlated with global mental health and quality of life, and increased risk of depression and anxiety, irrespective of age. However, children (<18 years) were more negatively affected than adults or older adults (>65 years), highlighting this population as a key target for interventions.^b As lockdowns ease worldwide, strategies should be employed to reduce time spent being sedentary.¹ Other research demonstrated a relationship between decreased PA and poor mental health outcomes among children, adolescents, adults, college students, professional athletes and seniors. <ul style="list-style-type: none"> ○ Children and Adolescents: A review (March 2021) on mental health and PA among children and adolescents during COVID-19 concluded that PA has been correlated with psychological health, and it may improve well-being; the study recommends that PA be used to better support the psychological health of children and adolescents affected by school restrictions during the COVID-19 pandemic.² ○ College Students: A single study (November 2021) that surveyed Chinese college students (n=11,787) in February 2020 reported that high screen time (ST) (>4 hours/day) or low PA (<3 days/week) was positively associated with depressive symptoms; there was also an interactive effect between ST and PA on depressive symptoms (e.g., the authors speculate that ST might be displacing PA, which is protective against depression).³ ○ Seniors: A review (November 2020) on the mental health of the elderly during COVID-19 reported that research on older adults has demonstrated that regular PA helps develop self-efficacy and improves perceptions of one's health and happiness, thereby reducing depression.⁴
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^b Children increased their sedentary time by 159.5 ± 142.6 mins day⁻¹, followed by adults ($+126.9 \pm 42.2$ mins day⁻¹) and older adults ($+46.9 \pm 22.0$ mins day⁻¹). There were no sex differences in any age group. Screen time was the only consistently measured behaviour and accounted for 46.8% and 57.2% of total sedentary time in children and adults, respectively ([Runacres et al., 2021](#)).

	<ul style="list-style-type: none"> ○ Adults: Studies from Canada, Ontario, BC, and several international jurisdictions including France/Switzerland, Australia, UK, and the US, demonstrated the impacts of decreased PA and/or increased sedentary behaviours (e.g., ST) on the mental health of adults during the pandemic. <ul style="list-style-type: none"> ▪ Canada: A study (May 2021) that surveyed mostly women, aged 18-29, living in Canada reported that respondents were less physically active and more sedentary during the pandemic as compared to six-months before, with increased psychological stress and moderate symptoms of anxiety and depression. Respondents whose mental health deteriorated the most were also the ones who were least active. Most respondents were unmotivated to exercise because they were too anxious, lacked social support, or had limited access to equipment or space. The respondents who remained active reported being less motivated by physical health outcomes, such as weight loss or strength building, and being more motivated by mental health outcomes, such as anxiety relief. These results highlight the potential protective effect of PA on mental health and point to the need for psychological support to overcome perceived barriers.⁵ ▪ Ontario: A study (September 2021) that surveyed Ontario adults' (n=2,157; aged 30-59) health behaviours, mental health status, and overall well-being during the pandemic reported that while respondents met PA and sedentary behaviour guidelines,^c they also reported double the amount of recommended recreational ST, practiced moderately healthy dietary behaviours, experienced mental health problems, and scored below "normal" in some well-being domains (e.g., satisfaction with their life as a whole, their standard of living, their health, mental and physical).⁶ ▪ BC: A study (April 2021) that surveyed English-speaking adults (aged 18+) in BC found that participants with clinically significant mental health symptomatology reported greater declines in moderate-to-vigorous physical activity (MVPA) than those who reported no symptoms. Conversely, participants who were sufficiently active during COVID-19 reported significantly lower depression and anxiety, and higher life satisfaction.⁷ ▪ International: A study (March 2021) that surveyed participants living in France or Switzerland about PA, physical and mental health, anxiety, and depressive symptoms before and during lockdown reported that lockdown resulted in more time spent in walking and moderate physical activity (~10 mins/day) and in sedentary behaviour (~75 mins/day), compared to time spent before COVID-19. An increase in sedentary behaviour was associated with worse physical health, mental health, and subjective vitality. Ensuring sufficient levels of PA and reducing sedentary time can play a vital role in helping people to cope with a major stressful event, such as the COVID-19 pandemic.⁸ <ul style="list-style-type: none"> ● Greater Impact on Women: A multi-national study (Australia, France, UK, US; May 2021) on PA and mental health among adults (18+) during the COVID-19 pandemic reported that lockdowns were associated with increases in sedentary behaviour. These results were most acute in young adults. Lockdowns were associated with a decline in mental health, a finding that was more pronounced in women likely due to their competing demands of full-time work, home schooling, and domestic responsibilities.⁹ ○ Professional Athletes: A systematic review (September 2021) on the impact of COVID-19 on the PA, mental health, and quality of life among professional athletes reported a decrease in
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^c With respondents self-reporting 199 mins. of moderate PA and 97 mins. of vigorous PA per week, the sample, on average, met the PA goal identified in the [Canadian 24-Hour Movement Guidelines for Adults](#), which recommend at least 150 minutes of MVPA per week as well as several hours of LPA ([Shillington et al., 2021](#)).

