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“Return to Play”: The Impact of, and Changes to, Ontario Children’s Physical Activity During COVID-19

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Abstract

This dissertation explored parents' and their children's perspectives of returning to play/sport during the COVID-19 pandemic in Ontario, Canada, and assessed how children's physical activity levels changed during COVID-19. To understand the initial impact of the pandemic, Study 1 (*August 2020*) explored the influence of family sociodemographic factors (e.g., housing type) and risk tolerance (using the validated Tolerance of Risk in Play Scale) on parents' return to play/sport attitudes. Via interviews with parents (n = 9) and children (n = 12), Study 2 (*December 2020 – January 2021*) gathered participants' experiences of getting active during COVID-19. In Study 3, parent-reported data collected from both baseline and follow-up surveys (*August 2021*) were examined to understand the impact of the pandemic on children's physical activity.

In Study 1, it was found that parents' attitudes concerning their children's return to play/sport varied by socialization, support, and safety-related attitudes; however, attitudes were most positive towards safety-related items. Specifically, parents reported that having their children at home with them during COVID-19 made them feel safe (M = 3.86, SD = 1.11). Qualitative data revealed that parents had mixed levels of comfort about their children's return to play/sport. Parental risk tolerance did not influence attitudes.

In Study 2, children reported missing important people (e.g., coaches) as the main reason for wanting to return to play/sport, and children who had returned reported having no concerns with following COVID-19 protocols. Parents and children

noted declines in children's activity levels during COVID-19; however, they referenced getting active outdoors and virtual opportunities (e.g., YouTube) as common facilitators.

Results from Study 3 revealed decreases in the proportion of children achieving 60 minutes of physical activity/day during periods of lockdown (i.e., pre-lockdown: *before March 2020*; during lockdown: *March 2020 – June 2020; January 2021 – May 2021*; and post-lockdown: *August – December 2021*). Generalized linear mixed-effects models revealed that the proportion of children achieving 60 minutes of physical activity/day pre-lockdown (63%) declined during lockdown (21%) and then increased post-lockdown (54%). Several demographic variables (e.g., household income) moderated results suggesting family-level factors may have influenced children's activity during COVID-19. In conclusion, findings from this study reveal the impact of COVID-19 on children's play/sport and provide realistic strategies families can implement to increase activity during a pandemic.

Keywords: children, Ontario, COVID-19, physical activity, pandemic, parents

Summary for Lay Audience

The COVID-19 pandemic impacted opportunities for children's play/sport. In Ontario, parks and recreation facilities were closed to reduce the transmission of the disease. This was problematic, as physical activity during childhood offers numerous health benefits. To understand the implications of COVID-19 on children's physical activity, this study captured parents' and their children's perspectives of returning to play/sport during COVID-19.

Via two online surveys and Zoom interviews with parents and children, three studies were conducted to: 1) understand parents' attitudes regarding their children's return to play/sport and identify if parental risk tolerance influenced their attitudes (Study 1); 2) qualitatively explore parents' and their children's perspectives of returning to play/sport during and post-COVID-19 (Study 2); and, 3) explore whether children's physical activity levels changed during a period of COVID-19 in Ontario (Study 3).

In Study 1, parents completed an online survey during early COVID-19 (August – December 2020) that assessed their attitudes regarding their children's return to play/sport. Parents also completed the Tolerance for Risk in Play Scale – a tool used to assess parental tolerance for their children's risk taking. The highest scored attitude by parents was that having their children at home with them during COVID-19 made them feel safe. Overall, parents had mixed levels of comfort about their children's future return to play/sport. Risk tolerance did not influence attitudes.

In Study 2, interviews were conducted with parents and children to further understand their perspectives of returning to play/sport during COVID-19. Barriers and

facilitators to getting active during COVID-19 were also explored. The most common facilitator for dealing with children's inactivity was getting active outdoors, and children's desire to return to play/sport was mostly due to them missing their friends/sports coaches.

Study 3 explored the proportion of children achieving 60 minutes of physical activity/day during three timepoints (pre-COVID, during COVID lockdowns, and after COVID lockdowns). The proportion of children achieving 60 minutes of physical activity/day declined during COVID lockdowns but increased once lockdowns were lifted. Several sociodemographic variables (e.g., household income) impacted results. In conclusion, this study advances our knowledge of pandemic-associated impacts on children's play/sport by sharing children's and parents' voices.

Co-Authorship Statement

This dissertation would not have been possible without 8 co-authors. First, my supervisor, Dr. Trish Tucker was integral to the study's conceptualization, design, and implementation. I would also like to thank Drs. Leigh Vanderloo, Brianne Bruijns, Stephanie Truelove, Shauna Burke, Jason Gilliland, Jennifer Irwin, and Matthew Bourke for their on-going support in providing feedback, analytical, and editorial expertise for the entire *Return to Play* Project. This dissertation would not have been possible without their input!

Data Availability Statement

The processed, deidentified data for this study are available in Western University's Borealis data repository, doi:10.5683/SP3/ZPWDR3, under a Creative Commons 4.0 license. The raw data are restricted to maintain the confidentiality of research participants.

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I acknowledge that Western University is located on the traditional lands of the Anishinaabek, Haudenosaunee, Lūnaapéewak and Chonnonton Nations, on lands connected with the London Township and Sombra Treaties of 1796 and the Dish with One Spoon Covenant Wampum. With this, I respect the longstanding relationships that Indigenous Nations have to this land, as they are the original caretakers. I acknowledge historical and ongoing injustices that Indigenous Peoples (First Nations, Métis and Inuit) endure in Canada, and I accept responsibility to contribute toward revealing and correcting miseducation as well as renewing respectful relationships with Indigenous communities through my research and community participation.

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List of Abbreviations

COVID-19: Coronavirus-disease-19

CSEP: Canadian Society for Exercise Physiology

LASSO: Least Absolute Shrinkage and Selection Operator

MVPA: Moderate-to-Vigorous Physical Activity

OR: Odds Ratio

PMT: Protection Motivation Theory

SPSS: Statistical Package for the Social Sciences

TRiPS: Tolerance for Risk in Play Scale

WHO: World Health Organization

Chapter 1:

Introduction and Literature Review

Engaging in physical activity during various stages of childhood (e.g., early childhood; 0-4 years of age, and school-age; 5-12 years [the focus of this dissertation]) is important for children's growth, development, and overall health (Carson, Chaput, Janssen, & Tremblay, 2017; Chaput et al., 2014; Gao, Chen, Sun, Wen, & Xiang, 2018; Janssen & Leblanc, 2010). Defined as "any voluntary bodily movement produced by skeletal muscles that requires energy expenditure" (Caspersen, Powell, & Christenson, 1985; pg. 126), physical activity fosters increased physical health (e.g., cardiorespiratory fitness; Marta, Marinho, & Marques, 2012; Raghuveer et al., 2020), cognition (e.g., working memory; Bidzan-Bluma & Lipowska, 2018, language development; Timmons et al., 2012), and psychosocial health outcomes (e.g., social skills, resilience; Lees & Hopkins, 2013) among children. Physical activity during childhood is also important because it is inversely related to cardiometabolic risk factors, such as high blood pressure, poor lipid profiles, and insulin resistance, while also aiding the development of healthy bones, joints, and muscles (Tambalis & Sidossis, 2019). Moreover, children who are physically active during childhood exhibit improved mental health and overall well-being (Rodriguez-Ayllon et al., 2019), and may have a reduced risk of developing depression and/or anxiety (Nieman, 2002). Further, children who are physically active have been found to have higher levels of academic achievement compared to their inactive peers (Barbosa et al., 2020). Physical activity during childhood also acts as a preventative measure against chronic conditions such as hypertension, cancer, heart

disease, and type 2 diabetes in later life (Anderson & Durstine, 2019). As physical activity has been shown to track from childhood to adolescence and adulthood (Jones, Hinkley, Okely, & Salmon, 2013; Migueles et al., 2023), ensuring children are active from an early age is crucial.

Though engaging in physical activity during childhood is integral to proper health, limiting sedentary behaviour is just as important (Carson, Hunter, Kuzik, Gray, et al., 2016). Sedentary behaviour is defined as "any waking behaviour characterized by an energy expenditure ≤1.5 metabolic equivalents (METs), while in a sitting, reclining or lying posture" (Tremblay et al., 2017; pg. 75). Sedentary behaviour during childhood is associated with unfavourable outcomes, such as poor mental health (Tremblay et al., 2011), increased risk for obesity and poor psychosocial and cognitive health (Leblanc et al., 2012), and reduced cardiovascular health and poor overall physical fitness (Shields & Tremblay, 2008). Cardiometabolic risk factors associated with sedentary behaviour during childhood include a poor body mass index, higher waist circumference, and increased total cholesterol and triglycerides (Nur Zati Iwani et al., 2023; Kallio et al., 2021; Vaisto et al., 2019). Further, limiting sedentary behaviours during childhood is important as it has been linked to disruptive sleep patterns (Leblanc et al., 2012), and decreased language and executive functioning development (e.g., literacy and numeracy; Carson, Hunter, Kuzik, Gray, et al., 2016).

Common examples of sedentary behaviours that children engage in include screen-viewing, such as watching television, playing video games, and spending time on social media applications (Biddle, Pearson, Ross, & Braithwaite, 2010; Dauw, 2016).

Some activities that involve sedentary behaviour such as reading, storytelling, and academic pursuits (e.g., doing homework) are important for children's development (Poitras et al., 2017); however, children's extended time spent in sedentary behaviours, particularly those involving screen-viewing, should be avoided. This is especially important given that researchers have identified that regular screen time is often introduced to children before they reach 2 years of age, and a large proportion of preschool-aged children accumulate >1 hour of screen-viewing, daily (Mitchell, 2019). With regard to school-aged children, a study including 1,600 children (8-12 years) in the United States found that children engaged in 4-6 hours of screen-viewing per day (American Academy of Child & Adolescent Psychiatry, 2020). Clearly, children under 12 years of age are spending too much time engaged in sedentary pursuits, particularly screen-viewing.

Does Physical Activity Intensity Matter?

Researchers have identified that the intensity level of physical activity during childhood can impact the health benefits acquired (Carson, Hunter, Kuzik, Wiebe, et al., 2016; Janz et al., 2010). Specifically, higher intensity activity, such as biking, running and jumping, also known as moderate-to-vigorous intensity physical activity (MVPA), offers increased health benefits to children compared to lighter intensity activity (e.g., walking; Carson et al., 2017; Tremblay et al., 2016). Engaging in MVPA has been associated with greater increases in children's motor skill (Figueroa & An, 2017) and executive functioning development (Moreau, Kirk, & Waldie, 2017) when compared to light physical activity (LPA). Further, research supports that engaging in MVPA during early

childhood (<5 years) offers benefits to the development of bone mineral content in later childhood (i.e., age 8 to 11 years), especially for boys (Janz et al., 2010). Additional research underscores the importance of consistency in engaging in physical activity during childhood in obtaining overall good health (Janssen & LeBlanc, 2010). In short, although MVPA during childhood offers improved health outcomes (Carson et al., 2017), even small amounts of physical activity on a regular basis, regardless of intensity, can offer important health benefits to children (Janssen & LeBlanc, 2010) and some physical activity, even at a lighter intensity level, is better than none.

Canadian 24-Hour Movement Guidelines

With the goal of increasing physical activity levels among children, the Canadian *24-Hour Movement Guidelines* were developed, which provide age-specific daily recommendations for physical activity, sedentary behaviour, and sleep (Canadian Society for Exercise Physiology, 2017b, 2017a). Unique sets of guidelines exist for children in their early years (0 – 4 years) and for school-aged children (i.e., 5 – 17 years). For children in their early years, specific recommendations exist for cohorts including infants (<1 year), toddlers (1-2 years), and preschoolers (3-4 years), and specify that infants should engage in 30 minutes of tummy time daily (i.e., prone position while awake), engage in no screen time, and limit periods of sitting (e.g., in a stroller or highchair) to no more than 1 hour per day. Children under 2 years should not have any screen time. Toddler and preschooler recommendations include getting at least 180 minutes per day of total physical activity (60 minutes of which should be MVPA for preschoolers) and reducing prolonged periods of sitting. Children 2 years and older

should engage in no more than 1 hour of screen time per day (Canadian Society for Exercise Physiology, 2017b). For children aged 5 to 17 (i.e., school-aged children), the guidelines recommend participating in at least 60 minutes of MVPA per day, including additional time spent in light or unstructured physical activity, bone strengthening activities 3 times per week, and limiting periods of sitting to no more than 2 hours per day (Canadian Society for Exercise Physiology, 2017a). Although not a focus of this research, within the integrated 24-hour approach, sleep is also a component of the guidelines, and recommendations exist for each age group, referencing between 12-17 hours for infants, 10-14 hours for toddlers and preschoolers, and 9-11 hours for school-aged children (Canadian Society for Exercise Physiology, 2017b, 2017a). Other countries such as Australia (Australian Government, 2017), the United Kingdom (Government of the United Kingdom, 2011), New Zealand (New Zealand Ministry of Health, 2017), and South Africa (Draper et al., 2020) have followed suit and adopted similar recommendations for children, underscoring a global shift in movement guideline recommendations. Finally, the World Health Organization (WHO) released the *WHO Guidelines on Physical Activity and Sedentary Behaviour,* which also include specific recommendations for children based on their age (World Health Organization, 2020). Clearly, there is a growing global consensus regarding the importance of a healthy 24-hour day.

Proportion of children in Canada meeting the guidelines. Evidence suggests that children who meet the movement guidelines exhibit stronger health outcomes compared to children who do not meet these guidelines (Chaput et al., 2017). Despite

the consensus of the importance of meeting guidelines on children's health, and age-specific recommendations, many children in Canada are not meeting the respective targets for their age group (Chaput et al., 2017; Roberts et al., 2017). Results from the Canadian Health Measures Survey (CHMS) including a sample of 803 preschoolers (M_{age} = 3.5 years) revealed that approximately 13% of children met all three guidelines, and 62% and 24% met the physical activity and screen-time recommendations for their age group, respectively (Chaput et al., 2017). For school-aged children, results from three cycles of the CHMS (i.e., 2007-2009, 2009-2011, 2012-2013) including a sample of 5,217 children (ages 5-17) identified that 17% were meeting all three movement guidelines (Carson et al., 2017). More recently, data from the 2016-2017 CHMS including a sample of 2,070 children aged 5 to 17, revealed that only 39% met the MVPA guidelines for their age group, with boys being 2 times more likely to meet guidelines compared to girls (i.e., 52% and 26%, respectively; Statistics Canada, 2018). Just over half of children (53%) met the screen-time requirement of spending less than 2 hours per day engaged in screen-viewing (Statistics Canada, 2018). These trends are comparable to those found among children in other countries; a study including 324 families in Brazil identified that only 10% of preschoolers met all three guidelines (e.g., physical activity, sedentary behaviour, and sleep), with the lowest adherence found for the screen-time recommendation (22%; Goncalves, Byrne, de Lira, Viana, & Trost, 2022). Similar trends were identified in Australia among a sample of 202 toddlers – only 9% met all three guidelines, with the screen time guideline achieving the lowest adherence (11%; Santos et al., 2017). Interestingly, a 12-country study exploring the proportion of children (aged

9 – 11 years; *n* = 6,128) meeting guidelines reported Australia and Canada to show the highest adherence to all three guidelines (15% and 14%, respectively) when compared to children in other countries (Roman-Viñas et al., 2016). With respect to MVPA and sedentary time targets, 43% and 45% of children in Canada were meeting guidelines, respectively (Roman-Viñas et al., 2016). Undoubtedly, efforts are needed to increase the number of children meeting guidelines outlined in the 24-hour approach to protect against adverse health and chronic disease development in later life (Poitras et al., 2016).

How is Physical Activity Measured?

Given the plethora of health benefits associated with getting active during childhood (Carson et al., 2017; Timmons et al., 2012), physical activity has become a prominent intervention tool in research. However, to assess whether changes in activity occur, physical activity levels must be measured. Thus, investigators hoping to explore physical activity levels of a population are faced with a decision to make regarding how this behaviour (usually among a target population of their choice) will be assessed. Multiple measurement methods exist; however, common methods include self-report questionnaires, self-report activity logs or diaries, direct observation (i.e., by a researcher), and measurement tracking devices (i.e., objective measurement via accelerometry; Sylvia et al., 2014). Self-report questionnaires have been reported to be the most common form of physical activity measurement (Castillo-Retamal & Hinckson, 2011) and rely on participants' ability to recall their physical activity levels. Self-report questionnaires can vary by what they measure (e.g., type of activity, frequency, or

duration), and are beneficial when aiming to survey a large population in a cost-effective, practical way (Sattler et al., 2021). However, self-report measures can present limitations in capturing physical activity due to poor reliability and validity, potential participant recall bias, or forgetting to report on spontaneous or light activities (e.g., walking to school, chores at home). Self-reported activity logs employ a similar approach, as they ask study participants to self-document their activity over a set period of time (e.g., once a week, or every day). Direct observation involves having a designated person such as a research assistant watch a target populations interactions, processes, or behaviours as they occur; for example, observing a group of toddlers in daycare and recording how much activity they engage in (Poulos, Wilson, Lanza, & Vanos, 2022). Some examples of pitfalls of direct observation with regard to physical activity assessment include: inaccuracy with regard to physical activity intensity (e.g., not being able to accurately capture intensity levels), more intrusive for the participants compared to other methods (e.g., participants may be inclined to alter individual behaviors if the know that they are being watched or studied), and the burden of time for the researcher; however, this approach can reduce participant burden (i.e., no logs or paperwork to complete), and is affordable and accessible compared to other methods. Finally, objective forms of physical activity measurement that utilize wearable devices (e.g., accelerometers) have been often coined the "gold standard" in physical activity assessment as they measure and record the physiological changes of performing physical activity (e.g., change in heart rate; Trost & O'Neil, 2014). Objective methods of assessing physical activity have been called the gold standard because wearable devices

can assess one or more dimensions of physical activity (e.g., frequency, intensity, time, type; Strath et al., 2013) and can do so in real time (e.g., no bias present; Trost & O'Neil, 2014). Assessing physical activity is critical for understanding the effects of interventions, and for population surveillance, and researchers must decide which form of measurement(s) they wish to employ by weighing the benefits and limitations of each method (e.g., self-report vs. objective).

How do Children Engage in Physical Activity?

During childhood, children can engage in movement in a variety of ways; two common forms of children's movement include play and sport (Truelove, Vanderloo, & Tucker, 2017). Play typically encompass unstructured physical activities, which might include play in the neighbourhood, playing with toys such as hula hoops indoors, while sport typically encompasses structured physical activities which are often adult led or conducted in group settings (e.g., organized sports, adult-facilitated movement; Hofferth & Sandberg, 2001).

Unstructured Physical Activity (Play)

Unstructured physical activity, often called active play for those in their younger years (Lee et al., 2015), entails total body movement in which young children "exert energy in a freely chosen, fun, and unstructured manner" (Truelove et al., 2017; p. 164). Activities involving unstructured or active play can be facilitated by adults, but they are not prescribed (Canadian Public Health Association, 2019). Examples of unstructured activities include tummy time for infants (Canadian Society for Exercise Physiology, 2017b), playing with and/or gathering loose parts outdoors (e.g., sticks, rocks) for

toddlers/preschoolers (Nicaise, Kahan, & Sallis, 2011) and walking or running to and from school for school-aged children (Wang, 2018). Other examples of children's unstructured activities include playing tag, exploring the outdoors, or playing with toys (Hofferth & Sandberg, 2001).

Participating in unstructured forms of physical activity offers many benefits to children beyond those that are purely physical (e.g., the maintenance of a healthy body weight; Bundy et al., 2011), such as the development of initiative and increased self-regulation (Larson & Verma, 1999), self-esteem (Lavrysen et al., 2015), and the ability to handle adversity and manage risk (Helen Little & Sweller, 2015; Sandseter, 2009b). Further, engaging in unstructured activity has been found to increase children's overall levels of physical activity (O'Dwyer et al., 2013; Goldfield et al., 2012), and improve their social engagement and problem-solving skills, as it allows children to learn how to communicate with others via peer interactions (Nijhof et al., 2018).

Activities involving unstructured or active play often take place outdoors (Tremblay et al., 2015). This is because the outdoor environment promotes children to be spontaneous and interact with their surroundings, allowing them to engage with risks such as inclement weather or uneven surfaces (e.g., rockfaces; Sandseter, 2009). Further, the outdoors represents an opportune setting for children to engage in unstructured activities, as this environment offers a great deal of variety (e.g., open fields, playgrounds, natural loose parts), and children can do what interests them. Not surprisingly, engaging in unstructured activity while outdoors has also been found to be associated with increasing children's total physical activity levels when compared to

engaging in activity indoors (Gray et al., 2015). A systematic review exploring the relationship between outdoor time and physical activity among children ages 3 to 12 reported a positive association with MVPA ranging from 2.2 to 3.3 times higher when children were outdoors versus indoors (Gray et al., 2015). Moreover, a study by Vanderloo and colleagues (2013) found that preschoolers (*n* = 31) in childcare acquired an additional 4.49 minutes per hour of MVPA when playing outdoors versus indoors. This is important, as the outdoor environment represents an ideal setting for encouraging children's unstructured physical activity as it is often associated with no cost, improving overall accessibility (Farley et al., 2007). Further, outdoor play is appropriate for children of all ages. Nonetheless, in 2022, only 25% of children aged 5-17 in Canada were found to engage in 2 hours per day of unstructured forms of physical activity (ParticipACTION, 2022). This may be due to the children's age, as active or unstructured play is usually engaged in by children in their early years (e.g., reflecting developmental preferences; Eyler, Nanney, Brownson, Lohman, & Haire-Joshu, 2006). Further, as children get older, their enrollment in activities such as organized sports increases and takes over their movement affordances as they enter later childhood (i.e., 6-12 years; Purcell, 2005).

Structured Physical Activity

Structured physical activity includes any planned activities, such as organized sports (e.g., hockey, dance), or activities that are intentionally directed by others (e.g., bean bag games at school, educator-led games in daycare; Bright Futures, 2013). Structured physical activity during childhood, has been placed under the framework of

deliberate play, which is defined as "a form of sporting activity that involves early developmental physical activities that are intrinsically motivating, provide immediate gratification, and are specifically designed to maximize enjoyment" (Côté, Baker, & Abernethy, 2012; pg. 185-186). Often, structured physical activities are arranged or led by adults (Alhassan, Nwaokelemeh, Lyden, Goldsby, & Mendoza, 2013), and take place in specific locations such as community centres, sport-specific arenas, or at school gymnasiums or outdoor playgrounds (Tassitano, Weaver, Tenório, Brazendale, & Beets, 2020). Adults can facilitate structured activities by instructing children to listen, follow instructions, or repeat steps. In 2020, ParticipACTION reported that approximately 75% of Canadian children engaged in some form of organized sport, revealing that many more children in Canada participate in structured activity compared to unstructured activity (ParticipACTION, 2020).

Although structured physical activities are associated with similar health benefits to those affiliated with unstructured activities (e.g., physical and psychosocial; Bundy et al., 2011; Sandseter, 2009a; Tremblay et al., 2015), engaging in structured activities plays an important role in children's physical literacy development. Physical literacy is defined as "the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities throughout life" (Whitehead, 2010; p. 8). For example, during organized sports, children develop skills such as the ability to catch and throw a ball, and balance and jump. Such skills are vital for children's future participation in sport, and research suggests that children who develop such skills during childhood are more likely to use them in

adolescence and adulthood (Whitehead, 2010). Further, some studies have reported that structured physical activities are associated with higher levels of physical activity among children when compared to unstructured or free play (Palmer, Matsuyama, & Robinson, 2017; Pate et al., 2016). However, findings are inconsistent; a study by Herrington and Brussoni (2015) postulated that organized sports are not always conducive to increasing levels of MVPA among children, as this can be highly sport dependent. Further, Trost and colleagues (2008) observed similar findings - they reported a 24-55% decrease in children's (M_{age} = 10.1) MVPA during time spent in organized physical activities compared to time spent in free play among children attending after-school programs (Trost, Rosenkranz, & Dzewaltowski, 2008). It is important to underscore that levels of physical activity obtained from structured versus unstructured sports are likely child-dependent (e.g., children may have different preferences in ways they like to get active), location-dependent (school, playground, home, park) and age-dependent (e.g., preferences for activity may be subject to change over time). Therefore, it is imperative that children have access to both unstructured and structured physical activity opportunities during childhood.

As described above, both unstructured and structured physical activities offer many health benefits to children (Brussoni et al., 2015; Bundy et al., 2011; Carson, Lee, et al., 2017; Tremblay et al., 2015); however, not all children may have equal affordances to participate in structured activities due to factors associated with these activities, such as logistics (e.g., travel time), and the cost of sports (e.g., equipment and registration; Bauman et al., 2012; Farley et al., 2007; Gustafson & Rhodes, 2006;

Hesketh et al., 2017). As such, external factors that are outside of children's control that may impact their physical activity opportunities are important to explore. One imperative factor in shaping children's physical activity affordances and sedentary behaviour is the role of the parent.

What Role do Parents Play in Children's Physical Activity and Sedentary Behaviour?

Children, especially younger ones, are not fully autonomous in their decisions regarding their physical activity and sedentary behaviours (Panter, Jones, Van Sluijs, & Griffin, 2010), and the association between parents' and children's physical activity and sedentary time is well documented (i.e., more active parents have more active kids; Garriguet, Colley, & Bushnik, 2017). As such, parents and/or legal guardians play an important role in shaping their children's movement behaviours (Loprinzi & Trost, 2010; Pate et al., 2019; Rhodes et al., 2019). For the remainder of this thesis, parents and guardians will be referred to as "parents" for brevity.

Parents can influence their children's physical activity by role modeling positive movement behaviours (e.g., engaging in activity themselves; Gustafson & Rhodes, 2006), providing encouragement for their children to get active (Pate et al., 2019), and by providing material support in relation to movement opportunities (e.g., financing activities, providing transportation; Bauman et al., 2012; Gustafson & Rhodes, 2006). With respect to role modeling, studies have shown that active parents tend to have more active children (Garriguet et al., 2017). For example, a study by Garriguet et al. (2017) including a sample of 1,328 biological parent-child pairs, found that for every additional 20 minutes of parental MVPA, children (aged 6-11 years) engaged in an

additional 5 minutes of daily physical activity. For younger children, similar findings have been observed (Maltby, Vanderloo, & Tucker, 2018). In a sample of 2.5- to 5-year-old Canadian children (*n* = 24) and their mothers (n = 24), Maltby et al. (2018) identified that mothers' support was found to be a significant predictor of preschoolers' light and moderate-vigorous physical activity ($p < .05$). Further, children who received encouragement and support from their parents have been found to have more opportunities to be active, and increased physical activity levels (Allender, Cowburn, & Foster, 2006; Pate et al., 2019). For example, Jago et al. (2011) identified that greater levels of physical activity were observed among children who had parents who provided support in the form of transportation to and from their sports. Similarly, studies have identified that parents who do not value physical activity are less likely to teach their children the importance of this behaviour (Brockman et al., 2009; Sallis, Prochaska, & Taylor, 2000; Trost et al., 2003). Finally, activities such as organized sports require resources such as specialized equipment (e.g., protective gear, clothing) and time (e.g., travel to and from sporting practices and events), and these responsibilities typically fall upon parents, further underscoring their importance in facilitating and supporting their children's activity opportunities (Gustafson & Rhodes, 2006; Smith et al., 2010). Clearly, parents play an important role in supporting both unstructured and structured physical activity opportunities for their children.

Like the role that parents play in shaping their children's physical activity opportunities, the same is true for the role between parents' and children's sedentary behaviour (Carson, Langlois, & Colley, 2020; Garriguet et al., 2017; Philips, Sioen,

Michels, Sleddens, & De Henauw, 2014). Specifically, researchers have identified a correlation between parents' and their children's sedentary time (Dunton et al., 2012; Garriguet et al., 2017); results from the CHMS survey (2009-2017) including 1,116 children aged 3-5 and one of their biological parents, identified that every additional 60 minutes of parent sedentary time was associated with approximately 7 additional minutes daily of children's sedentary time (Carson et al., 2020). For children aged 8 to 14 years, Dunton et al. (2012) identified that among 291 parent-child pairs, parents and children spent 93minutes per day in sedentary behaviour together, compared to ~2.4 minutes per day engaged in MVPA together. Moreover, similar to the abovementioned parent influences on children's physical activity, a recent systematic review also identified parental role modeling and support as important influences on children's sedentary behaviour (Albrecht, Peterson, & Lassetter, 2019). This is worrisome, as it may increase the likelihood that children with parents who lead highly sedentary lifestyles will exhibit poor adherence to movement guidelines as they get older. Further, parents determine children's access for sedentary behaviours (e.g., hours allowed per day), specifically screen-viewing (e.g., rule setting; Sanders, Parent, & Forehand, 2018). As such, parents' attitudes towards scheduling their children's physical activity and sedentary behaviour are incredibly important to understand because of the clear role that parents play in habit development for their children during such an integral development period (Frosch, Schoppe-Sullivan, & O'Banion, 2019; Goldfield, Harvey, Grattan, & Adamo, 2012). Nonetheless, it is important to consider other factors that can impact parents' abilities to support their children's healthy physical activity and

sedentary behaviour, including sociodemographic factors (e.g., housing type, household income; Bingham et al., 2016; Lämmle, Worth, & Bös, 2012; Rodríguez-Rodríguez et al., 2021).

The Role of Family Sociodemographic Factors in Children's Physical Activity and Sedentary Time

Family sociodemographic factors have been acknowledged as impacting children's physical activity and sedentary time (Bingham et al., 2016; Hesketh et al., 2014). Sociodemographic factors are defined as a range of social and demographic factors including, but are not limited to parent and child age, gender, education, ethnicity, household income, employment status, and housing type.

Given that children under 12 years of age typically reside with their parents and spend a large portion of their time together (Carlson & Berger, 2013), parents' sociodemographic factors are highly influential. For example, there is strong evidence to support the role that housing type and surrounding neighbourhoods have on familial physical activity opportunities (Carroll-Scott et al., 2013; Kaushal & Rhodes, 2014). Particularly, children living in homes with yards (Kaushal & Rhodes, 2014) and homes with nearby access to parks/playgrounds (Carroll-Scott et al., 2013) have been found to engage in higher levels of physical activity. Moreover, when comparing the movement behaviours of children living in rural versus urban areas, studies have identified that children living in rural areas are at an elevated risk for physical inactivity compared to their urban counterparts (Moore et al., 2010; Yousefian, Ziller, Swartz, & Hartley, 2009). In fact, a recent study including data from 12,161 children aged 4-17 years identified

that unfavourable trends in children's physical activity and screen time occur at a higher rate in rural communities compared to urban communities (Nigg et al., 2022). Clearly, the environment in which children live plays a role in their opportunities to engage in movement, and parents establish these environments.

Not only does housing type and surrounding environment play a role in children's activity levels, household income (Guerrero et al., 2020), parent education level (Lim & Biddle, 2012; Ruedl et al., 2021), and family situation (e.g., double, or single parent; Rayner, 2013) can also influence children's physical activity and sedentary time. Specifically, in Canada, Guerrero et al. (2020) identified that parents with higher-than-average household incomes (≥ $100,000 CAD) were more likely to support their children's physical activity by providing them with a greater range of physical activity-related opportunities. Moreover, families with lower-than-average household incomes ($<62,000; Uppal, 2023) have historically reported poorer odds of meeting physical activity guidelines (Armstrong et al., 2018; Chang & Kim, 2017; Sfm et al., 2020). In fact, a study by Vella et al. (2014) identified that children from lower-income families were more likely to drop out of sport by age 10 compared to children from higher income families, and similar findings have been identified internationally in countries such as the United States (Cottrell et al., 2015; Jin & Jones-Smith, 2019) and the United Kingdom (Goisis, Sacker, & Kelly, 2016; Noonan, Boddy, Knowles, & Fairclough, 2016). The same has been found regarding education level – parents with a higher level of education tend to have more active children (Merino-De Haro et al., 2018; Ruedl et al., 2021). A study exploring the influence of parental education level on physical activity of children

identified that children (n = 284; M_{age} = 9.37) with highly educated parents (i.e., university degree or higher) spent significantly more time engaged in physical activity compared to children with parents of a lower education level (i.e., no graduation from high school; Muñoz-Galiano, Connor, Gómez-Ruano, & Torres-Luque, 2020). Further, regarding sedentary behaviour, research has identified that children from lower-income families tend to have more opportunities for sedentary behaviour as they are more likely to have media access in their bedrooms and less likely to have access to play equipment such as bikes (Tandon et al., 2012). Finally, Merino-De Haro et al. (2018) explored the association between family situation and level of fitness among 3–5-year-olds (n = 2,638) and identified that children living in double-parent households had higher levels of cardiorespiratory fitness compared to children from single-parent households. Undoubtedly, factors at the family level are important to consider when examining the role that parents' play in their children's movement.

Demographic factors at the child level, such as biological sex and age have been identified as correlates of children's physical activity and sedentary time (Telford, Telford, Olive, Cochrane, & Davey, 2016; Trost et al., 2002). In fact, a large body of research supports that boys are more active than girls (Hallal et al., 2012; Pearce et al., 2012; Trost et al., 2002), with differences found as early as 4 years of age (Ekelund et al., 2012). There are several plausible explanations noted in the literature as to why girls are less active than boys, citing reasons such as girls' lower organized sport participation (Vella, Cliff, & Okely, 2014) and lower enjoyment in physical education in general (Cairney et al., 2012). However, a systematic review including 10 studies explored the

association between physical activity and age among children aged 9-15 years identified that physical activity decreased with age, with no differences found between boys and girls (Bacil, Mazzardo Júnior, Rech, Legnani, & Campos, 2015). As such, promoting increased physical activity for all children during various stages of childhood is important. Research should continue to investigate the influence of family sociodemographic factors in relation to young children's physical activity and sedentary behaviour to identify where increased supports are needed. In addition, factors specific to children (e.g., biological sex, age) and their influence on children's movement behaviours should be explored to identify how parents can better promote healthy childhood behaviours.

The Role of Parental Risk Tolerance on Children's Physical Activity

Having the opportunity to engage with risk during physical activities in childhood is necessary (Brussoni et al., 2018). Often called *risky play*, engaging with risk during childhood involves experimenting with uncertainty and overcoming fears, sparking feelings of thrill and excitement (Sandseter, 2009b). Six categories of risky play have been identified, outlining the broad ways in which children can engage with risk while being physically active. The categories include: (1) play at speed (e.g., running, playing tag); (2) play at heights (e.g., climbing a tree); (3) playing with tools (e.g., hammer, scissors); (4) playing near dangerous elements (e.g., open water); (5) rough and tumble play (e.g., allowing children to wrestle); and, (6) playing without adult supervision (e.g., walking to school; Sandseter, 2009b). Allowing children to engage in risky play has been associated with numerous health benefits (Brussoni et al., 2015; Sandseter & Kennair,

2011). A systematic review including 21 studies identified that risky play increases children's physical activity and decreases sedentary behaviour, improves mental and physical health, and increases children's social interactions, creativity, and learning outcomes (Brussoni et al., 2015). There is also supporting research to show that children's risky play can lead to improved self-confidence, mastery, and social skills (Sandseter & Kennair, 2011).

As parents play an important role in their children's movement behaviours (Gustafson & Rhodes, 2006; Rhodes et al., 2019), they also influence the amount of risky play their children are afforded (Brussoni et al., 2018). Parental risk tolerance is a measure of how likely parents are to allow their children to engage with risk, and this has been previously measured via a validated tool, called the Tolerance for Risk in Play Scale (TRiPS; Hill & Bundy, 2014). The TRiPS was originally developed to measure parents' tolerance for their children to engage with risk during play (Hill & Bundy, 2014) and has also been used to capture early childhood educators risk tolerance for engaging young children (<5 years old) in outdoor risky play during childcare hours (Szpunar et al., 2023; under review). This is important to measure as adults' attitudes (e.g., fears) toward their children's engagement with risk, and their perceptions of the value of this behaviour have a strong influence on children's risky play opportunities (Aarts, Wendel-Vos, van Oers, van de Goor, & Schuit, 2010; Bundy et al., 2011). More specifically, parental fears can diminish children's opportunities to engage with risk (Jelleyman, McPhee, Brussoni, Bundy, & Duncan, 2019).

Research shows that children's opportunities for engaging in risky play have been diminishing over time, and this has been attributed to parents' fears of serious injury and disapproval from other parents (Jenkins, 2007), children's increased access to screen-viewing technology such as smartphones (Dauw, 2016), and overall, increasingly risk-averse societies (Harper, 2018; Tremblay et al., 2015). Specifically in Canada, studies exploring the risk-taking behaviours of children have found that feeling safe was a common theme among children's (ages 10-13; *n* = 105) unsupervised outdoor activities (e.g., hanging out with friends, playing outdoors; Brussoni et al., 2020). Another Canadian study with 9-13-year-old children (*n* = 143) found that ~95% of their time was spent within 400m from their home, and that they spent little time in their larger neighbourhood environments (Loebach & Gilliland, 2014). It is important to note that most studies exploring risk taking of children have been conducted in other countries (e.g., Norway; [Sandseter, 2009a], Australia; [Helen Little & Wyver, 2010]); however, previous research has identified that parents from Canada tend to be less risk-averse than parents in United States and in Australia (Little, Sandseter, & Wyver, 2012; Watchman & Spencer-Cavaliere, 2017). Given the associated risks of allowing children to engage in physical activity outside of the home, parents' risk tolerance is important to understand. This is especially important during periods of increased risk, such as a global pandemic. Particularly, understanding whether parents' risk tolerance impacts children's opportunities for structured and unstructured physical activity opportunities during a global pandemic is crucial.

The COVID-19 Pandemic

The World Health Organization declared COVID-19, caused by the SARS-CoV-2 virus, a global pandemic on March 11, 2020 (World Health Organization, 2021a). COVID-19 was first detected in Wuhan, China, and is a highly transmissible respiratory disease that can spread from person to person via small respiratory particles or aerosols from an infected individual (World Health Organization, 2021a). Symptoms of COVID-19 vary by the severity of disease; however, common symptoms of mild COVID-19 illness can include fever, the loss of taste and/or smell, headache, fatigue, and sore throat, while symptoms of more serious disease can include chest pain, confusion, and shortness of breath. In serious cases, COVID-19 can result in death (World Health Organization, 2021a). Given the rapid spread and the severity of COVID-19, various government-mandated public health measures were enforced in Canada (and around the world) to protect citizens and reduce the likelihood of overwhelming the healthcare system (Government of Canada, 2021). Shortly after the announcement of a global pandemic, the Canadian government declared a state of emergency on March 18, 2020, that sparked the onset of various health protecting measures (Government of Canada, 2021). Examples of government measures introduced in response to COVID-19 in Canada included physical distancing requirements (i.e., maintaining a 2-metre distance from others) and restrictions on large public gatherings, mask and vaccination mandates, and closures of non-essential businesses and prohibitions on travel (Government of Canada, 2021). Closures of non-essential businesses were arguably the most disruptive to daily routines of Canadian citizens, as during periods of closures many establishments such as

daycares, schools, indoor and outdoor recreation programs, and workplaces were required to close (i.e., locked down). These public health protections remained in place for an extended period and varied by province/territory in Canada, as well as contextual factors such as disease transmission risk, number of positive cases in the community, and local government authorities (Government of Ontario, 2021; World Health Organization, 2021a).

Timelines of COVID-19 in Ontario

Given that the pandemic has been present since 2020, the timelines of COVID-19 related important events (e.g., announcement of public health measures, provincial announcements) in the context of Ontario, Canada (geographical sample for this study) are important to understand. Specifically, because regulations regarding COVID-19 in Canada were decided upon at the provincial level, varying protocols were in place based on geographical location (i.e., province, territory, city). For this dissertation, only Ontario specific information as it pertains to COVID-19 will be explored and presented. In addition, federally enforced rules that impacted Ontarians will be described.

During the first year of COVID-19 (i.e., 2020), Ontario introduced its first re-opening plan and assigned cities into 1 of 3 reopening phases (i.e., Phase 1—protect and support; Phase 2—restart; and Phase 3—recovery [introduced in April – approximately 1 month into the pandemic]; Government of Ontario, 2020) depending on transmission risk. The format of reopening plans shifted over the course of the year as case counts progressed, and the Ontario government moved to a five-colour framework in November (i.e., Green—Prevent, Yellow—Protect, Orange—Restrict, Red—Control, and

Grey—Lockdown), with restrictions again being reinstated dependant on COVID-19 case-counts and transmission risk (Government of Ontario, 2020). The following year, in May of 2021, Ontario again readjusted the reopening plans, introducing another three-step re-opening plan that included the gradual reopening of activities. In general, stricter lockdowns were in place during the winter months (November-February 2020-2021), as during the summer, COVID-19 case counts in Ontario were lower (May to September 2020-2021). Please see Figure 1 for a detailed timeline of important dates related to the COVID-19 Pandemic in Ontario, Canada with considerations regarding sport/play closures, and lockdowns/stay-at-home orders.

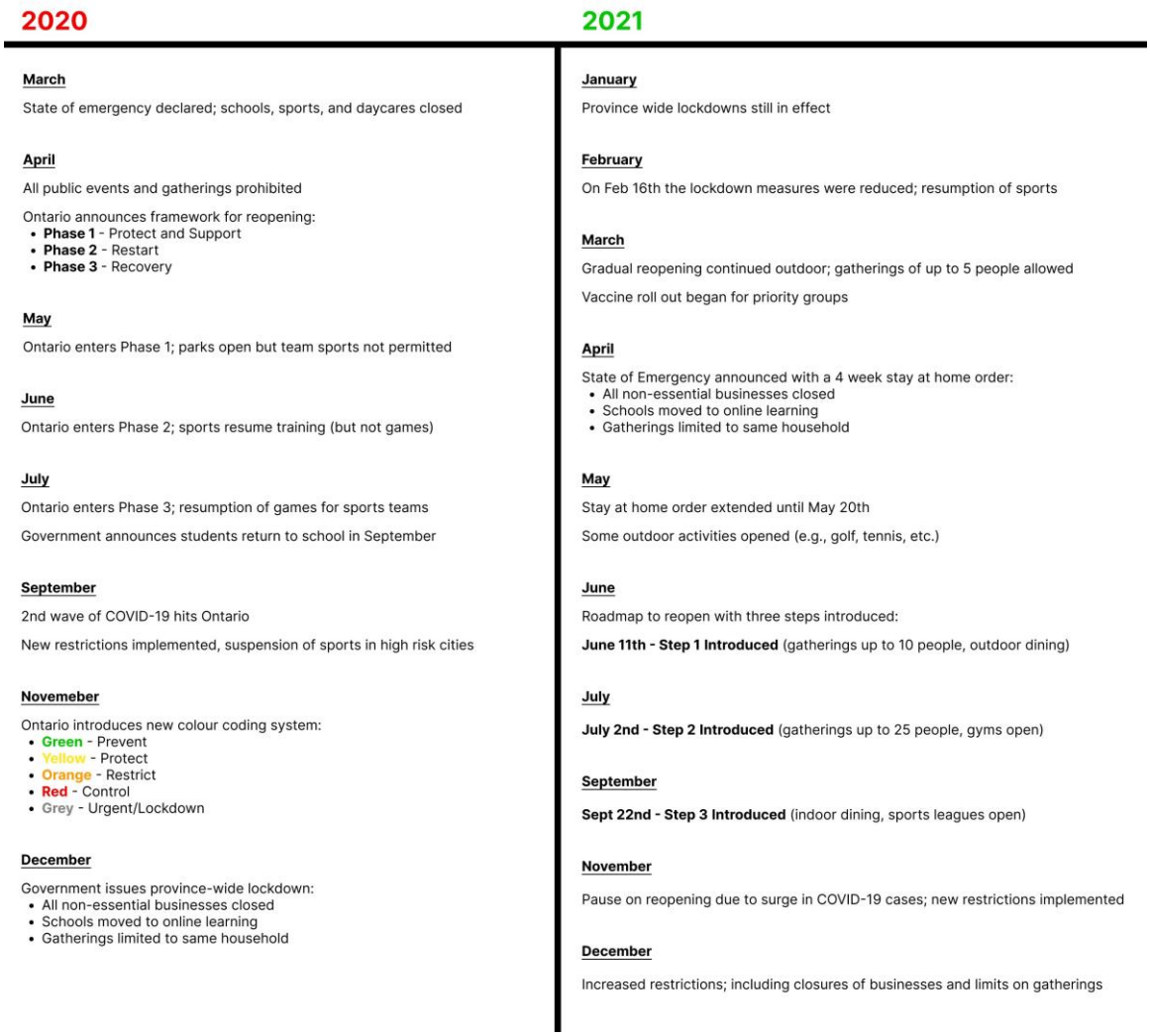

Figure 1. Timeline of COVID-19 restrictions in Ontario, Canada.

The Impact of COVID-19 on Children's Physical Activity Opportunities in Canada

Undoubtedly, since March 2020, children's physical activities, both unstructured (play) and structured (sport) have been stifled (Dunton, Do, & Wang, 2020; Mitra et al., 2020; Moore et al., 2020; Riazi et al., 2021). Specifically, closures of physical activity supporting environments (e.g., gyms, parks, schools, community centres) have impacted children's play/sport (de Lannoy, Rhodes, Moore, Faulkner, & Tremblay, 2020; Gadermann et al., 2021). Moreover, since closures were enforced in a staggered manner (e.g., dependent on phase of re-opening, risk of virus transmission), children's activities have been disrupted over an extended period. In addition, parents may have restricted children's use of public places due to transmission concerns or fears of themselves or their child getting ill.