	<p>overall physical fitness, and the number of days and hours of spent in training, as well as an increase in the occurrence of negative emotions (stress, fatigue, and depression), and a decrease in sleep quality. Changes in PA had an impact on overall well-being ratings, which depended on the sex of the subjects. Women were more likely to experience negative emotions compared to men.^d The mental state of the athletes affected the quality of sleep.¹⁰</p> <ul style="list-style-type: none"> <p>● Moderate to Vigorous PA is Associated with Less Depression and Anxiety: According to a systematic review (August 2021) on the association between PA and depression, early evidence suggests that people (aged 6-70; 68% female) who performed PA on a regular basis, with higher volume and frequency^e and who kept the PA routines stable, showed fewer symptoms of depression and anxiety. For instance, those reporting a higher total time spent in moderate to vigorous PA had 12-32% lower risk of presenting with depressive symptoms and 15-34% of presenting with anxiety.¹¹ A Canadian study (July 2020) on adults' (n=4,524; aged 20+ years) exercise and ST during the COVID-19 pandemic, between March 29 and April 3, 2020, reported that more women reported 'very good' or 'excellent' mental health if they were exercising outdoors (54%) compared with those who were not (41%). More men (65%) and women (62%) rated their mental and general health as very good or excellent if they maintained or decreased TV time compared with those who increased TV time (57% and 43%, respectively), with the same evident for Internet use in women only (maintained/decreased: 61% versus increased: 44%). More men (63%) and women (52%) rated their mental health as very good or excellent if they maintained or decreased video game time compared with those who increased video game time (48% and 29%, respectively). More men and women reported very good or excellent mental and general health if they increased none or one type of screen and/or were exercising outdoors compared with those who increased two or three types of screens, and who were not exercising outdoors, with the exception of general health among men. The study suggests that maintaining opportunities for outdoor exercise and limiting ST may promote better mental and general health during periods of confinement.¹² A review (October 2021) on the correlates of PA and sedentary behaviour during COVID-19 reported that, although some evidence is of lower quality, having a better overall mental health status is associated with being more physically active. This correlation may be stronger among females than males.¹³</p> <ul style="list-style-type: none"> <p>○ A single study (August 2021) on associations among adults' MVPA, sitting time, time spent outdoors, and mental health during the pandemic in Austria (72.4% female; mean age of 36) reported that maintaining one's MVPA levels was associated with higher mental well-being (odds ratio [OR]: 8.61).^f Overall, results show a positive association between PA, time spent outdoors (i.e., ≥60 mins/day), and mental well-being during COVID-19 social restrictions. The study suggests that interventions that are aimed increasing PA might mitigate negative effects of such restrictions.¹⁴</p>
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^d The review did not provide any information about why women experienced more negative emotions than men.

^e The authors of the review did not specify volume and frequency of PA from the studies included. For example, one study described volume as: > 60 mins/day or < 60 mins/day. The same study described frequency as: one to two times/week; > two times/week; and < one time/week.

^f Results showed that participating in higher levels of MVPA was associated with higher mental well-being (OR: 3.92), fewer depressive symptoms (OR: 0.44) and anxiety symptoms (OR = 0.62), and less loneliness (OR: 0.46). Participants sitting <10 h/day had higher odds of mental well-being (OR: 3.58). Comparable results were found for spending ≥60 mins/day outdoors ([Haider et al., 2021](#)).