Research conducted during the COVID-19 pandemic in Canada has explored the impact of closures on children's physical activity and sedentary time (Mitra et al., 2020; Moore et al., 2020, 2021; Riazi et al., 2021). For example, a national study conducted by Moore et al. during early stages of the pandemic (i.e., April 2020) identified that among a group of children (n = 1,472), only 18.2% and 11.3% of children were meeting physical activity and screen-time guidelines, respectively (Moore et al., 2020). At 6-month follow up (i.e., October 2020) 14.3% of children were meeting physical activity guidelines, and 25.6% were meeting screen-time guidelines among the same group of children (Moore et al., 2021). The noted declines in children's physical activity are comparable to findings from other countries. For example, a longitudinal study exploring changes in physical activity and screen time from pre-COVID to during-COVID including children aged 4 to 8

years living in the Netherlands (*n* = 233) identified that daily physical activity levels declined and sedentary time increased during the pandemic (ten Velde et al., 2021). Specifically, ten Velde (2021) identified that only 20% of children were achieving 60 minutes of physical activity per day during-COVID, compared to 64% pre-COVID. Moreover, a study exploring children's (*n* = 211) sedentary behaviour in the United States during a period of COVID-19 (April – May 2020) identified that children engaged in over 9.5 hours of sedentary behaviour per day (Dunton et al., 2020). Further, a systematic review including 71 studies across 35 countries identified substantial declines in children's physical activity, with children living in countries such as Spain and Brazil who had the strictest public health measures being impacted the most (Kharel et al., 2022). Similarly, a systematic review and meta-analysis assessing child and adolescent physical activity during COVID-19 including 22 studies, capturing 14,216 participants (M_{age} =10.5 years) demonstrated that the duration of engagement in total daily physical activity decreased by 20% because of the pandemic. In addition, the moderation analyses from this study revealed a 17-minute reduction in children's time spent in daily MVPA (Neville et al., 2022). Clearly, the pandemic has resulted in changes in children's physical activity and sedentary behaviour. This is problematic, as poor adherence to movement behaviours is associated with an increased risk of obesity, diabetes, and cardiovascular disease in children (Warburton, Nicol, & Bredin, 2006).

Further, not only did COVID-19-related restrictions on physical activity-supportive environments lead to daily scheduling changes for children, the lack of daily active transport to school, and previous components of a normal day such as recess,

were also removed from children's routines (Perez, Thalken, Ughelu, Knight, & Massey, 2021; Riazi et al., 2021). Opportunities for children to engage in unstructured, play-based physical activities also declined - a study exploring perspectives of parents (*n* = 29) living in Ontario and British Columbia, Canada noted the pandemic's influence on reducing children's opportunities for outdoor play and children's independent mobility (e.g., exploring the neighbourhood; Riazi et al., 2021). With regard to structured physical activities, Canadian sport organizations also reported facing challenges during COVID-19 (i.e., spring/summer 2020) as a result of declining enrollment (Jackman & Way, 2020). For instance, a nationwide study capturing responses from 1,300 organizations in Canada identified that 70% of local sport organizations reported decreased revenue as a result of declining registration and participation just 3 months into the pandemic (i.e., June 2020; Jackman & Way, 2020). Given the noted declines in unstructured and structured physical activity engagement among Canadian children, research exploring whether parents' attitudes toward their children's return to play/sport has shifted since the onset of COVID-19 is needed. In addition, research exploring the impact of the pandemic on children's physical activity levels is warranted.

Have Previous Pandemics or Public Health Emergencies Impacted Children's Physical Activity?

Prior to COVID-19, previous public health emergencies have transpired (e.g., Zika virus, Ebola, severe acute respiratory syndrome [SARS], Influenza Type A virus [H1N1]; WHO, 2023). For example, in 2009, the H1N1 virus (also known as swine flu), was labelled as a pandemic by the WHO (WHO, 2023). The H1N1 virus, a type of influenza,

was a major health concern and caused an estimated 284,400 deaths worldwide (Mayo Clinic, 2023). During this time, researchers explored whether the presence of the H1N1 virus impacted sport and physical activity participation. In line with COVID-19 public health measures, H1N1 resulted in sports and fitness organizations/centres taking increased health precautions, such as: increased hand washing, routine disinfection and cleaning of facilities, and ensuring that sports players with symptoms or those with sick family members abstained from participating; however, little is known about whether previous pandemics such as H1N1 or SARS impacted physical activity levels (Lateef, Alaggia, & Collin-Vezina, 2021).

The Protection Motivation Theory

Considering COVID-19 is a highly contagious disease (World Health Organization, 2021a) that could be transmitted by allowing children to return to physical activities (e.g., outdoor play, sports) during a pandemic, some parents may be hesitant to do so. The Protection-Motivation theory (PMT), first introduced by Rogers in 1975, has been widely used as a framework to predict people's protective behaviours (Rogers, 2010; Sommestad et al., 2015). The PMT can describe how people perceive and respond to threats, risks, or dangers in their environment (i.e., COVID-19). In the context of this dissertation, the PMT can provide insight into how parents make decisions about allowing their children to return to play or sports during the COVID-19 pandemic.

PMT proposes that incorporating protective behaviours against a health threat is dependent on a person's motivation for self-protection (Rogers, 2010). Therefore, in the case of the COVID-19 pandemic, the way a person will act will be dependent on their

inherent fear of contracting the virus (e.g., or in the instance of parents, the fear that their child will contract the virus). Specifically, PMT outlines that individuals protect themselves based on two factors: threat appraisal and coping appraisal. Threat appraisal depends on the individual's perceived severity of the situation and their susceptibility to it (e.g., danger or harm associated with allowing children to get active during the COVID-19 pandemic). The coping appraisal is how one responds to the situation and depends on one's evaluation of the efficacy of the protective behaviour in coping with the threat (e.g., effectiveness of not allowing children to engage in activities outside of the home during COVID-19). As such, the PMT is one model that explains why people respond the way they do to certain situations, and explains the cognitive processes regarding threat and coping appraisals (Rogers, 2010).

In this instance, PMT can be applied to understand how parents and their children may act when faced with the opportunity to re-engage in play and sport during a global pandemic (i.e., behavioural intention), as people are faced with a potentially life-threatening situation. It can be assumed that individuals who perceive COVID-19 as a serious threat to their health will be more likely to engage in protective behaviours (e.g., wearing masks, social distancing, washing hands, following vaccine protocols, refraining from re-engaging in play/sport). In the case of children's return to sport/play, parents may consider the risk of their children contracting the virus and the potential consequences, such as long-term health effects or spreading the virus to other family members. If parents perceive the threat to be high, they may be more likely to prevent their children from returning to play/sports. On the other hand, individuals who do not

perceive COVID-19 as a serious threat may be less likely to engage in these protective behaviours as they may believe the risks of contracting the virus are low or may believe that measures to protect against the virus are unnecessary or inconvenient. In this case, parents may evaluate the effectiveness of measures such as mask-wearing, social distancing, and sanitization protocols put in place by the sports organization to mitigate the risk of COVID-19 transmission and decide upon their evaluation. Further, if parents feel confident that the sports organization is taking adequate measures to protect their children, or they do not view COVID-19 as a threat, they may be more likely to allow them to return to sports.

The high prevalence of COVID-19 in Canada over the last 3 years has made it an important health challenge, especially for parents with young children. As the COVID-19 can be prevented by adherence to protective behaviours (e.g., following public health protocols), parents had to assess their (and their child's) level of risk regarding returning to play/sport. Overall, PMT provides a useful framework for understanding why some individuals are more likely to engage in protective behaviours during the COVID-19 pandemic than others. Specifically, the PMT can help us to understand parents' and children's responses to COVID-19, specifically concerning return to play/sport behaviours. By understanding these cognitive processes, sports organizations and public health authorities can design interventions and strategies that increase parents perceived coping efficacy and reduce the perceived threat, thereby increasing the likelihood of children returning to play/sports safely. See Figure 2 for a visual describing

the PMT framework, including a COVID-19 context regarding children's return to play/sport.

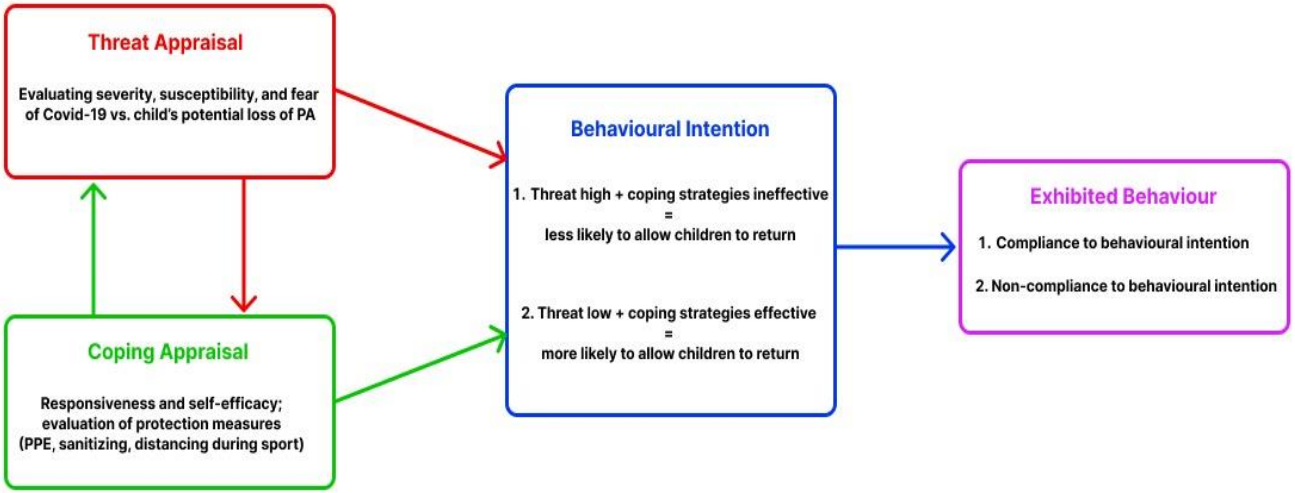

Figure 2. Protection Motivation Theory in a COVID-19 Return to Play/Sport Context.

Study Rationale

Due to the important role that physical activity plays in children's health (Carson et al., 2017), and the specific evidence pointing to the importance of children's engagement in unstructured outdoor activities (Tremblay et al., 2015) and structured activities such as sports (Ewing, Seefeldt, & Brown, 1996), the impact of the COVID-19 pandemic on children's return to play/sport was important to explore. Moreover, given the fundamental role that parents play in supporting children's physical activity opportunities (Gustafson & Rhodes, 2006), and the limited research exploring parents' attitudes on their children's return to play and sport during a pandemic, an exploration of parents' perspectives was integral. Capturing children's perspectives on their return to play/sport were also fundamental to this project as their voices are not often included in the literature (Tisdall, Davis, & Gallagher, 2008). Further, because of the observed decline in the proportion of children in Canada meeting physical activity and sedentary behaviour guidelines since the onset of COVID-19 (Moore et al., 2020, 2021), a specific exploration into how the pandemic has changed Ontario children's physical activity and sedentary behaviour was needed. Ontario had several restrictions enacted to physical activity supporting environments in place for extended periods of time (Government of Ontario, 2021), as this province had one of the highest case counts in the country (de Lannoy et al., 2020), therefore, an Ontario-specific study was needed. Further, because provincial regulations regarding the opening and closing of children's physical activity supporting environments in Ontario were changed frequently (and different from approaches taken by other provinces/territories; Government of Ontario,

2021), capturing perspectives as they changed (or not) was important. As such, having a province-specific study exploring the impact of the COVID-19 pandemic on Ontario children's movement opportunities was needed to collect important contextual data so that researchers, policy makers, and parents are better able to promote and support children's physical activity during future instances of community closures. Finally, no study to our knowledge has examined the impact of the COVID-19 pandemic on children under 5 years of age physical activity levels in Ontario; therefore, children aged 0-12 were of interest for this research. This population was explored because of the wide range of physical activity opportunities children receive during childhood, and the observed transition from unstructured (i.e., play) to more structured (i.e., sports) activity during these pivotal years (ParticipACTION, 2020).

Purpose Statement

The purpose of this dissertation was to explore parents' and children's perspectives of the impact of the COVID-19 pandemic on children's return to play/sport during COVID-19 in Ontario, Canada. Parents' perspectives were of utmost importance to include in this dissertation as these individuals are integral to supporting their children's health behaviours (Gustafson & Rhodes, 2006; Philips et al., 2014; Rhodes et al., 2019). Additionally, gathering children's perspectives were important as the impact of COVID-19 has not been previously explored. The impact of family sociodemographic factors was explored in relation to parents' perspectives of their children's return to play/sport. A secondary objective was to explore the impact the COVID-19 pandemic had on children's physical activity levels, as reported by their parents. Three sequential

studies were undertaken to achieve these goals. First, study 1 (August 2020) explored parents' socialization, safety, and support related attitudes regarding their children's return to play/sport and explored the impact of sociodemographic factors (e.g., household income, parents' physical activity levels) and parental risk tolerance on return to play/sport attitudes. Study 2 (December 2020 – January 2021) employed a qualitative design, and interviews were conducted with both parents and children to understand their in-depth feelings and perspectives of COVID-19's impact on children's physical activity, sport, and play, and intentions (or not) to return to sport/play during COVID-19. Understanding barriers and facilitators to engaging in physical activity during COVID-19 was also examined. Finally, study 3 evaluated changes in Ontario children's physical activity levels during a period of the COVID-19 pandemic (i.e., August 2020 to December 2021) and explored the impact of family sociodemographic markers on children's activity. This dissertation is presented in the integrated article format, therefore, some information presented in the literature review and discussion may be presented within the individual study articles (below).

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Chapter 2:

Parents' Attitudes Regarding their Children's Play and Sport During COVID-19[1]

Physical activity during childhood offers many health benefits (Carson et al., 2017; Timmons et al., 2012). Nonetheless, since the announcement of the SARS-CoV-2 Coronavirus Disease (COVID-19) on March 11, 2020 (World Health Organization, 2021a), opportunities for children's physical activity have largely changed (Moore et al., 2020; Nigg et al., 2021; Pelletier, Cornish, & Sanders, 2021). Many countries imposed physical distancing rules and contact restrictions (e.g., maintain a distance of 2 metres from others; World Health Organization, 2021a), and while important to protect citizens, these public health measures limited children's opportunities to engage in activity with peers outside of their household, which has been recognized to positively influence physical activity levels (Barkley et al., 2014). Furthermore, in Canadian provinces such as Ontario, these public health measures included restrictions of settings (e.g., schools, outdoor playgrounds, and sport facilities) that previously supported children's physical activity participation (Government of Canada, 2021). These measures have remained in place for extended periods of time, with staggered phases of re-opening across Ontario depending on contextual factors (e.g., state and risk of transmission, positive cases; Government of Ontario, 2021). More specifically, during the timeframe of this study, citizens across Ontario were in 1 of 3 of Ontario's phases of re-opening dependent on

[1] A version of this manuscript has been published. Szpunar, M., Vanderloo, L. M., Bruijns, B. A., Truelove, S., Burke, S. M., Gilliland, J., Irwin, J. D., & Tucker, P. (2022). Parents' Attitudes regarding their Children's Play and Sport During COVID-19. *Health Education & Behavior*, 49(6), 934-948. doi:10.1177/10901981221116789

their city of residence; these phases directed the types of activities that were permitted ("Ontario Newsroom," 2020).[2]

As 2 years have passed since the onset of the pandemic (World Health Organization, 2021a), studies exploring the influence of COVID-19 public health restrictions on children's physical activity have transpired (Bates et al., 2020; Moore et al., 2020; Okely et al., 2021; Tandon, Zhou, Johnson, Gonzalez, & Kroshus, 2021; White, Barreira, & Norris, 2019). Most studies have identified decreases in children's physical activity (Dunton et al., 2020; Medrano et al., 2021; Moore et al., 2020); including reduced higher intensity activity (e.g., MVPA; Tulchin-Francis et al., 2021), while some have shown no significant change (Okely et al., 2021). Further, some research has highlighted a shift in children's engagement in structured activities (e.g., sports participation) toward more unstructured or child-led play (e.g., outdoor free play; Dunton et al., 2020; Pelletier et al., 2021; Szpunar et al., 2021). However, findings are inconsistent and largely dependent on geographical location and community type (Mitra et al., 2020).

To date, factors found to be associated with increases in children's physical activity during COVID-19 in Canada have included access to outdoor spaces (Szpunar et al., 2021), dog ownership (Moore et al., 2020), living in low-density areas (Mitra et al., 2020), and encouragement from parents/family members to engage in movement

[2] Ontario's re-opening framework during this study included 3 phases; phase 1 – protect and support; phase 2 – restart; and phase 3 – recovery. Cities were assigned a phase based on number of positive COVID-19 cases in the community. Sports and/or community centres were only permitted to open in phase 2.

(Moore et al., 2020). Nevertheless, COVID-19 has required many to adapt the ways in which they get active (e.g., engaging at home or outdoors versus at organized sport). This has revealed new barriers for parents such as financing new toys and activities, time constraints due to work from home and homeschooling demands, and lack of motivation (Szpunar et al., 2021).

Parent's (including guardians) influence their children's movement opportunities though role-modeling, providing encouragement, enrolling and paying for their children's participation inclusive of registration and equipment fees, organizing their scheduling and providing needed transportation (Gustafson & Rhodes, 2006; Rhodes et al., 2020; Strauss et al., 2018; Van Der Horst et al., 2007). Likewise, researchers have previously identified various demographic factors, including socioeconomic status and geographical location that influence parents' ability to support children's activity (Inchley, Currie, Todd, Akhtar, & Currie, 2005; Smith et al., 2010). For example, Smith et al. (2010) reported cost and transport as notable barriers to supporting children's movement, prior to a pandemic. Finally, a handful of studies have explored how parents' risk tolerance impacts their children's physical activity opportunities (Brussoni et al., 2021, 2018; Hilland, 2019; Jelleyman et al., 2019); for example, research has found that parental fears can diminish children's opportunities to engage with risk; Jelleyman et al., 2019). This is an especially important consideration in the COVID-19 era.

Given the associated COVID-19 transmission risks that may be associated with allowing children to return to their pre-COVID-19 activities, some parents may be

hesitant to do so. The purpose of this paper was to explore parents' attitudes regarding their children's physical activities inclusive of play and sports during COVID-19 (e.g., as reported by participants during the timeframe of this study – August to December 2020). A secondary objective was to explore if demographic factors (e.g., housing type, number of children) or parent-reported MVPA levels and risk tolerance influenced these attitudes. It was hypothesized that the re-opening of facilities that support physical activity would leave Ontario parents with a challenging dilemma regarding their child(ren)'s return (or not) to their previous physical activity-related programming, and that parents' attitudes would vary based on demographic and parent-reported MVPA and risk tolerance.

Methods

Study Design and Procedures

Return to Play, a repeated measures study which employed multiple online surveys (August – December 2020; survey 1 and August – December 2021; survey 2) using Qualtrics, assessed Ontario parents' perspectives of their children's (≤12 years) physical activity-related behaviours over the course of the pandemic, as well as their plans for their children's play/sport during various timepoints of COVID-19. The surveys asked parents to report on types of activities their child(ren) engaged in prior to COVID-19 (e.g., sports enrolled in, amount of time spent in these activities per week), spaces that children engaged in play/sport prior to and during COVID-19 (e.g., at home, at sport facility, gyms), amount of time children spent engaged in physical activity prior to the pandemic, and parents' perceptions of changes in their children's physical activity levels.

This paper presents cross-sectional findings from survey 1 (e.g., baseline; August – December 2020). Ethical approval was provided by the Non-Medical Research Ethics Board at the University of Western Ontario (REB #116331; Appendix A).

Recruitment and Participants

English-proficient parents living in Ontario with children 12 years or younger (at the time of the first survey; with custody at least 50% of the time) were invited to participate. Recruitment took place using various social media platforms (e.g., Twitter), where infographics with study details (e.g., eligibility criteria, principal investigators' contact details) were shared (Appendix B). In addition, various sport and physical activity organizations across Ontario were contacted and invited to circulate study details with their respective communities. Upon confirming their eligibility, participants were directed to the survey, the completion of which indicated their consent to participate.

Instruments and Tools

The online survey (survey #1; Appendix C) was created by the research team to address the overarching objectives of the *Return to Play* study. Survey items were informed by the COVID-19 situation in Ontario, Canada, at the time of survey creation, and were tailored to encompass guidance from Ontario's specific re-opening framework (as outlined in the summer of 2020). The baseline survey in its entirety contained 162 items; however, for the purpose of this paper, a subset of 64 items across four sections (i.e., parents' demographic characteristics [*n* = 16], parents' MVPA levels prior to and during COVID-19 [*n* = 2], parents' self-reported risk tolerance [*n* = 30], and their

attitudes [*n* = 14] regarding their children's play/sport programming) were examined. The validity and reliability of this study's questionnaire has not been tested, apart from the Tolerance for Risk in Play Scale.

Demographic Questions

Demographic questions included parent age, number of children, highest level of education, family situation (e.g., single-parent, double parent), approximate yearly household income, and employment status.

Parent-Reported Physical Activity

Parent's MVPA levels prior to and during COVID-19 were assessed via multiple choice format (e.g., *how many minutes per week did you spend engaged in moderate-to-vigorous, heart-pumping activity prior to COVID-19?*). Parents were given 5 response options ranging from less than 30 minutes per week to more than 150 minutes per week.

Attitude Questions

Reported on a 5-point Likert scale (i.e., 1 – *strongly disagree* to 5 – *strongly agree*), parents were asked 14 questions about their comfort and beliefs (i.e., attitudes) regarding their child(ren)'s eventual return to various forms of play and sport during COVID-19 (e.g., *I feel willing to return my child to active play opportunities where they can follow physical distancing guidelines*). For analysis, attitude items were grouped into three thematic categories: *support-related attitudes* (items regarding parents' skills and access to resources that support children's play while at home during COVID-19; *n* = 6 items); *safety-related attitudes* (items pertaining to physical distancing and overall

perceived safety either at home or at play/sport environments*; n* = 5 items); and, *socialization-related attitudes* (items concerning their child(ren)'s socialization as a result of COVID-19; *n* = 3 items). Means and standard deviations were computed for each individual attitude, and a total mean score for each of the three attitude groups was computed.

Two-open ended questions were included to allow participants to share more in-depth responses (i.e., "*Please describe the reasons you do or do not feel comfortable with the idea of your child(ren) returning to their active play/sports activities that they engaged in prior to COVID-19*"; "*To help increase our understanding, please explain your plan to return your child(ren) to their active play/sport programming [e.g., how you are (or not) planning to return your child(ren) to activities they engaged in prior to COVID-19]*.").

Tolerance of Risk in Play Scale

A modified version (i.e., 30 of 32 items) of the Tolerance of Risk in Play Scale (TRiPS; Hill & Bundy, 2014) was included at the end of the survey to assess parents' self-reported risk tolerance for engaging children in various types of play (e.g., playing outdoors while unsupervised). Two items from the scale were removed as they were not appropriate for the age group (i.e., some parents responding for children under 3 years of age). This valid and reliable survey (i.e., Pearson reliability index of 0.87) was originally developed to assess adults' tolerance for outdoor risky play among children 3 to 13 years (Hill & Bundy, 2014), and its psychometric properties have been previously demonstrated with parents and elementary school teachers as respondents (Brussoni et

al., 2018). The first item of the tool asks participants *"how often do you encourage everyday risks?"* with four response options, ranging from 'never' to 'often', while all remaining items provide a "yes" or "no" response. Raw scores were collected (i.e., yes = 1; no = 0), and per the tool creator's recommendation, a higher total score indicating greater tolerance for risk during children's play.

Data Preparation and Analysis

Descriptive statistics were used to report parent demographics and risk tolerance and were computed in SPSS (version 27). All other data preparation (i.e., data cleaning) and analyses were computed using R statistical software, version 3.6.1 (R Core Team, 2019). Survey responses with more than 15% missingness (i.e., incomplete data) were removed (Li et al., 2020). A self-define function was employed to insert median values in instances where a small number of participants did not complete a demographic question (e.g., provided parent age but not ethnicity), and imputation methods were applied to address variables with high levels of missing data using the K Nearest Neighbor (KNN) algorithm (Zhang, 2016). Because some parents provided responses for multiple children, children's biological sex and age were concluded across families to provide family indices.

Three Least Absolute Shrinkage and Selection Operator (LASSO) regressions (one for each attitude category) were conducted to identify whether demographic and/or parent-reported physical activity and risk tolerance influenced parents' attitudes regarding their children's play/sport during and following COVID-19. LASSO regressions reduce unstable estimates to zero to exclude variables without the need for formal

statistical testing and are frequently used when a large number of covariates need to be considered (Steyerberg, Eijkemans, & Habbema, 2001). Once predictors were identified from the LASSO regression, multiple linear models (R package "*lmtest*") were computed for each attitude category; however, upon visual inspection of the QQ plots for safety and socialization-related models, non-appropriate shapes were observed and the Shapiro tests reported very small *p*-values (p = 1.80 and 1.90, respectively). Consequently, Box-Cox transformations (R package "*EnvStats*"; Steven & Millard, 2020) were undertaken to improve the linear models and normalize the residuals to increase the applicability and usefulness of the data for the safety and socialization models (Teugels & Vanroelen, 2004). Parameter lambdas (λ) were set to 2 based on minimizing the log-likelihood of potential models for the safety and socialization-related attitude models. *F*-tests were used to identify if categorical variables were significant. The two open-ended questions were analyzed via deductive content analysis (Kyngäs & Kaakinen, 2020) by two independent researchers using QSR NVivo (Version 12), and common responses were identified based on the questions asked (e.g., assessing plan to return and comfort to return; Anderson, 2010).

Results

A total of 819 parents, mean age of 38.1 (*SD* = 6.1) years, participated; the majority identified as female (93%), Caucasian (84%), lived in a detached house (77%), and had full-time employment (65%). Most parents (59%) had 2 or more children, and children were, on average, 6.5 (*SD* = 3.2) years of age, and most were reported to be female (69%). Participants most frequently (27.4%) reported spending less than 30 min/week in

MVPA during the pandemic. The average risk tolerance score was 17.1 (*SD* = 5.1) out of 29, and most participants (56%) reported *sometime*s encouraging children's everyday risks. See Table 1 for complete parent demographics, physical activity, and risk tolerance.

Summary of Parents' Support, Safety, and Socialization-Related Attitude Scores

Parents, on average, reported slightly higher attitudes to safety-related items (*M* = 3.54, *SD* = 0.63) compared to socialization- and support-related attitude items (*M* = 3.50, *SD* = 0.54; *M* = 3.30; *SD* = 0.82, respectively). With regard to individual attitude items, *"I reserve time out of my day to support my child's active play"* was ranked highest (*M* = 3.89, *SD* = 1.09) in the support category; *"I feel that having my child at home with me during the pandemic makes me feel safe"* (*M* = 3.86, *SD* = 1.11) in the safety category; and "*I am looking forward to allowing my child to interact with others"* (*M* = 4.36, *SD* = 0.93) in the socialization category. Finally, a high score was noted for the socialization item *"I feel that my child has missed out on health benefits of extracurricular activities due to the COVID-19 pandemic"* (*M* = 4.19; *SD* = 1.06). See Table 2 for support-, safety-, and socialization-related attitudes, and total scores for each category.

Identified Predictors and the Influence of Demographic and Parental Factors on Parents' Support, Safety and Socialization Attitudes

The variable selection from the LASSO regression revealed 20 main predictors for parents' attitudes regarding their children's play/sport during COVID-19. See Table 3 for all identified predictors as identified by the LASSO regression for each attitude group.

Table 1. ***Parent (n = 819) Demographics, Self-Reported Physical Activity and Risk Tolerance***

Demographic Factors	*M*	*SD*
Parent Age (years)	38.1	6.1
Child Age (years)	6.5	3.2
	N	***%***
Parent Gender		
Male	53	6.5
Female	762	93.0
Prefer not to say	4	0.5
Child Biological Sex		
Male	257	31.3
Female	562	68.7
Type of Living Location		
Rural	232	28.3
Suburban	359	43.8
Urban	228	27.8
Ethnicity		
Caucasian	688	84.0
African Canadian	3	0.4
South or East Asian	51	6.2
Middle Eastern	5	0.6
Aboriginal	26	3.2
Latin American	6	0.7
Other	23	2.8
Employment Status		
Full-time	536	65.4
Part-time	105	12.8
Occasional/Support	30	3.7
Unemployed	109	13.3
Family Situation		
Single parent	90	11.0
Double parent	703	85.8
Guardian-led	6	0.7
Other	13	1.6
Highest Level of Education		
High school	59	7.2
College	239	29.2

University	304	37.1
Graduate School	210	25.6
Housing Type		
Apartment	46	5.6
Condo	15	1.8
Townhouse	55	6.8
Semi-detached house	59	8.3
Detached house	632	77.2
Other	12	1.5
Family Dog		
Yes	363	44.3
No	456	55.7
Household Income		
< $20,000	21	2.6
$20,000 – $59,999	109	13.3
$60,000 – $99,999	174	21.2
$100,000 – $139,999	194	23.7
≥$140,000	249	30.4
Number of Children		
1	337	41.1
2	360	44.0
3 or more	122	14.8
Phase of Re-Opening		
Phase 1	29	3.5
Phase 2	93	11.4
Phase 3	697	85.1
Children's Age Minimum		
0-3 years	298	36.4
3.5-6 years	212	25.9
>6.5 years	309	37.7
Children's Age Maximum		
<3 years	124	15.1
3-6 years	193	23.6
>6 years	502	61.3
Parent Physical Activity and Risk Tolerance	***N***	***%***
Minutes/week spent in MVPA prior to COVID-19		
Less than 30 minutes	146	17.8

30-59 minutes	180	22.0
60-89 minutes	132	16.1
90-119 minutes	104	12.7
120-140 minutes	78	9.5
150 minutes or more	179	21.9
Minutes/week spent in MVPA during COVID-19		
Less than 30 minutes	224	27.4
30-59 minutes	171	20.9
60-89 minutes	123	15.0
90-119 minutes	86	10.5
120-140 minutes	57	7.0
150 minutes or more	158	19.3
Frequency parent/guardian encourages everyday risks		
Never	16	2.0
Seldom	99	12.1
Sometimes	456	55.7
Often	248	30.3
	M	***SD***
Risk tolerance	17.1	5.1

Note. Risk tolerance refers to parents' raw risk tolerance score out of 29 as measured via the Tolerance of Risk in Play Scale (Hill & Bundy, 2014). Phase re-opening refers to Ontario's re-opening framework at the time of survey completion (Government of Ontario, 2021). Number of children refers to number of children under 12 years of age that the participant legally provided care for at time of survey completion. Children's Age Minimum refers to the age of the youngest child within the family. Children's Age Maximum refers to the age of the eldest child within the family. MVPA = moderate-to-vigorous-intensity physical activity.

Table 2. ***Means and Standard Deviations for Parents' Attitude Scores***

Support-Related Attitudes		
	M	***SD***
I have enough skills to support my child's active play at home	3.38	1.25
I have access to what I need at home to support my child's active play	3.38	1.18
I have the ability to support my child's physical activity/active play at home without engagement in extra-curricular activities	3.06	1.28
I have enough access to resources (i.e., space, time, toys) that allow me to support my child's active play	3.50	1.23
I reserve time out of my day to support my child's active play	3.89	1.09
I feel worried that I will no longer be able to afford my child's extracurricular activities post-pandemic	2.61	1.37
TOTAL Support score	**3.30**	**.818**
Safety-Related Attitudes		
	M	***SD***
I feel willing to return my child to active play opportunities where they can follow physical distancing guidelines	3.77	1.27
I feel that having my child at home with me during the pandemic makes me feel safe	3.86	1.11
I feel that having my child at home with me during the pandemic makes them feel safe	3.76	1.12
Even if my child can follow physical distancing guidelines, I am still hesitant to return them to active play programming	3.08	1.33
I am confident that if I return my child to active play, my child will follow Ontario's public health guidelines (e.g., hand sanitizing)	3.24	1.30
TOTAL Safety score	**3.54**	**.629**
Socialization-Related Attitudes	***M***	***SD***
I am looking forward to allowing my child to interact with others	4.36	.932
I prefer to allow my child to interact with people via social networking sites and screen-based technology than in person	1.96	1.14
My child has missed out on health benefits of extracurricular activities due to the COVID-19 pandemic	4.19	1.06
TOTAL Socialization score	**3.50**	**0.58**

Note. Each item was ranked on a 5-point Likert scale (i.e., 1 – *strongly disagree* to 5 – *strongly agree).*

Support-Related Attitudes

For support-related attitudes, significant predictor variables were parent age, living in an urban community, family situation (i.e., in the 'other' category), and not having a family dog. This model accounted for 17% of the variability observed [$F(58,713) = 3.76$, $p < .001$)]. See Table 4 for complete results from the mixed linear models exploring various predictors' influences on support-related attitudes.

Safety-Related Attitudes

No variables showed a significant association with safety-related attitudes. Living in a suburban environment, risk tolerance, children's biological sex, and parents who engaged in more than 150 min/week of physical activity prior to COVID-19 all approached significance with safety-related attitudes ($p < .10$). This model accounted for 4% of the variability observed [$F(15,803) = 3.59$, $p < .001$)]. See Table 4.

Socialization-Related Attitudes

Being in Phase 2 of Ontario's re-opening plan at the time of survey completion, children's age maximum (i.e., having older children), physical activity levels of parents during COVID-19 (i.e., specifically those with higher levels of weekly MVPA), and the interaction between housing type and age of children, and housing type and number of children had a significant effect on socialization-related attitudes ($p < .05$). The model accounted for 7% of the variability observed [$F(36,726) = 2.63$, $p < .001$)]. See Table 4.

Table 3. ***Main Predictors for Parents' Safety, Socialization, and Support-Related Attitudes***

Category	Variable	Details
Demographic	[δ]Parent gender	Parent gender at measurement time
	[δ]Parent age	Parent age at measurement time
	[δ,ξ]Community type	3-response option item: "Rural", "Urban", "Suburban"
	[δ,ξ]Child biological sex	Parents report of their child(ren)'s biological sex
	[ξ, λ]Child age max	The age of the eldest child within the family
	[δ]Child age min	The age of the youngest child within the family
	[ξ]Child age mean	Mean age of children included in study
	[δ]Ethnicity	9-response option item: "Caucasian", "African Canadian", "South Asian", "East Asian", "Middle Eastern", "First Nations/Aboriginal", "Latin American", "Other", "Prefer not to answer"
	[δ]Employment status	5-response option item: "Full-time", "Part-time", "Occasional/Support", "Unemployed", "Prefer not to answer"
	[δ,λ]Family situation	5-response option item: "Single-parent", "Double-parent", "Guardian-led", "Other", "Prefer not to answer"
	[δ,λ]Education level	5-response option item: "High school", "College", "University", "Graduate school", "Prefer not to answer"
	[δ,λ]Housing type	6-response option item: "Apartment", "Condominium", "Townhouse", "Semi-detached house", "Detached house", "Other housing"
	[δ,ξ,λ]Family dog	2-response option item: "Yes", "No"
	[δ]Household income	9-response option item: "less than $20,000", "$20,000-$39,000", "$40,000-$59,000", $60,000-

		$79,000", $80,000-$99,000", $100,000-$119,000", $120,000-$139,000", "more than $140,000", "prefer not to answer"
	$^{\delta,\lambda}$Phase re-opening	Phase re-opening at time of survey completion. 3-response option item "Phase 1", "Phase 2", "Phase 3"
	$^{\delta,\lambda}$Number of children	Number of children at time of survey completion
Parental	$^{\delta}$Parents self-report moderate-to-vigorous physical activity level before COVID-19	6-point item: "Less than 30 minutes", "30-59 minutes", "60-89 minutes", "90-119 minutes", "120-149 minutes", "150 minutes or more"
	$^{\delta,\xi,\lambda}$Parents self-report moderate-to-vigorous physical activity level during COVID-19	6-point item: "Less than 30 minutes", "30-59 minutes", "60-89 minutes", "90-119 minutes", "120-149 minutes", "150 minutes or more"
	$^{\delta,\xi,\lambda}$How often do you encourage your child to take everyday risks	4-point item: "Never", "Seldom", "Sometimes", "Often"
	$^{\delta,\xi}$Overall risk tolerance	Total yes score out of 29 "yes" or "no" questions

Note. Phase re-opening refers to Ontario's re-opening framework as outlined by the Ontario Government in 2020 (Government of Ontario, 2021). Overall risk tolerance was assessed using a modified version of the validated TRiPS tool (Hill & Bundy, 2014) $^{\delta,\xi,\lambda}$ = variables selected for the final model by LASSO regression for support-related factors, safety-related factors, and socialization-related attitudes, respectively.

Table 4. ***Influence of Demographic and Parental Factors on Support, Safety and Socialization-Related Attitudes – Mixed Linear Model Results***

Variable	Support			Safety			Socialization		
	Estimate	**Std. Error**	***p*-value**	**Estimate**	**Std. Error**	***p*-value**	**Estimate**	**Std. Error**	***p*-value**
Community Type									
Urban	-.18	.07	.017*	.59	.18	.001**			
Suburban	-.06	.06	0.33	.19	.20	.35			
Parent Gender									
Female	.01	.11	.96						
Prefer not to answer	.61	.51	.23						
Parent Age	-.01	.01	.017*						
Ethnicity									
African Canadian	.12	.42	.77						
South Asian	-.20	.14	.13						
East Asian	-.17	.19	.38						
Middle Eastern	.06	.37	.88						
Aboriginal	.44	.17	.008**						
Latin American	-.14	.32	.67						
Other	.14	.16	.37						
Prefer not to answer	.13	.24	.60						
Employment Status									
Part Time	.32	.08	7.84***						
Occupational/Support	.23	.14	.10						
Unemployed	.28	.09	.001**						
Prefer not to answer	039	.14	.005**						
Family Situation									
Double parent	.02	.10	.80				-.01	.21	.98
Guardian led	-.06	.34	.85				-.82	1.09	.45
Other	.50	.23	.027*				-1.19	.61	.05
Prefer not to answer	.06	.38	.88				-.07	.89	.93
Highest Level of Education									

College	-.02	.12	.86				-.20	.28	.48
University	-.05	.12	.66				-.18	.28	.51
Graduate school	.02	.13	.89				-.42	.29	.16
Prefer not to answer	-.11	.47	.82				-1.15	1.01	.25
Housing Type	.14	.25	.58				.82	2.68	.76
Condominium									
Townhouse	-.15	.16	.34				.37	1.13	.74
Semi-detached house	.20	.15	.19				.59	1.08	.59
Detached house	.18	.13	.16				-.01	.79	.99
Other	0.01	0.26	0.96				-3.09	2.28	.18
No Family Dog	.14	.06	.014*	0.25	0.15	.10	-.16	.13	.23
Household income	-.13	.20	.52						
$20,000 - $39,999									
$40,000 - $ 59,999	.08	.21	.70						
$60,000 - $79,999	.07	.20	.72						
$80,000 - $99,999	.09	.20	.66						
$100,000 - $119,999	-.05	.21	.81						
$120,000 - $139,999	-.14	.21	.50						
≥$140,000	-.04	.20	.86						
Prefer not to answer	.25	.21	.24						
Phase Re-opening									
2	-.12	.16	.45				.95	.43	.028*
3	-.13	.15	.37				.20	.39	.60
Number of Children	-.05	.04	.17				-.58	.46	.21
Parents PA before COVID									
30-59 min/week									
	.06	.09	.49						
60-89 min/week	.02	.09	.81						
90-119 min/week	.09	.10	.41						
120-149 min/week	-.02	.12	.83						
≥150 min/week	.14	.10	.17						
Parents PA during COVID				.02	.21	.94	-.40	.18	.029*
30-59 min/week									
	.12	.08	.12						

60-89 min/week	.25	.09	.01**	.03	.23	.88	-.24	.20	.24
90-119 min/week	.32	.10	.002**	.38	.26	.14	-.33	.23	.16
120-149 min/week	.48	.12	.001**	-.11	.31	.72	-.62	.27	.022*
≥150 min/week	.42	.10	.001**	.59	.22	.006**	-.49	.19	.011*
How Often Parent Encourages Risks									
Seldom	-.25	.22	.24	-.70	.57	.22	-.24	.56	.66
Sometimes	-.07	.21	.730	-0.70	0.54	0.20	-.41	.53	.45
Often	.08	.21	.71	-0.93	0.56	0.10	-.69	.54	.21
Parents Risk Tolerance	-.00	.01	.92	-.03	.02	.10			
Children's Age Min	-.03	.01	.008**	.04	.06	.51			
Children's Age Max				.03	.06	.62	.26	.09	.005**
Child Sex	.02	.07	.79	.51	.20	.01**			
Interaction Effect Housing type – Condominium and Child age max							-.47	.22	.04*
Interaction Effect Housing type – Townhouse and Child age max							-.04	.12	.72
Interaction Effect Housing type – Semi-detached house and Child age max							-.24	.12	.05*
Interaction Effect Housing type – Detached house and Child age max							-.16	.09	.10
Interaction effect Housing type – Other and Child age max							-.15	.28	.59
Interaction effect Housing type –							1.58	1.43	.27

Condominium and Number of Children Interaction effect			.07	.58	.90
Housing type – Townhouse and Number of Children Interaction effect			.52	.61	.39
Housing type – Semi-detached house and Number of Children Interaction effect			.48	.47	.31
Housing type – Detached house and Number of Children Interaction effect			1.87	.73	.01*
Housing type – Other and Number of Children					

***Note*.** Risk tolerance refers to parents' raw risk tolerance score as measured via the Tolerance of Risk in Play Scale (Hill & Bundy, 2014). Phase re-opening refers to Ontario's re-opening framework at the time of survey completion (Government of Ontario, 2021). Children's age min refers to the age of the youngest child within the family. Children's age max refers to the age of the eldest child within the family. Child sex refers to the proportion of female children within the family. MVPA = moderate-to-vigorous-intensity physical activity. Safety and socialization results are presented from the adjusted models. The support model accounted for 17% of the variability observed [$F(58,713) = 3.76$, $p < .001$)]. The safety model accounted for 4% of the variability observed [$F(15,803) = 3.59$, $p < .001$)]. The socialization model accounted for 7% of the variability observed [$F(36,726) = 2.63$, $p < .001$)]. * = $p \leq .05$; **= $p \leq .001$.

Parents' Level of Comfort and Plans to Return their Child(ren) to Play/Sport

Regarding parents' level of comfort returning children to play/sport, there was a range of views. The most common parent reasons for feeling comfortable included: if it was deemed safe per COVID-19-related public health guidelines in Ontario; low case numbers in their respective communities; a desire to return to normalcy and routine; comfort to return to outdoor activities only; and to support the physical and mental health of their children. Reasons for not feeling comfortable included: Children being too young to properly follow and understand public health guidelines (e.g., distancing); fear of others (e.g., other children, other families) not following guidelines and consequently spreading the virus; concern for vulnerable children or other family members; uncertainty of facilities' abilities to uphold safety protocols (including physical distancing); and increased costs of activities and general financial strain associated with pandemic. Similar themes were noted regarding parents' plans to return their children to play/sport (e.g., plan to return to outdoor activities only, plan to return if deemed safe by public health guidelines, etc.) with the addition of "plan to return only once there is a vaccine available". See table 5 for themes, subthemes and supporting quotes concerning parents' level of comfort and plans for their child(ren)'s return to play/sport.

Table 5. ***Parents Level of Comfort Returning their Child(ren) to Play/Sport and Plans to Return***

Theme	Example Quotes by Subtheme
Comfortable to return child(ren) to play and/or sport	***Comfortable to return if deemed safe by public health guidelines*** - *"I feel comfortable because I trust our health teams and government policies surrounding [COVID-19."* - *"I feel comfortable as long as the correct COVID protocols are in place."* - *"Most sports are taking extensive measures to ensure physical distancing and safety of all participants (more so than school!)."* - *"I feel comfortable with my children returning to track and field because the track team has a solid return to play guideline following the guidance of Athletes Canada and Athletics Ontario."* - *"I feel most comfortable about them returning to hockey because hockey Canada is providing associations with guidelines and support that help everyone follow recommended guidelines."*
	Comfortable to return given low case counts/community transmission - *"I feel mostly comfortable as the cases are very low in our area and the places my kids go are doing a good job addressing the situation."* - *"I am comfortable because we live in a small rural area, where we pretty much [all] know each other."* - *"We live in a very small community with no active cases of COVID so as long as it stays that way, I am completely fine with my kids returning to play/sport activities."*
	Comfortable to return given the additional physical and mental health benefits - *"The mental health of the children is being affected."* - *"I worry about the damage to my children's physical and emotional health if we don't."*

	- "*I believe keeping children from participating in extracurricular activities may cause as much or more long-term damage than COVID-19."* - *"Children need to play and… interact and learn with and from other children. The reward is greater than the risk of contracting COVID-19."* - *"I feel comfortable because of the immediate positive impact I have witnessed with returning back to both school and recreational activities on his mental health and social well-being. My son is physically and mentally happier, engaged, focused and positive about life and I believe that a child needs these outlets to grow and build self-confidence and resiliency."*
	Comfortable to return because of the desire to return to normalcy and have routines - *"I feel he needs to get back into a regular routine and interact with other children and authority figures other than his parents at home."* - *"I think we all need to get back to a normal life. Kids need to socialize."* - *"They need social interaction and a return to their "normal" activities that cannot be duplicated at home."*
Not comfortable to return child(ren) to play and/or sport	***Not comfortable given child's age/inability to follow safety measures*** - *"My children are too young to understand the importance of physical distancing and so will be at risk of contracting and spreading the virus."* - "*Physical distancing is the major issue with small children - no sense of personal space. Difficult to manage*." - *"We feel uncomfortable with our children returning to pre-covid indoor activities as they are too young to maintain physically distance or wear masks."*

	- *"I'm not confident in the abilities of my children and their peers to maintain safe distances while engaging in activities."*
	Uncomfortable because of others
	- *"I do not feel comfortable that other participants and families are taking the same precautions as my family and could potentially cause my child and family to become sick."* - *"I feel it is too risky to trust others to socially distance yourself the level we are comfortable with."* - *"We are very careful but are worried about other people not taking it seriously. If everyone was taking it seriously, we would be a lot more comfortable."* - *"I see other parents at the places not wearing masks themselves and it makes me question how safe their family is with the safety precautions"* - *"I have lost a lot of trust in the public and will not be able to tell the level of caution of other people involved in the activity."*
	Uncomfortable due to health conditions in family members
	- *"We have risk family member in the home, one of which is my youngest child.""* - *"I worry about spreading the virus to people who are immune compromised such as older family members or friends who are cancer survivors."* - *My son has been diagnosed with asthma so we are quite hesitant putting him into things where he might come in contact with COVID, and what that could look like for him.*" - "*Fear of COVID showing no symptoms and [kids] bringing it home to loved ones who are immune-compromised, and several are elderly."* - *"If my kids contract the virus on the public playground, they will bring that back home and possibly infect my husband who is diabetic, that outcome could be negative for him."*

	Not comfortable given uncertainty to uphold safety protocols (including physical distancing)
	- *"I am also concerned about shared equipment in gymnastics, and the level of touching that would be required if I sign my 3-year-old up for swimming."*
	- *"I am not sure some spaces are safe, despite all the efforts, to guarantee physical distance."*
	- *"The largest concern is the ability for programmers to maintain physical distancing."*
	- *"I worry about cleaning protocols and air ventilation in the centre."*
	Uncomfortable because lack of information guidance from sport organizations
	- *"The guidelines for keeping kids safe (all of us safe) are constantly changing, I don't feel we have a proper understanding of how to truly protect ourselves."*
	- *"Don't trust all organizers to take precautions as seriously as they should."*
	- *"Many groups who run these activities around us are acting unconcerned about distancing and are not following the guidelines."*
	- "*I am concerned about the abundance of rules in hockey. That play will be so restricted they won't get the physical activity release and enjoyment that we sign them up for."*
	- "*We feel that with all of the new rules and restrictions in place at these programs, the activities themselves will be a lot less fun than they were pre-COVID."*
	Not comfortable to return given additional costs associated with pandemic
	- *"We are also being mindful of expenses in the event that my husband or I lose a job as the result of an economic downturn."*

	- *"With the uncertainty of whether there will be a second wave, I am not willing to risk spending the money on activities."* - *"We spend a lot of money on the sport, and I want to be able to watch my children play. That doesn't sound like an option at this point."* - *"I feel less comfortable about the financial burden though since my husband is self-employed and we took a huge hit financially this year while unable to work during the pandemic."* - *"We lost a large amount of money due to the shutdown of activities when COVID-19 started. With the uncertainty of whether there will be a second wave, I am not willing to risk spending the money on activities."* - *"Our family can't afford sports equipment/fees/fundraising."*
Plan to return children to play and/or sport	***Plan to return if public health guidelines are in place*** - *"We plan to allow them to return as long as our local health unit determines it is safe to do so."* - *"My children will be returning to activities that are following health unit (i.e., physical distancing) protocols."* - *"Returning will be dependent on what the programming looks like and the ability to follow public health recommendations."* - *"If social distancing, hand washing and masks will be enforced, I would like to enroll my children in the same activities they participated in prior to COVID."* - *"Returning to hockey with proper protocol. Dressing at home, limited time in change room, wearing mask until on ice, practicing physical distancing with all screening procedures beforehand. No contact sports."*
	Plan to return to outdoor activities only

Plan to return children to play and/or sport with some modifications	- *"We have enrolled in forest school for solely outdoor activity where natural distancing occurs."* - *"We will likely not be returning to dance until physical distancing needs are gone or dramatically reduced. We will look for more outdoor activities, and activities they can do safely."* - *"We will play at parks, play in the forest, go for hikes, make our own backyard ice for skating or use the outdoor skating trail. We will not participate in indoor activities."* - *"We're planning to continue with outdoors activities wherever possible throughout the pandemic."*
	Plan to return once there is a vaccine - *"Activities are on hold until a vaccine becomes available and is proven safe."* - *"I am uncomfortable returning my child to their previous programming until there is a vaccine available or COVID cases have stopped in our area."* - *"I will allow my children to return to their activities once provincial COVID numbers drop drastically, and a safe reliable vaccine is available."*
	Plan to return them to different activities from pre-COVID - *"Looking for new alternatives and wait to see how a season goes before we go back."* - *"Since they've been away from activities for so long, I might be looking for new activities for them."* - *"I expect that by the time things open they will be interested in different things as they are so young now."* - *"My child was in dance but has decided not to dance this year. Nothing to do with COVID."*
Do not plan to return or do not have the	***Unable to return due to lack of programming and/or finances*** - *"Our community is very small, so we might be limited in what is offered. As of right now, there is no programming offered."*

means to return child(ren) to play/sport	- *"We live in a smaller community, so it requires lots of volunteers to make things work. Some activities have been completely cancelled (i.e., indoor soccer) but others are slowly starting up!"* - *"My youngest would love to do so many things that we can't afford!"* - *"Our decision to return to play will be influenced by our parental ability to support participation the program (e.g., equipment, cost, time, travel, health measures, etc. … as well as the availability and variety of programs within our neighbourhood and municipality."*
	Do not plan to return. Waiting until it is safer and engaging at home in the meantime. - *"We have decoded to do things at home. Backyard gym, nature walks and bike rides."* - *"My kids will do only those activities which can be done at home or in my neighborhood in my supervision."* - *"My child will not be enrolled in any pre COVID-19 activities or any new ones."* - *"We will not return our children to school or scheduled activities with the current health measure in place. Masking, social distancing, and extra hand hygiene are all shown to be negative to children's social, psychological, and physical development."* - *"At this point, my children will not return to organized sports or active play engaged with children outside of our family."*

Discussion

The COVID-19 pandemic has led to extended public health measures in Ontario, Canada as a means of limiting the spread of the infectious virus. Given the important association between physical activity-related activities (e.g., play and sport), and children's overall health (Carson et al., 2017), the purpose of this study was to explore parents' attitudes regarding their children's return to these activities. Further, it was examined whether demographic factors and/or parent-reported physical activity and risk tolerance influenced attitudes.

Overall, parents reported higher scores towards taking time out of their day to support their children's physical activity (i.e., reported via support-related attitude). This is important, as pre-pandemic research supports the association between parents' role modeling and support on children's likelihood to engage in healthy movement behaviours (Garriguet et al., 2017). For example, research conducted by Jago et al. (2011) found that higher levels of parental support with regard to promoting children's physical activity (e.g., providing transportation) was related to greater physical activity among children (Jago et al., 2011). This is one of the first studies, to our knowledge, that explores the influence of parents' support-related attitudes toward their child(ren)'s play/sport during the COVID-19 pandemic. Parental attitudes for supporting children's activity during times when there is limited access to physical activity-supporting environments (e.g., gyms, sports) are important to consider.

Parents in the present study reported being eager to allow their child(ren) to interact with others (i.e., reported via socialization-related attitudes and open-ended

responses). This may imply that some parents see value in the benefits of play/sport activities, and their child(ren)'s socialization with others. It could also be an indication that parents need relief from parenting and homeschooling demands, as this has been previously identified by parents in Ontario during the pandemic (Szpunar et al., 2021). Allowing children to play with others during the pandemic may lead to higher levels of child-led, unstructured play, as this behaviour has been found to have increased during COVID-19 (Dunton et al., 2020; Pelletier et al., 2021). The inclination reported by parents to return children to play/sport in the present study may have been due to the timeframe in which this study was conducted, with most participants in phase 3 of re-opening (i.e., pre-Delta and Omicron waves; Public Health Ontario, 2020).

Parents agreed that they felt their child(ren) had missed out on important health benefits associated with extracurricular activities due to staying at home for extended periods of time amid the pandemic (i.e., as reported via safety-related attitude). Further, some qualitative findings from the present study revealed that parents felt they would like to return their children to play and sport programming as soon as possible. Compared to other periods where children may be home for extended periods (e.g., summer holidays from school, winter holiday break), public health measures because of COVID-19 may pose additional challenges for families as children are unable to play with others or engage in activity outside of the home as they typically would do during pre-COVID-19 extended stay-at-home periods (e.g., in the context of time away from school). Increased research is needed regarding the types of supports that can be put in

place for families with children during times of extended stay-at-home periods, specifically when public health measures (e.g., physical distancing rules) are in place.

Risk tolerance was not significant regarding its influence on participants' safety-related attitudes. This was contrary to expectations, as researchers have found that parental attitudes (e.g., fears, intentions), most frequently those of mothers, are a primary obstacle to child(ren)'s engagement in activities that involve risk (e.g., climbing a tree, playing without supervision; Boxberger & Reimers, 2019; Lee et al., 2015). However, given the TRiPS tool is a general risk tolerance scale, not one specifically designed for COVID-19 (or any pandemic), it is possible that risk was being influenced by factors that that weren't captured on this tool. Further, parents in this study expressed that having their children at home with them during the pandemic made them feel safe. It is important to note that at the time of data collection for this study, there was no vaccine approved for children under 12 years of age in Canada, and many adults were not yet vaccinated (apart from front line and healthcare workers). Thus, it is possible that parents felt fear, or increased worry about the risk of transmission, and risk of their children contracting COVID-19 at the time of completing the survey and preferred to have them isolating at home with minimal contacts. All these considerations may have led to highest attitudes reported by participants in the present study being found for safety-related attitude items. These findings were emphasized via open-ended items, where some participants noted they did not feel comfortable or did not plan to return their children due to fears of others (i.e., other children, other families) not following proper health protocols, and because of the uncertainty of organizations/facilities being

able to uphold safety protocols (and facilitate social distancing). In addition, some parents reported they were not yet willing to return their children to play/sport until a vaccine became available. Although risk tolerance did not influence support or socialization-related attitudes, we hypothesize this could be a consequence of COVID-19 being more closely aligned with one's perception of safety, than it is their ability to support their children's physical activity or socialization opportunities.

The regression modeling identified a number of predictors (i.e., housing type, child(ren)'s age, parent's physical activity levels, etc.) that significantly influenced parents' attitudes for their children's play/sport. For example, parents' levels of MVPA during COVID-19 influenced all three attitude categories, with those more active having more positive attitudes, specifically in the socialization category. In addition, community type, specifically living in an urban community, had a significant influence on safety attitudes. Previous research exploring the influence of community type and dog ownership on children's physical activity levels identified that children living in rural communities and ownership of a dog had higher levels of physical activity compared to those living in urban areas, and those without a dog (Moore et al., 2020; Zenic et al., 2020); thus, our finding that living in an urban environment and not having a dog was an important predictor for safety-related attitudes was surprising and contradicts previous findings. Finally, the influence of community is important to note, as de Lannoy and colleagues (2020) found that compared to other regions in Canada, Ontario experienced the greatest decline in children's time spent outdoors, and in outdoor play compared to other provinces (de Lannoy et al., 2020). This can likely be attributed to the fact that

Ontario was one of the hardest hit provinces by COVID-19 at the time of data collection, alongside Quebec, who both had the largest case counts and strictest restrictions (de Lannoy et al., 2020). In addition, because Canada has four seasons, rates of play/sport may have been influenced by environmental factors such as weather (i.e., lower physical activity levels in winter because of inclement weather, and higher physical activity during summer; Tucker et al., 2009), although this was not explored in the present study.

It is imperative that researchers further explore the effects of the pandemic on children's future physical activity-related behaviours and the challenging decisions parents need to make with returning their children to these activities (or not). With such a small percentage of children meeting physical activity guidelines during the pandemic (Moore et al., 2020), there is a larger risk posed for developing chronic health conditions in later life. As COVID-19 continues to spread, with new variants of concern, increased supports for at-home and contactless activity are needed. In addition, consideration for overcoming barriers/concerns raised by parents to support children's physical activity participation are warranted.

Limitations

Strengths of the present study include the early launch of the baseline survey at the start of COVID-19, the large sample of Ontario parents, inclusion of both quantitative and qualitative data, and the use of LASSO modeling to identify predictors of parents' attitudes. Despite noted strengths, there are also some limitations of note. First, although our efforts to recruit as many Ontario parents as possible, only 819

participants completed the survey in its entirety. Additionally, the length of the survey and the participant burden related to completion time may have led to incomplete data from some participants. Moreover, the survey respondents were primarily female, Caucasian, double parent, with higher average household incomes, which limits the generalizability of findings. Finally, the lack of validity and reliability of the survey (with the exception of the Tolerance of Risk in Play Scale; Hill & Bundy, 2014) due to its creation by the research team, and self-report nature of the survey also acts as a limitation. Given the responses were self-reported by participants, responses may have been influenced by social desirability bias (i.e., parents may have felt pressured to select a more desirable option for some questions). Finally, because this study took place during early COVID-19 when vaccines were not yet widely available, the survey did not capture vaccination status of participants, or the consideration this might have for parents play/sport decision-making. In addition, it is important to note that several factors beyond those that were explored in the present study could have influenced parents' attitudes of children's play/sport, including but not limited to case counts in participants' communities.

Conclusion

This study identified Ontario parents' support, safety, and socialization-related attitudes toward their children's return to play/sport during COVID-19. Parents had highest attitudes toward safety-related items. In addition, important predictors of parents' attitudes were highlighted, such as the influence of parents' MVPA levels on attitudes. An equal divide was found between Ontario parents who feel comfortable

returning their children to sport, and those who do not. Future investigations are needed to explore what types of supports are needed to ensure children's seamless transition back into physical activity-supportive environments (e.g., sport arenas, community centres, playgrounds) as public health measures in Ontario ease and society adjusts to new parameters and norms. Moreover, future investigations are needed to assess if parents' perspectives of their children's play/sport during and following COVID-19 change as vaccines for children under 12 years become available.

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Chapter 3:

Children's and Parents' Perspectives of the Impact of the COVID-19 Pandemic on Ontario Children's Physical Activity, Play, and Sport Behaviours[3]

During childhood (0-12 years), children often explore various forms of movement via activities such as sports, playing outdoors, and engaging in play with others (Felfe, Lechner, & Steinmayr, 2016). These activities are very important for children in their developing years, as engagement in sport and/or unstructured play often leads to higher levels of MVPA, which is associated with numerous health benefits (Carson et al., 2016; Poitras et al., 2017). In fact, the Canadian 24-Hour Movement Guidelines advocate that children aged 3-12 years should achieve at least 60-minutes per day of MVPA (Tremblay et al., 2016) as this supports various aspects of health, including psychosocial and mental health outcomes (Carson et al., 2017), the development of motor and fundamental movement skills (Tremblay et al., 2016), and stronger immune systems (Carlsson, Ludvigsson, Huus, & Faresjo, 2016). Collectively, there is growing research to suggest that children who meet guidelines possess better overall health compared to those who do not (Tremblay et al., 2016).

On March 11, 2020, the WHO declared COVID-19 a global pandemic (World Health Organization, 2021a). Due to COVID-19's high transmission rates, many countries, including Canada, enforced multiple public health measures such as physical

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distancing (e.g., maintaining a distance of 2 metres from others), mandatory masking, and lockdown periods (e.g., requiring citizens to stay home) to reduce the spread of the virus (Government of Canada, 2021). Specifically in Ontario, these rules included many additional prohibitions, including, but not limited to: bans on indoor and outdoor gatherings; closures of facilities where people regularly gather (e.g., community centres, gyms, parks, trails, shopping malls); and, closures of schools and other large institutions (i.e., workplaces and non-essential businesses; Government of Ontario, 2021). These new rules, regulations, and policies led to the restructuring and/or termination of many activities that previously supported physical activity for individuals of all ages, including children (de Lannoy et al., 2020). For example, organized sports were cancelled for many months (i.e., March – September 2020; November 2020 – April 2021; Government of Ontario, 2021) in staggered formats (i.e., re-opened in certain jurisdictions across Ontario as case counts dropped) due to their increased likelihood of having multiple individuals in close proximity, and outdoor play spaces (e.g., parks, splash pads) were closed to prevent large gatherings (de Lannoy et al., 2020). As a result, from March 2020 – January 2021 (data collection for the larger "Return to Play" study), many children and their families no longer had access to typical physical activity-supporting environments and programming, thus resulting in many barriers to ensuring children were sufficiently active each day. Moreover, over the last 18 months, the government of Ontario has adopted various re-opening strategies; however, at the time of data collection, a colour coding system was in place (Government of Ontario, 2021). For example, Ontario jurisdictions were categorized as being either in the grey, red, orange, yellow or green-

zones, dependent on the number of active COVID-19 cases in the area (Government of Ontario, 2021). Colours were used to inform citizens about the activities that were allowed and/or prohibited, and to keep jurisdictions aware of the risk in their respective communities.

Prior to the COVID-19 pandemic, the proportion of Canadian children meeting national integrative movement behaviour guidelines (i.e., physical activity, sedentary behaviour, and sleep) was already problematic. In fact, only ~13% of Canadian children aged 3-4 years and 5-12 years were meeting their respective age-specific guidelines (Chaput et al., 2017; Rhodes et al., 2019). Unfortunately, these low rates have been further compromised by the pandemic – recent data from early pandemic days (i.e., April 2020) showed that only 2.8% of Canadian children were meeting the 24-Hour Movement Guidelines (Moore et al., 2020). Moreover, preliminary findings have demonstrated the negative impact of COVID-related lockdowns and closures of outdoor spaces on Canadian children's physical activity opportunities (Moore et al., 2020) and levels (Bates et al., 2020). For example, Moore and colleagues' study found a dramatic decline in children's outdoor physical activity, and drastic increase in screen time and social media use (Moore et al., 2020). Similarly, Bates and colleagues' (2020) commentary also reported significant decreases in physical activity, increases in sedentary time, and sleep disruptions among children aged 5-17 years (Bates et al., 2020). These trends are apparent worldwide, as studies in Italy (Pietrobelli et al., 2020), South Korea (Guan et al., 2020), Shanghai, (Xiang, Zhang, & Kuwahara, 2020) and the United States (Dunton et al., 2020) have reported similar behavioural shifts among

children during COVID-19. Undoubtedly, lockdowns and closures of physical activity-supportive spaces, despite their positive role in helping to curb the spread of the virus, have also had negative impacts on children's movement behaviours and have posed difficulties for parents and guardians who are trying to support their children's health. To date, limited qualitative studies are available examining how the COVID-19 pandemic has impacted families and children as it relates to physical activity (Riazi et al., 2021). Further missing from the literature are children's voices. More specifically, a lack of information exists regarding children's perspectives about getting active during COVID-19, their experienced barriers, as well as the facilitators implemented by this young cohort. Thus, the primary purpose of this study was to explore Ontario parents' and children's perspectives of the COVID-19 pandemic's impact on children's physical activity behaviours, perspectives on return to play/sport, as well as the barriers and facilitators to getting active amid extended closures of physical activity venues.

Methods

Study Design

This study was part of a larger cross-sectional study, entitled 'Return to Play', which quantitatively assessed the perspectives of parents during the pandemic (i.e., August – December 2020) regarding their children's physical activity levels, their intentions to resume sports and physical activities post-pandemic and their risk tolerance. To solicit richer, contextual data, the present study captured qualitative data via interviews about physical activity participation during the pandemic from a pool of survey participants who expressed interest in participating in online Zoom interviews.

The Western University Non-Medical Research Ethics Board approved all study procedures and associated documents (REB #116331; Appendix D).

Recruitment and Participants

Parent participants were eligible to participate if they were a parent or guardian of a child 12 years old or younger, resided in Ontario, had custody of their child(ren) at least 50% of the time, and participated in the larger study (i.e., online survey). Upon completion of the survey, participants were asked if they were interested in participating in an internet-based interview (i.e., audio only, conducted via Zoom) to further share their perspectives on their children's return to physical activity-related programming post-COVID-19, and activity levels during COVID. A total of 1,097 parents completed the online survey and were included in the original study, and 392 parents expressed their interest in participating in a follow-up interview. Using www.randomizer.org, parents were randomly selected from the 392 volunteers and were invited via email to participate in an interview. At this time, parents were also notified that their children were invited to participate, if interested. Only children that met the inclusion criteria (i.e., 12 years of age or under, living in Ontario, had a parent who completed the online survey, and spoke English) were eligible. If participants did not respond to the email within one week, the next randomly selected participant was contacted and invited. A total of 32 parents and their children were invited to participate. Recruitment continued until saturation was achieved.

Interview Procedures

Data collection occurred between December 2020 and January 2021. All parent interviews were 30-45 minutes in length and were recorded via the online video platform, Zoom. Child interviews were completed subsequently to parent interviews if from the same household, or uniquely if not (i.e., parent who completed the online survey organized a time via email for their child's interview to take place with the research assistant). Dependent on the age of the child, a parent was sometimes present for the duration of the interview. All child interviews ranged between 10-25 minutes in length. Only audio content for both parent and child interviews were recorded. Individual interview guides were created by the research team for parent and child participants. Please see appendices E and F for the parent and child semi-structured interview guides, respectively. Parents/guardians were asked to provide verbal consent at the start of interviews, and verbal assent from children was also obtained. Member checking (i.e., restating or summarizing information for the purpose of determining correctness) was used by the research assistant conducting interviews to ensure accuracy of participant responses (Guba & Lincoln, 1989), verify the trustworthiness of qualitative results (Doyle, 2007) and ensure credibility (Korstjens & Moser, 2018). Interviews were digitally transcribed verbatim using QSR NVivo (version 12). Two trained research assistants confirmed the transcripts for accuracy using NVivo. Upon completion of each interview, participants were given a token of appreciation for their time.

Analysis

All interviews were analyzed using QSR NVivo (version 12). Thematic content analysis was conducted by two trained researchers to ensure confirmability and to identify common participant responses (Anderson, 2010); specifically, the records of all transcripts coding processes were documented independently and simultaneously to ensure a logical and traceable approach (Korstjens & Moser, 2018). In addition, intercoder reliability was assessed using reliability checks during the analysis period (e.g., reviewing evidence and debriefing; Creswell, 2017) and comparing codes in NVivo. Because the interviews were conducted using semi-structured interview guides, transcripts from parent and child interviews were analyzed separately and responses were grouped based on each question and analyzed deductively. Thematic analyses were conducted in accordance with Braun and Clarke's best practices (2006), and both trained research assistants independently: (1) read through all interview transcripts to become familiar with the data, reviewing the content repeatedly; (2) generated lists of codes based on items found in the data sets (i.e., organized by question asked), and colour-coded items manually when patterns emerged; (3) analyzed codes and identified prominent themes and subthemes; (4) reviewed the themes; (5) identified proper names for themes; and, (6) presented interview data via tables and written summaries of the themes and subthemes using quotes (Braun & Clarke, 2006). Once all steps were complete, the research assistants met to discuss final themes and compare codes in order to summarize and present findings. A third researcher was brought in to aid with streamlining of themes (e.g., in instances where there was overlap). Deductive content

analysis was also used to test existing categories, and concepts that became apparent to the research assistants from responses to open-ended questions in the online survey. Confirmation bias was avoided as the secondary coder was only responsible for coding interviews and was not directly involved in the project (Schumm, 2021). Having two independent coders prevented the occurrence of having the research team form a hypothesis or belief and using the respondents' information to confirm that belief.

Results

A total of 12 parents/guardians and 9 children from across Ontario participated in the interviews. Nearly all (*n* = 11, 92%) of parent participants identified as female and were from urban communities. Parents had an average age of 40.67 years (*SD* = 7.49), and an average of 1.67 children (*SD* = 0.651). The majority (n = 8; 67%) of parents lived in semi-detached or detached homes. Child participants were mostly female (*n* = 6, 67%), had an average age of 7.33 years (*SD* = 2.92), and all resided in urban environments across Ontario. See Table 1 for full participant characteristics.

Analyses revealed four over-arching themes which were apparent in both parent and child interviews, and were consistent with the questions from the semi-structured interview guides: (1) barriers associated with children getting active during COVID-19-related closures; (2) facilitators used to encourage children to become active during COVID-19 closures; (3) perspectives on returning to organized sport and/or engaging in physical activity involving social interaction with others during (e.g., when permitted in Ontario; physical distancing and wearing personal protective equipment); and, (4) changes in children's physical activity levels during COVID-19. Unique to parent

interviews, two additional themes were social connectedness and lack of regular access to sport and supportive environments (e.g., parks, playgrounds). See Table 2 and Table 3 for sample quotes for each theme and subtheme from parents/guardians and children, respectively.

Table 1. ***Participant Characteristics of Parents (n = 12) and Children (n = 9) in Ontario***

Participant Characteristics	Parents		Children	
	M	***SD***	***M***	***SD***
Age (years)	40.67	7.50	7.33	2.91
	N	***%***	***N***	***%***
Gender				
Male	1	8.3	3	33.3
Female	11	91.7	6	66.7
Community Type				
Urban	11	91.7	9	100.0
Rural	1	8.3	--	--
Colour/Phase Re-Opening (at time of interview)				
Yellow	1	8.3	--	--
Orange	--	--	1	11.1
Red	5	41.7	3	33.3
Grey (Lockdown)	6	50.0	5	55.6
Housing Type				
Apartment/Condominium	2	16.7	1	11.1
Detached or semi-detached house	8	66.6	7	77.8
N/A	2	16.7	1	11.1
Number of Children				
1	5	41.7	--	--
2	6	50.0	--	--
3	1	8.3	--	--

Note. Colour/Phase Re-Opening refers to the current state of Ontario's re-opening plan at the time of data collection (i.e., December 2020 – January 2021). Please see https://www.toronto.com/news-story/10239506-here-s-how-ontario-s-covid-19-colour-codes-work/ for more information.

Table 2. ***Parents' Experiences (i.e., Barriers, Solutions) of Getting their Children Active During the Pandemic and Perspectives on Return to Play/Sport***

Question	Theme	Example Quotes
What **challenges** did you experience with getting your children active while at home?	Closures of Supportive Spaces	- "At one point in [city] where I am, they actually closed hiking trails. They came and they put big like boulder things like big cement blocks. That was probably the most upsetting thing because I was like… this is the last thing that we can do outside." - "He would just look at you and he'd say, can't go there [outside], Mom, because the [in]fection, that's what he calls it, I know, and the [in]fection. Yeah. And it was heartbreaking." - "We would go for walks by the park and just had to try to explain to her that they had closed it, but it was a little bit heartbreaking for us because we knew that as she got older, she was more able to play and use these to use the equipment. So, it was hard to not allow her to do that…"
	Weather	- "Now that it's getting a bit colder and now that we returned to work, I don't feel like she's getting nearly enough activity." - "In the summer, we're very, very active. But yeah, in the winter now, like now it's getting hard again because I will get up and get bundled up and take them out. But my four-year-old wants to wear shorts all day, every day. I can't, like he fights every morning when I try to take him to school to put splash pants or snow pants on, even like he hates it. So, he just refuses to get ready to go outside." - "It was hard to get them outside to play where they wouldn't freeze after 5 minutes."

		- "When the rainy gray season starts, they don't really want to go outside."
	Lack of Motivation	- "It's a lot of onus on me, like I said, in front of the computer all day for work, I've got a really high, high stress job that is very difficult. And the last thing I want to do is like I don't want to have to be the instructor or the teacher on the computer again." - "So, am I giving her as much experience as what she would be getting at school or sport? Definitely not, you know. I don't have the energy to do that."
	Financial Implications	- "I looked into, you can swim, which is allowed if it's a private lesson, but it's one on one, but it was prohibitively expensive. So, I wanted to do it, but I can't afford it." - "We tried to purchase some aids in the form of like a climber or like a swing set or bike but like literally everything was sold out like or anything that was left available was like exorbitantly priced." - "I also become a little bit resentful about spending the money on that. I'm all I want to support small businesses, but I, I have two kids enrolled and I'm paying two hundred dollars a month for them to rent somebody dancing [with regard to online classes]."
	Disruption and Change to Routines	- "Oh, it was really hard. We fell into a pretty unstructured routine, I guess. Bedtimes were later. Sleep ins were later." - "I got really, really lax with the routine. So, they were doing whatever they wanted to do more often. And I just I had to kind of let go of the control and let go of what I thought a successful day was going to look like."

	Increase in Screen Time	- "My kid plays Fortnite and he does a lot of gaming and he's on the computer a lot. So, I really struggle with trying to get him off of the technology because it's been so much more accessible to him. So, trying to get him outside, even to play basketball, to go sit in the backyard, to do something outside, it's a lot harder now." - "We're going through a lot of temper tantrums, fits, him being very angry because I'm trying to take the devices away…" - "Screen time has increased totally. Because at the beginning, there was nothing for you really to do but to watch TV. There was nowhere to go. Nowhere to go and really nothing to do sort of thing."
	Quality of Virtual Instructions	- "She found it really discouraging. In fact, how they had done it was pre-recorded. It wasn't like a Zoom live type dance session. So, she got really frustrated that the instructor couldn't see her or wasn't speaking back to her or that like, you know, she's not making suggestions like, can we do this? Can we do that? And it was so regimented."
	Housing Type (i.e., Presence or Not of Outdoor Space)	- "We have no yard; we have no balcony. And our neighbor in the summer at one point just said, look, if you want to use our backyard, you can come sit here, which made a huge difference." - We found it very challenging. So, we live in a townhouse that does not have a basement or backyard. We had to try to utilize just the front yard space, which isn't impossible. But it just made it difficult because we're right on a street, so then we were scared because we are on a corner lot that is adjacent to the exit of a cul, kind of like a cul de sac sort of thing. So, people come out of there with the vehicle."

What **solutions** did you undertake to deal with these challenges?	Engaging in Activity Indoors	- "We set up obstacle courses with like furniture in our house like, I don't know, unsafe probably things. But we had fun and yeah. And we did dances and songs…" - "Like we have like a Google Play, and I would let them use Spotify and they would just dance around inside to random kid songs…"
	Bubbling with Neighbours and Other Families	- "We have a communal courtyard outside our house. And I think once the sun came back, there was one family that sort of approached my son and they were like, are you OK if they play together?... And sometimes some of the kids wear masks, some don't." - "I've actually networked on like via Instagram and Facebook and things like that. I've actually been able to network with quite a bit of other moms that are that feel the same way I do about everything and want their kids to be active and want their kids to socialize. So, we have like playdates and stuff at the parks and like we'll meet up outdoors and try and let the kids run around and still socialize and things like that. So that's been a godsend."
	Getting Outdoors	- "We have amazing greenery in the area. There's lots of trails and creeks and all that kind of stuff. We're right by the lake. So, there's a ton of nature outdoor stuff to do in the summer. Thank goodness." - "We went hiking every single week. Lots of activity, lots of outside time. With so much international travel and like cross provincial travel, we never really explored Ontario. We had no idea what was close by and we've hiked everything now close by so well, when you think you've done it all, there's more to do with it. So that was a radical change. We started to explore our own backyard. You know, lots of good changes for the future."

	Virtual platforms	- "There are all these free programs available on YouTube and stuff to get them up and dancing." - "They would they found this YouTube channel where they could do kids exercises. So, they would do that every day just to kind of keep them off the screens and active."
	Housing Type/ Presence of Outdoor Space at Home	- "We are so lucky that I have a big yard, so we have like the trampoline in the back. A yard to play in the front yard, all that kind of stuff, so it definitely helped having an outdoor space." - "…like when I'm working, I'm comfortable running them on their own in the backyard."
Do you intend to make any changes to your child(ren)'s active play/sports programming as a result of the pandemic?	Children's Views on Masks and Physical Distancing Rules	- "I think when people think that, like, oh, kids can't wear masks or kids won't be able to do this. The kids actually have no problem with it. They're taking their cues from us. Kids know what's normal based on what everyone else is doing around them. So, it's really just when their parents are against it, they have a big issue with it. And pre-COVID kids had to wear masks in the hospital, sometimes for various reasons. And we never had a kid freak out. They just did it, all the nurses did it. So, they did it."
	Willingness to Have Children Return to Play	- "I think that risk is so low that it's, it's an acceptable level of risk because the risk to my child not being able to access physical activity and all the developmental goodness that comes with interacting with his peers in this kind of group setting, that's a greater risk to his health than the very small chance that he contracted COVID or something else." - "I would like to get back to a situation where kids are allowed to play with each other and touch each other and be close as quickly as possible, and as soon as anything like that is offered, I will be signing my kids up."

		- "I'm more worried about how it's being dealt with and what it does for kids to be told to stay away from each other, to wear masks when they see other people. Like I find that the potential psychological impact on kids to be more dangerous."
	Physical Distancing Rules	- "One of the neighbor's child is in hockey, and he doesn't want to go because of all the protocols, because it's not as fun." - "I'm very comfortable with what they're doing at hockey. I mean, everyone only one parent is allowed in the arena with the kid. There's only ten people allowed the dressing room. Everyone has to wear masks…"
What are your **overall feelings** regarding your child(ren)'s eventual return to play/sports?	Lack of Motivation to Parent	- "I just really I had to just focus on me, like, really, I had to, like, maintain my mental health a little bit. I just I had to kind of let go of the control and let go of what I thought a successful day was going to look like."
	Parents' Reduction in Activity	- "And for both my husband and I, were both super into running... but since Sunday, neither of us have even ran one kilometer, you know what I'm saying? So, like, it just it shows you how much the pendulum swings for sure. It was good up until we were really isolated."
	Children's Social Connectedness	- "So, you know, I think [child] has some mental health problems, because now with all this happening, you know, everyone's getting on each other's nerves, and I know [child] getting frustrated with us and we're getting frustrated with each other because we are trying to be careful and trying to go by most of these guidelines." - "They went through this stage where they were like, does it really matter? You know, nothing's going to go back to normal like, you know, week after week, you know, just kept continuing and just knowing that school could not come back so they really just the school not going back to, like, what's

		going on so they were like, who cares? And I just I took it easy on them. You know, because they are children still and, you know, everybody was going through the same thing. But this is really new for a child that was go, go, go. And all of a sudden, you're, like, you know what? You don't have to go anywhere. You stay at home and watch the iPad if you want to, or you could watch TV if you want is it was an adjustment for them." - "There would be like an episode where she might get upset and she cries, and that hurts your feelings, too, because she's justified and you don't know how else to explain it to her, and she just has to get through it and but you're like, there's no reason for this (…) She's not getting in trouble, but you're kind of giving her so many rules and all she just wants to do is just throw the ball and just sort of be free, so. It just maybe stifles her a little bit and then can cause a little bit of frustration, (…) we had to deal with a lot of that."
	Parents' Social Connectedness	- "Well, I guess when you're at the dance studio five nights a week and then all of a sudden, you're not there anymore.... it's like for her, it was more like the loss of activity. For me, it was I feel it was my that was my social time." - "I'm glad that this is my second child and not the first one because we were so lucky to be able to be a part of so many, like mommy and baby groups before. I think it was really beneficial for her and now we can't do that with our second."

Table 3. ***Children's Experiences (i.e., Barriers, Solutions) of Getting Active During the Pandemic and Perspectives on Return to Sport***

Question	Theme	Example Quotes
What **challenges** did you experience with getting active while at home?	Not Being Able to See Important Personnel (i.e., Friends, Coaches)	- "It impacted me like, very much, because I couldn't see my dance friends. I couldn't go to dance, and I couldn't do much." - "I was trying to get used to not going outside, not going to the park, and not seeing my friends but it was really hard." - "I miss seeing my friends and getting to go to competitions or swim meets and just having fun." - "I miss seeing how people can teach me new ways to get better at stuff or like to play with a group of people instead of just one person."
	Engaging in a lot of Screen Time	- "I'd pretty much be sitting on my phone talking to my friends all day." - "We watched a lot of tv shows, YouTube, and TikTok."
	Lack of Things to do at Home	- "It's challenging not being able to play with my family because they're like doing work and stuff and because my dad still goes to his job."
	Closures of Outdoor Spaces and Sport Facilities	- "I can't go on the slide, and they took off? the swing, the monkey bars and the rings." - "When you get to be in person is much more fun than trying to dance on your own at home when you don't have the studio, or mirrors, or space."

What **helped you to** deal with these challenges? [solutions]	Maintaining Sport or Activity Engagement at Home	- "I had some online gym classes, and I would go outside and roll out my mat. I'd go on my trampoline, and my friend made me download this workout app so I'd workout with her on the phone." - "I played hide and seek with my sister. We also played tag, skipping rope, hula hoop and hopscotch." - "I miss basketball, but me and my mom play basketball together." - "I have a hockey set-up in my basement, so I play hockey in the basement."
	Being Able to See Others Outside	- "When things started to cool down, I would be allowed to go hang out with a few friends that we like, knew parents of." - "We went and played at parks and at my school. We got outside and built an igloo." - "I got to see the neighbourhood kids in the summer, and I made some new friends."
	Talking to Friends Virtually and on Virtual Platforms	- "We made a group chat, and we'll play games together and stuff and talk about what we did, what we ate, what we learned online, at school, and asking each other about what all were doing at home." - "Knowing we were all kind of going through the same thing was helpful. And knowing that it wasn't just me who was missing all of the activities and sports events we had lined up." - "I used to do dancing online, but it [the internet] was always freezing."

		- "I went on hockey training camp on Zoom five days a week, 1 hour per day, for 6 weeks."
Have you and/or your parents/guardians already **made any changes as a result of COVID-19** to your active play or sport programming? For example, are you back in any team activities or planning to go back?	Parents as Primary Decision Makers	- "My mom's thought process was like if were going back to school, and they want me to keep my social bubble, I'm already exposed to the same people. Dance isn't going to be much worse, because it's going to be the same precautions as school. And a lot of my dance friends are also from school." - "I'm not the one who decides... it's my mom." - "After corona, I'm planning to go back only if my mom lets me, and now that its corona, no, I'm not planning on doing anything." - "We heard that dance was coming back, and we just went back. It was like a no brainer."
	Perspectives on Health Protocols at Sport	- "It was still super easy with the protocols." - "I don't mind wearing my mask." - "It's kind of the same as before besides the 5 or 10-minute period for them to clean. So instead of having 45-minute classes, we had 35-minute classes, but we still got the same amount of dance in, we just had to go a bit faster." - "It was harder because I kept losing my mask. I couldn't keep track of it at gymnastics."

		- "At hockey, there's a usually a guy waiting at the door and he's going to ask you questions about if you were out of the city and if you have any symptoms of Covid and then you would go in."
Compared to your routine before the pandemic started (as a reminder, this was in March), do you think you were more or less active back then than you are now?	Reduction in Activity Levels	- "I was more active before because with Covid you can't do very many activities." - "I miss that I used to be really energetic in dance and I'm sad I missed my dance recital." - "I thought I was just going to, like, not be active enough to go back [to dance]. But I think other girls felt the same too." - "I'm less active because we don't have any games. We're just doing drills."

Salient differences in themes were observed across parent and child interviews (i.e., unique subthemes emerged). For example, with regard to barriers to engaging children in physical activity, parent interviews revealed weather, housing type (e.g., apartment, detached house), screen-time, loss of their previously daily routines, financial barriers, closures of supportive environments, and lack of motivation as subthemes, while children perceived missing important people (i.e., friends, coaches), closure of outdoor play spaces (i.e., parks) and lack of things to do at home as the most notable barriers. In greater detail, many parents reported that screen time became an overwhelmingly large part of children's days, as they had "nothing else to do" while confined at home for extended periods. In addition, finances were mentioned by parents as a barrier towards promoting their children's movement during the deeper stages of the pandemic (i.e., fall of 2020), when the novelty of spending copious amounts of time at home began to ware off. Parents noted this barrier arose as Ontario began to re-open following the first wave (i.e., March – July; 2020; [Government of Ontario, 2021]), and sport facilities were permitted to operate at lower capacity. Finances were mentioned with regard to both the purchasing of physical activity-promoting equipment (e.g., trampolines, bikes), as well as the increased cost of sports (when deemed accessible) due to a switch to private lessons, and costs of virtual classes. Finally, the loss of daily routines and lack of parental motivation to support children's activity was frequently noted and was exacerbated by periods of cold weather which posed additional challenges.

With regard to facilitators to getting children active during the pandemic, sample subthemes from parent interviews included: bubbling (i.e., clustering with people outside of immediate household) with other families, spending time outdoors, and using virtual platforms (i.e., YouTube and Tik Tok), of which the latter two were also noted by children. Parents spoke more about the influence of their living space and community (i.e., rural, urban) on their ability to facilitate their children's activity, whereas this was not frequently mentioned by children. Regarding common outdoor spaces, parents with free standing homes that had backyards and other outdoor spaces (i.e., communal living areas, courtyards outside apartments) reported these spaces to be instrumental in their ability to promote their children's movement. In addition, children who had outdoor play spaces and equipment (i.e., trampolines, yards) that facilitate activity, referenced using them often to maintain their sport skills. Finally, children alluded to getting active with their parents whenever possible, and those who had siblings expressed their engagement of play with them as a facilitator for getting active during stay-at-home orders.

During child interviews, children were most inclined to engage in conversation about what they missed concerning their pre-COVID activities. The most frequently uttered phrase was "I miss my friends". Furthermore, similar to missing friends, children also reported that they missed other important people in their lives, such as their coaches and mentors, and events that come alongside sports (e.g., tournaments). Children reported that they missed their coaches because they felt like their skillset for their sport (i.e., hockey, dance) was falling behind without having constant support and

training from someone deemed an "expert". As a result, it was not surprising that nearly all children who had returned to sport at some point prior to interviews reported having no issues with following health protocols. Children reported that wearing their mask was not a burden, and that returning to sport/play was their priority. Children also commented on enhanced cleaning procedures at their respective sports, not being able to change in changerooms (i.e., coming prepared to sport), and hand sanitizing. Overall, no major concerns were noted by children about health protocols. Similarly, parents reported being satisfied with public health guidelines and health protocols at sports, once they had re-opened, in their respective Ontario cities.

Finally, parents emphasized their loss of social interaction at children's events (i.e., dance lessons, tournaments) as a social connectedness consequence of sport closures, for both themselves, and their children. Parents reported that having their children at home for extended periods of time without any social interaction worried them about the impact of the pandemic on their children's social development. In addition, parents reported missing their own time to socialize with other parents at their children's sporting events. Finally, with regard to changes in physical activity levels, both parents and children reported that children's levels of physical activity declined during the pandemic. Specifically, it was noted by parents that they felt their children's engagement in MVPA declined, and that they were no longer getting nearly as much heart-pumping or sweat-inducing activity. However, younger children reported being less influenced in regard to their activity levels by COVID-related closures and loss of programming.

Discussion

The purpose of this study was to explore the perspectives of Ontario parents/guardians and children regarding their experiences getting children physically active during the COVID-19 pandemic, and to examine their feelings concerning children's return to physical activity-related programming. The impact of the pandemic on physical activity levels of children was also explored. Given the timing of the interviews (December 2020 and January 2021), some parents reported that their children had already returned to sport (during a reopening in summer/fall 2020) and were required to follow health protocols (i.e., mask wearing, not being able to access change rooms), while others had not yet returned, as this was dependent on where they were located in the province (i.e., colour phases of re-opening happened at the local level, not provincial; [Government of Ontario, 2021]). Overall, parents and children provided a great level of detail regarding their experiences during the COVID-19 pandemic. Many themes were identified, and centred around common barriers (e.g., closures of supportive environments), facilitators (e.g., virtual platforms) and perspectives on return to play/sport, including parents' and children's views of new health protocols and personal protective equipment. It was clear that the pandemic greatly influenced children's movement opportunities and behaviours, as noted by parents and children. Several findings are discussed below.

When asked about challenges regarding children's physical activity participation amid COVID-19 closures, parents frequently referenced the initial stages of the pandemic (i.e., March to May 2020). Parents expressed that these were the most

challenging months to encourage behaviours that supported their children's movement, because of the uncertainty associated with engaging in activity outdoors (e.g., potential risk of aerosol transmission at the park), as well as the cold weather in Ontario. Certainly, being confined to one's home and trying to support children's activity while indoors was a commonly noted challenge by parents. In addition, parents who did not have backyards or outdoor space tucked away from major roads voiced their frustration, as they previously relied on parks and/or neighbourhood spaces to safely support their children's movement pre-COVID-19. This is consistent with research conducted prior to the COVID-19 pandemic that supports the impact of the neighbourhood environment on the extent of children's physical activity (Raktim Mitra, Cantello, Buliung, & Faulkner, 2017), as well as research comparing urban and rural living environment's effects on physical activity levels of Croatian adolescents during COVID-19 (Zenic et al., 2020). As most participants in the present study were from urban environments, references to outdoor and indoor spaces and their influence on physical activity offerings were frequently noted. Recently, Zenic and colleagues (2020) found a significant influence linking adolescents living in urban environments with lower physical activity levels during the pandemic (Zenic et al., 2020), compared to their rural counterparts. It is interesting to note that Zenic et al.'s (2020) findings report that adolescents living in urban settings had physical activity levels that were lower due to their dependence on organized sport for movement, consistent with our findings.