	<ul style="list-style-type: none"> ○ A single study (September 2020) that surveyed 3,052 adults (62% female; aged 18-24) from across the US in April 2020 reported that those who no longer met US guidelines for PA^g and who increased their ST (≥8 h/day) reported worsening depression, loneliness, and stress, and mental health. Maintaining and enhancing PA participation and limiting ST increases during abrupt societal changes may mitigate the mental health consequences.¹⁵ ○ A single study (October 2020) of 937 participants from Brazil (females=72.3%; aged 18-35), those performing ≥30 mins/day of MVPA or ≥15 mins/day of vigorous PA reported lower odds of prevalent depressive, anxiety, and co-occurring depressive and anxiety symptoms. Those spending ≥10 hrs/day sedentary were more likely to have depressive symptoms.¹⁶ ● Populations with Low Socioeconomic Status (SES): Two single studies (US, Latin America) demonstrated that household income/socioeconomic status and race/ethnicity were associated with lower levels of PA and increased psychological distress. <ul style="list-style-type: none"> ○ US: A US-based study (December 2021) examined the relationship between PA and mental health during COVID in Louisiana, Montana, North Carolina, Oregon, and West Virginia (from April to September 2020) demonstrating that household income was significant in predicting difficulties in maintaining pre-pandemic PA levels. For example, participants with annual household incomes of CAD \$54,271-\$60,300 had 1.35 greater odds of experiencing difficulty maintaining PA levels compared to those with more than \$60,300 per year; those who self-identified as Asian had a 2.35 greater odds of experiencing difficulty maintaining pre-pandemic PA levels than those not identifying as Asian.^h Pre-pandemic PA levels was associated with increased psychological distress levels during COVID-19; and race/ethnicity, income status, and urbanicity were significantly associated with deteriorating mental health status and PA levels during COVID-19.ⁱ Data suggests that a bi-directional, cyclical relationship between PA and mental health exists. Policy implications should include PA promotion as a protective factor against declining mental health.¹⁷ ○ Latin America: A study (February 2021) of ambulatory patients (50.9% male; mean age of 60) with cardiometabolic disease^j in 13 Latin American countries demonstrated that a deterioration in lifestyle habits and an appearance of depressive symptoms during the pandemic were frequent and associated with socioeconomic status: 1) Low/very low income (45.5% of participants) was associated with a lower level of PA, less fruit and vegetables intake, more tobacco use, and perception of depression; and 2) Low educational level was also associated with the perception of depression (OR: 1.46).¹⁸ ● Populations with Chronic Illness: A study (February 2021) investigated associations between PA and sedentary time (i.e., sitting) and indicators of mental health and wellbeing in rheumatoid arthritis during the COVID-19 lockdown. Results suggest that light PA (e.g.,
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^g No information was identified on the 2018 US Department of Health and Human Services' "Physical Activity Guidelines for Americans".

^h The study reported figures of USD \$45,000-50,000, and USD \$50,000. All Canadian Dollar (CAD) amounts were calculated using Purchasing Power Parities (PPPs) as published by the Organisation for Economic Co-operation and Development (OECD) for 2020 (1 US dollar [USD]= 1.206 CAD). PPPs are the rates of currency conversion that eliminate the differences in price levels between countries ([OECD, 2021](#)).

ⁱ In this study, researchers controlled for race/ethnicity, household income/size, gender, urbanicity, education, employment, use of government assistance and presence of chronic health conditions. The demographic makeup of respondents consisted of: Non-Hispanic White (81.32%); Hispanic (3.4%); Non-Hispanic Black (7.13%); multi-racial (3.52%); and other race (4.5%) ([Groccke-Dewey, et al., 2021](#)).

^j Cardiometabolic diseases (CMDs) include cardiovascular disease (CVD), diabetes mellitus and chronic renal failure ([de Waard, et al., 2018](#)).