Regarding common outdoor spaces, parents and children with outdoor spaces (e.g., backyards, communal courtyards) reported these spaces to be instrumental in

their ability to support movement. Specifically, children who had outdoor play spaces and equipment (i.e., trampolines) that facilitate activity, referenced using them often. This underscores the importance of the home environment, and presence and/or lack of outdoor space during a global pandemic. Consistent with Mitra et al.'s findings, parents with children aged 5-11 years who lived in an apartment during the pandemic reported that their home space discouraged healthy movement behaviours (Mitra et al., 2020). In addition, living in neighbourhoods with low density and further from major roads (i.e., highways, large intersections) promoted increased outdoor activity among children physical activity (Mitra et al., 2020), mimicking findings by Nigg and colleagues (2021) that found children living in lower density areas exhibited more physical activity during COVID-19. Although the present study only had one participant from a rural environment, this participant noted that their family was not as affected by the closures of supportive environments, as they had their own outdoor playground due to their living space. As a result, according to this parent, living in a rural environment during COVID-19 increased the feasibility to abide by physical distancing, and reduced barriers to accessing outdoor physical activity.

Finances were noted by parents as a barrier for engaging children in activity. Specifically, parents reported sport enrollment during COVID-19 came at a higher cost, likely due to increased health measures in Ontario during phases of re-opening, where less children were permitted at a time in various sport facilities (e.g., smaller team sizes), or private lessons becoming the preference, as they were more conducive to physical distancing. In this case, enrollment costs were increased, and parents expressed

their frustrations. This represents a possible barrier for future consideration to enrolling children in sport post-COVID (i.e., if costs remain increased as a result of smaller groups due to physical distancing regulations). In addition, the financial aspect of returning to physical activity-related activities post-COVID has also been identified in Australia (Elliott et al., 2021), and has made many parents reference their preference for spending time outdoors or in free, open spaces. Finally, parents emphasized that purchasing home-equipment was a strategy for maintaining their children's activity, but also came with financial implications and budgeting for new toys.

Screen time was another commonly noted barrier to engaging children in activity. This is consistent with Moore and colleagues' findings that showed a drastic increase in social media use during COVID-19 (Moore et al., 2020) and Riazi et al.'s study, in which parents reported a drastic increase in their children's screen time, some referencing their children's engagement tripled during various timepoints throughout the pandemic (Riazi et al., 2021). Interestingly, parents in the present study reported they were "just human" and that an increase in screen time was inevitable as it provided them relief from parental demands, even if just for 30 minutes. However, some parents also reported increased behavioural issues following removal of screens (e.g., temper tantrums), as children got accustomed to spending the majority of their days without other tasks or activities. This is similar to the theme of routine disruptions noted by parents, as without regular programming (i.e., waking up at consistent times for work or school), family routines were irregular or "thrown-off" (e.g., no scheduled "school" hours due to virtual and online learning, more time watching movies, later bedtimes).

Similarly, many children reported that they were aware of their increased time spent engaged in screen-viewing during periods of lockdown. Clearly, families spending copious amounts of time at home has led to many changes to daily schedules, including juggling work, parenting, and homeschooling demands, which has consequently resulted in children engaging in increased amounts of screen-time, alongside a change in typical routines.

Having access to screen-based technology was mentioned by a handful of parent and child participants as a facilitator for activity. Some parents reported allowing their children to follow YouTube tutorials and learn online dances such as those on the social media application called TikTok. The use of virtual platforms identified in the present study is consistent with findings by Dunton et al. (2020) and Moore et al. (2020) who found remote and streaming services one of the most frequently used mediums by parents to engage children in physical activity during COVID-associated closures (Dunton et al., 2020; Moore et al., 2020). In addition, children referenced various virtual experiences that helped them maintain activity during closures. For example, one child participant mentioned a kid's physical activity smartphone application that provided in-depth at-home workouts and stretching, and other children referenced spending large amounts of time following and/or learning Tik Tok and/or YouTube dance routines with their family members. As a result, screen time seems to have acted as both a barrier and solution for parents and children during the COVID-19 pandemic in Ontario.

Nearly all parent participants reported that they believed their children's activity intensities changed during COVID-19. Specifically, the majority of parent participants

stated that they believed their children's engagement in MVPA declined as a result of closures of supportive environments and organized sport, consistent with findings by Moore et al. (2020) showing that children's physical activity declined in all forms of activity (i.e., outdoor activity, sports), except for household chores (Moore et al., 2020). This is likely due to the time demands of engaging children in this type of activity, as many parents reported that after working long days and juggling at-home tasks (i.e., organizing children's virtual homeschool hours) the last thing that they had energy for was engaging their children in high intensity activity. Specifically, parents noted children's inability to play with other children as a result of stay-at-home orders, on top of inaccessibility of their regular extracurriculars (e.g., dance, hockey), as contributors to their reduced physical activity. Fortunately, parents reported that outdoor activity was extremely conducive to supporting children's higher-intensity movement, even if all those children received was unstructured activity (e.g., running in an open field) for a short period of time. This is consistent with research that reports children are more inclined to be active when outdoors (Stephanie Truelove et al., 2018), and outdoor play spaces provide additional benefits (Tremblay et al., 2015) to supporting movement.

Consistent with their parents, children also reported that they believed their levels of physical activity declined during the pandemic. However, this was more frequently noted by children in the upper years (i.e., 7-12 years old). Children nearing early adolescence reported their fears about diminishing their skillset for their sport as a result of not having access to their usual environment (i.e., studio, arena). In addition, they noted that engaging in sport-related skill development at home was not as

physically demanding as doing so in their typical sporting environment. However, younger children said they felt they were still getting into higher levels of activity during time spent at home because they could engage in sport with their parents. This finding could be a consequence of the level of sport in which the children participated, as younger children tended to be primarily involved in recreational activities rather than elite sports, or the inability of young children to accurately recall physical activity participation.

Finally, the most common facilitator for physical activity engagement that parents, and children reported engaging in during the early stages of the COVID-19 pandemic were getting active outdoors. Specifically, during the summer months, when the first wave of the pandemic was coming to an end and restrictions in Ontario slightly eased (i.e., July to August 2020), and more information regarding the safety of outdoor spaces became available (e.g., little to no risk of aerosol transmission; [Government of Ontario, 2021]), parents reported that taking their children on hikes, playing in backyards, and exploring their neighbourhoods by going on long walks were facilitators to encouraging activity and reducing screen time. This is consistent with Dunton et al.'s (2020) findings, who also reported that unstructured outdoor physical activity was the most common form of movement for this cohort during the early stages of COVID-19 (Dunton et al., 2020), and Schmidt et al.'s (2020) study that reported an increase in children's habitual physical activity (e.g., playing outside, gardening, cycling etc.) during COVID-related lockdowns (Schmidt et al., 2020). In addition, many children voiced their disappointment about being unable to play with their friends in the park during the

initial months of the pandemic (i.e., when parks and outdoor recreation spaces were closed and gatherings were limited to individual households only), but reported that when playing sports outdoors and maintaining their physical engagement in community spaces (i.e., school playgrounds and fields) was deemed accessible by public health, it was a good strategy for them to engage in activity, practice their sport, and spend time with friends while abiding by Ontario's physical distancing rules. This is important, as research shows the important role of peers in children's physical activity (Salvy et al., 2009). Specifically, research shows that children are more likely to be active when accompanied by their friends (Barkley et al., 2014), and children who report having more peers also report engaging in higher levels of activity (Beets, Vogel, Forlaw, Pitetti, & Cardinal, 2006). Similarly, in the present study, children with siblings cited playing with them during Ontario's stay-at-home orders as a means to maintain activity. These findings are consistent with Kracht and Sisson's (2018) systematic review that found children with siblings to have healthier physical activity patterns compared to only children (Kracht & Sisson, 2018).

As children who participated ranged from 4 to 12 years of age, it is apparent that missing friends is important for children both in their early years and those nearing adolescence. This is consistent with findings from Pelletier et al.'s (2021) qualitative study, that also found children aged 7-12 reporting negative feelings with regard to missing their peers during periods of lockdown (Pelletier et al., 2021). Moreover, children who had already returned to sport at the time of being interviewed specified that their parents helped them make the decision to return to sport, but it was also a

collaborative approach. This is consistent with previous research that shows parents play an important role in facilitating children's engagement in sport, as they are the individuals responsible for payment and transportation to these sorts of events and facilities (Allender et al., 2006). Parents reported that they asked their children if they wanted to return, or if they preferred to stay at home. However, few parents reported that they felt if their child had returned to school, returning to sport was not much different with regard to contacts and/or increasing their social bubbles. As a result, both parents and children expressed their desire and comfort to return to sport if it was deemed safe by the Ontario government.

The themes identified during the interviews with parents and children show that social connectedness and interaction with friends and coaches is essential to the maintenance of children's well-being and physical activity engagement. In addition, parents reported that having their children at home worried them about the impact of the pandemic on their children's social development and associated risks of social isolation. This is in line with other research published regarding the implications of the COVID-19 pandemic on many children (Elliott et al., 2021; Singh et al., 2020). For example, Elliott et al. (2021) found that parents noticed their children to be more irritable and frustrated due to the lack of social connectedness with others for an extended period (Elliott et al., 2021). Additionally, research shows that increased rates of depression and anxiety among children and adolescents have been documented during the pandemic (Marques de Miranda, da Silva Athanasio, Sena Oliveira, & Simoes-E-Silva, 2020). This is important to address as physical activity has been noted to reduce

mental health concerns in children (Carsonet al., 2017), yet we are seeing decreased rates as a result of COVID-19 (Moore et al., 2020), which are likely exacerbating social isolation and irritability, as noted by parents in the present study. More research is needed to explore how supports can be put in place in the case of future pandemics and/or stay-at-home orders to support children's physical activity and support their overall well-being.

Strengths and Limitations

This study represents one of the first that captured the voices of children regarding the impact of the pandemic on physical activity, play, and sport during the pandemic. However, limitations must also be addressed. First, all participants were recruited from our larger survey-based study exploring the effects of the pandemic on return to play, and so some participation bias may be apparent. Second, it is important to note that all interviews were conducted between December 2020 and January 2021, approximately 9 months after the onset of the pandemic, which may have had an influence on perspectives of return to sport (i.e., compared to if interviews were conducted at the onset of the pandemic). Third, nearly all parent participants were female from urban environments, which limits the diversity and transferability of perspectives obtained through the parent interviews. Further, no children under the age of 4 participated in interviews, thus limiting the findings of our study to this younger cohort. Additionally, the present study was only focused on residents of Ontario, therefore, perspectives may vary in other provinces/territories where COVID-related restrictions were different. Finally, because participants were recruited via

randomization (due to the extremely high interest expressed post-survey), and no ability to recruit a diverse sample for interviews (as their sign up was not tied to their survey responses/data), most participants were from urban environments.

Conclusion

The effects of COVID-19-related lockdowns and closures on children's physical activity and active play behaviours are evident. This study advances our knowledge of pandemic-associated impacts by sharing Ontario children's and parents' voices with regard to extended stay-at-home orders and their influence on movement-related behaviours and overall wellbeing. In addition, the current study sheds light on the disruptive changes to family routines as a result of the pandemic, and how these have had significant impacts on children's movement opportunities, and levels of social connectedness. This study identified barriers experienced, and facilitators used in regard to children's physical activity during COVID times, as well as the influence of the pandemic on physical activity levels and perspectives on eventual return to sport/play. Further research is needed to unpack what type of supports can be put in place to ensure children receive enough activity if physical distancing and health measures remain in place, or in the case of additional waves of this, or another, pandemic. In addition, greater efforts are needed to ensure children's voices are heard regarding the pandemic's impacts on their activity levels and social connectedness.

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Chapter 4:

Parent-Reported Changes in Ontario Children's Physical Activity Levels During the COVID-19 Pandemic[4]

The health benefits associated with meeting international (i.e., WHO; World Health Organization, 2021b) and national (e.g., United Kingdom; [Government of the United Kingdom, 2011], Australia; [Australian Government, 2017], and Canada; [Canadian Society for Exercise Physiology, 2016]) physical activity recommendations are well documented (Carson et al., 2017). For children, participating in recommended levels of daily physical activity is associated with improved cardiometabolic health (Janssen & Leblanc, 2010), lower risk of obesity (Carson et al., 2017), improved mental health and wellbeing (Rodriguez-Ayllon et al., 2019), and reduced risk of chronic disease in adolescence and later in life (Warburton et al., 2006). Consequently, both the Canadian 24-Hour Movement Guidelines (Canadian Society for Exercise Physiology, 2017b) and the WHO Physical Activity Guidelines (World Health Organization, 2021b) suggest that infants (<1 year) should engage in at least 30 minutes of a variety of physical activities (including tummy time; Canadian Society for Exercise Physiology, 2017), while toddlers (1–2 years) and preschoolers (3–4 years) are encouraged to engage in 180 minutes of a variety of physical activities (whereby 60 minutes should be at the moderate-to-vigorous intensity for 3-to-4-year-olds; Canadian Society for Exercise Physiology, 2017). Further, it is recommended that school-aged children (5–17 years) strive for a minimum

[4] A version of this manuscript has been published. Szpunar, M., Bourke, M., Vanderloo, L. M., Bruijns, B. A., Truelove, S., Burke, S. M., Gilliland, J., Irwin, J. D., & Tucker, P. (2023). Parent-Reported Changes in Ontario Children's Physical Activity Levels During the COVID-19 Pandemic. *Children*, 10(2), 221. https://doi.org/10.3390/children10020221

of 60 minutes of MVPA per day (Canadian Society for Exercise Physiology, 2017a; Tremblay et al., 2017). However, recent data from the CHMS suggest that only 62% of toddlers and preschoolers and 47% of school-aged children aged (5–11 years) are meeting physical activity recommendations (Chaput et al., 2017; Statistics Canada, 2018). These low levels of physical activity are not unique to Canada; globally, approximately only one-third of children between the ages of 5–17 years are achieving their respective national physical activity guidelines (Aubert et al., 2018).

COVID-19 was announced a global pandemic by the WHO on March 11, 2020 (World Health Organization, 2021a). Shortly thereafter, stay-at-home orders (e.g., lockdowns) were implemented and resulted in restrictions on access to public spaces. In addition, community-wide public health protections were implemented by the Ontario government in accordance with the national COVID-19 strategy in Canada (Government of Canada, 2021). For parents and guardians, these protections drastically reduced opportunities for their children to engage in physical activities (Mitra et al., 2020; Riazi et al., 2021), as many physical activity-supporting environments (e.g., schools, childcare, and community centres, including indoor and outdoor sport recreation facilities) were inaccessible for extended periods of time (Government of Canada, 2021). Further, access to outdoor public play spaces such as parks and basketball courts was also prohibited during the early stages of COVID-19 in Ontario due to transmission risks (CityNews Toronto, 2020). These public health protections, in the form of lockdowns, remained in place for extended periods (in a staggered format, dependent on positive case counts) in Ontario, Canada (Government of Ontario, 2021), leaving many families

with limited options for engaging in physical activity-related behaviours outside of their homes.

Despite existing targets, the prevalence of Canadian children meeting the movement guidelines pre-pandemic was low (Chaput et al., 2017; Rhodes et al., 2019; Roman-Viñas et al., 2016) and has further declined since March 2020 (Moore et al., 2020). A study conducted by Moore and colleagues during the early stages of the pandemic (i.e., April 2020) identified that less than one-fifth (18.2%) of Canadian children (aged 5-11 years; *n* = 1,472), as reported by their parents, were meeting the movement behaviour guidelines (Moore et al., 2020). Six months later (i.e., October 2020), this number declined to 14.3% among the same group of children (Moore et al., 2021). Given the observed decline of physical activity among Canadian children during the COVID-19 pandemic—and as the pandemic continues—it is imperative to explore how children's activity levels have been impacted and what factors may have influenced their physical activity participation during the COVID-19 pandemic. For example, research conducted during the pandemic has found various family sociodemographic factors (e.g., dog ownership, presence of outdoor space at home) as important correlates of children's physical activity (Dunton et al., 2020; Moore et al., 2020). Given the lack of published evidence pertaining to the impact of the pandemic on young children's (0–5 years) movement behaviours, the purpose of this study was to explore changes in Ontario children's (0–12 years) physical activity levels during the first 1.5 years of the COVID-19 pandemic. Specifically, children's physical activity levels prior to the declaration of a pandemic and lockdown (*before March 2020; measured*

retrospectively), during lockdowns (*March 2020- June 2020; January 2021 - May 2021),* and post-lockdown *(between August to December 2021)* were captured[5]. For the purpose of this study, lockdown refers to periods of time in Ontario when citizens were required to stay at home, and public spaces (e.g., gyms, schools, and community centres), were closed. A secondary objective was to examine the impact of family sociodemographic and environmental moderators such as housing type, children's biological sex and age, annual family household income, and parental level of education on physical activity.

Methods

Study Design and Procedures

Drawing on data collected from the larger *Return to Play* study (details published elsewhere [Szpunar et al., 2021]), this repeated measures study consisted of two online surveys (August – December 2020 [survey 1; Appendix C]; and August – December 2021 [survey 2; Appendix G]) designed to assess parents' plans for their children's return to play/sport over the course of the COVID-19 pandemic. Data concerning parents' and children's physical activity levels were also collected. The current paper presents parent-reported data collected in both surveys related to their children's physical activity levels throughout the pandemic (including retrospectively, to capture pre-pandemic levels and during periods of lockdown). See Figure 1 for a timeline of the Return to Play study

[5] At *post-lockdown*, stay-at-home periods in Ontario ceased and various sport settings were permitted to re-open. For more information, a timely breakdown of COVID-19 restriction easing (e.g., settings that were open for operation) can be found here: https://www.jdsupra.com/legalnews/ontario-s-covid-19-response-a-history-1280608/

surveys and provincial announcements (e.g., COVID-19 provincial mandates) in relation to this study, and Appendices C and G for the *Return to Play* Study surveys. Ethical approval was provided by the Non-Medical Research Ethics Board at the University of Western Ontario (REB #116331), and informed consent was obtained from all participants (Appendix A).

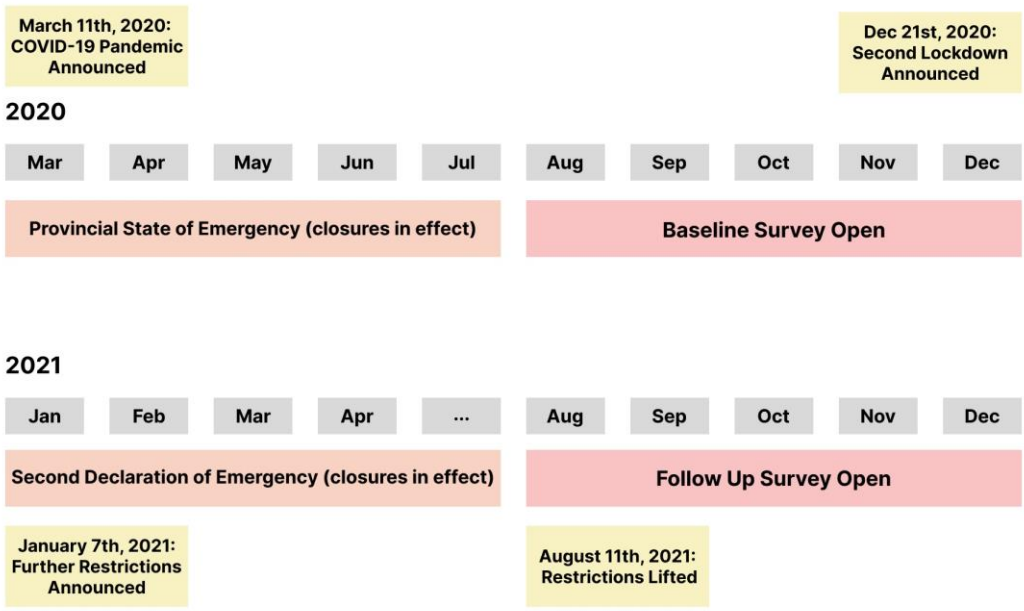

Figure 1. Timeline of the Return to Play Study Surveys and Provincial Mandates.
Note: During provincial states of emergency (March – July 2020 and December 2020 – August 2021), various closures and policies were in effect, including, but not limited to, stay-at-home periods, school closures, non-essential business closures (e.g., restaurants, gyms), and remote (work from home) work mandates for non-front line staff workers [Government of Ontario, 2021].

Recruitment and Participants

To recruit participants, the research team contacted various child sport and physical activity organizations across Ontario and invited them to share study details

(e.g., infographic with survey link; Appendix B) with their communities. In addition, multiple social media platforms (e.g., Instagram and Facebook) were used. English-proficient Ontario parents and guardians with children aged 12 and under (at the time of baseline survey completion) were invited to participate. Upon confirmation of study eligibility, participants were directed to the first online survey (the completion of which indicated their consent to participate). At the end of the first online survey, participants were asked to provide their email address to be contacted for subsequent surveys.

Instruments and Tools

Two online surveys were created by the research team, and the Tolerance for Risk in Play Scale (TRiPS) validated tool was incorporated into the baseline survey (Hill & Bundy, 2014). The surveys were administered in English and delivered via Qualtrics and took approximately 30 minutes to complete. Survey items were informed by the COVID-19 situation in Ontario, Canada, at the time of survey creation (i.e., survey 1, launched August 2020, *n* = 162 items; and survey 2, launched August 2021, *n* = 58 items). Survey items were embedded into sections based on the type of question asked (e.g., demographics and physical activity levels), and unique instructions were provided based on each section. For this paper, sociodemographic items known to be associated with children's physical activity (e.g., dog ownership, parents' level of education; *n* = 16; Moore et al., 2020; Telford, Telford, Olive, Cochrane, & Davey, 2016) and parent-reported physical activity levels of their children pre-lockdown assessed in the baseline survey, and items that assessed parent-reported physical activity levels of children during lockdown and post-lockdown from the follow-up survey were examined.

Sociodemographic Questions

Sociodemographic information (*n* = 16 items) such as parent's age, self-report gender, and highest level of education, as well as parent-reported child biological sex, age, and disability status, were measured. Participants were asked to report the number of children aged 12 and under they cared for at the time of survey completion (i.e., *How many children aged 0-12 years do you currently provide care for?*) via a dropdown list (i.e., participants could select any number). As such, the questions that followed were populated based on the participants' selected number of children. For example, if a participant selected that they have 2 children under 12 years of age, they had to fill out age and biological sex twice, once per each of their children. Additional items captured socio-economic factors such as employment status, family household income, housing type (e.g., apartment, detached home), and community type (e.g., rural, urban), as well as dog ownership.

Children's Physical Activity

In Survey 1, parents reported their children's daily physical activity levels pre-lockdown. Specifically, the survey asked, *"In your opinion, how many minutes per day did your child spend engaged in physical activity prior to the COVID-19 pandemic?*" Response options were presented in multiple-choice format, with four response options (i.e., less than 30 minutes per day, 30–59 minutes per day, 60–149 minutes per day, or 150 minutes or more per day), and participants were required to input a value for each of their children aged 12 and under.

At follow-up (i.e., Survey 2), parents responded to two questions concerning each of their children's physical activity during lockdowns and post-lockdown. The questions asked, *"In your opinion, how many minutes per day did your child spend engaged in physical activity during Ontario's strictest COVID-19 related lockdowns (when sport and neighbourhood closures were in effect; March 2020- June 2020; January 2021 - May 2021)?"*[6] and *"In your opinion, how many minutes per day is your child engaging in physical activity currently (i.e., at this moment in time)?".* Response options were consistent with the baseline survey, and a dichotomous variable was calculated for each time point (1 = engaging in 60 minutes of physical activity or more per day, 0 = engaging in less than 60 minutes of physical activity per day; World Health Organization, 2021b).

Data Preparation and Analysis

All data preparation (e.g., cleaning) and analyses were completed in SPSS (version 28; IBM, n.d.) and R studio using the lme4 ("CRAN - Package lme4," n.d.) and lmerTest (Kuznetsova, Brockhoff, & Christensen, 2017) packages. Incomplete survey responses (i.e., participants with more than 15% missing data from either survey) were removed (Li et al., 2020). Descriptive statistics, including means, standard deviations, and proportions, were used to report participant demographics. The proportion of children accumulating 60 minutes of physical activity at each time point was calculated from raw data. First, generalized linear mixed effects models with a binomial distribution and a logit link function were used to estimate changes in the proportion of

[6] During periods of lockdown in Ontario, various closures were in effect. For an extensive list COVID-19 related restrictions enforced since 2020 by time (e.g., month), please visit: https://www.jdsupra.com/legalnews/ontario-s-covid-19-response-a-history-1280608/.

children who accumulated 60 minutes of physical activity per day pre-lockdown, during lockdown, and post-lockdown. Time (i.e., pre-lockdown, during lockdown, post-lockdown) was entered as a factor to compare the proportion of children engaging in 60 minutes of physical activity per day at each time point. Second, to determine whether changes in physical activity during COVID-19 were moderated by sociodemographic characteristics, interaction effects were entered into the model between time and each of the measured sociodemographic variables (e.g., household income, level of education, dog ownership). Each of the demographic variables was dichotomized to aid interpretation of the moderation effect. Therefore, a three (time points) by two (dichotomized levels of the moderators) moderation analysis was conducted. All models were run with a random intercept to account for clustering of repeated measures within children. Given a small average cluster size (i.e., 1.68 children), clustering of children within families was not accounted for in the analyses.

Results

A total of 243 parents (M_{age} = 38.8; SD = 5.7) caring for 408 children (M_{age} = 6.3 years; SD = 3.7) completed both online surveys. Most parents identified as female (94%), Caucasian (86%), had an average household income of CAD $100,000 or more (65%) and lived in a detached house (77%). Nearly half (41%) of participants reported their children's biological sex as male, and 7% of children were reported to have a disability. See Table 1 for full participant demographics.

Table 1. ***Demographic Information of Parents (n = 243) and their Children (n = 408)***

Participant Characteristics	Parents		Children	
	M	***SD***	***M***	***SD***
Age (years)	38.76	5.72	6.32	3.66
	N	**%**	***N***	**%**
Gender				
Male	10	4.12		
Female	228	93.83		
Biological Sex				
Male			167	40.93
Female			161	39.46
Disability				
Yes			29	7.11
No			368	90.20
Ethnicity				
Caucasian	208	85.60		
South Asian	9	3.70		
East Asian	2	0.82		
Middle Eastern	1	0.41		
First Nations/Indigenous	7	2.88		
Latin American	3	1.23		
Other	6	2.47		
Prefer not to answer	3	1.23		
Housing Type				
Detached House	187	76.95		
Semi-Detached House	19	7.82		
Apartment/Condominium	31	12.76		
Other	2	0.82		
Family Situation				
Double-parent	203	83.5		
Single-parent	29	11.9		
Other	8	2.9		
Household income				
Less than $60,000 CAD	35	14.6		
CAD $60,000 – 99,000	48	20.1		
CAD $100,000+	156	65.3		
Prefer not to answer	15	6.3		
Highest Level of Education				
High School	17	7.00		
College	52	21.40		
University	81	33.33		
Graduate School	89	36.36		
Prefer not to answer	4	1.65		

Note. Percentages do not add to 100% due to missing data.

Change in Children's Physical Activity During COVID-19

The proportions of children accumulating at least 60 minutes of physical activity per day, as per parent reports at each time point, are presented in Figure 2. Results from the generalized linear mixed effects model showed that children were significantly less likely to engage in 60 minutes of physical activity during lockdowns (20.53%) compared to pre-lockdowns (63.02%), β = −2.40, 95%CI = −2.83, −1.97, p < .001, Odds Ratio (OR) = 0.09, and during lockdowns compared to post-lockdowns (54.14%), β = −1.95, 95%CI = −2.36, −1.54, p < .001, OR = 0.14. Although the proportion of children engaging in 60 minutes of daily physical activity increased from during lockdowns to post-lockdown, children were still significantly less likely to engage in 60 minutes of physical activity per day post-lockdown compared to pre-lockdown (β = −0.46, 95%CI = −0.79, −0.12, p <.001, OR = 0.63).

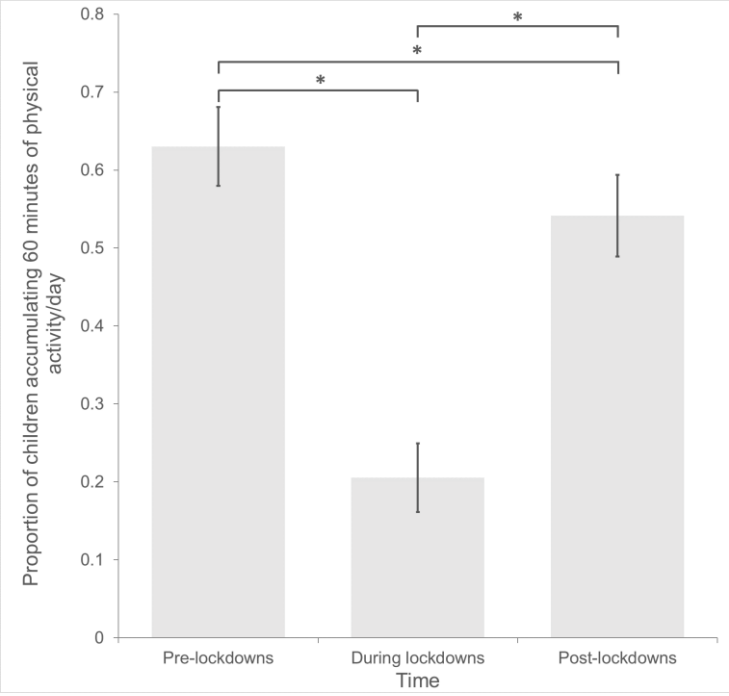

Figure 2. Proportion of children attaining 60 minutes of physical activity, as reported by parents, pre-lockdown, during lockdowns, and post-lockdown.

Sociodemographic Moderators of Change in Children's Physical Activity During COVID-19

Results from the moderation analysis are displayed in Table 2 and Figure 3. Results showed that the proportion of older children engaging in 60 minutes of physical activity per day decreased significantly more than younger children from pre-lockdowns to during lockdowns, β = −0.86, 95%CI = −1.66, −0.07, p = .033, OR = 0.42, as did the proportion among children from households with a family dog, β = −0.92, 95%CI = −1.72, −0.11, p = .025, OR = 0.40. Results also showed that the proportion of children from households with parents who are employed full-time to engage in 60 minutes of physical activity per day increased significantly more than children from households with parents who do not work full time from during lockdowns to post-lockdowns, β = 1.05, 95%CI = 0.27, 1.83, p = .008, OR = 2.86. Additionally, the proportion of children from non-double-parent households engaging in 60 minutes of physical activity per day decreased significantly more from pre-lockdown to post-lockdown than children from double-parent households, β = −1.33, 95%CI = −2.39, −0.27, p = .013, OR = 0.26, as did the proportion of females compared to males, β = −0.82, 95%CI = −1.57, −0.07, p = .032, OR = 0.44. Although not significant, results also demonstrated a U-shaped effect of household income on the proportion of children engaging in 60 minutes of physical activity per day, with a greater decrease from pre-lockdown to during lockdown in children from families with higher household income, then a rebound effect from during lockdowns to post-lockdown.

Table 2. ***Influence of Sociodemographic Moderators on Changes in Parent-Reported Child Physical Activity Over Time During the COVID-19 Pandemic***

	Change from pre-lockdown to during lockdown		Change from during lockdown to post-lockdown		Change from pre-lockdown to post-lockdown	
Moderator	**Moderation effect**	***p***	**Moderation effect**	***p***	**Moderation effect**	***p***
Community type (0 = rural; 1 = (sub)urban)	.86 (−.08, 1.80)	.073	−.48 (−1.41, .45)	.310	0.38 (−0.44, 1.17)	0.369
Housing type (0 = other; 1 = detached)	.81 (−.17, 1.79)	.107	−.68 (−1.37, .60)	.171	0.12 (−0.71, 0.96)	0.776
Family dog (0 = no; 1 = yes)	−.92 (−1.72, −.11)	.025 °	.65 (−.15, 1.45)	.112	−0.27 (−0.99, 0.46)	0.470
Household income (0 = <CAD $100,000; 1 = CAD $100,000+)	−.65 (−1.40, .10)	.093	.74 (−.02, 1.50)	.055	0.10 (0.60, 0.79)	0.788
Family situation (0 = other; 1 = double parent)	.43 (−.70, 1.57)	.455	.90 (−.21, 2.01)	.113	1.33 (0.28, 2.38)	0.013
Parent employment status (0 = not employed full time; 1 = employed full time)	−.21 (−.98, .56)	.588	1.05 (.27, 1.83)	.008 °	.84 (0.11, 1.57)	0.024
Parent education (0 = high school/college diploma, 1= university degree)	−0.20 (−.97, .57)	.629	.46 (−.35, 1.27)	.262	.26 (−0.48, 1.01)	0.485
Child sex (0 = female; 1= male)	.74 (−.08, 1.55)	.077	.09 (−.74, .91)	.838	.82 (0.07, 1.58)	0.032
Child age (0 = 0-5 years; 1 = 6-12 years)	−.86 (−1.66, −.07)	.033 °	.23 (−.57, 1.03)	.572	-.63 (-1.37, 0.11)	0.094
Child disability (0 = no; 1 = yes)	−.78 (−2.41, .84)	.345	.63 (−1.01, 2.27)	.450	-.15 (-1.47, 1.16)	0.820

Note: °$p < .050$.

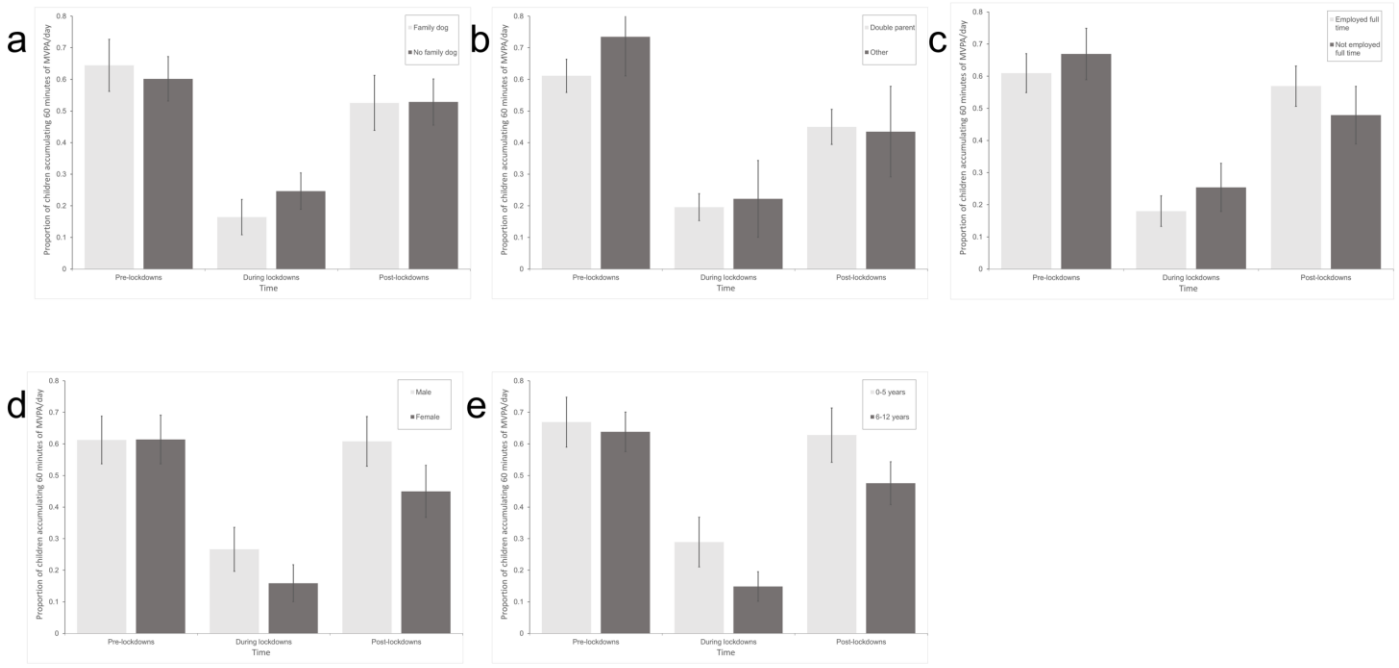

Figure 3. Difference in the proportion of children attaining 60 minutes of physical activity, as reported by parents, pre-lockdown, during lockdowns, and post-lockdown based on **a)** owning a family dog, **b)** family situation, **c)** parent employment status, **d)** child sex, and **e)** child age.

Discussion

This study examined Ontario children's parent-reported physical activity levels over time throughout the COVID-19 pandemic (i.e., pre-lockdown, during lockdown, and post-lockdown). The proportion of children engaging in at least 60 minutes of physical activity per day, as reported by their parents, significantly declined during periods of lockdown in Ontario. However, children's activity levels appeared to rebound after lockdowns were lifted, though they did not reach pre-pandemic levels (Aubert et al., 2018; Statistics Canada, 2018). Interestingly, older children showed a larger decline in physical activity levels during lockdown, as did children in households that had a family dog. Additionally, there was a significantly larger decrease in the proportion of children from non-double-parent households and girls engaging in 60 minutes of physical activity per day from pre-lockdown to post-lockdowns. Several findings are discussed below.

Given the many benefits of physical activity for children (Carson et al., 2017), exploring how participation has changed throughout the pandemic and during the implementation of specific public health measures is important. In addition, exploring whether levels of physical activity increased after lockdowns were lifted offers insightful considerations for the continuing and eventual post-pandemic recovery. Children accumulate physical activity in a variety of settings (e.g., school, sports, and community centres; Corder, Sallis, Crespo, & Elder, 2011; Kneeshaw-Price et al., 2013), and many of these settings were closed or off limits during periods of the COVID-19 pandemic in Ontario. Additionally, as people were encouraged to remain at home, there were decreased opportunities for children to engage in incidental and spontaneous physical

activities (e.g., on their way to school or while out with parents running errands). Therefore, it was not surprising that a significant decline in children's physical activity was observed during periods when lockdown measures were in place. This decline in children's physical activity during the COVID-19 pandemic is consistent with other studies (Bates et al., 2020; Moore et al., 2020, 2021). For example, in a systematic review by Stockwell et al. (2021) exploring changes in children's and adolescents' physical activity levels during the first year of COVID-19, all studies (*n* = 6) reported a decrease in children's physical activity during the pandemic. Although the disruption of physical activity programming (e.g., after-school activities, sports) was necessary to reduce transmission of COVID-19, the noted decline in children's physical activity may have been a result of children traditionally accumulating much of their physical activity in these settings (Felfe et al., 2016), rather than at home. Prior to the start of the COVID-19 pandemic, Canadian data from early 2020 reported that 78% of 5-19 year old's participated in some form of organized physical activity or sport (ParticipACTION, 2020). In addition, 21% of this cohort also reported using active modes of transportation to travel to and from school (ParticipACTION, 2020). With organized sports and schools closed for various periods during COVID-19 in Ontario, and therefore the need to commute to these settings negated, this could also have contributed to the identified decrease in children's activity.

Parents play an important role in the promotion of their children's physical activity opportunities by role modeling, providing transportation, and financing activities (Gustafson & Rhodes, 2006; Strauss et al., 2018). Research has found that during the

COVID-19 pandemic, many families have switched to more unstructured (e.g., playing outdoors) versus structured activity (e.g., organized sports**;** Pelletier, Cornish, & Sanders, 2021; Szpunar et al., 2021). As such, parents may play an even more crucial role in supporting their children's movement behaviours, especially during stay-at-home periods, where activity stimulus or promotion is less likely to come from external sources (i.e., sports coaches, peers, and mentors). This may explain why results from the current study showed that children from non-double-parent households had a greater decrease in physical activity from pre-lockdown to post-lockdown than children from double-parent households, as single parents may juggle multiple household duties and may not have the time to support their children's engagement in physical activity. Similar results have been reported in previous research, which showed that children in households with dual parents engaged in significantly more physical activity six months into the pandemic (Moore et al., 2021). It is urgent that supports are put in place for single parents or for those who are reliant on structured movement opportunities to ensure that these children are getting sufficient activity when sports and organized activities are not accessible. Recent research shows that adults (including parents) have also reported that their activity levels have declined because of COVID-19 (Stockwell et al., 2021), suggesting that there may be a family effect of the pandemic on physical activity behaviours. Efforts to increase children's physical activity should be targeted at the individual level by parents and ideally should be centered around how their children like to accumulate activity (whether at home, in unstructured settings such as outdoor environments, or in organized settings such as sports). In addition, the role of schools

and municipalities in promoting children's activity outside of the home should not be overlooked.

The results from the study suggested that elementary-school-aged children (6-12 years) may have had a larger decrease in physical activity than younger children (0-5 years). These findings are consistent with other Canadian research, which demonstrated younger children`s levels of physical activity decreased less during lockdowns (Moore et al., 2020). This could be due to the cumulative effect of a lack of active transport to school and the loss of organized activities that children approaching adolescence experienced during periods when schools and organized sports were closed. Moreover, there was a larger decrease in the proportion of females achieving 60 minutes of physical activity from pre-lockdown to post-lockdown when compared to males. This finding is consistent with pre-COVID-19 literature, which has persistently identified girls to be less active than boys (Telford et al., 2016), and is also consistent with research conducted during the pandemic (Moore et al., 2020). This may have occurred because of increased time at home to engage in screen-viewing, less social pressure from parents/guardians, and no access to organized sport. However, these factors are not limited to COVID-19. Further investigations are needed to identify how the pandemic has affected the physical activity levels of children of different ages and biological sex, and it is crucial that children are given ample opportunities to get active during early childhood to increase the chance that these healthy habits track into later life (Jones et al., 2013).

Socio-economic status was also associated with changes in physical activity during the COVID-19 pandemic. The effect of socio-economic status was mainly observed from during lockdown to post-lockdown. There was a greater increase in the proportion of children from high-income families and families with parents who work full time from during lockdown to post-lockdown. Participation in organized sport and physical activities is greater among children from families with higher socio-economic status ("The Daily, Tuesday, June 3, 2008. Study: Organized sports participation among children," n.d.). Therefore, these findings may be a consequence of a combined loss of sport and formalized physical activity opportunities during lockdown and a greater ability to reengage with formal sports and physical activities when they restarted following lockdown.

Children from families with a dog also experienced greater declines in physical activity from pre-lockdown to during lockdowns. This is contradictory to previous research, which has largely shown a positive association between dog ownership and physical activity in youth (Chase et al., 2022), and research conducted in Canada during the COVID-19 pandemic, which found family dog ownership to be positively associated with healthy movement behaviours (Moore et al., 2020). However, despite being associated with greater outdoor physical activity/play, this previous research also showed that dog ownership was associated with significantly less indoor play in Canadian youth (Moore et al., 2020). We espouse that this decrease in physical activity may be more strongly attributed to the fact that lockdowns occurred during the winter months in Ontario (whereby seasonality was likely an issue; Tucker et al., 2009), and

indoor play became more prominent, thus potentially diluting the impact of dog ownership on sustaining children's activity in the present study.

Considering the growing body of research exploring the impact of the COVID-19 pandemic on children's movement behaviours, and findings that show alarmingly low percentages of children meeting guidelines during lockdowns (Moore et al., 2020, 2021), it is essential that more research be conducted to understand the supports needed for parents with young children. Specifically, support for parents is needed to ensure their children are meeting movement guidelines during periods when physical-activity-supportive environments are closed, such as in the case of more stay-at-home orders or following natural disasters. Although the results of the present study showed an upwards trend in the number of children achieving at least 60 minutes of physical activity post-lockdown, there remains work to be conducted to get children back to at least pre-pandemic levels of physical activity. Further, given that physical inactivity is associated with a wide array of chronic health conditions (Warburton et al., 2006), increased supports for physically distanced activity are also needed. Finally, researchers in this area should aim to obtain objectively measured physical activity levels of this population, to allow for comparisons across studies. In addition, exploring the correlation between parents' personal activity levels and their children's levels is also warranted.

Strengths and Limitations

Strengths of the present study include the use of repeated measures to examine the impact of the COVID-19 pandemic on a provincial sample of parents and children

and the use of generalized linear mixed effects models to present the non-linear trajectories of the proportion of children who accumulated at least 60 minutes of physical activity during various periods of the pandemic. Notwithstanding these strengths, there are some limitations to note. First, despite our efforts to retain as many participants as possible from baseline to follow-up, only 243 of the 819 participants at baseline completed the follow-up survey, limiting the size of our sample. Second, children's physical activity was collected via parent report and did not capture intensity level (e.g., MVPA). This may have influenced our findings due to potential recall or social desirability biases (van de Mortel, 2008) or led to participants reporting invalid data (e.g., lack of precision). Further, survey respondents were primarily female, Caucasian, with full-time employment, and had higher than average household incomes; this limits the generalizability of findings to other populations. Participants were also recruited by contacting sport organizations, which may also have led to parents of already physically active children participating. Additionally, it is important to note that public health measures may have differed across regions in Ontario, and this may have impacted parents' reports of their children's physical activity levels (depending on what was open at the time of survey completion in their respective city/town). Finally, this study did not capture parents' nor children's vaccination status and did not consider the impact this may have had on parents' return to sport/play decision making.

Conclusion

This study explored changes in the proportion of children accumulating 60 minutes of daily physical activity during various periods of the COVID-19 pandemic in

Ontario, Canada. It was found that children's activity levels dropped during periods when the COVID-19 virus risk was high, and many public health protections were in place; however, findings should be interpreted with caution due to the nature of the study (e.g., self-reported physical activity levels) and high homogeneity of study participants (i.e., female, Caucasian, high household income). As society continues to navigate the changing landscape of the COVID-19 pandemic, it is imperative that we strive to understand whether the pandemic will have lasting impacts on physical activity levels for families with young children, and preparation is needed to support children's movement behaviours through pandemic and non-pandemic times alike.

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Chapter 5:

Summary, Discussion, Limitations, Future Directions, and Conclusion

This dissertation explored parents' perspectives of returning their children to play and sport during the COVID-19 pandemic in Ontario, Canada, with insights sought from children also. To quantify the impact of the COVID-19 pandemic on children's physical activity, parent-report of children's activity levels were examined to explore whether the proportion of children achieving 60 minutes of physical activity per day changed from pre-lockdowns, during lockdowns to post-lockdowns. Both quantitative and qualitative methods were employed, and parents' and children's voices were captured. As such, this study complements the existing literature by providing novel insights into the impact of COVID-19 on children's movement behaviours, particularly play (e.g., unstructured activity) and sport (e.g., structured activity). This is the first study, to our knowledge, that captures Ontario parents' attitudes regarding children's return to play and sport during COVID-19, young children's perspectives of getting active during the pandemic including barriers and facilitators experienced and captures physical activity changes among children aged 0-12 years in Ontario, Canada. Two online surveys (via a repeated-measures design) were used to collect data presented in studies 1 and 3, and interviews were conducted with parents and children for study 2.

Study 1 was used to capture parents' perspectives during early stages of COVID-19 in Ontario (e.g., August – December 2020) on returning children to play and sport, and to examine whether risk tolerance (measured via validated TRiPs tool; Hill & Bundy, 2014) or parents' own MVPA level influenced their attitudes. Safety-related attitudes

were identified to have the highest scores by parents compared to socialization- and support-related attitude items. Twenty main predictors of parents' attitudes were identified via LASSO regressions; sociodemographic factors such as parent age, physical activity levels of parents, and living in an urban community were found to influence attitudes. Open-ended items revealed that there was a range of views among parent participants about their level of comfort to return their children to play/sport. Some examples that parent participants reported as to why they felt comfortable returning their children to play/sport were if case counts in their respective communities were low and if it was deemed safe by Public Health Ontario. Further, parents voiced that they were willing to return their children to play/sport during COVID-19 to support their children's mental and physical health. Parents who did not feel comfortable returning their children voiced concerns such as the age of their children (e.g., too young to follow public health protocols such as physical distancing), and fear of sport facilities being unable to uphold safety protocols (e.g., sanitization, ensuring children physically distance). These findings stress the importance of capturing perspectives from parents regarding the reasons parents will or will not return their children to physical activities during COVID-19. This is important as findings from this study can help sport organizations identify priorities that are important to parents, such as increased sanitization and clearance from public health authorities, for re-engaging children in active play opportunities. Finally, this study captured early pandemic perspectives toward getting children active via play and sport and serves as a baseline to identify if parents' perspectives change as the pandemic continues.

Following Study 1, with a better understanding of parents' attitudes during early stages of COVID-19 regarding return to play/sport, Study 2 aimed to qualitatively capture in-depth attitudes from both parents and children. Children were included as their experiences of getting active during COVID-19 were of special interest, and few studies have highlighted children's voices during the COVID-19 pandemic. Findings showed that parents and children experienced several barriers to engaging in physical activity during COVID-19, including closures of supportive spaces (e.g., parks, community centres), financial implications (e.g., price of toys), weather, and lack of motivation to support children's activity. Children voiced barriers such as engaging in a lot of screen time, lack of things to do at home, and not being able to see friends/important personnel. The most common facilitator for getting active amid COVID-19 related closures voiced by both parents and children was getting outdoors and using virtual platforms. Both parents and children noted declines in children's activity levels during COVID-19 related closures. As a handful of child participants had already returned to sport/play during this study, those who had returned voiced their perspectives of health protocols (e.g., masking) and most noted having no issues following them. These findings provided in-depth evidence of the impact of the COVID-19 pandemic on children's physical activity opportunities and shed light on important facilitators that can be used by parents during future stay-at-home periods. Moreover, this study underscores the value of including children's voices in research, how they differ from their parents' perspectives, and that capturing their perspectives can be

used to provide important insight into realistic strategies that can be used to promote children's activity (e.g., virtual opportunities).

Finally, Study 3 involved examining the proportion of children meeting the recommended 60 minutes of physical activity per day (as outlined in the Canadian 24-hour movement guidelines for children; Canadian Society for Exercise Physiology, 2017a) during COVID-19, as reported by their parents via both online surveys. In the baseline survey, parents retrospectively reported on their children's pre-pandemic levels. Results from the generalized linear mixed effects model showed that children were significantly less likely to engage in 60 min of physical activity during lockdowns compared to pre-lockdowns, and during lockdowns compared to post-lockdowns. In other words, the proportion of children meeting guidelines declined during periods when stay-at-home orders were in place but had a slight rebound when physical activity supporting environments were permitted to re-open in Ontario, Canada; however, these did not reach pre-pandemic levels. Various sociodemographic variables had an influence on results and showed that children from families with a higher-than-average household income experienced greater declines in physical activity, and older children also experienced greater declines in physical activity compared to younger children. The findings from this study shed light on the impact of the COVID-19 pandemic on children's physical activity levels, with important contextual considerations particularly regarding parent and child sociodemographic variables. This study adds to the body of literature exploring changes in children's activity levels during a pandemic, with an

Ontario-specific lens, and supports previous COVID-19 research studies showing that the COVID-19 pandemic had a negative impact on children's activity.

Discussion

This research demonstrates the drastic impact that the COVID-19 pandemic has had on Ontario children's physical activity, particularly their play and sport experiences, and further reveals the integral role that parents play in shaping children's physical activity opportunities (Gustafson & Rhodes, 2006). This dissertation presents data that was collected from three sequential studies, including two surveys, and data collected from interviews with parents and children. Many findings warrant discussion.

Beginning with Study 1, results showed that parents reported positive attitudes toward taking time out of their day to support their children's physical activity. This is important, as due to COVID-19, parents did not have support from external sources (e.g., sporting coaches) that usually facilitate children's play/sport. As a result, many children may have relied on their parents to support their physical activity and play opportunities. However, in Study 2, which was conducted a few months further into COVID-19, parents emphasized their lack of motivation to support children's activity. It is likely that as the pandemic went on, parents began to feel fatigued toward supporting their children's activities. Specifically, given that parents participated in Study 1 as early as August 2020 (e.g., 5 months into COVID-19), it is likely that by December 2020 and January 2021, they were no longer willing or able to support their child's play due to being burnt out from spending many hours at home, and juggling work and homeschooling, on top of facilitating physical activity. Further, seasonality was likely a

factor, as inclement weather often makes it more difficult to engage children in activity (Tucker & Gilliland, 2007). For example, parents may not have been inclined to send their young children out to play in the yard or nearby park in freezing temperatures. In addition, during interviews, parents reported financial barriers to supporting their child's play, citing that purchasing new physical activity-supportive toys was not feasible during COVID-19 times, and that sport registration costs were increased due to limited class/lesson sizes. The rich data gathered via interviews with parents regarding their lack of motivation and financial concerns may explain findings identified in Studies 2 and 3 showing that children's physical activity levels significantly declined during periods of lockdowns.

Although Studies 2 and 3 identified reductions in children's physical activity during COVID-19, of particular interest is that older children's physical activity levels appeared to be more negatively impacted by COVID-19-related closures compared to younger children. Specifically, in Study 2, older children verbally (during interviews) reported more drastic declines in their activity levels compared to younger children since the start of the pandemic. This is consistent with findings from Study 3 that identified older children (i.e., ages 6 and up) were significantly less likely to achieve 60-minutes of physical activity per day during periods of closures in Ontario, compared to younger children. These findings are also consistent with previous research showing that children's physical activity levels tend to decline with age (Bradley et al., 2011; Troiano et al., 2008). For example, a longitudinal study that objectively measured physical activity changed across time among sample of 242 children identified that at age 5,

physical activity had declined to around half of what it was when children were 3 years of age (Taylor, Williams, Farmer, & Taylor, 2013). In the context of the COVID-19 pandemic, it can be postulated that this may be due to older children being more reliant on organized sports for activity, or physical activities associated with school extracurriculars, which were not available for extended periods of time in Ontario (Government of Ontario, 2021). In fact, children who participated in interviews (Study 2) referenced that they felt that the pandemic removed opportunities for getting active, citing both the lack of sports participation, general lack of active things to do while confined at home, and changes in sports practices (e.g., more drills versus game time in hockey practice to allow for physical distancing) among those children who had returned. This is problematic, as pre-COVID research has identified that by age 13, many Canadian children move away from organized sports (CBC, 2016). Specifically, a 2020 study conducted by Canadian Women and Sport reported that 1 in 3 girls and 1 in 10 boys drop out of sport by adolescence (Canadian Women & Sport, The Rally Report, 2020). Therefore, without increased supports or interventions, it is likely that COVID-19 will further exacerbate previously identified declines in children's physical activity as they get older and may result in an earlier age that children drop out from sports.

Like the noted declines in physical activity observed in Studies 2 and 3, Study 2 revealed that children spent more time engaged in sedentary behaviours during the pandemic, and this was reported by both parents and children. This may also explain why older children experienced larger declines in physical activity compared to their younger counterparts. Given children above age 5 are more likely to have autonomy

regarding screen-viewing behaviours (Canada Media Fund, 2018) and were required to pivot to virtual learning for many months during COVID-19 (Lemay, Bazelais, & Doleck, 2021), it is possible that these children had more opportunities to engage in sedentary behaviours compared to children in their early years. This is consistent with research conducted by Hedderson et al. (2023) that identified children's (aged 4-12) total screen time was on average, 4.4 hours per day prior to the pandemic and increased by approximately 1.75 hours per day (95% CI, 1.18-2.31 hours per day) during a period of the pandemic (i.e., December 2020 - April 2021). Specifically in Ontario, a study exploring increases in screen time among children aged 6-12 (via parent-report) had similar findings (Seguin, Kuenzel, Morton, & Duerden, 2021). Seguin et al. (2021) identified that children were spending nearly 6 hours engaged in screen-viewing per day, with some children spending up to 13 hours/daily on screens. It is possible that school being moved online during COVID-19 played a role in the observed increases in sedentary time in the present study, as this may have led to children experiencing drastic shifts to their daily programming that led them to spend more time online while sitting. In addition, school-aged children who previously had an active commute to school experienced this being replaced with a commute to the kitchen - serving as another example of how children's previously active time was replaced with sedentary opportunities.

The slight rebound observed in children's physical activity levels when closures were no longer in effect in Ontario, Canada (identified in Study 3) may have been an artifact of parents' attitudes identified in Study 1. Specifically, in Study 1, parents

reported that they felt their children had missed out on important health benefits associated with play/sport due to staying at home for extended periods of time amid the pandemic (e.g., assessed via safety-related attitudes). Feeling that children may have missed out on health benefits could have resulted in some parents re-enrolling their children in play/sport as soon as these activities became available in their respective communities. These findings are consistent with other research during the COVID-19 pandemic that identified parents' high level of willingness to return their children to their pre-COVID sports programming (Post, Rivera, Doss, & Eberman, 2022). Specifically, Post et al. (2022) identified that among a sample of 236 parents of children (ages 7-17) that participated in an organized sport in the past year, ~75% of parents reported that their children were likely to resume organized sports during COVID-19. Further, although not a part of this dissertation, previous findings from the *Return to Play* study identified that 45% of parents reported that their children asked about returning to play/sport more than 3 times per week during COVID-19 (Szpunar et al., 2022). It is likely that a combination of factors at the parent and child-level drove the slight increase in children meeting 60 minutes of physical activity when sports facilities were permitted to re-open in Ontario. Finally, given that children and parents reported on other facilitators to engaging children in movement such as social media applications (e.g., YouTube), this could have driven an increase in children's physical activity as well.

While the objective of this study was to understand parents' perspectives relating to children's structured and unstructured movement opportunities, some participant perspectives were varied. For example, some parents were willing to send

their children back to activities as soon as possible, while others reported enjoying the shift to more unstructured styles of movement and were not in a rush to return their children to organized sport activities. These findings are consistent with a large body of research identifying an increase in children's outdoor play and unstructured activities during the pandemic (Lafave, Webster, McConnell, Van Wyk, & Lafave, 2021; Nathan et al., 2021; Pelletier et al., 2021; Poulain et al., 2021; Schmidt et al., 2020). This is a positive finding, considering the body of evidence showing the benefits of children's outdoor play (Burdette & Whitaker, 2005; Tremblay et al., 2015), and pre-pandemic trends showing a decline in this behaviour (Tremblay et al., 2015). Perhaps the pandemic has uncovered new perspectives towards outdoor play among children and parents, as these activities are often feasible and affordable strategies for encouraging children's movement. Interestingly, finances were noted as a very important factor in parents' decision-making regarding their children's return to play/sport in both Studies 1 and 2, which is consistent with other pandemic research conducted in Ontario (Ostermeier, Tucker, Tobin, Clark, & Gilliland, 2022). For example, Ostermeier et al. (2022) identified that the cost of swimming lessons had gone up because of COVID-19, and sport organizations pushed parents to register their children for private lessons, which came at a much higher cost. As a result, parents voiced their preferences to engage their children in activities while at home/outdoors. In the present dissertation, interview participants from Study 2 reported very similar challenges regarding increased prices of sport enrollment, and preferences for unstructured and outdoor play. Similar findings have been identified in the United States; Post et al. (2022) identified that

parents who reported that their family finances had been made worse or stayed the same because of COVID-19 were less likely than those whose finances had changed for the better to report that their child was likely to resume sports (worse: 76.5%, same: 71.1%, better: 88.2%, $p = 0.03$). Undoubtedly, outdoor play represents a great alternative for families that can no longer afford organized sports, regardless of the reason (e.g., loss of income or increased fees as a result of COVID-19).

Findings from Studies 1 and 2 identified that various family sociodemographic factors (e.g., household income, parent education level, child age) influenced parents' attitudes toward their children's return to play/sport. Study 3 identified that family sociodemographic factors (e.g., household income, child age) impacted children's activity levels. This is consistent with pre-pandemic research reporting on the correlates of sociodemographic factors on children's physical activity affordances (Kracht, Webster, & Staiano, 2019; Rhodes et al., 2019). For example, study by Tandon et al. (2012) identified that children from lower income households had greater media access in their bedrooms compared to children from higher income households (i.e., TV 52% vs. 14%, DVD player 39% vs. 14%, video games 21% vs. 9%, respectively). Among the same group of children, those from lower income households had lower access to portable play equipment compared to higher income children (bikes 85% vs. 98%, jump ropes 69% vs. 83%, respectively). Clearly, household income played an important role in the opportunities that children were provided, even prior to the pandemic. Studies exploring the role of household income on children's activity during COVID-19 had similar findings (Guerrero et al., 2020; Medrano et al., 2021; Perez et al., 2021). For

example, Perez et al. (2021) explored differences in outdoor play opportunities among parents with varying household incomes in the United States and identified that families in lower income brackets had less access to outdoor spaces and reported less engagement in outdoor physical activity compared to children from families in higher income brackets. With respect to child age, Medrano and colleagues (2021) identified that younger children (ages 8 – 11 years) were more active than older children (ages 12 – 16 years) during periods of COVID-19 related restrictions and confinement in Spain. Clearly, sociodemographic factors at the family and child level had important impacts on children's physical activity opportunities, and consequently, physical activity levels, during the pandemic.

Given children's activity levels did not meet pre-pandemic activity levels once COVID-19-related restrictions were lifted in Ontario (as evidenced in Study 3), increased efforts will be needed to promote an active recovery among children. This is particularly important given that physical activity-supporting facilities are now re-opened in Ontario, Canada. Perhaps these findings can be attributed to the geographical context of this study, as Ontario experienced higher case counts compared to other provinces/territories in Canada (de Lannoy et al., 2020). For example, densely populated areas such as the Greater Toronto Area (GTA) reported higher case-counts during the study period (e.g., 2020-2021), resulting in many public health protections being in place for extended periods. As most participants from the *Return to Play* study were from urban environments, another important sociodemographic consideration, it is likely that virus transmission risk was higher in these areas, and parents had more fearful attitudes

toward COVID-19 as facilities began re-opening in 2021. In fact, via another study from the *Return to Play* project, our team explored the geographical location of study participants and identified that most were from the GTA, which may explain the attitudes identified in Study 1 (Saravanamuttoo, 2023). This insight into the geographical location of the present study's participants may explain why some parents were more hesitant toward their children's general return to play. In turn, this could have been a factor in the smaller-than-anticipated proportion of children achieving 60 minutes of physical activity per day when restrictions were lifted.

The theoretical positioning of this thesis using the PMT (Rogers, 1975) provides valuable insights into understanding parents' attitudes towards their children returning to play and sports during the COVID-19 pandemic. Specifically, it is likely that parents' risk perception (e.g., assessed via TRiPS and attitudes), belief in preventive measures (e.g., assessed via interviews and open-ended items), and evaluation of COVID-19 response strategies (e.g., assessed via interviews and open-ended items) all impacted their decision-making process when deciding whether or not to return their children. For example, it was hypothesized that parents with higher perceived severity and susceptibility of COVID-19 were more likely to exhibit cautious attitudes and were more likely to act hesitant to allow their children to return to sports, whereas parents who have higher perceived efficacy of preventive measures and lower response costs were more likely to support their children's return to sports. As the pandemic situation continues to evolve (e.g., community case counts, virus mutations), these parental attitudes (i.e., threat and coping appraisals) may also change over time. It's essential for

sports organizations, health authorities, and communities to communicate effectively, provide accurate information, and implement appropriate safety measures to address parents' concerns and support safe sports participation during COVID-19 and in the instance of future pandemics.

Strengths and Limitations

While the present dissertation has many strengths such as the launch of survey 1 during the early stages of the COVID-19 pandemic, the inclusion of children's voices, and the inclusion of both quantitative and qualitative research methods, several limitations must be noted. With respect to specific studies, despite the high participation in Study 1 (i.e., 819 participants), only 243 participants were retained at follow-up (i.e., survey 2) resulting in a smaller than intended sample size included in Study 3. Further, because interview participants in Study 2 were recruited via randomization and were drawn from a list of participants who completed the baseline survey, it was not possible to recruit a diverse sample of participants; therefore, nearly all participants were from urban environments, limiting the transferability of study findings to rural populations. It would have been possible to have a more diverse sample in Study 2 had the original sample (i.e., in the baseline survey) been more diverse. Finally, Study 3 relied on parent-reports of children's physical activity and may have been subject to social desirability or recall bias (van de Mortel, 2008). Regarding the *Return to Play* study in its entirety, the most notable limitation is that participants were predominantly female, Caucasian, dual-parent, and from higher income households, representing a highly homogenous and affluent population, limiting the generalizability of results. Further, because participants

had to be from Ontario to participate in the study, results from these studies may not be generalizable to other provinces in Canada. Finally, COVID-19 vaccines were only made available to children aged 5-11 in November 2021, and July 2022 for children 6 months to 5 years (Canadian Institute for Health Information, 2023); therefore, the vaccination status of children was not captured during either of the surveys nor the interviews. In addition, vaccines only became available to the general population of adults in March 2021 in Ontario, as front line and health care workers were provided priority access (Canadian Institute for Health Information, 2023) and were also not captured in the present study. This is a limitation as vaccination status may have impacted parents' and children's perspectives on return to play/sport.

Future Directions

The findings from this dissertation, particularly those identified in Studies 2 and 3 revealing declines in children's physical activity during COVID-19, support the need for increased efforts to promote an active recovery among children living in Ontario, Canada. While a larger study with more participants from the province would provide more robust evidence regarding the proportion of children in Ontario meeting Canadian 24-hour physical activity guidelines, this program of research generated great insight into the state of physical activity during COVID-19 among children in Ontario, one of the hardest hit Canadian provinces with COVID-19 (de Lannoy et al., 2020). Specifically, this research serves as a call to action for public health programs, researchers, and government organizations to enforce increased strategies for engaging children in movement during COVID-19, or in the instance of a future pandemic. For example,

strategies enforced could include subsidies for parents to fund their children's sports. Subsidies could ensure equitable opportunities are given to all children, with a particular emphasis on children from lower socioeconomic status families (e.g., lower-than-average household income, children with parents with a lower education level) that have been proven to have less opportunities for physical activity (Armstrong et al., 2018; Guerrero et al., 2020; Vella et al., 2014). This is especially important as we just passed the 3-year anniversary of the COVID-19 pandemic, representing an extended period of reduced physical activity opportunities for children. Further, in the case of another pandemic, public health programs or government organizations should consider providing families with stipends to purchase active play related equipment, such as trampolines or hula hoops to encourage children's movement while at home. Finally, coaching for parents regarding how to promote children's activity while at home (e.g., capacity building) is another opportunity that should be explored by researchers to encourage an active recovery.

The Aspen Institute, an international non-profit organization launched a program called Project Play (The Aspen Institute, 2013), that offers some fantastic strategies for promoting children's activity, some of which include: *Ask What Kids What They Want* (i.e., identify the forms of play that children enjoy), *Reintroduce Free Play* (i.e., allow children to self-guide their physical activity), and *Encourage Sport Sampling* (i.e., allow children to sample several sports to identify an activity that they enjoy, rather than being encouraged to specialize in a sport based on their skills or parent/guardian's preference). Such strategies underscore feasible mechanisms in which parents, sport

organizations, schools, and research programs can encourage children's activity, and allow children to be key decision makers in their own movement programming. Undoubtedly, much work remains to increase the proportion of children that are engaging in unstructured and structured physical activities during and post-COVID-19; however, organizations such as the Aspen Institute offer important strategies that should be considered in conjunction with research findings such as those identified in present study (e.g., parent and child insights of barriers and facilitators for getting active amid a pandemic).

Conclusion

Given the large body of evidence underscoring the importance of physical activity during childhood (Carson et al., 2017), it was imperative to understand whether the COVID-19 pandemic had an impact on children's physical activity opportunities, including perspectives from both parents and children. This dissertation outlined parents' perspectives of returning their children to play and sport during COVID-19, children's perspectives of getting active during COVID-19, and identified whether COVID-19 impacted the proportion of children in Ontario, Canada meeting 60-minutes of physical activity per day. This work highlighted parents' views on the factors (e.g., barriers and facilitators) driving children's socialization-, safety-, and support-related attitudes. Moreover, this study provides important insight into sociodemographic factors at the parent and child level that impact parents' and children's return to play/sport perspectives and physical activity levels during a pandemic, such as the role of household income, and parents' personal levels of physical activity. Moving forward,

additional research is needed to understand what other supports can be put in place for families with children during extended stay-at-home periods. In addition, increased efforts are needed from sport organizations, public health organizations, and the Ontario government to facilitate an active recovery. This dissertation also serves as an important resource for parents and guardians of young children, as it outlines feasible strategies for encouraging children's healthy movement behaviours identified by Ontario residents, such as using the outdoor environment to get active and pursuing free online physical activities or social media applications (e.g., YouTube). Finally, this dissertation serves as a call to action to stress that the COVID-19 pandemic may have lasting implications on children's physical activity affordances and levels, and strategies for encouraging children's activity need to be identified and disseminated.

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Appendix A: Ethics Approval – Studies 1 and 3

Western Research

Date: 26 August 2020

To: Dr. Patricia Tucker

Project ID: 116331

Study Title: An Examination of Parents' Perspectives of their Child(ren)'s "Return to Play" Post-COVID-19 Pandemic

Short Title: Parents' Perspectives of their Child(ren)'s Return to Play Post-COVID

Application Type: NMREB Initial Application

Review Type: Delegated

Full Board Reporting Date: September 4 2020

Date Approval Issued: 26/Aug/2020

REB Approval Expiry Date: 26/Aug/2021

Dear Dr. Patricia Tucker

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the WREM application form for the above mentioned study, as of the date noted above. NMREB approval for this study remains valid until the expiry date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

This research study is to be conducted by the investigator noted above. All other required institutional approvals must also be obtained prior to the conduct of the study.

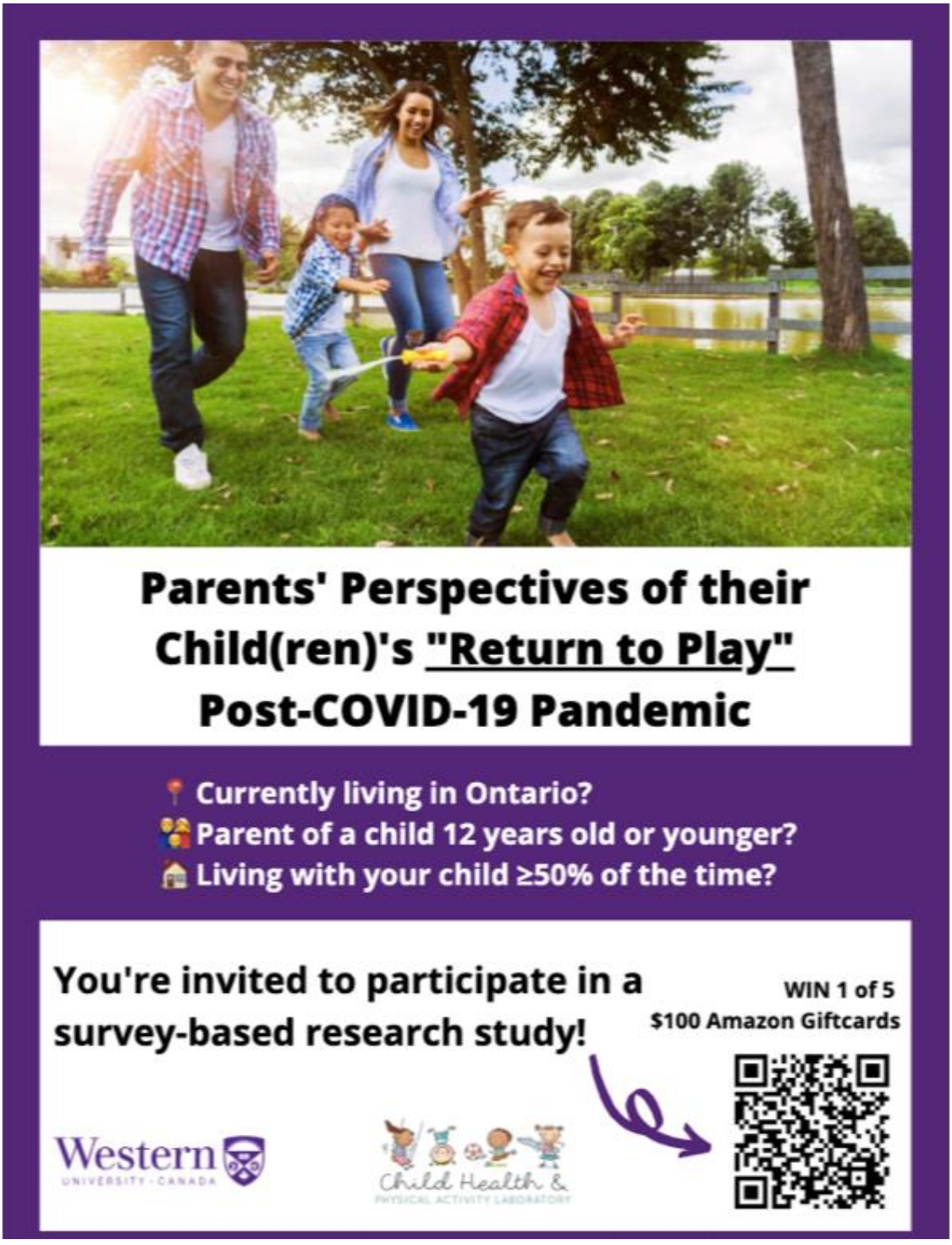
Documents Approved:

Document Name	Document Type	Document Date	Document Version
Volition to Enter Draw Survey-August12,2020	Online Survey	12/Aug/2020	
Appendix B-Telephone Interview Guide-Aug12	Interview Guide	12/Aug/2020	
Recruitment1-August12	Recruitment Materials	12/Aug/2020	
Recruitment2-August12	Recruitment Materials	12/Aug/2020	
Recruitment3-August12	Recruitment Materials	12/Aug/2020	
Verbal Consent-Telephone Interview-August12	Verbal Consent/Assent	12/Aug/2020	
6Month-Survey-Qualtrics.August12,2020	Online Survey	13/Aug/2020	
Appendix A-Baseline-Survey-Qualtrics.August12,2020	Online Survey	13/Aug/2020	
Appendix C- Letter of Information.August 12,2020	Implied Consent/Assent	13/Aug/2020	
Appendix D - Letter of Information for Telephone Interviews.August 12, 2020	Implied Consent/Assent	13/Aug/2020	
Recruitment4-August12	Recruitment Materials	13/Aug/2020	

Documents Acknowledged:

Document Name	Document Type	Document Date	Document Version
qualtrics-western-procedures	Other Materials	15/Jul/2020	
Appendix E- Eligibility-August12,2020	Screening Form/Questionnaire	13/Aug/2020	

Appendix B: Recruitment Flyer for Study 1


Parents' Perspectives of their Child(ren)'s "Return to Play" Post-COVID-19 Pandemic
📍 Currently living in Ontario?
👨‍👧 Parent of a child 12 years old or younger?
🏠 Living with your child ≥50% of the time?
You're invited to participate in a survey-based research study!
WIN 1 of 5 $100 Amazon Giftcards
Western UNIVERSITY · CANADA
Child Health & PHYSICAL ACTIVITY LABORATORY

Appendix C: Survey 1 (Baseline) and Letter of Information

Parents' Perspectives of their Child(ren)'s "Return to Play" Post-COVID-19 Pandemic: Baseline Survey

Q2.1 Are you the parent or legal guardian of a child 12 years of age or under?

- ○ Yes (1)
- ○ No (2)

Skip To: End of Block If Are you the parent or legal guardian of a child 12 years of age or under? = No

Q2.2 Are you an Ontario resident?

- ○ Yes (1)
- ○ No (2)

Skip To: End of Block If Are you an Ontario resident? = No

Q2.3 Can you read and write in English?

- ○ Yes (1)
- ○ No (2)

Skip To: End of Block If Can you read and write in English? = No

Q2.4 Do you provide care for, and live with your child(ren) at least 50% of the time?

- ○ Yes (1)
- ○ No (2)

Skip To: End of Block If Do you provide care for, and live with your child(ren) at least 50% of the time? = No

Q3.1 **Letter of Information**

Study Title: Parents' Perspectives of their Child(ren)'s "Return to Play" Post-COVID-19 Pandemic

Principal Investigator: Trish Tucker, PhD, Faculty of Health Sciences, Western University

Co-Investigators: Monika Szpunar, MSc; Stephanie Truelove, MSc; Brianne Bruijns, MSc; Jason Gilliland, PhD; Leigh Vanderloo, PhD; Jennifer Irwin, PhD; & Shauna Burke, PhD

Invitation to participate: This study aims to explore parents' perspectives of their child(ren)'s "return to play", defined for the purpose of this study as encompassing both

unstructured (i.e., playing in the neighbourhood) and structured (i.e., organized sport) activity post-COVID-19 pandemic. You are being invited to participate because you have a child or children 12 years of age or under and live in Ontario.

Purpose of this letter: The purpose of this letter is to provide you with the information needed to make an informed decision regarding your participation in the present study.

Background: Researchers highlight the importance of play in children's overall development and well-being. Play (i.e., engaging in activities that foster movement or creativity), from a young age promotes self-confidence, and cognitive functioning among young children. In recent years, an observed decline of children's engagement in active play has been noted, and this may be due to an increase in technology use (e.g., screen-viewing). In light of the current COVID-19 pandemic, many children's opportunities for active play have largely diminished (or changed). Schools, outdoor playgrounds, camps and sports facilities that previously supported active play opportunities have been deemed largely inaccessible. The purpose of this study is to explore parents' perspectives and intent (or not) to return their child(ren) to opportunities that support active play, following the pandemic. The findings from this work will have important implications for young children and for parents as COVID-19 restrictions ease and society adjusts to new parameters and norms.

Inclusion criteria: You are eligible to participate in this study if you are: (1) an Ontario resident; (2) a parent/guardian of a child or children 12 years of age or under with custody at least 50% of the time; and, (3) able to read and write in English.

Exclusion criteria: Individuals will be excluded from this study: (1) if they are not an Ontario resident; (2) if they do not have a child 12 years of age or under; (3) if they do not provide care for their child at least 50% of the time; and/or (4) if they are unable to read and write in English.

Study procedures: If you are willing to participate, you will be asked to fill out an online survey (via Qualtrics), and you will receive an invitation to complete a survey again via email approximately 6 months after physical distancing measures are entirely lifted (i.e., with directions from the provincial re-opening plan). The online surveys will take approximately 20 minutes to complete.

Costs and compensation: There are no costs to you for participating in the study. At the end of the survey, you will be invited to follow a link to submit your email address for a chance to win 1 of 5, $100 Amazon gift cards.

Voluntary participation: Participation in this study is voluntary. You may refuse to participate, skip any survey questions, or withdraw from the study at any time (prior to

the submission of your survey). You do not waive any legal rights by consenting to this study.

Consent: Completion of the survey indicates your consent to participate.

Possible benefits and risks: There are no known physical, social, or economic risks due to participation in this study. While there are no personal benefits to you, the results may help researchers and community stakeholders understand parents' level of comfort with their child's return to play. In turn, this research will increase our collective understanding of the long-term impacts that COVID-19 will have for Ontario children and may provide direction for implementing increased supports for young children's active play opportunities.

Confidentiality: We will keep your survey data confidential and secure. Only the research team and Western University's Non-Medical Research Ethics Board will have access to these data. Your survey responses will be collected through a secure online survey platform called Qualtrics. Qualtrics uses encryption technology and restricted access authorizations to protect all data collected. In addition, Western's Qualtrics server is in Ireland, where privacy standards are maintained under the European Union Safe Harbor Framework. The data will then be exported from Qualtrics and securely stored on Western University's server. All data obtained will be stored in secured computer files (password encrypted) and in locked filing cabinets at Wester University. All survey data will be retained for 7 years after the results of the study have been published. After this period, all data will be destroyed (i.e., the computer data will be erased). At the end of the first survey, you will be asked to submit your email address. Your email will not be linked to your survey responses and will be used only for the purposes of notifying you of winning the Amazon gift card, and for contacting you for the second survey.

Contacts for further information: If you have any questions about the conduct of this study or your rights as a research participant you may contact the Office of Human Research Ethics at Western University, [redacted]. If you have any questions about this study, please contact Ms. Monika Szpunar [redacted]

Publication of the results: All data will be grouped with other participants for the purposes of publication. If you would like to receive a copy of the results of the study, please indicate so by following the link at the end of the survey.

Section 0: Participant ID Code

Q4.1 By answering the following questions, you are creating a **unique participant ID for yourself**. This is necessary for the research team to link your data from baseline (Survey

1) to follow-up (Survey 2). **The information that you provide will be kept confidential and will only be available to the research team.** You will be asked to submit the **exact same** responses in the follow-up survey.

Q4.2 What is the **first letter** of your first name? (E.g., if your name is Sam, select "S").
Select Letter (1)

▼ A (1) ... Z (26)

Q4.3 What is the **date** of your birth? (E.g., If your birthday is June 20th, select "20").
Select Date (1)

▼ 1 (1) ... 31 (31)

Q4.4 What is the **first letter** of the town/city that you were born (E.g., if you were born in Toronto, select "T").
Select Letter (1)

▼ A (1) ... Z (26)

Q4.5 What are the **last two digits** of your phone number? (E.g., if your phone number is 905-555-1234, select "3" and then "4")
Digit 1 (1)
Digit 2 (2)

▼ 0 (1) ... 9 ~ 9 (110)

Section 1: Demographic Information

Q5.1 Please answer the following questions to provide some information about yourself.

Q5.2 What gender do you identify with? (Refers to **current gender** which may be different from sex assigned at birth and may be different from what is indicated on legal documents.)

- ○ Male (1)
- ○ Female (2)
- ○ Prefer not to say (3)
- ○ Prefer to self-describe: (4)

_____

Q5.3 What is **your age** (in years)?

_____

Q5.4 What is your postal code? (e.g., 1A1 A1A)?

_____

Q5.5 Which of the following best describes the area you live?

- ○ Rural (1)
- ○ Suburban (2)
- ○ Urban (3)

Q5.6 What is your racial background/ethnicity?

- ○ Caucasian (1)
- ○ African Canadian (2)
- ○ South Asian (3)
- ○ East Asian (4)
- ○ Middle Eastern (5)
- ○ First Nations/Aboriginal (6)
- ○ Latin American (7)
- ○ Other: (8) _____
- ○ Prefer not to answer (9)

Q5.7 What is your current employment status?

- ○ Full-time (1)
- ○ Part-time (2)
- ○ Occasional/Support (3)
- ○ Unemployed (4)
- ○ Prefer not to answer (5)

Q5.8 What is your family situation?

- ○ Single-parent (1)
- ○ Double-parent (2)
- ○ Guardian-led (3)
- ○ Other: (4) _____
- ○ Prefer not to answer (5)

Q5.9 What is your highest level of education?

- ○ High school (1)
- ○ College (2)
- ○ University (3)
- ○ Graduate school (4)
- ○ Prefer not to answer (5)

Q5.10 In what housing type do you live (during the COVID-19 pandemic)?

- ○ Apartment (1)
- ○ Condominium (2)
- ○ Townhouse (3)
- ○ Semi-detached house (4)
- ○ Detached house (5)
- ○ Other housing? Please describe: (6)

_____

Q5.11 Do you have a dog?

- ○ Yes (1)
- ○ No (2)

Q5.12 What is your approximate **yearly total household income (before taxes)**?

- ○ Less than $20,000 (1)
- ○ $20,000 - $39,000 (2)
- ○ $40,000 - $ 59,000 (3)
- ○ $60,000 - $79,000 (4)
- ○ $80,000 - $99,000 (5)
- ○ $100,000 - $119,000 (6)
- ○ $120,000 - $139,000 (7)
- ○ More than $140,000 (8)
- ○ Prefer not to answer (9)

Q5.13 Ontario is re-opening public spaces in three stages. What phase of re-opening are you **currently** in?

- ○ Phase 1 re-opening (1)
- ○ Phase 2 re-opening (2)
- ○ Phase 3 re-opening (3)

Section 2: Child(ren)'s Age, Biological Sex, & Presence of Disability/Chronic Condition

Q5.14 How many children aged 0-12 years do you currently provide care for?
Click to write Choice 1 (1)

▼ 1 (1) ... 10 (10)

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 1

Q5.15 What is the current age (0-12 years) and sex at birth of your child?

	Male (1)	Female (2)
Age of child: (1)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 2

Q5.16 What is the current age (0-12 years) and sex at birth of your children? Please complete the fields below in order from **youngest to oldest.**

	Male (1)	Female (2)
Child 1. Age of child: (1)	☐	☐
Child 2. Age of child: (2)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 3

Q5.17 What is the current age (0-12 years) and sex at birth of your children? Please complete fields below in order from youngest to oldest.

	Male (1)	Female (2)
Child 1. Age of child: (3)	☐	☐
Child 2. Age of child: (4)	☐	☐
Child 3. Age of child: (5)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 4

Q5.18 What is the current age (0-12 years) and sex at birth of your children? Please complete fields below in order from youngest to oldest.

	Male (1)	Female (2)
Child 1. Age of child: (1)	☐	☐
Child 2. Age of child: (2)	☐	☐
Child 3. Age of child: (3)	☐	☐
Child 4. Age of child: (4)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 5

Q5.19 What is the current age (0-12 years) and sex at birth of your children? Please complete fields below in order from youngest to oldest.

	Male (1)	Female (2)
Child 1. Age of child: (1)	☐	☐
Child 2. Age of child: (2)	☐	☐
Child 3. Age of child: (3)	☐	☐
Child 4. Age of child: (4)	☐	☐
Child 5. Age of child: (5)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 6

Q5.20 What is the current age (0-12 years) and sex at birth of your children? Please complete fields below in order from youngest to oldest.

	Male (1)	Female (2)
Child 1. Age of child: (1)	☐	☐
Child 2. Age of child: (2)	☐	☐
Child 3. Age of child: (3)	☐	☐
Child 4. Age of child: (4)	☐	☐
Child 5. Age of child: (5)	☐	☐
Child 6. Age of child: (6)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 7

Q5.21 What is the current age (0-12 years) and sex at birth of your children? Please complete fields below in order from youngest to oldest.

	Male (1)	Female (2)
Child 1. Age of child: (1)	☐	☐
Child 2. Age of child: (2)	☐	☐
Child 3. Age of child: (3)	☐	☐
Child 4. Age of child: (4)	☐	☐
Child 5. Age of child: (5)	☐	☐
Child 6. Age of child: (6)	☐	☐
Child 7. Age of child: (7)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 8

Q5.22 What is the current age (0-12 years) and sex at birth of your children? Please complete fields below in order from youngest to oldest.

	Male (1)	Female (2)
Child 1. Age of child: (1)	☐	☐
Child 2. Age of child: (2)	☐	☐
Child 3. Age of child: (3)	☐	☐
Child 4. Age of child: (4)	☐	☐
Child 5. Age of child: (5)	☐	☐
Child 6. Age of child: (6)	☐	☐
Child 7. Age of child: (7)	☐	☐
Child 8. Age of child: (8)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 9

Q5.23 What is the current age (0-12 years) and sex at birth of your children? Please complete fields below in order from youngest to oldest.

	Male (1)	Female (2)
Child 1. Age of child: (1)	☐	☐
Child 2. Age of child: (2)	☐	☐
Child 3. Age of child: (3)	☐	☐
Child 4. Age of child: (4)	☐	☐
Child 5. Age of child: (5)	☐	☐
Child 6. Age of child: (6)	☐	☐
Child 7. Age of child: (7)	☐	☐
Child 8. Age of child: (8)	☐	☐
Child 9. Age of child: (9)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 10

Q5.24 What is the current age (0-12 years) and sex at birth of your children? Please complete fields below in order from youngest to oldest.

	Male (1)	Female (2)
Child 1. Age of child: (1)	☐	☐
Child 2. Age of child: (2)	☐	☐
Child 3. Age of child: (3)	☐	☐
Child 4. Age of child: (4)	☐	☐
Child 5. Age of child: (5)	☐	☐
Child 6. Age of child: (6)	☐	☐
Child 7. Age of child: (7)	☐	☐
Child 8. Age of child: (8)	☐	☐
Child 9. Age of child: (9)	☐	☐
Child 10. Age of child: (10)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 1

Q5.25 Does your child have a diagnosed disability or chronic condition?