	<p>cooking, laundry) and walking were associated with lower physical and mental fatigue and depressive symptoms, and higher vitality. Exercise (e.g., tennis, cycling) was associated with lower physical and general fatigue and fewer depressive symptoms, and sedentary time was associated with higher physical fatigue.¹⁹</p> <ul style="list-style-type: none"> • Coping Strategies: A systematic review (August 2021) on the relationship between PA and depression suggested that specific volitional and motivational skills might be paramount to overcome COVID-19 specific barriers (e.g., curfew, closed facilities) to maintaining PA routines. In particular, web-based technologies could be an accessible way to increase motivation and volition for PA, and maintain daily PA routines.²⁰ A single study (November 2021) on mental well-being and coping strategies of Canadian adolescents during COVID-19 (June to September 2020) reported that participants adopted various positive coping strategies to mitigate their distress, including PA, safe peer interactions, and hobbies.²¹ <ul style="list-style-type: none"> ○ Recommendations for Seniors: An article (2020) on protecting the psychological and mental health of the elderly during COVID-19 list strategies and suggestions that are consistent with the recommendations from the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC): 1) Maintain a daily schedule and exercise pattern; 2) Have regular habits to maintain good health; 3) Make time for leisure activities and engaging in enjoyable activities (e.g., indoor physical activities such as stretching, gymnastics, yoga, hula hoop, and dumbbell exercise); 4) Maintain a healthy and balanced diet; 5) Obtain enough sleep; 6) Avoid excessive drinking and drug use; and 7) Take prescriptive medicine as usual.²² ○ Women with Cardiovascular Disease (CVD): An editorial (June 2021) on women with CVD recommends that to increase exercise participation among women with CVD in all communities during the pandemic, and over the long-term, virtual exercise programs and or exercise regimens should consider: 1) Friend-, partner- and family-inclusion to promote social interactions; 2) Shorter duration and structured exercise programming (e.g., 15-minute interval training) that impose a flexible and lower time constraint; 3) A variety of activities (e.g., walking, aerobic dancing, resistance training, on-line fitness classes) allowing women to choose the exercise most enjoyable for them; 4) Insurance coverage of home-based CR; and 5) Behaviour change techniques to increase motivation and remain active long-term (e.g., use an exercise diary or tracker, set small and achievable goals, telephone coaching).²³ • Future Research: A UK-based protocol for a systematic review currently underway was identified on changes in PA and sedentary behaviour due to enforced COVID-19-related lockdown and movement restrictions.²⁴
International Scan	<ul style="list-style-type: none"> • No information identified.
Canadian Scan	<p>Evidence about the relationship between PA and mental health was identified in three Canadian jurisdictions: BC, Alberta, and Canada.</p> <ul style="list-style-type: none"> • Young Adults in BC: A BC Centre for Disease Control report (BCCDC; July 2021) on the impacts of the COVID-19 pandemic on the health and well-being of young adults reported that protective factors and strengths for young adults, including family support, engagement in physical activity, and trust and optimism, were associated with lower mental health concerns during the pandemic.^k The report made recommendations to encourage health-promoting

^k The BCCDC report included two recent studies that showed a correlation between PA and improved mental health during the pandemic: Vigorous physical activity, as well as duration and regularity of exercise (>2 times per week, 60 minutes duration, or

	<p>behaviours for young adults including: 1) Increasing awareness and uptake of evidence-based information on effective health-promoting behaviours (i.e., activity, nutrition, sleep hygiene, and reducing sedentary time) and daily habits to support mental, emotional, and physical well-being; and 2) Fostering equitable access to resources (e.g., parks and green spaces), opportunities and services to enable physical activity.²⁵</p> <ul style="list-style-type: none"> • Mental Health Concerns and Supports in Alberta: The Canadian Mental Health Association (CMHA; 2021) administered a survey between April and May 2020 to understand the mental health and well-being impact of the COVID-19 pandemic in Alberta in rural and urban areas. <ul style="list-style-type: none"> ○ Primary Concerns: Respondents had a wide variety of concerns in the wake of the COVID-19 pandemic with the four most prevalent being: 1) Isolation (42.1% of respondents); 2) Access to mental health support and services (33.4%); 3) Challenges to mental health (28.7%); and 4) Anxiety (24.1%). ○ Mental Health Supports: The most popular coping mechanisms and supports included: 1) Staying connected (56.7% of respondents); 2) PA and health (49.3%) (e.g., bike riding, walking, working out); 3) Self-care (48.3%) (e.g., crafting, reading, watching movies, baking, games, music, mindfulness); 4) Benefit of the outdoors and changing environments (34.1%); and 5) Maintaining routine (31.5%).²⁶ • Canada: The annual report of the Chief Public Health Officer of Canada (October 2020) on an equity approach to COVID-19 reported that public health measures requiring physical isolating may have an impact on mental health.¹ Research from Statistics Canada has demonstrated that people who were able to engage in PA outdoors were more likely to report excellent or very good mental health.²⁷ Health equity considerations to support PA include: <ul style="list-style-type: none"> ○ Healthy Built Environment: Improving the built environment, particularly in historically underserved and underinvested communities, can help during the pandemic and beyond, supporting all Canadians to meet their basic needs and promote good health. Neighbourhood design, transportation systems, food systems, and the natural environment are important elements to support health and well-being including building safe and vibrant spaces for community connection and PA (e.g., parks).²⁸ ○ Connectivity in Indigenous Communities: A companion PHAC report (February 2021) on Indigenous peoples and COVID-19 stated that lockdown situations led to communities using creative outlets to engage community members (e.g., a First Nations community designated a pickup truck to move across the community and play music to encourage dancing and exercise).²⁹
<p>Ontario Scan</p>	<p>Public Health Ontario (PHO) and SickKids Hospital reported on the relationship between PA and mental health for children and adolescents.</p> <ul style="list-style-type: none"> • A PHO summary report (February 2021) on health behaviours of Ontario secondary school students during wave 1 of the COVID-19 pandemic (n=3,100) stated that almost two-thirds of students reported that they coped with COVID-19 restrictions using the following strategies: 1) Studying or working on school work (68%); 2) Exercising (e.g., getting outside for a walk, bike ride, working out at home; 67%); and 3) Spending time with family (e.g., playing games, eating