- ○ Yes (1)
- ○ No (2)

Skip To: Q5.35 If Does your child have a diagnosed disability or chronic condition? = Yes

Skip To: End of Block If Does your child have a diagnosed disability or chronic condition? = No

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 2

Q5.26 Have any of your children been diagnosed with a disability or chronic condition? Please provide a response for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Yes (1)	No (2)
Child 1 (1)	☐	☐
Child 2 (2)	☐	☐

Skip To: End of Block If Have any of your children been diagnosed with a disability or chronic condition? Please provide a... [No] (Count) = 2

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 3

Q5.27 Have any of your children been diagnosed with a disability or chronic condition? Please provide a response for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Yes (1)	No (2)
Child 1 (1)	☐	☐
Child 2 (2)	☐	☐
Child 3 (3)	☐	☐

Skip To: End of Block If Have any of your children been diagnosed with a disability or chronic condition? Please provide a... [No] (Count) = 3

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 4

Q5.28 Have any of your children been diagnosed with a disability or chronic condition? Please provide a response for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Yes (1)	No (2)
Child 1 (1)	☐	☐
Child 2 (2)	☐	☐
Child 3 (3)	☐	☐
Child 4 (4)	☐	☐

Skip To: End of Block If Have any of your children been diagnosed with a disability or chronic condition? Please provide a... [No] (Count) = 4

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 5

Q5.29 Have any of your children been diagnosed with a disability or chronic condition? Please provide a response for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Yes (1)	No (2)
Child 1 (1)	☐	☐
Child 2 (2)	☐	☐
Child 3 (3)	☐	☐
Child 4 (4)	☐	☐
Child 5 (5)	☐	☐

Skip To: End of Block If Have any of your children been diagnosed with a disability or chronic condition? Please provide a... [No] (Count) = 5

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 6

Q5.30 Have any of your children been diagnosed with a disability or chronic condition? Please provide a response for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Yes (1)	No (2)
Child 1 (1)	○	○
Child 2 (2)	○	○
Child 3 (3)	○	○
Child 4 (4)	○	○
Child 5 (5)	○	○
Child 6 (6)	○	○

Skip To: End of Block If Have any of your children been diagnosed with a disability or chronic condition? Please provide a... [No] (Count) = 6

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 7

Q5.31 Have any of your children been diagnosed with a disability or chronic condition? Please provide a response for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Yes (1)	No (2)
Child 1 (1)	☐	☐
Child 2 (2)	☐	☐
Child 3 (3)	☐	☐
Child 4 (4)	☐	☐
Child 5 (5)	☐	☐
Child 6 (6)	☐	☐
Child 7 (7)	☐	☐

Skip To: End of Block If Have any of your children been diagnosed with a disability or chronic condition? Please provide a... [No] (Count) = 7

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 8

Q5.32 Have any of your children been diagnosed with a disability or chronic condition? Please provide a response for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Yes (1)	No (2)
Child 1 (1)	☐	☐
Child 2 (2)	☐	☐
Child 3 (3)	☐	☐
Child 4 (4)	☐	☐
Child 5 (5)	☐	☐
Child 6 (6)	☐	☐
Child 7 (7)	☐	☐
Child 8 (8)	☐	☐

Skip To: End of Block If Have any of your children been diagnosed with a disability or chronic condition? Please provide a... [No] (Count) = 8

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 9

Q5.33 Have any of your children been diagnosed with a disability or chronic condition? Please provide a response for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Yes (1)	No (2)
Child 1 (1)	☐	☐
Child 2 (2)	☐	☐
Child 3 (3)	☐	☐
Child 4 (4)	☐	☐
Child 5 (5)	☐	☐
Child 6 (6)	☐	☐
Child 7 (7)	☐	☐
Child 8 (8)	☐	☐
Child 9 (9)	☐	☐

Skip To: End of Block If Have any of your children been diagnosed with a disability or chronic condition? Please provide a... [No] (Count) = 9

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 10

Q5.34 Have any of your children been diagnosed with a disability or chronic condition? Please provide a response for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Yes (1)	No (2)
Child 1 (1)	☐	☐
Child 2 (2)	☐	☐
Child 3 (3)	☐	☐
Child 4 (4)	☐	☐
Child 5 (5)	☐	☐
Child 6 (6)	☐	☐
Child 7 (7)	☐	☐
Child 8 (8)	☐	☐
Child 9 (9)	☐	☐
Child 10 (10)	☐	☐

Skip To: End of Block If Have any of your children been diagnosed with a disability or chronic condition? Please provide a... [No] (Count) = 10

Q5.35 Does this disability or chronic condition **impact your child(ren)'s ability to play?** (i.e., physical limitations)

- ○ Yes. Please describe: (1)

_____

- ○ No (2)

Skip To: End of Block If Does this disability or chronic condition impact your child(ren)'s ability to play? (i.e., physic... = Yes. Please describe:

Skip To: End of Block If Does this disability or chronic condition impact your child(ren)'s ability to play? (i.e., physic... = No

Section 3: Children's Enrollment in Active Play Prior to COVID-19 (Settings, Play and Sport Behaviours)

Q6.1 The World Health Organization (WHO) declared COVID-19 as a global pandemic on March 11th, 2020. For the following questions, **please provide information regarding your child(ren)'s engagement in activities prior to COVID-19 (e.g., before the declaration of COVID-19 as a global pandemic)**. Please answer as honestly as possible.

Q6.2 **Prior to the onset of COVID-19**, where did your child(ren) spend majority of their waking hours **during a typical work week** (e.g., Monday-Friday)?

- ☐ Daycare/Preschool (1)
- ☐ Elementary School (2)
- ☐ Home with parent (3)
- ☐ Home with caregiver (e.g., nanny, other family member) (4)
- ☐ Other. Please describe: (5)

_____

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 1

Q6.3 Prior to COVID-19, was your child enrolled in extra-curricular/physical activities?
Please select all that apply.

- ☐ Archery (1)
- ☐ Ball/Ice/Field Hockey (2)
- ☐ Baseball/Softball (3)
- ☐ Basketball (4)
- ☐ Cricket (5)
- ☐ Dance (6)
- ☐ Football (7)
- ☐ Gymnastics (8)
- ☐ Horseback riding (9)
- ☐ Volleyball (10)
- ☐ Martial Arts (Karate, Tae Kwon Do, Judo) (11)
- ☐ Playgrops (12)
- ☐ Play in neighbourhood (parks, community centres) (13)
- ☐ Rugby (14)
- ☐ Skating (15)
- ☐ Skiing/Snowboarding (16)
- ☐ Soccer (17)
- ☐ Sports Camps (18)
- ☐ Swimming/Diving (19)

- ☐ Tennis/Badminton/Squash (20)
- ☐ Track and Field (21)
- ☐ Yoga/Pilates (22)
- ☐ Other (please specify): (23)

_____

- ☐ Not applicable (24)

Display This Question:
If How many children aged 0-12 years do you currently provide care for? = 2

Q6.4 What kind of extra-curricular/physical activities were your children enrolled in during the last year (i.e., throughout 2019) before the pandemic? **Please select all that**

apply for each child. Please use the same order of children **(youngest to oldest)** as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)
Archery (1)	☐	☐
Ball/Ice/Field Hockey (2)	☐	☐
Baseball/Softball (3)	☐	☐
Basketball (4)	☐	☐
Cricket (5)	☐	☐
Dance (6)	☐	☐
Football (7)	☐	☐
Gymnastics (8)	☐	☐
Horseback Riding (9)	☐	☐
Volleyball (10)	☐	☐
Martial Arts (Karate, Tae Kwon Do, Judo) (11)	☐	☐
Playgroups (12)	☐	☐
Play in neighbourhood (parks, community centres) (13)	☐	☐
Rugby (14)	☐	☐

Skating (15)	☐	☐
Skiing/Snowboarding (16)	☐	☐
Soccer (17)	☐	☐
Sports Camps (18)	☐	☐
Swimming/Diving (19)	☐	☐
Tennis/Badminton/Squash (20)	☐	☐
Track and Field (21)	☐	☐
Yoga/Pilates (22)	☐	☐
Other (please specify): (23)	☐	☐
Not applicable (24)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 3

Q6.5 What kind of extra-curricular/physical activities were your children enrolled in during the last year (i.e., throughout 2019) before the pandemic? Please select all that

apply for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)
Archery (1)	☐	☐	☐
Ball/Ice/Field Hockey (2)	☐	☐	☐
Baseball/Softball (3)	☐	☐	☐
Basketball (4)	☐	☐	☐
Cricket (5)	☐	☐	☐
Dance (6)	☐	☐	☐
Football (7)	☐	☐	☐
Gymnastics (8)	☐	☐	☐
Horseback Riding (9)	☐	☐	☐
Volleyball (10)	☐	☐	☐
Martial Arts (Karate, Tae Kwon Do, Judo) (11)	☐	☐	☐
Playgroups (12)	☐	☐	☐
Play in neighbourhood (parks, community centres) (13)	☐	☐	☐
Rugby (14)	☐	☐	☐

Skating (15)	☐	☐	☐
Skiing/Snowboarding (16)	☐	☐	☐
Soccer (17)	☐	☐	☐
Sports Camps (18)	☐	☐	☐
Swimming/Diving (19)	☐	☐	☐
Tennis/Badminton/Squash (20)	☐	☐	☐
Track and Field (21)	☐	☐	☐
Yoga/Pilates (22)	☐	☐	☐
Other (please specify): (23)	☐	☐	☐
Not applicable (24)	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 4

Q6.6 What kind of extra-curricular/physical activities were your children enrolled in during the last year (i.e., throughout 2019) before the pandemic? Please select all that

apply for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)
Archery (1)	☐	☐	☐	☐
Ball/Ice/Field Hockey (2)	☐	☐	☐	☐
Baseball/Softball (3)	☐	☐	☐	☐
Basketball (4)	☐	☐	☐	☐
Cricket (5)	☐	☐	☐	☐
Dance (6)	☐	☐	☐	☐
Football (7)	☐	☐	☐	☐
Gymnastics (8)	☐	☐	☐	☐
Horseback Riding (9)	☐	☐	☐	☐
Volleyball (10)	☐	☐	☐	☐
Martial Arts (Karate, Taw Kwon Do, Judo) (11)	☐	☐	☐	☐
Playgroups (12)	☐	☐	☐	☐
Parks in neighbourhood (parks, community centres) (13)	☐	☐	☐	☐
Rugby (14)	☐	☐	☐	☐

Skating (15)	☐	☐	☐	☐
Skiing/Snowboarding (16)	☐	☐	☐	☐
Soccer (17)	☐	☐	☐	☐
Sports Camps (18)	☐	☐	☐	☐
Swimming/Diving (19)	☐	☐	☐	☐
Tennis/Badminton/Squash (20)	☐	☐	☐	☐
Track and Field (21)	☐	☐	☐	☐
Yoga/Pilates (22)	☐	☐	☐	☐
Other (please specify): (23)	☐	☐	☐	☐
Not applicable (24)	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 5

Q6.7 What kind of extra-curricular/physical activities were your children enrolled in during the last year (i.e., throughout 2019) before the pandemic? Please select all that

apply for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)
Archery (1)	☐	☐	☐	☐	☐
Ball/Ice/Field Hockey (2)	☐	☐	☐	☐	☐
Baseball/Softball (3)	☐	☐	☐	☐	☐
Basketball (4)	☐	☐	☐	☐	☐
Cricket (5)	☐	☐	☐	☐	☐
Dance (6)	☐	☐	☐	☐	☐
Football (7)	☐	☐	☐	☐	☐
Gymnastics (8)	☐	☐	☐	☐	☐
Horseback Riding (9)	☐	☐	☐	☐	☐
Volleyball (10)	☐	☐	☐	☐	☐
Martial Arts (Karate, Tae Kwon Do, Judo) (11)	☐	☐	☐	☐	☐
Playgroups (12)	☐	☐	☐	☐	☐
Play in neighbourhood (parks, community centres) (13)	☐	☐	☐	☐	☐
Rugby (14)	☐	☐	☐	☐	☐

Skating (15)	☐	☐	☐	☐	☐
Skiing/Snowboarding (16)	☐	☐	☐	☐	☐
Soccer (17)	☐	☐	☐	☐	☐
Sports Camps (18)	☐	☐	☐	☐	☐
Swimming/Diving (19)	☐	☐	☐	☐	☐
Tennis/Badminton/Squash (20)	☐	☐	☐	☐	☐
Track and Field (21)	☐	☐	☐	☐	☐
Yoga/Pilates (22)	☐	☐	☐	☐	☐
Other (please specify): (23)	☐	☐	☐	☐	☐
Not applicable (24)	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 6

Q6.8 What kind of extra-curricular/physical activities were your children enrolled in during the last year (i.e., throughout 2019) before the pandemic? Please select all that

apply for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)
Archery (1)	☐	☐	☐	☐	☐	☐
Ball/Ice/Field Hockey (2)	☐	☐	☐	☐	☐	☐
Baseball/Softball (3)	☐	☐	☐	☐	☐	☐
Basketball (4)	☐	☐	☐	☐	☐	☐
Cricket (5)	☐	☐	☐	☐	☐	☐
Dance (6)	☐	☐	☐	☐	☐	☐
Football (7)	☐	☐	☐	☐	☐	☐
Gymnastics (8)	☐	☐	☐	☐	☐	☐
Hoseback Riding (9)	☐	☐	☐	☐	☐	☐
Volleyball (10)	☐	☐	☐	☐	☐	☐
Martial Arts (Karate, Tae Kwon Do, Judo) (11)	☐	☐	☐	☐	☐	☐
Playgroups (12)	☐	☐	☐	☐	☐	☐
Play in neighbourhood (parks, community centres) (13)	☐	☐	☐	☐	☐	☐
Rugby (14)	☐	☐	☐	☐	☐	☐

Skating (15)	☐	☐	☐	☐	☐	☐
Skiing/Snowboarding (16)	☐	☐	☐	☐	☐	☐
Soccer (17)	☐	☐	☐	☐	☐	☐
Sports Camps (18)	☐	☐	☐	☐	☐	☐
Swimming/Diving (19)	☐	☐	☐	☐	☐	☐
Tennis/Badminton/Squash (20)	☐	☐	☐	☐	☐	☐
Track and Field (21)	☐	☐	☐	☐	☐	☐
Yoga/Pilates (22)	☐	☐	☐	☐	☐	☐
Other (please specify): (23)	☐	☐	☐	☐	☐	☐
Not applicable (24)	☐	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 7

Q6.9 What kind of extra-curricular/physical activities were your children enrolled in during the last year (i.e., throughout 2019) before the pandemic? Please select all that

apply for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)	Child 7 (7)
Archery (1)	☐	☐	☐	☐	☐	☐	☐
Ball/Ice/Field Hockey (2)	☐	☐	☐	☐	☐	☐	☐
Baseball/Softball (3)	☐	☐	☐	☐	☐	☐	☐
Basketball (4)	☐	☐	☐	☐	☐	☐	☐
Cricket (5)	☐	☐	☐	☐	☐	☐	☐
Dance (6)	☐	☐	☐	☐	☐	☐	☐
Football (7)	☐	☐	☐	☐	☐	☐	☐
Gymnastics (8)	☐	☐	☐	☐	☐	☐	☐
Horseback riding (9)	☐	☐	☐	☐	☐	☐	☐
Volleyball (10)	☐	☐	☐	☐	☐	☐	☐
Martial Arts (Karate, Tae Kwon Do, Judo) (11)	☐	☐	☐	☐	☐	☐	☐
Playgroups (12)	☐	☐	☐	☐	☐	☐	☐
Play in neighbourhood (parks, community centres) (13)	☐	☐	☐	☐	☐	☐	☐
Rugby (14)	☐	☐	☐	☐	☐	☐	☐

Skating (15)	☐	☐	☐	☐	☐	☐	☐
Skiing/Snowboarding (16)	☐	☐	☐	☐	☐	☐	☐
Soccer (17)	☐	☐	☐	☐	☐	☐	☐
Sports Camps (18)	☐	☐	☐	☐	☐	☐	☐
Swimming/Diving (19)	☐	☐	☐	☐	☐	☐	☐
Tennis/Badminton/Squash (20)	☐	☐	☐	☐	☐	☐	☐
Track and Field (21)	☐	☐	☐	☐	☐	☐	☐
Yoga/Pilates (22)	☐	☐	☐	☐	☐	☐	☐
Other (please specify): (23)	☐	☐	☐	☐	☐	☐	☐
Not applicable (24)	☐	☐	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 8

Q6.10 What kind of extra-curricular/physical activities were your children enrolled in during the last year (i.e., throughout 2019) before the pandemic? Please select all that

apply for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)	Child 7 (7)	Child 8 (8)
Archery (1)	☐	☐	☐	☐	☐	☐	☐	☐
Ball/Ice/Field Hockey (2)	☐	☐	☐	☐	☐	☐	☐	☐
Baseball/Softball (3)	☐	☐	☐	☐	☐	☐	☐	☐
Basketball (4)	☐	☐	☐	☐	☐	☐	☐	☐
Cricket (5)	☐	☐	☐	☐	☐	☐	☐	☐
Dance (6)	☐	☐	☐	☐	☐	☐	☐	☐
Football (7)	☐	☐	☐	☐	☐	☐	☐	☐
Gymnastics (8)	☐	☐	☐	☐	☐	☐	☐	☐
Horseback Riding (9)	☐	☐	☐	☐	☐	☐	☐	☐
Volleyball (10)	☐	☐	☐	☐	☐	☐	☐	☐
Martial Arts (Karate, Taw Kwon Do, Judo) (11)	☐	☐	☐	☐	☐	☐	☐	☐
Playgroups (12)	☐	☐	☐	☐	☐	☐	☐	☐
Play in neighbourhood (parks, community centres) (13)	☐	☐	☐	☐	☐	☐	☐	☐
Rugby (14)	☐	☐	☐	☐	☐	☐	☐	☐

Skating (15)	☐	☐	☐	☐	☐	☐	☐	☐
Skiing/Snowboarding (16)	☐	☐	☐	☐	☐	☐	☐	☐
Soccer (17)	☐	☐	☐	☐	☐	☐	☐	☐
Sports Camps (18)	☐	☐	☐	☐	☐	☐	☐	☐
Swimming/Diving (19)	☐	☐	☐	☐	☐	☐	☐	☐
Tennis/Badminton/Squash (20)	☐	☐	☐	☐	☐	☐	☐	☐
Track and Field (21)	☐	☐	☐	☐	☐	☐	☐	☐
Yoga/Pilates (22)	☐	☐	☐	☐	☐	☐	☐	☐
Other (please specify): (23)	☐	☐	☐	☐	☐	☐	☐	☐
Not applicable (24)	☐	☐	☐	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 9

Q6.11 What kind of extra-curricular/physical activities were your children enrolled in during the last year (i.e., throughout 2019) before the pandemic? Please select all that

apply for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)	Child 7 (7)	Child 8 (8)	Child 9 (9)
Archery (1)	(	(	(	(	(	(	(	(	(
Ball/Ice/Field Hockey (2)	(	(	(	(	(	(	(	(	(
Baseball/Softball (3)	(	(	(	(	(	(	(	(	(
Basketball (4)	(	(	(	(	(	(	(	(	(
Cricket (5)	(	(	(	(	(	(	(	(	(
Dance (6)	(	(	(	(	(	(	(	(	(
Football (7)	(	(	(	(	(	(	(	(	(
Gymnastics (8)	(	(	(	(	(	(	(	(	(
Horseback Riding (9)	(	(	(	(	(	(	(	(	(
Volleyball (10)	(	(	(	(	(	(	(	(	(
Martial Arts (Karate, Tae Kwon Do, Judo) (11)	(	(	(	(	(	(	(	(	(
Playgroups (12)	(	(	(	(	(	(	(	(	(
Play in neighbourhood (parks, community centres) (13)	(	(	(	(	(	(	(	(	(

Rugby (14)	(	(	(	(	(	(	(	(	(
Skating (15)	(	(	(	(	(	(	(	(	(
Skiing/Snowboarding (16)	(	(	(	(	(	(	(	(	(
Soccer (17)	(	(	(	(	(	(	(	(	(
Sports Camps (18)	(	(	(	(	(	(	(	(	(
Swimming/Diving (19)	(	(	(	(	(	(	(	(	(
Tennis/Badminton/Squash (20)	(	(	(	(	(	(	(	(	(
Track and Field (21)	(	(	(	(	(	(	(	(	(
Yoga/Pilates (22)	(	(	(	(	(	(	(	(	(
Other (please specify): (23)	(	(	(	(	(	(	(	(	(
Not applicable (24)	(	(	(	(	(	(	(	(	(

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 10

Q6.12 What kind of extra-curricular/physical activities were your children enrolled in during the last year (i.e., throughout 2019) before the pandemic? Please select all that

apply for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)	Child 7 (7)	Child 8 (8)	Child 9 (9)	Child 10 (10)
Archery (1)	(	(	(	(	(	(	(	(	(	(
Ball/Ice/Field Hockey (2)	(	(	(	(	(	(	(	(	(	(
Baseball/Softball (3)	(	(	(	(	(	(	(	(	(	(
Basketball (4)	(	(	(	(	(	(	(	(	(	(
Cricket (5)	(	(	(	(	(	(	(	(	(	(
Dance (6)	(	(	(	(	(	(	(	(	(	(
Football (7)	(	(	(	(	(	(	(	(	(	(
Gymnastics (8)	(	(	(	(	(	(	(	(	(	(
Horseback Riding (9)	(	(	(	(	(	(	(	(	(	(
Volleyball (10)	(	(	(	(	(	(	(	(	(	(
Martial Arts (Karate, Tae Kwon Do, Judo) (11)	(	(	(	(	(	(	(	(	(	(
Playgroups (12)	(	(	(	(	(	(	(	(	(	(
Play in neighbourhood (parks, community centres) (13)	(	(	(	(	(	(	(	(	(	(

Rugby (14)	(	(	(	(	(	(	(	(	(	(
Skating (15)	(	(	(	(	(	(	(	(	(	(
Skiing/Snowboarding (16)	(	(	(	(	(	(	(	(	(	(
Soccer (17)	(	(	(	(	(	(	(	(	(	(
Sports Camps (18)	(	(	(	(	(	(	(	(	(	(
Swimming/Diving (19)	(	(	(	(	(	(	(	(	(	(
Tennis/Badminton/Squash (20)	(	(	(	(	(	(	(	(	(	(
Track and Field (21)	(	(	(	(	(	(	(	(	(	(
Yoga/Pilates (22)	(	(	(	(	(	(	(	(	(	(
Other (please specify): (23)	(	(	(	(	(	(	(	(	(	(
Not applicable (24)	(	(	(	(	(	(	(	(	(	(

Section 4: Children's Sport Levels Prior to COVID-19 and Locations Used for Play

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 1

Q6.13 Prior to the onset of COVID-19, how many **hours per week** did your child spend engaged in these extra-curricular/physical activities?

0 10

Hours per Week ()	

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 2

Q6.14 Prior to the onset of COVID-19, how **many hours per week** did your child(ren) spend engaged in their extra-curricular/active play activities? Please provide a value for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Hours per Week 0 1 2 3 4 5 6 7 8 9 10
Child 1 ()	
Child 2 ()	

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 3

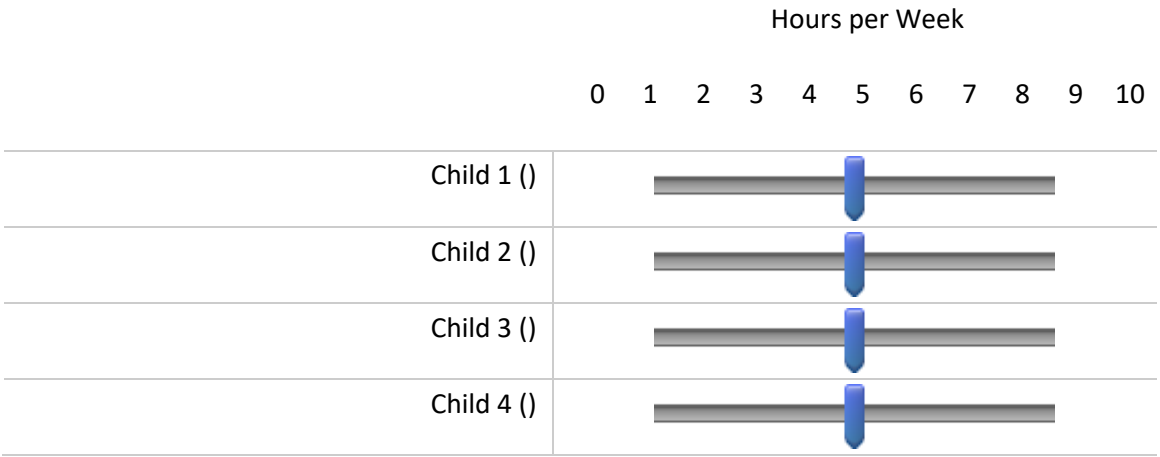
Q6.15 Prior to the onset of COVID-19, how many hours per week did your child(ren) spend engaged in their extra-curricular/active play activities? Please provide a value for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Hours per Week 0 1 2 3 4 5 6 7 8 9 10
Child 1 ()	
Child 2 ()	
Child 3 ()	

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 4

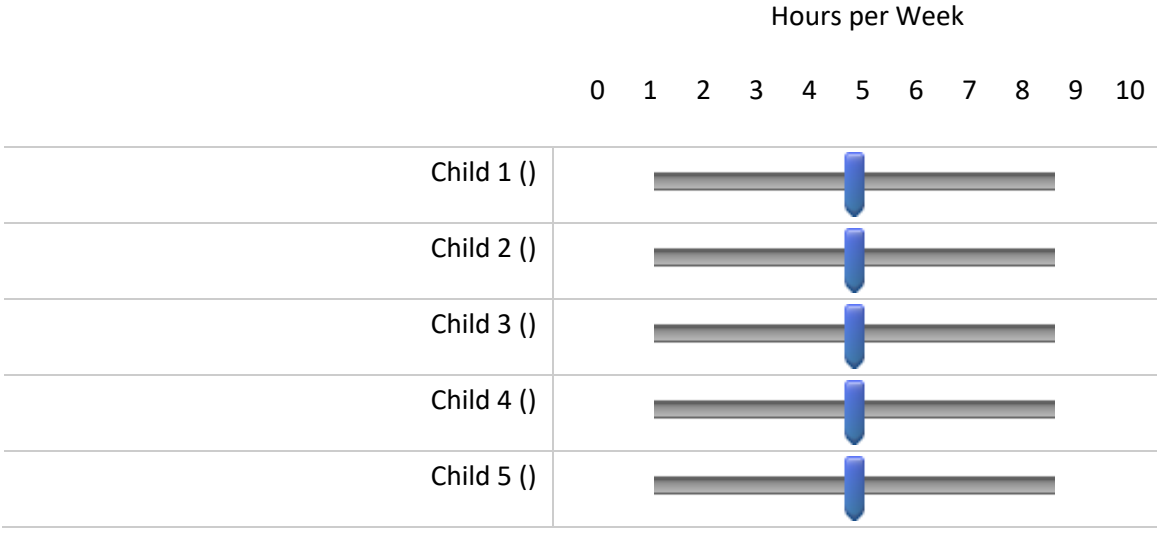
Q6.16 Prior to the onset of COVID-19, how <u>many hours per week</u> did your child(ren) spend engaged in their extra-curricular/active play activities? Please provide a value for each child. Please use the same order of children <u>(youngest to oldest)</u> as you have done in previous sections of the survey.



Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 5

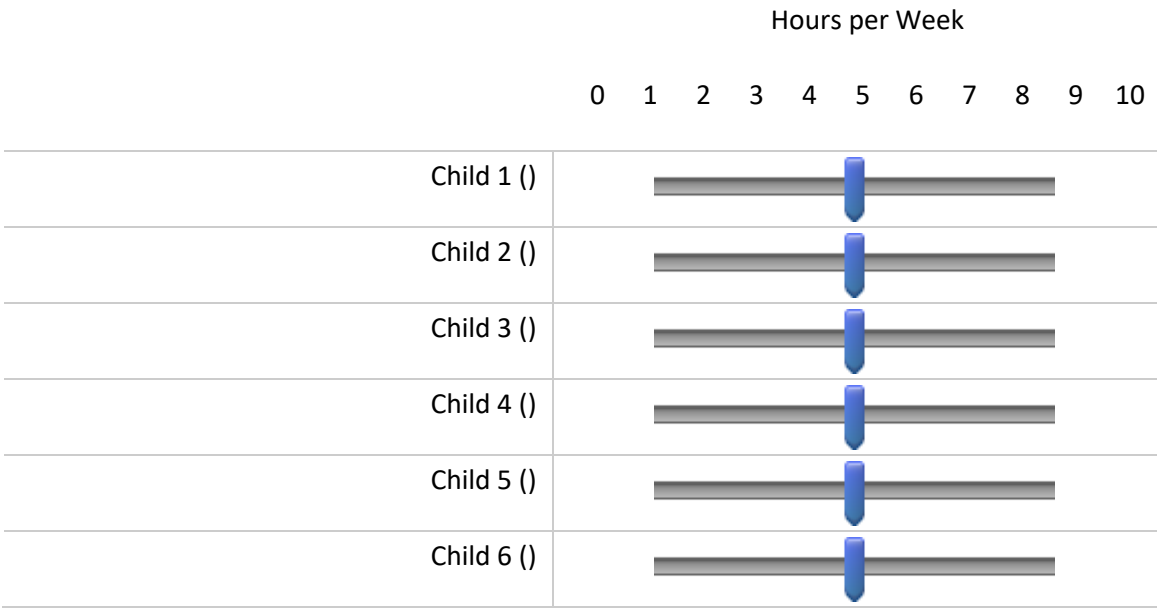
Q6.17 Prior to the onset of COVID-19, how <u>many hours per week</u> did your child(ren) spend engaged in their extra-curricular/active play activities? Please provide a value for each child. Please use the same order of children <u>(youngest to oldest)</u> as you have done in previous sections of the survey.



Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 6

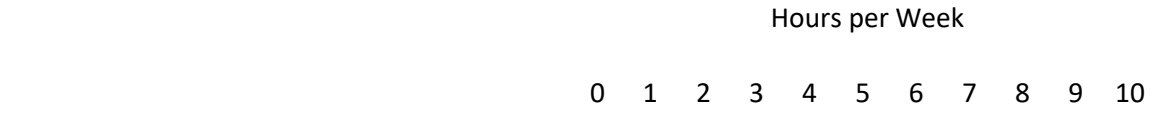
Q6.18 Prior to the onset of COVID-19, how <u>many hours per week</u> did your child(ren) spend engaged in their extra-curricular/active play activities? Please provide a value for each child. Please use the same order of children <u>(youngest to oldest)</u> as you have done in previous sections of the survey.



Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 7

Q6.19 Prior to the onset of COVID-19, how <u>many hours per week</u> did your child(ren) spend engaged in their extra-curricular/active play activities? Please provide a value for each child. Please use the same order of children <u>(youngest to oldest)</u> as you have done in previous sections of the survey.



Child 1 ()	
Child 2 ()	
Child 3 ()	
Child 4 ()	
Child 5 ()	
Child 6 ()	
Child 7 ()	

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 8

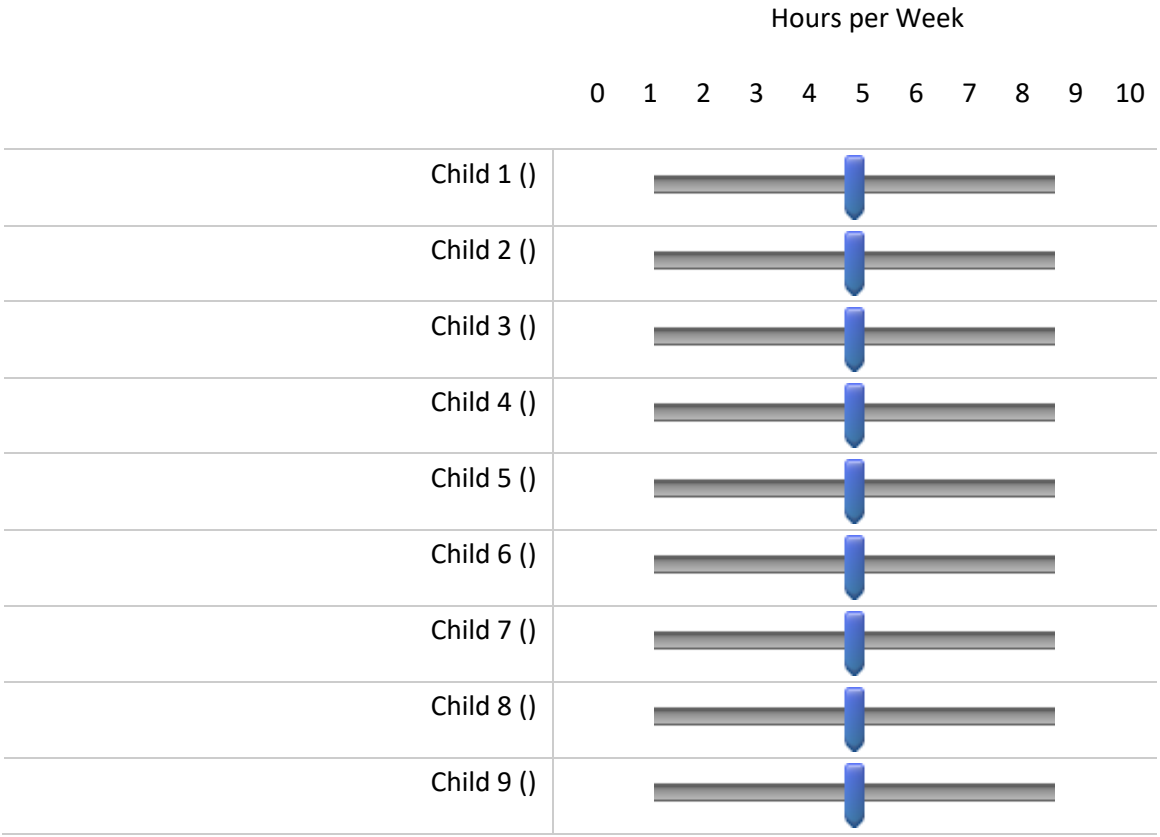
Q6.20 Prior to the onset of COVID-19, how <u>many hours per week</u> did your child(ren) spend engaged in their extra-curricular/active play activities? Please provide a value for each child. Please use the same order of children <u>(youngest to oldest)</u> as you have done in previous sections of the survey.

	Hours per Week 0 1 2 3 4 5 6 7 8 9 10
Child 1 ()	
Child 2 ()	
Child 3 ()	
Child 4 ()	
Child 5 ()	
Child 6 ()	
Child 7 ()	
Child 8 ()	

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 9

Q6.21 Prior to the onset of COVID-19, how <u>many hours per week</u> did your child(ren) spend engaged in their extra-curricular/active play activities? Please provide a value for each child. Please use the same order of children <u>(youngest to oldest)</u> as you have done in previous sections of the survey.



Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 10

Q6.22 Prior to the onset of COVID-19, how <u>many hours per week</u> did your child(ren) spend engaged in their extra-curricular/active play activities? Please provide a value for each child. Please use the same order of children <u>(youngest to oldest)</u> as you have done in previous sections of the survey.

0 1 2 3 4 5 6 7 8 9 10

Child 1 ()	
Child 2 ()	
Child 3 ()	
Child 4 ()	
Child 5 ()	
Child 6 ()	
Child 7 ()	
Child 8 ()	
Child 9 ()	
Child 10 ()	

Q6.23 Prior to COVID-19, **where** did your child(ren) regularly engage in active play? **Please select all that apply.**

- ☐ Inside home (1)
- ☐ Inside garage (2)
- ☐ In yard/driveway (3)
- ☐ Common areas inside living space (e.g., living room, basement) (4)
- ☐ On the sidewalks/roads in the neighbourhood (5)
- ☐ Gym or fitness centre (6)
- ☐ At a park/trail (7)
- ☐ At an indoor sports facilities (e.g., indoor hockey arena, pool) (8)
- ☐ At an outdoor sports facility (e.g., soccer field, basketball court) (9)
- ☐ Other: (10) _____

Section 5: Children's Physical Activity Levels prior to COVID-19, Registration Status, and Future Directions regarding Return to Play/Sport

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 1

Q6.24 In your opinion, how **many minutes per day** did your child spend **engaged in physical activity prior to the COVID-19 pandemic**?

- ○ Less than 30 minutes per day (1)
- ○ 30-59 minutes per day (2)
- ○ 60-149 minutes per day (3)
- ○ 150 minutes or more per day (4)

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 2

Q6.25 In your opinion, how **many minutes per day** did your child(ren) spend **engaged in physical activity prior to the COVID-19 pandemic**?

	Child 1 (1)	Child 2 (2)
Less than 30 minutes per day (1)	☐	☐
30-59 minutes per day (2)	☐	☐
60-149 minutes per day (3)	☐	☐
150 minutes or more per day (4)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 3

Q6.26 In your opinion, how **many minutes per day** did your child(ren) spend **engaged in physical activity prior to the COVID-19 pandemic**?

	Child 1 (1)	Child 2 (2)	Child 3 (3)
Less than 30 minutes per day (1)	☐	☐	☐
30-59 minutes per day (2)	☐	☐	☐
60-149 minutes per day (3)	☐	☐	☐
150 minutes or more per day (4)	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 4

Q6.27 In your opinion, how **many minutes per day** did your child(ren) spend **engaged in physical activity prior to the COVID-19 pandemic**?

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)
Less than 30 minutes per day (1)	☐	☐	☐	☐
30-59 minutes per day (2)	☐	☐	☐	☐
60-149 minutes per day (3)	☐	☐	☐	☐
150 minutes or more per day (4)	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 5

Q6.28 In your opinion, how **many minutes per day** did your child(ren) spend **engaged in physical activity prior to the COVID-19 pandemic**?

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)
Less than 30 minutes per day (1)	☐	☐	☐	☐	☐
30-59 minutes per day (2)	☐	☐	☐	☐	☐
60-149 minutes per day (3)	☐	☐	☐	☐	☐
150 minutes or more per day (4)	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 6

Q6.29 In your opinion, how **many minutes per day** did your child(ren) spend **engaged in physical activity prior to the COVID-19 pandemic**?

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)
Less than 30 minutes per day (1)	☐	☐	☐	☐	☐	☐
30-59 minutes per day (2)	☐	☐	☐	☐	☐	☐
60-149 minutes per day (3)	☐	☐	☐	☐	☐	☐
150 minutes or more per day (4)	☐	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 7

Q6.30 In your opinion, how **many minutes per day** did your child(ren) spend **engaged in physical activity prior to the COVID-19 pandemic**?

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)	Child 7 (7)
Less than 30 minutes per day (1)	☐	☐	☐	☐	☐	☐	☐
30-59 minutes per day (2)	☐	☐	☐	☐	☐	☐	☐
60-149 minutes per day (3)	☐	☐	☐	☐	☐	☐	☐
150 minutes or more per day (4)	☐	☐	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 8

Q6.31 In your opinion, how **many minutes per day** did your child(ren) spend **engaged in physical activity prior to the COVID-19 pandemic**?

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)	Child 7 (7)	Child 8 (8)
Less than 30 minutes per day (1)	☐	☐	☐	☐	☐	☐	☐	☐
30-59 minutes per day (2)	☐	☐	☐	☐	☐	☐	☐	☐
60-149 minutes per day (3)	☐	☐	☐	☐	☐	☐	☐	☐
150 minutes or more per day (4)	☐	☐	☐	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 9

Q6.32 In your opinion, how **many minutes per day** did your child(ren) spend **engaged in physical activity prior to the COVID-19 pandemic**?

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)	Child 7 (7)	Child 8 (8)	Child 9 (9)
Less than 30 minutes per day (1)	☐	☐	☐	☐	☐	☐	☐	☐	☐
30-59 minutes per day (2)	☐	☐	☐	☐	☐	☐	☐	☐	☐
60-149 minutes per day (3)	☐	☐	☐	☐	☐	☐	☐	☐	☐
150 minutes or more per day (4)	☐	☐	☐	☐	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 10

Q6.33 In your opinion, how **many minutes per day** did your child(ren) spend **engaged in physical activity prior to the COVID-19 pandemic**?

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)	Child 7 (7)	Child 8 (8)	Child 9 (9)	Child 10 (10)
Less than 30 minutes per day (1)	○	○	○	○	○	○	○	○	○	○
30-59 minutes per day (2)	○	○	○	○	○	○	○	○	○	○
60-149 minutes per day (3)	○	○	○	○	○	○	○	○	○	○
150 minutes or more per day (4)	○	○	○	○	○	○	○	○	○	○

Q7.1 Since the onset of COVID-19 as a global pandemic, many settings that hold opportunities for active play activities have been paused or cancelled. The following questions are **seeking information about your personal beliefs and intentions regarding your child(ren)'s eventual return to their active play opportunities.** Please choose the response that **best represents your beliefs.**

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 1

Q7.2 Have you **already registered** your child in any type or active play/organized sport programming **that is scheduled to take place in the upcoming months outside of your home?**

- ○ Yes (1)
- ○ No (3)

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 2

Q7.3 Have you **already registered** your child(ren) in any type or active play/organized sport programming **that is scheduled to take place in the upcoming months outside of your home?** Please provide a response for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Yes (1)	No (2)
Child 1 (1)	☐	☐
Child 2 (3)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 4

Q7.4 Have you **already registered** your child(ren) in any type or active play/organized sport programming **that is scheduled to take place in the upcoming months outside of**

your home? Please provide a response for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Yes (1)	No (2)
Child 1 (1)	☐	☐
Child 2 (3)	☐	☐
Child 3 (4)	☐	☐
Child 3 (5)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 5

Q7.5 Have you **already registered** your child(ren) in any type or active play/organized sport programming **that is scheduled to take place in the upcoming months outside of your home?** Please provide a response for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Yes (1)	No (2)
Child 1 (1)	☐	☐
Child 2 (3)	☐	☐
Child 3 (4)	☐	☐
Child 4 (5)	☐	☐
Child 5 (6)	☐	☐

Q7.6 Do you feel comfortable with your child(ren) **returning** to their organized/structured active play/sports activities that they engaged in **prior to COVID-19? Select all that apply.**

- ☐ Yes (1)
- ☐ No (2)
- ☐ Unsure (3)
- ☐ I feel comfortable returning them to some activities, but not all. Please describe: (4) _____
- ☐ I feel comfortable returning some of my children, but not all (5)

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 6

Q7.7 Have you **already registered** your child(ren) in any type or active play/organized sport programming **that is scheduled to take place in the upcoming months outside of**

your home? Please provide a response for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Yes (1)	No (4)
Child 1 (1)	☐	☐
Child 2 (3)	☐	☐
Child 3 (4)	☐	☐
Child 4 (5)	☐	☐
Child 5 (6)	☐	☐
Child 6 (7)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 7

Q7.8 Have you **already registered** your child(ren) in any type or active play/organized sport programming **that is scheduled to take place in the upcoming months outside of**

your home? Please provide a response for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Yes (1)	No (2)
Child 1 (1)	☐	☐
Child 2 (3)	☐	☐
Child 3 (4)	☐	☐
Child 4 (5)	☐	☐
Child 5 (6)	☐	☐
Child 6 (7)	☐	☐
Child 7 (8)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 8

Q7.9 Have you **already registered** your child(ren) in any type or active play/organized sport programming **that is scheduled to take place in the upcoming months outside of**

your home? Please provide a response for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Yes (1)	No (2)
Child 1 (1)	☐	☐
Child 2 (3)	☐	☐
Child 3 (4)	☐	☐
Child 4 (5)	☐	☐
Child 5 (6)	☐	☐
Child 6 (7)	☐	☐
Child 7 (8)	☐	☐
Child 8 (9)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 9

Q7.10 Have you **already registered** your child(ren) in any type or active play/organized sport programming **that is scheduled to take place in the upcoming months outside of**

your home? Please provide a response for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Yes (1)	No (2)
Child 1 (1)	☐	☐
Child 2 (3)	☐	☐
Child 3 (4)	☐	☐
Child 4 (5)	☐	☐
Child 5 (6)	☐	☐
Child 6 (7)	☐	☐
Child 7 (8)	☐	☐
Child 8 (9)	☐	☐
Child 9 (10)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 10

Q7.11 Have you **already registered** your child(ren) in any type or active play/organized sport programming **that is scheduled to take place in the upcoming months outside of**

your home? Please provide a response for each child. Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Yes (1)	No (2)
Child 1 (1)	☐	☐
Child 2 (3)	☐	☐
Child 3 (4)	☐	☐
Child 4 (5)	☐	☐
Child 5 (6)	☐	☐
Child 6 (7)	☐	☐
Child 7 (8)	☐	☐
Child 8 (9)	☐	☐
Child 9 (10)	☐	☐
Child 10 (11)	☐	☐

Q7.12 **Are you** feeling hesitant regarding your child(ren)'s return to their **pre-COVID-19 activities?**

- ○ Yes (1)
- ○ Somewhat (2)
- ○ No (3)

Skip To: Q7.13 If Are you feeling hesitant regarding your child(ren)'s return to their pre-COVID-19 activities? = Yes

Skip To: Q7.13 If Are you feeling hesitant regarding your child(ren)'s return to their pre-COVID-19 activities? = Somewhat

Skip To: Q7.14 If Are you feeling hesitant regarding your child(ren)'s return to their pre-COVID-19 activities? = No

Q7.13 If applicable, **please select all of the factors that are causing these hesitations**. Select all that apply.

- ☐ Fear of my child/myself contracting COVID-19 (1)
- ☐ Fear of social judgement (2)
- ☐ Lack of guaranteed physical distancing during the activity (3)
- ☐ My child is too young to abide by physical distancing (4)
- ☐ Financial burden (e.g., new requirements in place to purchase own supplies, can no longer afford the same activities) (5)
- ☐ Fear that my child is unlikely to remember or abide by physical distancing during activity (6)
- ☐ Our family's schedule can no longer accommodate the same activities (7)
- ☐ I feel my child can be just as engaged in active play at home (8)
- ☐ Our priorities for active play outside the home have changed (9)
- ☐ Other: (10) _____

Q7.14 Please describe the reasons **you do** or **do not** feel comfortable with the idea of your child(ren) returning to their active play/sports activities that they engaged in **prior to COVID-19.**

_____

_____

_____

_____

_____

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 1

Q7.15 What are your active play opportunity plans for your child **post-pandemic?** Please specify what you intend to do once Ontario's restrictions have been **completely lifted** (e.g., in guidance with provincial directions of re-opening).

- ☐ Will resume their original/previous programming as soon as possible (1)
- ☐ Might resume, if public health measures allow for my child(ren)'s return/re-open (2)
- ☐ Might resume, if I know public health measures can be enforced at all times (3)
- ☐ Planning to enroll them in new activities that naturally promote physical distancing because of COVID-19 (4)
- ☐ Planning to withdraw completely (5)
- ☐ Unsure (6)

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 2

Q7.16 What are your active play opportunity plans for your children post-pandemic? Please specify what you intend to do for each child once Ontario's restrictions have been completely lifted (e.g., in guidance with provincial directions of

re-opening). Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)
Will resume their original/previous programming as soon as possible (1)	☐	☐
Might resume, if public health measures allow for my child(ren)'s return/re-open (2)	☐	☐
Might resume, if I know public health measures can be enforced at all times (3)	☐	☐
Planning to enroll them in new activities that naturally promote physical distancing because of COVID-19 (4)	☐	☐
Planning to withdraw completely (5)	☐	☐
Unsure (6)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 3

Q7.17 What are your active play opportunity plans for your children post-pandemic? Please specify what you intend to do for each child once Ontario's restrictions have been completely lifted (e.g., in guidance with provincial directions of

re-opening). Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)
Will resume their original/previous programming as soon as possible (1)	☐	☐	☐
Might resume, if public health measures allow for my child(ren)'s return/re-open (2)	☐	☐	☐
Might resume, if I know public health measures can be enforced at all times (3)	☐	☐	☐
Planning to enroll them in new activities that naturally promote physical distancing because of COVID-19 (4)	☐	☐	☐
Planning to withdraw completely (5)	☐	☐	☐
Unsure (6)	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 4

Q7.18 What are your active play opportunity plans for your children post-pandemic? Please specify what you intend to do for each child once Ontario's restrictions have been completely lifted (e.g., in guidance with provincial directions of

re-opening). Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)
Will resume their original/previous programming as soon as possible (1)	☐	☐	☐	☐
Might resume, if public health measures allow for my child(ren)'s return/re-open (2)	☐	☐	☐	☐
Might resume, if I know public health measures can be enforced at all times (3)	☐	☐	☐	☐
Planning to enroll them in new activities that naturally promote physical distancing because of COVID-19 (4)	☐	☐	☐	☐
Planning to withdraw completely (5)	☐	☐	☐	☐
Unsure (6)	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 5

Q7.19 What are your active play opportunity plans for your children post-pandemic? Please specify what you intend to do for each child once Ontario's restrictions have been completely lifted (e.g., in guidance with provincial directions of

re-opening). Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)
Will resume their original/previous programming as soon as possible (1)	☐	☐	☐	☐	☐
Might resume, if public health measures allow for my child(ren)'s return/re-open (2)	☐	☐	☐	☐	☐
Might resume, if I know public health measures can be enforced at all times (3)	☐	☐	☐	☐	☐
Planning to enroll them in new activities that naturally promote physical distancing because of COVID-19 (4)	☐	☐	☐	☐	☐
Planning to withdraw completely (5)	☐	☐	☐	☐	☐
Unsure (6)	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 6

Q7.20 What are your active play opportunity plans for your children post-pandemic? Please specify what you intend to do for each child once Ontario's restrictions have been completely lifted (e.g., in guidance with provincial directions of re-opening). Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)
Will resume their original/previous programming as soon as possible (1)	☐	☐	☐	☐	☐	☐
Might resume, if public health measures allow for my child(ren)'s return/re-open (2)	☐	☐	☐	☐	☐	☐
Might resume, if I know public health measures can be enforced at all times (3)	☐	☐	☐	☐	☐	☐
Planning to enroll them in new activities that naturally promote physical distancing because of COVID-19 (4)	☐	☐	☐	☐	☐	☐
Planning to withdraw completely (5)	☐	☐	☐	☐	☐	☐
Unsure (6)	☐	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 7

Q7.21 What are your active play opportunity plans for your children post-pandemic? Please specify what you intend to do for each child once Ontario's restrictions have been completely lifted (e.g., in guidance with provincial directions of re-opening). Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)	Child 7 (7)
Will resume their original/previous programming as soon as possible (1)	☐	☐	☐	☐	☐	☐	☐
Might resume, if public health measures allow for my child(ren)'s return/re-open (2)	☐	☐	☐	☐	☐	☐	☐
Might resume, if I know public health measures can be enforced at all times (3)	☐	☐	☐	☐	☐	☐	☐
Planning to enroll them in new activities that naturally promote physical distancing because of COVID-19 (4)	☐	☐	☐	☐	☐	☐	☐
Planning to withdraw completely (5)	☐	☐	☐	☐	☐	☐	☐
Unsure (6)	☐	☐	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 8

Q7.22 What are your active play opportunity plans for your children post-pandemic? Please specify what you intend to do for each child once Ontario's restrictions have been completely lifted (e.g., in guidance with provincial directions of

re-opening). Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)	Child 7 (7)	Child 8 (8)
Will resume their original/previous programming as soon as possible (1)	☐	☐	☐	☐	☐	☐	☐	☐
Might resume, if public health measures allow for my child(ren)'s return/re-open (2)	☐	☐	☐	☐	☐	☐	☐	☐
Might resume, if I know public health measures can be enforced at all times (3)	☐	☐	☐	☐	☐	☐	☐	☐
Planning to enroll them in new activities that naturally promote physical distancing because of COVID-19 (4)	☐	☐	☐	☐	☐	☐	☐	☐
Planning to withdraw completely (5)	☐	☐	☐	☐	☐	☐	☐	☐
Unsure (6)	☐	☐	☐	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 9

Q7.23 What are your active play opportunity plans for your children post-pandemic? Please specify what you intend to do for each child once Ontario's restrictions have been completely lifted (e.g., in guidance with provincial directions of re-opening). Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)	Child 7 (7)	Child 8 (8)	Child 9 (9)
Will resume their original/previous programming as soon as possible (1)	☐	☐	☐	☐	☐	☐	☐	☐	☐
Might resume, if public health measures allow for my child(ren)'s return/re-open (2)	☐	☐	☐	☐	☐	☐	☐	☐	☐
Might resume, if I know public health measures can be enforced at all times (3)	☐	☐	☐	☐	☐	☐	☐	☐	☐
Planning to enroll them in new activities that naturally promote physical distancing because of COVID-19 (4)	☐	☐	☐	☐	☐	☐	☐	☐	☐
Planning to withdraw completely (5)	☐	☐	☐	☐	☐	☐	☐	☐	☐
Unsure (6)	☐	☐	☐	☐	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 10

Q7.24 What are your active play opportunity plans for your children post-pandemic? Please specify what you intend to do for each child once Ontario's restrictions have been completely lifted (e.g., in guidance with provincial directions of

re-opening). Please use the same order of children (youngest to oldest) as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)	Child 7 (7)	Child 8 (8)	Child 9 (9)	Child 10 (10)
Will resume their original/previous programming as soon as possible (1)	(	(	(	(	(	(	(	(	(	(
Might resume, if public health measures allow for my child(ren)'s return/re-open (2)	(	(	(	(	(	(	(	(	(	(
Might resume, if I know public health measures can be enforced at all times (3)	(	(	(	(	(	(	(	(	(	(
Planning to enroll them in new activities that naturally promote physical distancing because of COVID-19 (4)	(	(	(	(	(	(	(	(	(	(
Planning to withdraw completely (5)	(	(	(	(	(	(	(	(	(	(
Unsure (6)	(	(	(	(	(	(	(	(	(	(

Q7.25 **To help increase our understanding,** please explain **your plan to return** your child(ren) to their active play/sports programming (e.g., how you are (or not) planning to return your child(ren) to activities they engaged in prior to COVID-19).

_____

_____

_____

_____

_____

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 1

Q7.26 **In order to capture a more specific view of your plan to return your child** to their previous active play programming (e.g., prior to COVID-19), please **complete the following chart** by selecting which activities you are **planning** to return your child to

once Ontario's physical distancing measures have been completely lifted (e.g., in guidance with provincial directions of re-opening). **Please select all that apply.**

- [ ] Archery (1)
- [ ] Ball/Ice/Field Hockey (2)
- [ ] Baseball/Softball (3)
- [ ] Basketball (4)
- [ ] Cricket (5)
- [ ] Dance (6)
- [ ] Football (7)
- [ ] Gymnastics (8)
- [ ] Horseback Riding (9)
- [ ] Volleyball (10)
- [ ] Martial Arts (Karate, Tae Kwon Do, Judo) (11)
- [ ] Playgroups (12)
- [ ] Play in neighbourhood (parks, community centres) (13)
- [ ] Rugby (14)
- [ ] Skating (15)
- [ ] Skiing/Snowboarding (16)
- [ ] Soccer (17)

- ☐ Sports Camps (18)
- ☐ Swimming/Diving (19)
- ☐ Tennis/Badminton/Squash (20)
- ☐ Track and Field (21)
- ☐ Yoga/Pilates (22)
- ☐ Other (please specify): (23)

_____

- ☐ Not applicable (24)

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 2

Q7.27 **In order to capture a more specific view of your plan to return your child(ren)** to their previous active play programming (e.g., prior to COVID-19), please **complete the following chart** by selecting which activities you are planning to **return** your child(ren) to once Ontario's physical distancing measures have been completely lifted (e.g., in guidance with provincial directions of re-opening). **Please select all that apply for each**

child. Please use the same order of children **(youngest to oldest)** as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)
Archery (1)	☐	☐
Ball/Ice/Field Hockey (2)	☐	☐
Baseball/Softball (3)	☐	☐
Basketball (4)	☐	☐
Cricket (5)	☐	☐
Dance (6)	☐	☐
Football (7)	☐	☐
Gymnastics (8)	☐	☐
Horseback Riding (9)	☐	☐
Volleyball (10)	☐	☐
Martial Arts (Karate, Tae Kwon Do, Judo) (11)	☐	☐
Playgroups (12)	☐	☐
Play in neighbourhood (parks, community centres) (13)	☐	☐
Rugby (14)	☐	☐

Skating (15)	☐	☐
Skiing/Snowboarding (16)	☐	☐
Soccer (17)	☐	☐
Sports Camps (18)	☐	☐
Swimming/Diving (19)	☐	☐
Tennis/Badminton/Squash (20)	☐	☐
Track and Field (21)	☐	☐
Yoga/Pilates (22)	☐	☐
Other (please specify): (23)	☐	☐
Not applicable (24)	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 3

Q7.28 **In order to capture a more specific view of your plan to return your child(ren)** to their previous active play programming (e.g., prior to COVID-19), please **complete the following chart** by selecting which activities you are planning to **return** your child(ren) to once Ontario's physical distancing measures have been completely lifted (e.g., in guidance with provincial directions of re-opening). **Please select all that apply for each**

child. Please use the same order of children **(youngest to oldest)** as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)
Archery (1)	☐	☐	☐
Ball/Ice/Field Hockey (2)	☐	☐	☐
Baseball/Softball (3)	☐	☐	☐
Basketball (4)	☐	☐	☐
Cricket (5)	☐	☐	☐
Dance (6)	☐	☐	☐
Football (7)	☐	☐	☐
Gymnastics (8)	☐	☐	☐
Horseback Riding (9)	☐	☐	☐
Volleyball (10)	☐	☐	☐
Martial Arts (Karate, Tae Kwon Do, Judo) (11)	☐	☐	☐
Playgroups (12)	☐	☐	☐
Play in neighbourhood (parks, community centres) (13)	☐	☐	☐
Rugby (14)	☐	☐	☐

Skating (15)	☐	☐	☐
Skiing/Snowboarding (16)	☐	☐	☐
Soccer (17)	☐	☐	☐
Sports Camps (18)	☐	☐	☐
Swimming/Diving (19)	☐	☐	☐
Tennis/Badminton/Squash (20)	☐	☐	☐
Track and Field (21)	☐	☐	☐
Yoga/Pilates (22)	☐	☐	☐
Other (please specify): (23)	☐	☐	☐
Not applicable (24)	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 4

Q7.29 **In order to capture a more specific view of your plan to return your child(ren)** to their previous active play programming (e.g., prior to COVID-19), please **complete the following chart** by selecting which activities you are planning to **return** your child(ren) to once Ontario's physical distancing measures have been completely lifted (e.g., in guidance with provincial directions of re-opening). **Please select all that apply for each**

child. Please use the same order of children **(youngest to oldest)** as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)
Archery (1)	☐	☐	☐	☐
Ball/Ice/Field Hockey (2)	☐	☐	☐	☐
Baseball/Softball (3)	☐	☐	☐	☐
Basketball (4)	☐	☐	☐	☐
Cricket (5)	☐	☐	☐	☐
Dance (6)	☐	☐	☐	☐
Football (7)	☐	☐	☐	☐
Gymnastics (8)	☐	☐	☐	☐
Horseback Riding (9)	☐	☐	☐	☐
Volleyball (10)	☐	☐	☐	☐
Martial Arts (Karate, Tae Kwon Do, Judo) (11)	☐	☐	☐	☐
Playgroups (12)	☐	☐	☐	☐
Play in neighbourhood (parks, community centres) (13)	☐	☐	☐	☐
Rugby (14)	☐	☐	☐	☐

Skating (15)	☐	☐	☐	☐
Skiing/Snowboarding (16)	☐	☐	☐	☐
Soccer (17)	☐	☐	☐	☐
Sports Camps (18)	☐	☐	☐	☐
Swimming/Diving (19)	☐	☐	☐	☐
Tennis/Badminton/Squash (20)	☐	☐	☐	☐
Track and Field (21)	☐	☐	☐	☐
Yoga/Pilates (22)	☐	☐	☐	☐
Other (please specify): (23)	☐	☐	☐	☐
Not applicable (24)	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 4

Q7.30 **In order to capture a more specific view of your plan to return your child(ren)** to their previous active play programming (e.g., prior to COVID-19), please **complete the following chart** by selecting which activities you are planning to **return** your child(ren) to once Ontario's physical distancing measures have been completely lifted (e.g., in guidance with provincial directions of re-opening). **Please select all that apply for each**

child. Please use the same order of children **(youngest to oldest)** as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)
Archery (1)	☐	☐	☐	☐
Ball/Ice/Field Hockey (2)	☐	☐	☐	☐
Baseball/Softball (3)	☐	☐	☐	☐
Basketball (4)	☐	☐	☐	☐
Cricket (5)	☐	☐	☐	☐
Dance (6)	☐	☐	☐	☐
Football (7)	☐	☐	☐	☐
Gymnastics (8)	☐	☐	☐	☐
Horseback Riding (9)	☐	☐	☐	☐
Volleyball (10)	☐	☐	☐	☐
Martial Arts (Karate, Tae Kwon Do, Judo) (11)	☐	☐	☐	☐
Playgroups (12)	☐	☐	☐	☐
Play in neighbourhood (parks, community centres) (13)	☐	☐	☐	☐
Rugby (14)	☐	☐	☐	☐

Skating (15)	☐	☐	☐	☐
Skiing/Snowboarding (16)	☐	☐	☐	☐
Soccer (17)	☐	☐	☐	☐
Sports Camps (18)	☐	☐	☐	☐
Swimming/Diving (19)	☐	☐	☐	☐
Tennis/Badminton/Squash (20)	☐	☐	☐	☐
Track and Field (21)	☐	☐	☐	☐
Yoga/Pilates (22)	☐	☐	☐	☐
Other (please specify): (23)	☐	☐	☐	☐
Not applicable (24)	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 5

Q7.31 **In order to capture a more specific view of your plan to return your child(ren)** to their previous active play programming (e.g., prior to COVID-19), please **complete the following chart** by selecting which activities you are planning to **return** your child(ren) to once Ontario's physical distancing measures have been completely lifted (e.g., in guidance with provincial directions of re-opening). **Please select all that apply for each**

child. Please use the same order of children **(youngest to oldest)** as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)
Archery (1)	☐	☐	☐	☐	☐
Ball/Ice/Field Hockey (2)	☐	☐	☐	☐	☐
Baseball/Softball (3)	☐	☐	☐	☐	☐
Basketball (4)	☐	☐	☐	☐	☐
Cricket (5)	☐	☐	☐	☐	☐
Dance (6)	☐	☐	☐	☐	☐
Football (7)	☐	☐	☐	☐	☐
Gymnastics (8)	☐	☐	☐	☐	☐
Horseback Riding (9)	☐	☐	☐	☐	☐
Volleyball (10)	☐	☐	☐	☐	☐
Martial Arts (Karate, Tae Kwon Do, Judo) (11)	☐	☐	☐	☐	☐
Playgroups (12)	☐	☐	☐	☐	☐
Play in neighbourhood (parks, community centres) (13)	☐	☐	☐	☐	☐
Rugby (14)	☐	☐	☐	☐	☐

Skating (15)	☐	☐	☐	☐	☐
Skiing/Snowboarding (16)	☐	☐	☐	☐	☐
Soccer (17)	☐	☐	☐	☐	☐
Sports Camps (18)	☐	☐	☐	☐	☐
Swimming/Diving (19)	☐	☐	☐	☐	☐
Tennis/Badminton/Squash (20)	☐	☐	☐	☐	☐
Track and Field (21)	☐	☐	☐	☐	☐
Yoga/Pilates (22)	☐	☐	☐	☐	☐
Other (please specify): (23)	☐	☐	☐	☐	☐
Not applicable (24)	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 6

Q7.32 **In order to capture a more specific view of your plan to return your child(ren)** to their previous active play programming (e.g., prior to COVID-19), please **complete the following chart** by selecting which activities you are planning to **return** your child(ren) to once Ontario's physical distancing measures have been completely lifted (e.g., in guidance with provincial directions of re-opening). **Please select all that apply for each**

child. Please use the same order of children **(youngest to oldest)** as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)
Archery (1)	☐	☐	☐	☐	☐	☐
Ball/Ice/Field Hockey (2)	☐	☐	☐	☐	☐	☐
Baseball/Softball (3)	☐	☐	☐	☐	☐	☐
Basketball (4)	☐	☐	☐	☐	☐	☐
Cricket (5)	☐	☐	☐	☐	☐	☐
Dance (6)	☐	☐	☐	☐	☐	☐
Football (7)	☐	☐	☐	☐	☐	☐
Gymnastics (8)	☐	☐	☐	☐	☐	☐
Horseback Riding (9)	☐	☐	☐	☐	☐	☐
Volleyball (10)	☐	☐	☐	☐	☐	☐
Martial Arts (Karate, Tae Kwon Do, Judo) (11)	☐	☐	☐	☐	☐	☐
Playgroups (12)	☐	☐	☐	☐	☐	☐
Play in neighbourhood (parks, community centres) (13)	☐	☐	☐	☐	☐	☐
Rugby (14)	☐	☐	☐	☐	☐	☐

Skating (15)	☐	☐	☐	☐	☐	☐
Skiing/Snowboarding (16)	☐	☐	☐	☐	☐	☐
Soccer (17)	☐	☐	☐	☐	☐	☐
Sports Camps (18)	☐	☐	☐	☐	☐	☐
Swimming/Diving (19)	☐	☐	☐	☐	☐	☐
Tennis/Badminton/Squash (20)	☐	☐	☐	☐	☐	☐
Track and Field (21)	☐	☐	☐	☐	☐	☐
Yoga/Pilates (22)	☐	☐	☐	☐	☐	☐
Other (please specify): (23)	☐	☐	☐	☐	☐	☐
Not applicable (24)	☐	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 7

Q7.33 **In order to capture a more specific view of your plan to return your child(ren)** to their previous active play programming (e.g., prior to COVID-19), please **complete the following chart** by selecting which activities you are planning to **return** your child(ren) to once Ontario's physical distancing measures have been completely lifted (e.g., in guidance with provincial directions of re-opening). **Please select all that apply for each**

child. Please use the same order of children **(youngest to oldest)** as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)	Child 7 (7)
Archery (1)	☐	☐	☐	☐	☐	☐	☐
Ball/Ice/Field Hockey (2)	☐	☐	☐	☐	☐	☐	☐
Baseball/Softball (3)	☐	☐	☐	☐	☐	☐	☐
Basketball (4)	☐	☐	☐	☐	☐	☐	☐
Cricket (5)	☐	☐	☐	☐	☐	☐	☐
Dance (6)	☐	☐	☐	☐	☐	☐	☐
Football (7)	☐	☐	☐	☐	☐	☐	☐
Gymnastics (8)	☐	☐	☐	☐	☐	☐	☐
Horseback Riding (9)	☐	☐	☐	☐	☐	☐	☐
Volleyball (10)	☐	☐	☐	☐	☐	☐	☐
Martial Arts (Karate, Tae Kwon Do, Judo) (11)	☐	☐	☐	☐	☐	☐	☐
Playgroups (12)	☐	☐	☐	☐	☐	☐	☐
Play in neighbourhood (parks, community centres) (13)	☐	☐	☐	☐	☐	☐	☐
Rugby (14)	☐	☐	☐	☐	☐	☐	☐

Skating (15)	☐	☐	☐	☐	☐	☐	☐
Skiing/Snowboarding (16)	☐	☐	☐	☐	☐	☐	☐
Soccer (17)	☐	☐	☐	☐	☐	☐	☐
Sports Camps (18)	☐	☐	☐	☐	☐	☐	☐
Swimming/Diving (19)	☐	☐	☐	☐	☐	☐	☐
Tennis/Badminton/Squash (20)	☐	☐	☐	☐	☐	☐	☐
Track and Field (21)	☐	☐	☐	☐	☐	☐	☐
Yoga/Pilates (22)	☐	☐	☐	☐	☐	☐	☐
Other (please specify): (23)	☐	☐	☐	☐	☐	☐	☐
Not applicable (24)	☐	☐	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 8

Q7.34 **In order to capture a more specific view of your plan to return your child(ren)** to their previous active play programming (e.g., prior to COVID-19), please **complete the following chart** by selecting which activities you are planning to **return** your child(ren) to once Ontario's physical distancing measures have been completely lifted (e.g., in guidance with provincial directions of re-opening). **Please select all that apply for each**

child. Please use the same order of children **(youngest to oldest)** as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)	Child 7 (7)	Child 8 (8)
Archery (1)	☐	☐	☐	☐	☐	☐	☐	☐
Ball/Ice/Field Hockey (2)	☐	☐	☐	☐	☐	☐	☐	☐
Baseball/Softball (3)	☐	☐	☐	☐	☐	☐	☐	☐
Basketball (4)	☐	☐	☐	☐	☐	☐	☐	☐
Cricket (5)	☐	☐	☐	☐	☐	☐	☐	☐
Dance (6)	☐	☐	☐	☐	☐	☐	☐	☐
Football (7)	☐	☐	☐	☐	☐	☐	☐	☐
Gymnastics (8)	☐	☐	☐	☐	☐	☐	☐	☐
Horseback Riding (9)	☐	☐	☐	☐	☐	☐	☐	☐
Volleyball (10)	☐	☐	☐	☐	☐	☐	☐	☐
Martial Arts (Karate, Tae Kwon Do, Judo) (11)	☐	☐	☐	☐	☐	☐	☐	☐
Playgroups (12)	☐	☐	☐	☐	☐	☐	☐	☐
Play in neighbourhood (parks, community centres) (13)	☐	☐	☐	☐	☐	☐	☐	☐
Rugby (14)	☐	☐	☐	☐	☐	☐	☐	☐

Skating (15)	☐	☐	☐	☐	☐	☐	☐	☐
Skiing/Snowboarding (16)	☐	☐	☐	☐	☐	☐	☐	☐
Soccer (17)	☐	☐	☐	☐	☐	☐	☐	☐
Sports Camps (18)	☐	☐	☐	☐	☐	☐	☐	☐
Swimming/Diving (19)	☐	☐	☐	☐	☐	☐	☐	☐
Tennis/Badminton/Squash (20)	☐	☐	☐	☐	☐	☐	☐	☐
Track and Field (21)	☐	☐	☐	☐	☐	☐	☐	☐
Yoga/Pilates (22)	☐	☐	☐	☐	☐	☐	☐	☐
Other (please specify): (23)	☐	☐	☐	☐	☐	☐	☐	☐
Not applicable (24)	☐	☐	☐	☐	☐	☐	☐	☐

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 9

Q7.35 **In order to capture a more specific view of your plan to return your child(ren)** to their previous active play programming (e.g., prior to COVID-19), please **complete the following chart** by selecting which activities you are planning to **return** your child(ren) to once Ontario's physical distancing measures have been completely lifted (e.g., in guidance with provincial directions of re-opening). **Please select all that apply for each**

child. Please use the same order of children **(youngest to oldest)** as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)	Child 7 (7)	Child 8 (8)	Child 9 (9)
Archery (1)	(	(	(	(	(	(	(	(	(
Ball/Ice/Field Hockey (2)	(	(	(	(	(	(	(	(	(
Baseball/Softball (3)	(	(	(	(	(	(	(	(	(
Basketball (4)	(	(	(	(	(	(	(	(	(
Cricket (5)	(	(	(	(	(	(	(	(	(
Dance (6)	(	(	(	(	(	(	(	(	(
Football (7)	(	(	(	(	(	(	(	(	(
Gymnastics (8)	(	(	(	(	(	(	(	(	(
Horseback Riding (9)	(	(	(	(	(	(	(	(	(
Volleyball (10)	(	(	(	(	(	(	(	(	(
Martial Arts (Karate, Tae Kwon Do, Judo) (11)	(	(	(	(	(	(	(	(	(
Playgroups (12)	(	(	(	(	(	(	(	(	(
Play in neighbourhood (parks, community centres) (13)	(	(	(	(	(	(	(	(	(

Rugby (14)	(	(	(	(	(	(	(	(	(
Skating (15)	(	(	(	(	(	(	(	(	(
Skiing/Snowboarding (16)	(	(	(	(	(	(	(	(	(
Soccer (17)	(	(	(	(	(	(	(	(	(
Sports Camps (18)	(	(	(	(	(	(	(	(	(
Swimming/Diving (19)	(	(	(	(	(	(	(	(	(
Tennis/Badminton/Squash (20)	(	(	(	(	(	(	(	(	(
Track and Field (21)	(	(	(	(	(	(	(	(	(
Yoga/Pilates (22)	(	(	(	(	(	(	(	(	(
Other (please specify): (23)	(	(	(	(	(	(	(	(	(
Not applicable (24)	(	(	(	(	(	(	(	(	(

Display This Question:

If How many children aged 0-12 years do you currently provide care for? = 10

Q7.36 **In order to capture a more specific view of your plan to return your child(ren)** to their previous active play programming (e.g., prior to COVID-19), please **complete the following chart** by selecting which activities you are planning to **return** your child(ren) to once Ontario's physical distancing measures have been completely lifted (e.g., in guidance with provincial directions of re-opening). **Please select all that apply for each**

child. Please use the same order of children **(youngest to oldest)** as you have done in previous sections of the survey.

	Child 1 (1)	Child 2 (2)	Child 3 (3)	Child 4 (4)	Child 5 (5)	Child 6 (6)	Child 7 (7)	Child 8 (8)	Child 9 (9)	Child 10 (10)
Archery (1)	(	(	(	(	(	(	(	(	(	(
Ball/Ice/Field Hockey (2)	(	(	(	(	(	(	(	(	(	(
Baseball/Softball (3)	(	(	(	(	(	(	(	(	(	(
Basketball (4)	(	(	(	(	(	(	(	(	(	(
Cricket (5)	(	(	(	(	(	(	(	(	(	(
Dance (6)	(	(	(	(	(	(	(	(	(	(
Football (7)	(	(	(	(	(	(	(	(	(	(
Gymnastics (8)	(	(	(	(	(	(	(	(	(	(
Horseback Riding (9)	(	(	(	(	(	(	(	(	(	(
Volleyball (10)	(	(	(	(	(	(	(	(	(	(
Martial Arts (Karate, Tae Kwon Do, Judo) (11)	(	(	(	(	(	(	(	(	(	(
Playgroups (12)	(	(	(	(	(	(	(	(	(	(
Play in neighbourhood (parks, community centres) (13)	(	(	(	(	(	(	(	(	(	(

Rugby (14)	(	(	(	(	(	(	(	(	(	(
Skating (15)	(	(	(	(	(	(	(	(	(	(
Skiing/Snowboarding (16)	(	(	(	(	(	(	(	(	(	(
Soccer (17)	(	(	(	(	(	(	(	(	(	(
Sports Camps (18)	(	(	(	(	(	(	(	(	(	(
Swimming/Diving (19)	(	(	(	(	(	(	(	(	(	(
Tennis/Badminton/Squash (20)	(	(	(	(	(	(	(	(	(	(
Track and Field (21)	(	(	(	(	(	(	(	(	(	(
Yoga/Pilates (22)	(	(	(	(	(	(	(	(	(	(
Other (please specify): (23)	(	(	(	(	(	(	(	(	(	(
Not applicable (24)	(	(	(	(	(	(	(	(	(	(

Q7.37 Please complete **the following chart by selecting the play spaces outside your home** that you are **planning to return your child(ren) to** (i.e., allow them to play

regularly) once Ontario's physical distancing measures have been lifted (e.g., in guidance with provincial directions of re-opening). **Please select all that apply.**

- ☐ Inside home (1)
- ☐ Inside garage (2)
- ☐ In yard/driveway (3)
- ☐ Common areas inside living space (e.g., living room, basement) (4)
- ☐ On the sidewalks/roads in the neighbourhood (5)
- ☐ Gym or fitness centre (6)
- ☐ At a park/trail (7)
- ☐ At an indoor sports facility (e.g., indoor hockey arena, pool) (8)
- ☐ At an outdoor sports facility (e.g., soccer field, basketball court) (9)
- ☐ Other: (10) _____

Q7.38 Please select the **reasons** you would like to return your child(ren) to their activities. **Select all that apply.**

- ☐ To keep them occupied (1)
- ☐ To support their physical activity (2)
- ☐ To support their mental health (3)
- ☐ To get out their excess energy (4)
- ☐ ge(5)
- ☐ To encourage learning (6)
- ☐ To expose them to different environments (7)
- ☐ To acknowledge their personal desire to return (8)
- ☐ To provide them with care and time outside of the home ()
- ☐ To allow myself some time away from parenting (12)
- ☐ Other: (13) _____

Section 6: Parents' Physical Activity Levels Prior to and During COVID-19

Q8.1 **The following questions are seeking information about your personal engagement in physical activity prior to COVID-19 AND during Ontario's closures as a result of the pandemic. Please answer as honestly as possible.**

Q8.2 This question is about **your** personal physical activity participation. On average, **how many minutes per week** did YOU spend engaged in **moderate-to-vigorous, heart-**

pumping physical activity **prior to COVID-19?** (e.g., brisk walking, jogging/running, bike riding, playing sports, strength training, cross-country skiing, etc.)?

- ○ Less than 30 minutes (1)
- ○ 30-59 minutes (2)
- ○ 60-89 minutes (3)
- ○ 90-119 minutes (4)
- ○ 120-149 minutes (5)
- ○ 150 minutes or more (6)

Q8.3 This question is about **your** personal physical activity participation. On average, **how many minutes per week** are you spending engaged in **moderate-to-vigorous, heart-pumping** physical activity **during the COVID-19 pandemic and associated physical distancing measures?** (e.g., brisk walking, jogging/running, bike riding, playing sports, strength training, etc.)?

- ○ Less than 30 minutes (1)
- ○ 30-59 minutes (2)
- ○ 60-89 minutes (3)
- ○ 90-119 minutes (4)
- ○ 120-149 minutes (5)
- ○ 150 minutes or more (6)

Section 7: Parents' Attitudes (intentions, comfort, beliefs) Regarding Return to Play/Sport

Q9.1 The following statements are aimed towards understanding your **intentions, beliefs, and comfort** regarding your child's eventual return to active play/sports

programming post-COVID. **Keeping in mind your personal opinions, please respond with the degree** to which you **agree** with the following.

	Strongly Disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I feel willing to return my child to active play opportunities where they can following physical distancing guidelines (1)	○	○	○	○	○
I feel that having my child at home with me during the pandemic makes **me** feel safe (2)	○	○	○	○	○
I feel that having my child at home with me during the pandemic makes **them** feel safe (3)	○	○	○	○	○
Even if my child can follow physical distancing guidelines, I am still hesitant to return them to active play programming (4)	○	○	○	○	○
I am confident that if I return my child to active play, my child will follow Ontario's public health guidelines (e.g., hand sanitizing) (5)	○	○	○	○	○
I am looking forward to allowing my child to interact with others (6)	○	○	○	○	○
I prefer to allow my child to interact with people via social networking sites and screen-based technology than in person (7)	○	○	○	○	○
My child has missed out on health benefits of extracurricular activities due to the COVID-19 pandemic (8)	○	○	○	○	○

I have enough skills to support my child's active play at home (9)	○	○	○	○	○
I have access to what I need at home to support my child's active play (10)	○	○	○	○	○
I have the ability to support my child's physical activity/active play at home without engagement in extra-curricular activities (11)	○	○	○	○	○
I have enough access to resources (i.e., space, time, toys) that allow me to support my child's active play (12)	○	○	○	○	○
I reserve time out of my day to support my child's active play (13)	○	○	○	○	○
I feel worried that I will no longer be able to afford my child's extracurricular activities post-pandemic (14)	○	○	○	○	○

Section 8: Parents' Risk Tolerance

Q10.1 **For each of the following questions, think about what you would do *majority* of the time. You may choose to skip a question if you feel it does not apply to you.** Please answer as honestly as possible. **There are no right or wrong answers.** Your responses will **remain completely confidential.**

Q10.2 How often do you encourage your child(ren) to take everyday risks?

- ○ Never (1)
- ○ Seldom (2)
- ○ Sometimes (3)
- ○ Often (4)

Q10.3 Would you let your child(ren) jump down from a height of 3-4 metres?

- ○ Yes (1)
- ○ No (2)

Q10.4 Do you let your child(ren) play chase with others?

- ○ Yes (1)
- ○ No (2)

Q10.5 Would you let your child(ren) go headfirst down a slippery dip?

- ○ Yes (1)
- ○ No (2)

Q10.6 Do you allow your children to continue playing after they get a scrape during play?

- ○ Yes (1)
- ○ No (2)

Q10.7 Do you let your child(ren) engage in challenging activities when they play at home?

- ○ Yes (1)
- ○ No (2)

Q10.8 Do you allow your child(ren) to play by themselves without constant supervision?

- ○ Yes (1)
- ○ No (2)

Q10.9 Would you let your child(ren) use a hammer and nail unsupervised?

- ○ Yes (1)
- ○ No (2)

Q10.10 Would you let your child(ren) climb a tree within your reach?

- ○ Yes (1)
- ○ No (2)

Q10.11 Would you let your child(ren) walk barefoot across a floor after broken glass was swept up?

- ○ Yes (1)
- ○ No (2)

Q10.12 Would you let your child(ren) run in a place where there was an open fire or portable heater?

- ○ Yes (1)
- ○ No (2)

Q10.13 Do you allow your child(ren) to play fight other children with sticks?

- Yes (1)
- No (2)

Q10.14 Would you let your child(ren) walk on slippery rocks close to water?

- Yes (1)
- No (2)

Q10.15 Would you encourage your child(ren) to try new things that involve some risk?

- Yes (1)
- No (2)

Q10.16 Do you allow your child(ren) to engage in rough and tumble play?

- Yes (1)
- No (2)

Q10.17 Would you let your child(ren) play near the edge of steep cliffs?

- Yes (1)
- No (2)

Q10.18 Would you allow your child(ren) to play in the bushes out of your sight?

- Yes (1)
- No (2)

Q10.19 Would you let your child(ren) experience minor mishaps if what they are doing is lots of fun?

- ○ Yes (1)
- ○ No (2)

Q10.20 Would you let your child(ren) swim in the ocean close to shore if you were watching from the beach?

- ○ Yes (1)
- ○ No (2)

Q10.21 Would you allow your child(ren) to continue playing if there is a chance they may break a bone?

- ○ Yes (1)
- ○ No (2)

Q10.22 Would you trust your child(ren) to play in the backyard while unsupervised?

- ○ Yes (1)
- ○ No (2)

Q10.23 Would you allow your child(ren) to play fight with other children to test who is the strongest?

- ○ Yes (1)
- ○ No (2)

Q10.24 Would you allow your child(ren) to climb a rock wall that goes straight down into the water?

- Yes (1)
- No (2)

Q10.25 Would you wait to see if your child(ren) could manage challenges on their own before getting involved?

- Yes (1)
- No (2)

Q10.26 Would you let your child(ren) climb as high as they want in a tree?

- Yes (1)
- No (2)

Q10.27 Would you let your child(ren) ride a bicycle down a hill at full speed?

- Yes (1)
- No (2)

Q10.28 Would you trust your child(ren) to play safely?

- Yes (1)
- No (2)

Q10.29 Would you trust your child(ren) to play in the backyard supervised?

- Yes (1)
- No (2)

Q10.30 Would you let your child(ren) balance on a fallen tree that is more than 2 metres off the ground?

- ○ Yes (1)
- ○ No (2)

Q10.31 Would you encourage your child(ren) to take some risks if that means having fun during play?

- ○ Yes (1)
- ○ No (2)

Appendix D: Ethics Approval – Study 2

Western Research

Date: 16 November 2020

To: Dr. Patricia Tucker

Project ID: 116331

Study Title: An Examination of Parents' Perspectives of their Child(ren)'s "Return to Play" Post-COVID-19 Pandemic

Application Type: NMREB Amendment Form

Review Type: Delegated

Full Board Reporting Date: December 4 2020

Date Approval Issued: 16/Nov/2020

REB Approval Expiry Date: 26/Aug/2021

Dear Dr. Patricia Tucker,

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the WREM application form for the amendment, as of the date noted above.

Documents Approved:

Document Name	Document Type	Document Date	Document Version
Appendix G - Verbal Consent Form - Oct 20	Verbal Consent/Assent	20/Oct/2020	1
Appendix H- Interview Guide for Children_ OCT 20	Interview Guide	20/Oct/2020	1
Appendix B - Interview Guide for Parents- Oct 20	Interview Guide	20/Oct/2020	2
Appendix G - Verbal Assent Form Parents	Verbal Consent/Assent	04/Nov/2020	2
Appendix I- Letter of Assent for Child interviews	Verbal Consent/Assent	13/Nov/2020	1

REB members involved in the research project do not participate in the review, discussion or decision.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Please do not hesitate to contact us if you have any questions.

Sincerely,

Kelly Patterson , Research Ethics Officer on behalf of Dr. Randal Graham, NMREB Chair

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).

Appendix E: Semi-Structured Interview Guide for Parent Interviews

Parents' Perspectives of their Child(ren)'s "Return to Play" Post-COVID-19 Pandemic
Semi-Structured Interview Guide for Parents

Thank you for volunteering to participate in this online interview. We are here today to discuss your thoughts on your child(ren)'s return to active play opportunities post-COVID-19 pandemic. Specifically, we are looking to gather your intentions and opinions (i.e., fear, comfort) in regard to returning your child to both unstructured (i.e., playing in the neighbourhood) and structured (i.e., organized sport) play activities. Your feedback on this topic is very important.

The information collected today will complement the data our research team has obtained through online surveys from parents/guardians in Ontario. More specifically, your comments and in-depth responses will be used by our research team to further understand how increased supports can be put in place for young children and their parents/guardian's post-COVID-19 pandemic.

There are no right or wrong answers. Everything discussed here today will be kept confidential, and all names will be removed from the transcripts and publications. By answering "yes" to the first question of the interview, you are providing consent to participate.

Are there any questions before we start?

---

1. Do you consent to participate in this interview?

2. What is your age and gender?

3. How many children aged 12 years and under do you provide care for?
    a. What are the ages of these children?

4. What types of active play/sports **outside of the home was** your child(ren) enrolled in **prior to COVID-19?**
    a. Did you and/or your child(ren) have a hard time adjusting to the new physical distancing measures that resulted in a cancellation of these activities?
    b. Did any of these activities continue in a virtual format during closures?
    c. Have your child and/or children already returned to active play/sport outside of the home (e.g., sports with other children)?

5. As a result of closures, what has been your **experience** with getting your child (or children) active during the COVID-19 pandemic?
    a. How 'feasible' (i.e., convenient and easy) was this for you while spending a large amount of time at home?
    b. In what way does your location influence your child's return to play? (e.g., rural or urban)
    c. How receptive were your children to engaging in activity at home?

6. What **challenges** did you experience with getting your children active while at home?
    a. Please expand.
    b. In what ways did this impact you and your child(ren)?
    c. Do you feel that your children experienced challenges with the transition to more often home-based play and/or sport?

7. What **solutions** did you undertake to deal with these challenges?
    a. Please expand.
    b. Tell me more about that.
    c. How much time and effort did these solutions require?

8. If you haven't already, **do you intend to make any changes to your child(ren)'s active play/sports programming as a result of the pandemic?**
    a. What sorts of changes? (e.g., withdrawal from team sport)
    b. What caused you to consider making these changes?

9. What are **your overall "feelings"** regarding your child(ren)'s eventual return to play/sports?
    a. Do you feel that the age of your child has an influence on these feelings?
        i. Do you think you would feel differently if your child was older/younger?
    b. What is making you feel concerned OR comfortable with regard to your child(ren)'s re-integration into play?
        i. Please expand.
    c. Are there any health precautions you would like to see in place that would make you feel more comfortable returning your child (if not yet returned)?
    d. Have you spoken with your child about their feelings in regard to returning to play?
        i. If yes, would you mind explaining how your child is feeling about returning to either active play or organized sport, or how they feel if already returned?

Thank you for participating!

Appendix F: Semi-Structured Interview Guide for Child Interviews

Parents' Perspectives of their Child(ren)'s "Return to Play" Post-COVID-19 Pandemic

Semi-Structured Interview Guide for Children

Thank you for volunteering to participate in this online interview. We are here today to talk about your thoughts on returning to active play and sports when the COVID-19 pandemic is over. Specifically, we are hoping you will tell us what you think about returning to both unstructured (e.g., playing in the neighbourhood) and structured (e.g., organized sports like hockey, soccer or dance) play activities. Your feedback on this topic is very important.
What we discuss today will allow our research team to better understand how COVID-19 has impacted your physical activity, and how you feel about returning to sport and play. There are no right or wrong answers and everything you say today will be kept confidential. We will not use any names when we report out findings. By answering "yes" to the first question of the interview, you are agreeing to participate.
Are there any questions before we start?

---

1. Do you consent to participate in this interview?

2. How old are you?

3. What types of extracurricular activities/sports **outside of the home were** you enrolled in **prior to COVID-19?** (e.g., soccer, sports camps)
    a. Did you find yourself often thinking about or "missing" these activities?
        i. What did you miss about them?

4. Compared to your routine before the pandemic started (as a reminder, this was in March), do you think you were more or less active back then than you are now?
    a. Do you feel you got enough activity when you were spending a lot of time at home when the pandemic first started?
    b. Do you find it challenging to get active while at home?

5. What **challenges** did you experience with getting active while at home?
    a. Please expand.
    b. In what ways did these challenges impact you?
    c. If you experienced challenges, do you think it was hard for your parents, too?

6. What **helped you to** deal with these challenges?
    a. Please tell me more.
    b. Can you give me some examples of the types of activities you did often during the provincial lockdown? (for example, what did you do to get active when you were not allowed to go to school or sports practices?)
    c. Tell me more about that.

7. Have you and/or your parents/guardians already **made any changes as a result of COVID-19** to your active play or sport programming? For example, are you back in any team activities or planning to go back?
    a. What are some examples of these?
    b. What caused you to make these changes?
    c. Did you get to help your parents decide your plan for returning (or not) to sport/play?
    d. Tell me more about that.

8. **If you have** returned to sport/active play, what has it been like?
    a. Are there any changes to the activity (e.g., wearing masks) that you had to adjust to?
    b. Do you think these changes will be good or bad for your activity levels?

9. **If you haven't returned**, how do you feel about your eventual return to play/sports programming?
    a. What excites you the most about returning?
    b. Does anything about returning make you feel nervous or uncomfortable? (e.g., new health protocols

Thank you for participating!

Appendix G: Survey 2 (1-Year Follow Up) and Letter of Information

1-Year Follow-Up "Return to Play" Post-COVID-19 Survey

Q1.1 Thank you for participating in our follow-up survey. Please follow the instructions ahead to record your response.

Q2.1

Study Title: Parents' Perspectives of their Child(ren)'s "Return to Play" Post-COVID-19 Pandemic - 1 Year Follow-Up

Principal Investigator: Trish Tucker, PhD, Faculty of Health Sciences, Western University

Co-Investigators: Monika Szpunar, MSc; Stephanie Truelove, MSc; Brianne Bruijns, MSc; Jason Gilliland, PhD; Leigh Vanderloo, PhD; Jennifer Irwin, PhD; & Shauna Burke, PhD

Invitation to participate: This study aims to explore parents' perspectives of their child(ren)'s "return to play", defined for the purpose of this study as encompassing both unstructured (i.e., playing in the neighbourhood) and structured (i.e., organized sport) activity post-COVID-19 pandemic. You are being contacted because you participated in our study by filling out our initial survey, titled "Parents' Perspectives of their Child(ren)'s "Return to Play" Post-COVID-19 Pandemic"

Purpose of this letter: The purpose of this letter is to provide you with the information needed to make an informed decision regarding your participation in the follow-up survey.

Background: Researchers highlight the importance of play in children's overall development and well-being. Play (i.e., engaging in activities that foster movement or creativity), from a young age promotes self-confidence, and cognitive functioning among young children. In recent years, an observed decline of children's engagement in active play has been noted, and this may be due to an increase in technology use (e.g., screen-viewing). In light of the current COVID-19 pandemic, many children's opportunities for active play have largely diminished (or changed). Schools, outdoor playgrounds, camps and sports facilities that previously supported active play opportunities have been deemed largely inaccessible. The purpose of this study is to explore parents' perspectives and intent (or not) to return their child(ren) to opportunities that support active play, following the pandemic. The findings from this

work will have important implications for young children and for parents as COVID-19 restrictions ease and society adjusts to new parameters and norms.

Inclusion criteria: You are eligible to participate in this study if you are: (1) an Ontario resident; (2) a parent/guardian of a child or children 13 years old or under with custody at least 50% of the time; (3) able to read and write in English; and, (4) participated in our baseline (i.e., initial) survey.

Exclusion criteria: Individuals will be excluded from this study: (1) if they are not an Ontario resident; (2) if they do not have a child 13 years old or under; (3) if they do not provide care for their child at least 50% of the time; (4) if they did not participate in our baseline (i.e., initial) survey; and/or (5) if they are unable to read and write in English.