over 2,000 pedometer steps/day), was correlated with better self-reported mental and emotional well-being, as well as less depression and anxiety during COVID-19 ([BCCDC, 2021](#)).

¹ In 2020, Statistics Canada reported that worsened self-perceived mental health since the onset of physical distancing was higher among Indigenous participants than non-Indigenous participants (60% compared to 52%). A greater proportion of Indigenous participants (40%) reported most days as “quite a bit stressful” or “extremely stressful” than non-Indigenous participants (27%) ([PHAC, 2021](#)).

	<p>meals together, hanging out; 61%). Only 4% of students reported connecting with a mental health professional to help cope with the COVID-19 pandemic.³⁰</p> <ul style="list-style-type: none"> • A PHO rapid review (January 2021) on the negative impacts of public health measures on children, adolescents, and families during COVID-19 reported that, overall, the COVID-19 public health measures have negatively impacted children’s mental health and behaviour. Parents of young children reported more behavioural difficulties, hyperactivity, and conduct problems among their children, while adolescents were more likely to have increased anxiety and depressive symptoms, increased suicidal ideation, and increased frequency of alcohol consumption for those reporting any use.³¹ <ul style="list-style-type: none"> ○ <u>Children and Adolescents</u>: The PHO report notes that data from five countries reported PA before COVID-19 was already 73% in adolescents and data from Canada indicated only 39% of those five to 17 years of age met recommended PA levels. Therefore, it is even more critical that efforts to promote PA during the COVID-19 pandemic are supported by public health and health practitioners. Specifically, there is a well-established association between PA levels and mental health outcomes; thus, getting outside, engaging in free play and exercise is important.³² • <u>Impact of Loss of In-Person School on Children and Youth</u>: Researchers at SickKids Hospital reported that mental health among children did not improve as the school year resumed, with most children and youth reporting worsening mental health during the initial COVID-19 lockdowns. <ul style="list-style-type: none"> ○ Over half the 758 children surveyed (aged eight to 12 years), and 70% of the 520 adolescents surveyed, reported clinically significant depressive symptoms during the second wave (February to March 2021). ○ Based on data collected from 2,206 participants, the researchers identified a strong association between time spent with online learning and depression and anxiety among school-age children (six to 18 years old). The more time students spent online learning, the more symptoms of depression and anxiety they experienced. ○ Before the pandemic, 58% of 1,261 participants surveyed participated in school sports and/or other extracurriculars, activities that are known to boost physical and mental health. During the pandemic, only 27% participated in sports and 16% in other extracurricular activities. Furthermore, losing in-school services, such as healthy eating programs, counselling, and learning supports, resulted in worse mental health outcomes for children and youth.³³
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Methods

The COVID-19 Evidence Synthesis Network is comprised of groups specializing in evidence synthesis and knowledge translation. The group has committed to provide their expertise to provide high-quality, relevant, and timely synthesized research evidence about COVID-19 to inform decision makers as the pandemic continues. The following member of the Network provided an evidence synthesis product that was used to develop this Evidence Synthesis Briefing Note:

- Evidence Synthesis Unit, Research Analysis and Evaluation Branch, Ministry of Health. December 13, 2021.

For more information, please contact the [Research, Analysis and Evaluation Branch \(Ministry of Health\)](#).

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