Study procedures: You are receiving an invitation to complete this survey again because it has been approximately 1-year since you participated in our initial survey.

Costs and compensation: There are no costs to you for participating in this follow up survey.

Voluntary participation: Participation in this study is voluntary. You may refuse to participate, skip any survey questions, or withdraw from the study at any time (prior to the submission of your survey). You do not waive any legal rights by consenting to this study.

Consent: Completion of the survey indicates your consent to participate.

Possible benefits and risks: There are no known physical, social, or economic risks due to participation in this study. While there are no personal benefits to you, the results may help researchers and community stakeholders understand parents' level of comfort with their child's return to play. In turn, this research will increase our collective understanding of the long-term impacts that COVID-19 will have for Ontario children and may provide direction for implementing increased supports for young children's active play opportunities.

Confidentiality: We will keep your original survey responses confidential and secure. Only the research team and Western University's Non-Medical Research Ethics Board will have access to these data. Your survey responses will be collected through a secure online survey platform called Qualtrics. Qualtrics uses encryption technology and restricted access authorizations to protect all data collected. In addition, Western's Qualtrics server is in Ireland, where privacy standards are maintained under the European Union Safe Harbor Framework. The data will then be exported from Qualtrics and securely stored on Western University's server. These data obtained will be stored in secured computer files (password encrypted) and in locked filing cabinets at Wester University. Original survey responses will be retained in this secure environment for 7

years after the results of the study have been published, and after this period any information that could identify you will be destroyed (i.e., the computer data will be erased). Any personal information that could identify you will be removed or changed before any data from this survey are shared with other researchers or results are made public. The information in this study will be used only for research purposes and in ways that will not reveal who you are.

Contacts for further information: If you have any questions about the conduct of this study or your rights as a research participant you may contact the Office of Human Research Ethics at Western University [redacted] If you have any questions about this study, please contact Ms. Monika Szpunar [redacted]

Publication of the results: All data will be grouped with other participants for the purposes of publication. If you would like to receive a copy of the results of the study, please indicate so by following the link at the end of the survey.

Q3.1 By answering the following questions, you are creating a **unique participant ID for yourself**. This is necessary for the research team to link your data from baseline (Survey 1) to follow-up (Survey 2). The information that you provide will be kept confidential and will only be available to the research team. **You are required to submit the exact same responses that you did in your initial survey.**

Q3.2 What is the **first letter** of your first name? (E.g., if your name is Sam, select "S").
Select Letter (1)

▼ A (1) ... Z (26)

Q3.3 What is the **date** of your birth? (E.g., If your birthday is June 20th, select "20").
Select Date (1)

▼ 1 (1) ... 31 (31)

Q3.4 What is the **first letter** of the town/city that you were born (E.g., if you were born in Toronto, select "T").
Select Letter (1)

▼ A (1) ... Z (26)

Q3.5 What are the **last two digits** of your phone number? (E.g., if your phone number is 905-555-1234, select "3" and then "4")
Digit 1 (1)
Digit 2 (2)

▼ 0 (1) ... 9 ~ 9 (110)

Q4.1 **By proceeding to the next question, you are consenting to your de-identified survey responses being archived with the understanding that they may be used in further research. Any personal information that could identify you will be removed or changed before files are shared. By continuing, you are providing your consent to publicly sharing your de-identified survey responses.**

Section 1: Number of Children and Children's Age and Biological Sex

Q5.1 How many children aged 0-13 years do you currently provide care for?
1 (1)

▼ 1 (1) ... 10 (10)

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 1

Q5.2 What is the current age and sex at birth of your child?

	Male (1)	Female (2)
Age (#) of child: (1)	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 2

Q5.3 What is the current age and sex at birth of your children? Please respond from **YOUNGEST** to **OLDEST**

	Male (1)	Female (2)
Age (#) of child 1: (1)	○	○
Age (#) of child 2: (4)	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 3

Q5.4 What is the current age and sex at birth of your children? Please respond from **YOUNGEST** to **OLDEST**

	Male (1)	Female (2)
Age (#) of child 1: (1)	○	○
Age (#) of child 2: (4)	○	○
Age (#) of child 3: (5)	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 4

Q5.5 What is the current age and sex at birth of your children? Please respond from **YOUNGEST** to **OLDEST**

	Male (1)	Female (2)
Age (#) of child 1: (1)	○	○
Age (#) of child 2: (4)	○	○
Age (#) of child 3: (5)	○	○
Age (#) of child 4: (6)	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 5

Q5.6 What is the current age and sex at birth of your children? Please respond from **YOUNGEST** to **OLDEST**

	Male (1)	Female (2)
Age (#) of child 1: (1)	○	○
Age (#) of child 2: (4)	○	○
Age (#) of child 3: (5)	○	○
Age (#) of child 4: (6)	○	○
Age (#) of child 5: (7)	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 6

Q5.7 What is the current age and sex at birth of your children? Please respond from **YOUNGEST** to **OLDEST**

	Male (1)	Female (2)
Age (#) of child 1: (1)	○	○
Age (#) of child 2: (4)	○	○
Age (#) of child 3: (5)	○	○
Age (#) of child 4: (6)	○	○
Age (#) of child 5: (7)	○	○
Age (#) of child 6: (8)	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 7

Q5.8 What is the current age and sex at birth of your children? Please respond from **YOUNGEST** to **OLDEST**

	Male (1)	Female (2)
Age (#) of child 1: (1)	○	○
Age (#) of child 2: (4)	○	○
Age (#) of child 3: (5)	○	○
Age (#) of child 4: (6)	○	○
Age (#) of child 5: (7)	○	○
Age (#) of child 6: (8)	○	○
Age (#) of child 7: (9)	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 8

Q5.9 What is the current age and sex at birth of your children? Please respond from **YOUNGEST** to **OLDEST**

	Male (1)	Female (2)
Age (#) of child 1: (1)	○	○
Age (#) of child 2: (4)	○	○
Age (#) of child 3: (5)	○	○
Age (#) of child 4: (6)	○	○
Age (#) of child 5: (7)	○	○
Age (#) of child 6: (8)	○	○
Age (#) of child 7: (9)	○	○
Age (#) of child 8: (10)	○	○

Section 2: Children's Physical Activity Prior to COVID-19 & During COVID-19

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 1

Q5.10 In your opinion, **how many minutes per day** did your child spend engaged in physical activity during Ontario's **strictest COVID-19 related lockdowns** (when sport and neighbourhood closures were in effect; March 2020- June 2020; January 2021 - May 2021)?

- ○ Less than 30 minutes per day (1)
- ○ 30-59 minutes per day (2)
- ○ 60-149 minutes per day (3)
- ○ 150 minutes or more per day (4)

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 1

Q5.11 In your opinion, how many **minutes per day** is your child engaging in physical activity **currently (i.e., at this moment in time)?**

- ○ Less than 30 minutes per day (1)
- ○ 30-59 minutes per day (2)
- ○ 60-149 minutes per day (3)
- ○ 150 minutes or more per day (4)

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 2

Q5.12 In your opinion, **how many minutes per day** did your children spend engaged in physical activity during Ontario's **strictest COVID-19 related lockdowns** (when sport and neighbourhood closures were in effect; March 2020- June 2020; January 2021 - May 2021)? **Please respond as you have in previous questions of the survey, from YOUNGEST to OLDEST.**

	Less than 30 minutes per day (1)	30-59 minutes per day (2)	60-149 minutes per day (4)	150 minutes or more per day (5)
Child 1 (1)	○	○	○	○
Child 2 (2)	○	○	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 2

Q5.13 In your opinion, how many **minutes per day** are your children engaging in physical activity **currently (i.e., at this moment in time)? Please respond as you have in previous questions of the survey, from YOUNGEST to OLDEST.**

	Less than 30 minutes per day (1)	30-59 minutes per day (2)	60-149 minutes per day (4)	150 minutes or more per day (6)
Child 1 (1)	○	○	○	○
Child 2 (2)	○	○	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 3

Q5.14 In your opinion, **how many minutes per day** did your children spend engaged in physical activity during Ontario's **strictest COVID-19 related lockdowns** (when sport and neighbourhood closures were in effect; March 2020- June 2020; January 2021 - May 2021)? **Please respond as you have in previous questions of the survey, from YOUNGEST to OLDEST.**

	Less than 30 minutes per day (1)	30-59 minutes per day (2)	60-149 minutes per day (4)	150 minutes or more per day (5)
Child 1 (1)	○	○	○	○
Child 2 (6)	○	○	○	○
Child 3 (7)	○	○	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 3

Q5.15 In your opinion, how many **minutes per day** are your children engaging in physical activity **currently (i.e., at this moment in time)? Please respond as you have in previous questions of the survey, from YOUNGEST to OLDEST.**

	Less than 30 minutes per day (1)	30-59 minutes per day (2)	60-149 minutes per day (4)	150 minutes or more per day (5)
Child 1 (1)	○	○	○	○
Child 2 (2)	○	○	○	○
Child 3 (3)	○	○	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 4

Q5.16 In your opinion, **how many minutes per day** did your children spend engaged in physical activity during Ontario's **strictest COVID-19 related lockdowns** (when sport and neighbourhood closures were in effect; March 2020- June 2020; January 2021 - May 2021)? **Please respond as you have in previous questions of the survey, from YOUNGEST to OLDEST.**

	Less than 30 minutes per day (1)	30-59 minutes per day (2)	60-149 minutes per day (4)	More than 150 minutes per day (5)
Child 1 (1)	○	○	○	○
Child 2 (2)	○	○	○	○
Child 3 (3)	○	○	○	○
Child 4 (4)	○	○	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 4

Q5.17 In your opinion, how many **minutes per day** are your children engaging in physical activity **currently (i.e., at this moment in time)? Please respond as you have in previous questions of the survey, from YOUNGEST to OLDEST.**

	Less than 30 minutes per day (1)	30-59 minutes per day (2)	60-149 minutes per day (4)	150 minutes or more per day (5)
Child 1 (1)	○	○	○	○
Child 2 (2)	○	○	○	○
Child 3 (3)	○	○	○	○
Child 4 (4)	○	○	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 5

Q5.18 In your opinion, **how many minutes per day** did your children spend engaged in physical activity during Ontario's **strictest COVID-19 related lockdowns** (when sport and neighbourhood closures were in effect; March 2020- June 2020; January 2021 - May 2021)? **Please respond as you have in previous questions of the survey, from YOUNGEST to OLDEST.**

	Less than 30 minutes per day (1)	30-59 minutes per day (2)	60-149 minutes per day (4)	150 minutes or more per day (5)
Child 1 (1)	○	○	○	○
Child 2 (2)	○	○	○	○
Child 3 (3)	○	○	○	○
Child 4 (4)	○	○	○	○
Child 5 (5)	○	○	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 5

Q5.19 In your opinion, how many **minutes per day** are your children engaging in physical activity **currently (i.e., at this moment in time)? Please respond as you have in previous questions of the survey, from YOUNGEST to OLDEST.**

	Less than 30 minutes per day (1)	30-59 minutes per day (2)	60-149 minutes per day (4)	150 minutes or more per day (5)
Child 1 (1)	○	○	○	○
Child 2 (2)	○	○	○	○
Child 3 (3)	○	○	○	○
Child 4 (4)	○	○	○	○
Child 5 (5)	○	○	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 6

Q5.20 In your opinion, **how many minutes per day** did your children spend engaged in physical activity during Ontario's **strictest COVID-19 related lockdowns** (when sport and neighbourhood closures were in effect; March 2020- June 2020; January 2021 - May

2021)? **Please respond as you have in previous questions of the survey, from YOUNGEST to OLDEST.**

	Less than 30 minutes per day (1)	30-59 minutes per day (2)	60-149 minutes per day (4)	150 minutes or more per day (5)
Child 1 (1)	○	○	○	○
Child 2 (2)	○	○	○	○
Child 3 (3)	○	○	○	○
Child 4 (4)	○	○	○	○
Child 5 (5)	○	○	○	○
Child 6 (6)	○	○	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 6

Q5.21 In your opinion, how many **minutes per day** are your children engaging in physical activity **currently (i.e., at this moment in time)? Please respond as you have in previous questions of the survey, from YOUNGEST to OLDEST.**

	Less than 30 minutes per day (1)	30-59 minutes per day (2)	60-149 minutes per day (4)	150 minutes or more per day (5)
Child 1 (1)	○	○	○	○
Child 2 (2)	○	○	○	○
Child 3 (3)	○	○	○	○
Child 4 (4)	○	○	○	○
Child 5 (5)	○	○	○	○
Child 6 (6)	○	○	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 7

Q5.22 In your opinion, **how many minutes per day** did your children spend engaged in physical activity during Ontario's **strictest COVID-19 related lockdowns** (when sport and neighbourhood closures were in effect; March 2020- June 2020; January 2021 - May

2021)? **Please respond as you have in previous questions of the survey, from YOUNGEST to OLDEST.**

	Less than 30 minutes per day (1)	30-59 minutes per day (2)	60-149 minutes per day (4)	150 minutes or more per day (5)
Child 1 (1)	○	○	○	○
Child 2 (2)	○	○	○	○
Child 3 (3)	○	○	○	○
Child 4 (4)	○	○	○	○
Child 5 (5)	○	○	○	○
Child 6 (6)	○	○	○	○
Child 7 (7)	○	○	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 7

Q5.23 In your opinion, how many **minutes per day** are your children engaging in physical activity **currently (i.e., at this moment in time)? Please respond as you have in previous questions of the survey, from YOUNGEST to OLDEST.**

	Less than 30 minutes per day (1)	30-59 minutes per day (2)	60-149 minutes per day (4)	150 minutes or more per day (5)
Child 1 (1)	○	○	○	○
Child 2 (5)	○	○	○	○
Child 3 (6)	○	○	○	○
Child 4 (7)	○	○	○	○
Child 5 (8)	○	○	○	○
Child 6 (9)	○	○	○	○
Child 7 (10)	○	○	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 8

Q5.24 In your opinion, **how many minutes per day** did your children spend engaged in physical activity during Ontario's **strictest COVID-19 related lockdowns** (when sport and neighbourhood closures were in effect; March 2020- June 2020; January 2021 - May

2021)? **Please respond as you have in previous questions of the survey, from YOUNGEST to OLDEST.**

	Less than 30 minutes per day (1)	30-59 minutes per day (2)	60-149 minutes per day (4)	150 minutes or more per day (5)
Child 1 (1)	○	○	○	○
Child 2 (2)	○	○	○	○
Child 3 (3)	○	○	○	○
Child 4 (4)	○	○	○	○
Child 5 (5)	○	○	○	○
Child 6 (6)	○	○	○	○
Child 7 (7)	○	○	○	○
Child 8 (8)	○	○	○	○

Display This Question:

If How many children aged 0-13 years do you currently provide care for? = 8

Q5.25 In your opinion, how many **minutes per day** are your children engaging in physical activity **currently (i.e., at this moment in time)? Please respond as you have in previous questions of the survey, from YOUNGEST to OLDEST.**

	Less than 30 minutes per day (1)	30-59 minutes per day (2)	60-149 minutes per day (4)	150 minutes or more per day (5)
Child 1 (1)	○	○	○	○
Child 2 (2)	○	○	○	○
Child 3 (3)	○	○	○	○
Child 4 (4)	○	○	○	○
Child 5 (5)	○	○	○	○
Child 6 (6)	○	○	○	○
Child 7 (7)	○	○	○	○
Child 8 (8)	○	○	○	○

Section 3: Parents' Perceptions of their Children's Return to Play POST-COVID

Q6.1 As a result of COVID-19, many settings that hold opportunities for sport/active play activities were paused or cancelled. The following questions are seeking information about your personal beliefs and actions taken regarding your child(ren)'s return (or not) to their sport/active play opportunities. **Please choose the responses that best represent your beliefs at this moment in time.**

Note. For the purpose of this study, sport/active play are defined as encompassing both unstructured (i.e., playing in the neighbourhood) and structured (i.e., organized sport) activity.

Q6.2 **At this moment,** do you feel comfortable with your child(ren) **returning** to unstructured (i.e., playing in the neighbourhood) and structured (i.e., sports) activity?

- ○ Yes (1)
- ○ No (2)
- ○ Unsure (3)
- ○ I feel comfortable returning them to some activities, but not all. Please describe: (4) _____
- ○ I feel comfortable returning some of my children, but not all. Please describe: (5) _____

Q6.3 **Have you enrolled your child(ren) to attend any sports or extracurricular activities scheduled to take place out of the home this summer or fall? (i.e., July-August or September-December 2021)?**

- ○ Yes (1)
- ○ No (2)
- ○ I have enrolled some of my children, but not all. (4)

Display This Question:

If At this moment, do you feel comfortable with your child(ren) returning to unstructured (i.e., pla... = No

Or At this moment, do you feel comfortable with your child(ren) returning to unstructured (i.e., pla... = I feel comfortable returning them to some activities, but not all. Please describe:

Or At this moment, do you feel comfortable with your child(ren) returning to unstructured (i.e., pla... = I feel comfortable returning some of my children, but not all. Please describe:

Or At this moment, do you feel comfortable with your child(ren) returning to unstructured (i.e., pla... = Unsure

Q6.4 If applicable, **please select all of the factors that are causing you to feel uncomfortable/hesitant regarding your child(ren)'s return to their sport and/or active play activities**. Select all that apply.

- ☐ Fear of my child/myself contracting COVID-19 (1)
- ☐ Fear of social judgement (2)
- ☐ Lack of guaranteed physical distancing during the activity (3)
- ☐ My child is too young to abide by physical distancing (4)
- ☐ Financial burden (e.g., new requirements in place to purchase own supplies, can no longer afford the same activities) (5)
- ☐ Fear that my child is unlikely to remember or abide by physical distancing during activity (6)
- ☐ Our family's schedule can no longer accomodate the same activities (7)
- ☐ I feel my child can be just as engaged in active play at home (8)
- ☐ Our priorities for active play outside the home have changed (9)
- ☐ Lack of knowledge about ventilation and sanitization in sport/play facilities (11)
- ☐ Other: (10) _____

Q6.5 What are your active play opportunity plans for your child(ren) **post-pandemic?** Specifically, **what do you plan to do with regard to their physical activity**

and/or sport programming once the pandemic is deemed "over" by the Ontario government?

- ○ Plan to resume their original/previous programming as soon as possible (1)
- ○ Plan to enroll them in new activities that naturally promote physical distancing because of COVID-19 (2)
- ○ Plan to withdraw completely (4)
- ○ Unsure (5)
- ○ I have different plans for each of my children. Please describe: (6) _____

Q6.6 **<u>In order to capture a more specific view of your child(ren)'s current active play programming,</u>** please **<u>complete the following chart</u>** by selecting which activities you

have returned your child(ren) to at this moment in time (i.e., at this point during the pandemic in Ontario).

- ☐ Archery (1)
- ☐ Ball/Ice/Field Hockey (2)
- ☐ Baseball/Softball (3)
- ☐ Basketball (4)
- ☐ Cricket (5)
- ☐ Dance (6)
- ☐ Football (7)
- ☐ Gymnastics (8)
- ☐ Horseback Riding (9)
- ☐ Volleyball (10)
- ☐ Martial Arts (Karate, Tae Kwon Do, Judo) (11)
- ☐ Playgroups (12)
- ☐ Play in neighbourhood (parks, community centres) (13)
- ☐ Rugby (14)
- ☐ Skating (15)
- ☐ Skiing/Snowboarding (16)
- ☐ Soccer (17)

- [ ] Sports Camps (18)
- [ ] Swimming/Diving (19)
- [ ] Tennis/Badminton/Squash (20)
- [ ] Track and Field (21)
- [ ] Yoga/Pilates (22)
- [ ] Other (please specify): (23)
- [ ] Not applicable (24)
- [ ] Other. Please specify: (25)

_____

Q6.7 **During COVID-19 (March 2020 - PRESENT DAY), where did your child(ren)** regularly engage in active play and sport? **Please select all that apply.**

- ☐ Inside home (1)
- ☐ Inside garage (2)
- ☐ In yard/driveway (3)
- ☐ Common areas inside living space (e.g., living room, basement) (4)
- ☐ On the sidewalks/roads in the neighbourhood (5)
- ☐ Gym or fitness centre (6)
- ☐ At a park/trail (7)
- ☐ At an indoor sports facility (e.g., indoor hockey arena, pool) (8)
- ☐ At an outdoor sports facility (e.g., soccer field, basketball court) (9)
- ☐ Other: (10) _____

Display This Question:

If Have you enrolled your child(ren) to attend any sports or extracurricular activities scheduled to... = Yes

Or Have you enrolled your child(ren) to attend any sports or extracurricular activities scheduled to... = I have enrolled some of my children, but not all.

Q6.8 Please select the **reasons** you have returned your child(ren) to their activities. **Select all that apply.**

- ☐ To keep them occupied (1)
- ☐ To support their physical activity (2)
- ☐ To support their mental health (3)
- ☐ To support their healthy development (4)
- ☐ To get out their excess energy (5)
- ☐ To keep them socially engaged with their peers (6)
- ☐ To encourage learning (7)
- ☐ To expose them to different environments (9)
- ☐ To acknowledge their personal desire to return (10)
- ☐ To provide them with care and time outside of the home (11)
- ☐ To allow myself some time away from parenting (12)
- ☐ Other: (13) _____

Section 4: Parents/Guardians Personal Levels of Physical Activity

Q7.1 **The following questions are seeking information about your personal engagement in physical activity prior to COVID-19 (i.e., before March 2020) AND during Ontario's closures (i.e., March 2020 - Present Day) as a result of the pandemic. Please answer as honestly as possible.**

Q7.2 This question is about **your** personal physical activity participation **PRIOR to COVID-19** (i.e., before March 2020). On average, **how many minutes per week** did YOU spend engaged in **moderate-to-vigorous, heart-pumping** physical activity prior to

COVID-19? (e.g., brisk walking, jogging/running, bike riding, playing sports, strength training, cross-country skiing, etc.)?

- ○ Less than 30 minutes (1)
- ○ 30-59 minutes (2)
- ○ 60-89 minutes (3)
- ○ 90-119 minutes (4)
- ○ 120-149 minutes (5)
- ○ 150 minutes or more (6)

Q7.3 On average, **how many minutes per week** are you spending engaged in **moderate-to-vigorous, heart-pumping** physical activity **CURRENTLY?** (e.g., brisk walking, jogging/running, bike riding, playing sports, strength training, etc.)?

- ○ Less than 30 minutes (1)
- ○ 30-59 minutes (2)
- ○ 60-89 minutes (3)
- ○ 90-119 minutes (4)
- ○ 120-149 minutes (5)
- ○ 150 minutes or more (6)

Section 5: Parents' Attitudes (intentions, comfort, beliefs) Regarding Return to Play/Sport

Q8.1 The following statements are aimed towards understanding your **intentions, beliefs, and comfort** regarding your child's return (or not) to their active play/sports

programming post-COVID. **Keeping in mind your personal opinions, please respond with the degree** to which you **agree** with the following.

	Strongly Disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I feel willing to return my child to active play opportunities where they can following physical distancing guidelines (1)	○	○	○	○	○
I feel that having my child at home with me makes **me** feel safe (2)	○	○	○	○	○
I feel that having my child at home with me makes **them** feel safe (3)	○	○	○	○	○
Even if my child can follow physical distancing guidelines, I am still hesitant to return them to active play programming (4)	○	○	○	○	○
I am confident that if I return my child to active play, my child will follow Ontario's public health guidelines (e.g., hand sanitizing) (5)	○	○	○	○	○
I am looking forward to allowing my child to interact with others (6)	○	○	○	○	○
I prefer to allow my child to interact with people via social networking sites and screen-based technology than in person (7)	○	○	○	○	○

My child has missed out on health benefits of extracurricular activities due to the COVID-19 pandemic (8)	○	○	○	○	○
I have enough skills to support my child's active play at home (9)	○	○	○	○	○
I have access to what I need at home to support my child's active play (10)	○	○	○	○	○
I have the ability to support my child's physical activity/active play at home without engagement in extra-curricular activities (11)	○	○	○	○	○
I have enough access to resources (i.e., space, time, toys) that allow me to support my child's active play (12)	○	○	○	○	○
I reserve time out of my day to support my child's active play (13)	○	○	○	○	○
I feel worried that I will no longer be able to afford my child's extracurricular activities post-pandemic (14)	○	○	○	○	○
I feel worried about ventilation in indoor spaces (15)	○	○	○	○	○

Section 6: Children's Feelings About Sport/Play During and After COVID-19

Q9.1 **How often** did your children ask about returning to organized sport and/or play in the neighbourhood when these activities were either closed or deemed inaccessible by public health guidelines?

- ○ More than 3x per week (1)
- ○ Seldom (1-2x per week) (2)
- ○ Never (3)

Q9.2 Now that public health measures are being lifted in Ontario, **are your children interested in the same activities and/or sports** they engaged in prior to the pandemic, **or different ones?**

- ○ Same activities they were enrolled in prior to COVID-19 (1)
- ○ Same activities with the addition of new ones (2)
- ○ Completely different activities (3)
- ○ My child(ren) are no longer interested in returning to sport/activities (4)

Q9.3 **How often did you engage in physical activity with your child(ren) during closures of supportive spaces (i.e., community centres, sport fields, parks, etc.)?**

- ○ Never (1)
- ○ Rarely (2)
- ○ Sometimes (3)
- ○ Often (weekly) (4)
- ○ Very often (daily) (5)

Q9.4 **In your opinion**, were your children more active during **weekdays** (i.e., Monday-Friday) or **weekends** (i.e., Saturday-Sunday) **during the last 18 months (i.e., March 2020- Present day)?**

- ○ Weekdays (1)
- ○ Weekends (2)

Q9.5 **Please describe** any differences (if any) in your child(ren)'s physical activity levels on weekdays (i.e., Monday-Friday) compared to Weekends (Saturday-Sunday)

_____

Q9.6 **Have you noticed any behaviour changes in your child(ren) during the last 18 months?**

- ○ Yes (4)
- ○ No (5)
- ○ Unsure (6)

Q9.7 With respect **behaviour changes (if any) during** closures of supportive spaces (i.e., community centres, sports fields, parks, etc.), **what did you notice in your child(ren) during the last 18 months?**

_____

Q9.8 If applicable, **what helped you to support your child(ren)'s activity during the pandemic?**

- ☐ Personal interest in being physically active (1)
- ☐ Access to outdoor spaces (2)
- ☐ Virtual opportunities (i.e., virtual sport lessons, YouTube, etc.) (3)
- ☐ Other. Please describe: (4)

_____

- ☐ It was very difficult for me to support my child(ren)'s physical activity (5)

Q9.9 Did you experience **any challenges** with regard to supporting your child(ren)'s activity while at home? **Please describe.**

- ○ Yes. Please describe: (4)

_____

- ○ No. Please describe: (5)

_____

Q9.10 Did **you and your child(ren)** form any mini bubbles (i.e., have designated people and/or families that you would interact with) **over the last 18 months (i.e., March 2020 - present day)?**

- ○ Yes (1)
- ○ No (2)
- ○ Prefer not to answer (3)

Q9.11 Due to COVID-19 associated closures, some activities (i.e., sports) were being conducted via a **virtual space** (e.g., Zoom, Skype, etc.). Now that a lot of these activities

have begun opening back up, **are there any components of these virtual activities that you would like to see continued?**

- ○ Yes. Please describe: (4)
  _____
- ○ No. Please describe: (5)
  _____

Q9.12 If you have returned your child(ren) to sport/activities, **have you noticed any changes in your child(ren)'s physical activity levels?**

- ○ Yes. Please describe: (1)
  _____
- ○ No. Please describe: (2)
  _____

Q9.13 How concerned are you about your child(ren)'s physical activity levels following COVID-related closures/ lockdowns?

- ○ Very concerned (1)
- ○ Somewhat concerned (2)
- ○ Not very concerned (4)
- ○ Not at all concerned (5)

Curriculum Vitae

CURRICULUM VITAE - Monika Szpunar

EDUCATION

Doctor of Philosophy, Health and Rehabilitation Science ***2020-Current***
Western University, London, ON
Field: Health Promotion
Working Thesis Title: Children's and Parents' Perspectives of Return to Play and Sport During the COVID-19 Pandemic in Ontario, Canada

Master of Science, Health and Rehabilitation Science ***2018-2020***
Western University, London, ON
Field: Health Promotion
Thesis Title: Implementation Adherence and Perspectives of the PhysicaL ActivitY (PLAY)
Policy Study: A Process Evaluation, available online:
https://ir.lib.uwo.ca/cgi/viewcontent.cgi?article=9472&context=etd

Bachelor of Health Sciences, Honours ***2014-2018***
Western University, London, ON

RESEARCH EXPERIENCE

Research Assistant ***2018-Current***
Child Health & Physical Activity Lab, University of Western Ontario, London, ON
Lab website: https://www.childpalab.ca/

- Responsible for onboarding new students; liaising with research team members; leading grant application submissions (CIHR, SSHRC, Western); creating knowledge mobilization outputs; leading systematic reviews; accelerometry data collection and analyses; drafting manuscripts; conducting quantitative and qualitative studies (including preparing ethics protocols, survey generation/administration in Qualtrics, analyses in SPSS© and QSR NVivo©)

Intern ***2019-2020***
Mitacs Funded Project **($16,000)**
Western University in partnership with the YMCA of Southwestern Ontario (YMCA SWO), London, ON

- During this internship, I explored the effects of a risk-reframing workshop tailored towards early childhood educators regarding outdoor play affordances for young children enrolled in childcare. I delivered an education workshop to early childhood educators and collected and analyzed pre-and post-intervention

data (quasi-experimental study design). I first authored a manuscript and created an executive summary to disseminate the results of this project.

PUBLICATIONS

Accepted Papers in Peer-Reviewed Journals (*n* = 8):

1. **Szpunar,** M., Bruijns, B. A., Vanderloo, L. M., Shelley, J., Burke, S. M., & Tucker, P. Development of a Physical Activity and Sedentary Behaviour Policy for Canadian Childcare Settings: A Delphi Study. *Early Childhood Education Journal; 2023.* *https://doi.org/10.1007/s10643-023-01473-z*
2. **Szpunar, M.,** Bourke, M., Vanderloo, L. M., Bruijns, B. A., Truelove, S., Burke, S. M., Gilliland, J., Irwin, J. D., & Tucker, P. Parent-Reported Changes in Ontario Children's Physical Activity Levels During the COVID-19 Pandemic. *Children*. 2023; 10(2):221. https://doi.org/10.3390/children10020221
3. **Szpunar, M.,** Saravanamuttoo, K., Vanderloo, L.M., Bruijns, B.A., Truelove, S., Burke, S.M., Gilliland, J., Irwin, J.D., Tucker, P. Children's Physical Activity during COVID-19 in Ontario, Canada: Parents' Perspectives. *International Journal of Environmental Research and Public Health.* 2022; 19(22):15061. https://doi.org/10.3390/ijerph192215061
4. **Szpunar, M.,** Vanderloo, L. M., Bruijns, B. A., Truelove, S., Burke, S. M., Gilliland, J., Irwin, J. D., & Tucker, P. Parents' Attitudes regarding their Children's Play and Sport During COVID-19. *Health Education & Behavior*; 2022; 49(6):934-948. doi:10.1177/10901981221116789
5. **Szpunar, M.,** Vanderloo, L. M., Bruijns, B. A., Truelove, S., Burke, S. M., Gilliland, J., Irwin, J. D., & Tucker, P. 2021. Children and Parents' Views of the COVID-19 Pandemic on Ontario Children's Physical Activity, Play and Sport Behaviours. *BMC Public Health* **21,** 2271 (2021). https://doi.org/10.1186/s12889-021-12344-w
6. **Szpunar, M.,** Bruijns, B., & Tucker, P. 2021. Measuring Early Childhood Educators' Physical Activity and Sedentary-Behaviour-Related Self-Efficacy: A Systematic Review of Assessment Tools. *Health Education & Behavior.* 2021;48(4):455-467. doi:10.1177/10901981211025471
7. **Szpunar, M.,** Driediger, M., Johnson, A.M., Vanderloo, L.M., Burke, S.M., Irwin, J.D., Shelley, J., & Tucker, P. 2021. Impact of the Childcare PhysicaL ActivitY (PLAY) Policy on Young Children's Physical Activity and Sedentary Time: A Pilot Clustered Randomized Controlled Trial. *International Journal of Environmental Research and Public Health*. 2021; 18(14):7468. https://doi.org/10.3390/ijerph18147468
8. **Szpunar, M.,** Johnson, A.M., Driediger, M., Burke, S.M., Irwin, J.D., Shelley, J., Timmons, B.W., Vanderloo, L.M. & Tucker, P. 2021. Implementation Adherence and Perspectives of the Childcare PhysicaL ActivitY (PLAY) Policy: A Process Evaluation. *Health Education & Behavior;* 2022;49(1):66-77. doi:10.1177/1090198121996285

Publications Submitted/Under Review (*n* = 4):

1. Saravanamuttoo, K., Bourke, M., **Szpunar, M.,** & Tucker, P. The Effectiveness of Physical Activity Policies in Centre-Based Childcare: A Systematic Review and Meta-Analysis. Manuscript submitted to *Research Quarterly for Exercise and Sport* on Aug 2022. 40 pages.
2. Vanderloo, L.M., **Szpunar, M**., Bruijns, B.A., Driediger, M., Burke, S.M., Johnson, A.J., & Tucker, P. Impact of a Physical Activity Childcare Policy on the Self-Efficacy of Early Childhood Educators in Canada. Submitted to *Early Childhood Research Quarterly* on Oct 2022. 34 pages.
3. **Szpunar, M.,** Johnson, A.M., Driediger, M., & Tucker, P. Early Childhood Educators' Knowledge, Self-Efficacy and Risk Tolerance for Outdoor Risky Play in Childcare. Manuscript submitted to *Early Childhood Education Journal* on Oct 2022. 32 pages.
4. **Szpunar, M.,** Bourke, M., Vanderloo, L. M., Bruijns, B. A., Truelove, S., Burke, S. M., Gilliland, J., Irwin, J. D., & Tucker, P. The Association between Children's and Parents' Physical Activity During the COVID-19 Pandemic: A Cross-Lagged Analysis. Submitted June 2023 to *Journal of Sport and Health Science*

TEACHING EXPERIENCE

Graduate Teaching Assistant ***Fall 2018, 2019, 2020, 2022***

Faculty of Health Sciences, University of Western Ontario, London, ON

Course: HS 3630: Topics in Sex, Gender, and Health. **4 terms.**

- Responded to student inquiries regarding course content, exam materials
- Facilitated lectures and class discussions
- Held office hours and meetings for students throughout semester
- Managed student appeals, concerns, and course re-adjustments
- Graded exams, final essays, and assignments and uploaded to OWL

Graduate Teaching Assistant ***2021-2022***

Faculty of Occupational Therapy, University of Western Ontario, London, ON

Course: IPE9803: Applying Research to Practice (Interprofessional Education). **2 terms.**

- Created content for in-person labs and online modules
- Lectured and facilitated class discussions and labs via Zoom
- Graded course assignments and uploaded grades to OWL
- Held office hours and managed student relations
- Hosted and graded inter-professional presentation days with students across Physical Therapy, Occupational Therapy and Communication Science and Disorders disciplines

CONFERENCE PRESENTATIONS

Refereed Academic Conferences and Presentations (*n* = 4)

1. **Szpunar, M.,** Driediger, M., Johnson, A.M., Vanderloo, L.M., Burke, S.M., Irwin, J.D., Shelley, J., & Tucker, P. (2021, Sept). *Exploring the Feasibility of a Childcare Physical Activity & Sedentary Time Policy.* 8th International Society for Physical Activity and Health Virtual Congress (ISPAH). *Oral Presentation.*
2. **Szpunar, M.,** Driediger, M., Johnson, A.M., Vanderloo, L.M., Burke, S.M., Irwin, J.D., Shelley, J., & Tucker, P. (2021, May). *Impact of the Childcare PhysicaL ActivitY(PLAY) Policy on Toddlers' and Preschoolers' Physical Activity Levels.* International Society of Behavioral Nutrition and Physical Activity (ISBNPA) Xchange Initiative Conference. *Oral Presentation.*
3. **Szpunar, M.,** Driediger, M., Johnson, A.M., Vanderloo, L.M., Burke, S.M., Irwin, J.D., Shelley, J., & Tucker, P. (2021, May). *Impact of the Childcare PhysicaL ActivitY (PLAY) Policy on Toddlers' and Preschoolers' Physical Activity Levels.* Child Health Symposium, Western University, London, Ontario. *Oral Presentation.*
4. **Szpunar, M.,** Driediger, M., & Tucker, P. (2019, Feb). *Exploring the Feasibility and Appropriateness of Physical Activity Policy in Childcare Centres across Canada*. Health and Rehabilitation Sciences Graduate Student Research Conference, Western University, London, Ontario. *Oral Presentation.*

Conference Submissions Under Review/Upcoming (*n* = 1):

1. **Szpunar, M.,** Vanderloo, L. M., Bruijns, B. A., Truelove, S., Burke, S. M., Gillilland, J., Irwin, J. D., & Tucker, P. 2021. Children and Parents' Views of the COVID-19 Pandemic on Ontario Children's Physical Activity, Play and Sport Behaviours. International Society of Behavioral Nutrition and Physical Activity (ISBNPA) Annual Meeting Conference (scheduled for June 14-17, 2023, in Sweden). *Oral Presentation.*

Invited Speaker Presentations (*n* = 5):

1. **Szpunar, M.** *Introduction to Data Archiving and Deposit to Western's Dataverse: Borealis.* Presentation created and delivered for Lunch and Learn. (2023, January). *Oral Presentation.*
2. **Szpunar, M.,** & Tucker. P. *Encouraging Healthy Movement Behaviours in Childcare Based Settings.* Presentation created and delivered for the Canadian Childcare Federation. (2022, Oct). *Oral Presentation.*
3. **Szpunar, M.,** & Tucker, P. *How Childcare Policy Can Increase Physical Activity Affordances: Results from PLAY Policy Study.* Western Summit on Physical Activity. (2022, Feb). *Oral Presentation.*

4. **Szpunar, M.,** & Newton, A. *Rethinking Naps in Childcare.* Presentation created and delivered for the Canadian Childcare Federation. (2022, Jan). *Oral Presentation.*
5. Bruijns, B.A., Truelove, S., & **Szpunar, M.** (2019, May). The Importance of Measuring Physical Activity. Discovery Days. University of Western Ontario, London, ON.

GRANTS AND AWARDS

1. **Canadian Institutes of Health Research Institute of Human Development, Child, and Youth Health (CIHR-IHDCYH) Talks Video Competition** ***2023***
   Title: Children's and Parents' Activity During COVID-19 in Ontario
   Amount Awarded: $500
   Description: We submitted a video to educate parents and children on how to get active during stay-at-home periods because of COVID-19. The video can be seen here: https://www.youtube.com/watch?v=C0dzWFVr86M&list=PLxWz0fEGuv6ojqR_nESogGZMnUrFeuy_Z&index=6

2. **NDRIO-Portage COVID-19 Data Curation Funding** ***2021-2022***
   Title: Parents' Perspectives of their Child(ren)'s "Return to Play" Post-Covid
   Amount Awarded: $20,840
   Description: The Digital Research Alliance of Canada awarded me this funding to create an open-access dataset and deposit it to Western's Dataverse – a data repository. I anonymized the dataset to protect confidentiality of participants, and data was made to align with the FAIR principles (Findable, Accessible, Interoperable, and Reusable). The completed project can be found online: https://borealisdata.ca/dataset.xhtml?persistentId=doi:10.5683/SP3/ZPWDR3

3. **Western Faculty Research Development Fund (FRDF)** ***2021-2022***
   Title: Knowledge Dissemination of Parents' Perspectives of their Child(ren)'s "Return to Play" Post-COVID-19 Pandemic: Infographic
   Amount Awarded: $3,000
   Description: Funds awarded to produce infographics and videos.

4. **Social Science and Humanities Research Council Explore Grant** ***2020-2021***
   Title: Parents' Perspectives of their Child(ren)'s "Return to Play" Post-Covid

Amount Awarded: $7,000

Description: This funding was used for my doctoral research project, that assessed the impact of the COVID-19 pandemic on parents and children's physical activity. Given that parents are gatekeepers to children's activity (e.g., they provide transportation, finances, etc.), their plans to return (or not) their children to physical activity and sport were also examined in detail.

SCHOLARSHIPS

Ontario Graduate Scholarship ***2022-2023***

Value: $15,000

STUDENT SUPERVISION

Research Assistants (*n* = 3):

1. Kshitija Mundle (2021 – present)
2. Aidan Loh (2021 – present)
3. Cara Davidson (2019 – 2020)

Graduate Students (*n* = 1):

4. Kendall Saravanamuttoo (2020 – 2023)

Undergraduate Student Interns (*n* = 3):

5. Alex Liao (2021 – 2022)
6. Alyssa Aglipay (2019 – 2020)
7. Cole Misic (2020)

KNOWLEDGE TRANSLATION

Media Appearances (*n* = 4)

1. **Szpunar, M.** London Free Press. April 19, 2022
   Topic: Children's and parents' activity during COVID-19 in Ontario. News article accessible online: https://lfpress.com/news/local-news/pandemic-upside-families-rediscovered-the-outdoors-western-researchers
2. **Szpunar, M.** CBC London News. April 19, 2022
   Topic: Strategies for supporting family's healthy movement during COVID-19 related closures across Ontario. News article accessible

online: https://www.cbc.ca/news/canada/london/shift-toward-more-unstructured-physical-activities-could-be-pandemic-legacy-researchers-find-1.6420153

3. **Szpunar, M.** 630 CHED News. April 14, 2022
   Topic: How to promote children to engage at home activity during COVID-19
4. **Szpunar, M.** 770 CHQR News. April 14, 2022
   Topic: How to promote children to engage at home activity during COVID-19

Written Work (*n* = 2)

5. **The Conversation -** https://theconversation.com/as-kids-activities-reopen-parents-share-insights-about-keeping-families-active-during-covid-19-shutdowns-177518
   Description: This was a short communication piece written to disseminate research findings from one of my doctoral studies. We shared findings from this study that shared strategies from children and parents on how to get active during COVID-19 related community closures. Our goal was to inspire families to get active and provide them with strategies to do so.
   This article was also featured on Western News - https://news.westernu.ca/2022/04/expert-insights-what-we-learned-about-keeping-kids-active-during-the-pandemic/
6. **International Society of Behavioural Nutrition and Physical Activity –** Early Career Researcher Spotlight. Monika Szpunar investigates how we can increase children's health via promoting their physical activity. Available online: https://isbnpa.org/membership-2/student-ecr-spotlight-monika-szpunar-investigates-how-we-can-increase-childrens-health-via-promoting-their-physical-activity/

Infographics (*n* = 3)

7. **YMCA Mitacs Project -** https://www.childpalab.ca/post/educators-knowledge-self-efficacy-and-risk-tolerance-for-outdoor-play-in-childcare
8. **Systematic Review of Tools to Promote Early Childhood Educators Self-Efficacy -** https://www.childpalab.ca/post/systematic-review-of-tools-infographic
9. **Return to Play During COVID-19 Strategies -** https://www.childpalab.ca/post/families-perspectives-of-the-impact-of-covid-19-on-physical-activity-play-and-sport-behaviours

Videos (*n* = 1)

10. **Children's Return to Play During COVID-19 -** https://www.youtube.com/watch?v=C0dzWFVr86M&list=PLxWz0fEGuv6ojqR_nESogGZMnUrFeuy_Z&index=6

SERVICES & ADMINISTRATION

Peer-Review for Scientific Journals

- Reviewer for Health Education Research (2023) – 1 paper
- Reviewer for Nursing and Health Science (2023) – 1 paper
- Reviewer for BMC Public Health (2021) – 3 papers
- Reviewer for Journal of Applied Nutrition, Physiology & Metabolism (2021) – 2 papers

Conference Judge

- Health and Rehabilitation Sciences Graduate Research Conference. Faculty of Health Sciences, University of Western Ontario, London, ON (2021, Feb).

Health and Rehabilitation Sciences Graduate Student Council

University of Western Ontario, London, ON

- Organizing welcome back events for incoming graduate students
- Responsible for internal communications duties and budget planning
- Planning of social events including HRS program orientation week, HRS graduate conference, HRS networking events.

PROFESSIONAL DEVELOPMENT

Canadian Institutes of Health Research (CIHR)

Science Communication Workshops

- #SciComm on Social Media for Researchers
- Instagram and TikTok for #SciComm
- Combatting Misinformation on Social Media

Research Western Conference

- Integrated Knowledge Translation (May 2021)
- Grant Writing 101 (Aug 2019)

Ivey "Master the Entrepreneur Skillset" Program

University of Western Ontario, London, ON

Thematic Analysis using NVivo: Workshop

Public Health Ontario Training

- Health Equity Impact Assessment Certificate
- Health Promotion Foundations Course

Accessibility at Western (AODA) – Accessibility in Teaching Certificate
University of Western Ontario, London, ON

TA Day: Graduate Student Conference on Teaching
Centre of Teaching and Learning, University of Western Ontario, London, ON

Tri-Council Policy Statement 2 (TCPS 2): Course on Research Ethics (CORE), Ethical Conduct for Research Involving Humans

Teaching Assistant Training Program Certification
Centre of Teaching and Learning, University of Western Ontario, London, ON

LANGUAGES

English (native), **Polish** (Highly proficient, verbal and written)