The #MomsGotGame Campaign:

What the Research Says About Mom's Participation in Physical Activity and Sport

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SIRC

Introduction

Canada's Sport Information Resource Centre (SIRC), supported by the Government of Canada, is leading a media campaign this Spring. *Mom's Got Game (Vas-y, Maman!)* is a bilingual initiative encouraging, celebrating and supporting moms to play sport and be active. Through partner engagement and digital, radio, and television advertisements, #MomsGotGame (#VasYMaman) aims to:

- Celebrate moms who are making efforts to play sports and be physically active;
- Provide resources for moms to get involved in sport and physical activity for the first time, or to participate more often; and
- Change the perceptions and attitudes of friends and family (e.g., partners, children) to support mom's physical activity and sport participation.

The benefits of physical activity and sport participation cannot be understated[1]. And while moms recognize the importance of physical activity for their health and wellbeing, they often prioritize the needs of their children, household, or employer above their own (Hamilton & White, 2010; Krouse et al., 2011).

Indeed, women report significant decreases in their physical activity levels after giving birth to their first child (McIntyre & Rhodes, 2009). Up to 75% of moms experience barriers to regular physical activity, including lack of time and social support, fatigue, childcare, and obligations to other roles (Verhoef & Love, 1992)—and these barriers may be exacerbated during the COVID-19 pandemic. As such, resources and support provided through #MomsGotGame (#VasYMaman) will consider the unique challenges and circumstances for mothers in the time of COVID-19.

Through #MomsGotGame (#VasYMaman), SIRC envisions a "new normal" where more moms are playing sports and getting active!

Purpose and Objectives

The purpose of this document is to provide a summary of the evidence that underpinned the development of the #MomsGotGame (#VasYMaman) campaign. To this end, a literature review focused on mother's participation in physical activity in sport was conducted.

The objectives of this literature review were to:

[1] See "Physical Activity and COVID-19: A Review of the Benefits and Effective Behaviour Change Strategies" on SIRC.ca.

1. Provide an overview of the reasons why mothers participate in physical activity and sport, as well as the unique benefits for moms;

2. Identify common barriers and facilitators that influence mother's participation in physical activity and sport;

3. Highlight effective and/or promising strategies for physical activity promotion among mothers; and

4. Explore how the COVID-19 pandemic has influenced mother's participation in physical activity and sport.

Search Strategy

The titles of articles in two databases (PsycINFO and PUBMED) were first searched in May of 2020 using the following terms: "physical activity" OR "exercise" OR "sport" AND "mom" OR "mother". A secondary search of the same databases was performed in April 2021 using the search terms: "physical activity" OR "exercise" OR "sport" AND "mom" OR "mother" AND "COVID-19". A tertiary search was then performed in January 2022, using the search terms: "physical activity" OR "exercise" OR "sport" AND "mom" OR "mother" OR "new mom" OR "postpartum" OR "expecting mom" or "pregnancy". These searches were limited to peer-reviewed articles published in English. A total of 86 articles were identified and retained for full-text review.

Additional articles were identified through a manual search of the reference lists of articles that were included in the initial review. To supplement these searches, SIRC partners and researchers with expertise in the area of gender and sport were asked to identify or submit research on the topic of mother's participation in physical activity and sport. An additional 26 articles and reports were included.

Following full-text review of relevant data sources (i.e., peer-reviewed articles, reports, and custom analyses; n = 112), a total of 62 data sources aligned with the objectives of this literature review and were included in the final report.

Synthesis of Research Findings

Research on mother's participation in physical activity and sport is limited (Bean & Wimbs, 2021). These limitations include a focus on small, homogenous samples (e.g., McGannon & Schinke, 2013) and narrow geographic regions (e.g., Brown et al., 2001), which largely include Caucasian women in developed nations. Additionally, current research has relied primarily on cross-sectional designs and self-report measures (Bellows-Riecken & Rhodes, 2008). Nonetheless, research in this area has grown steadily over the past two decades.

With these limitations in mind, this review synthesizes key findings from the literature focused on mother's physical activity and sport participation, including (a) participation rates, (b) motives, (c) benefits, (d) barriers, (e) facilitators, (f) effective and/or promising promotional strategies, (g) special considerations for new and expecting moms, and (h) the impact of COVID-19.

Participation Rates

Research shows that becoming a parent is often associated with decreased physical activity participation (Allender et al., 2008; Bean & Wimbs, 2021). Parents are generally less active than nonparents (Bellows-Reicken & Rhodes, 2008), and describe a shift from organized sports to less structured forms of activity (e.g., walking) after having a child (Hamilton & White, 2010). These findings are especially true for mothers (Bellows-Reicken & Rhodes, 2008; McIntyre & Rhodes, 2009). For example, women who are mothers of young children tend to have lower levels of physical activity than women of a similar age who do not have children (Brown et al., 2001), and mothers spend nearly 1.5 hours less time on physical activity every two weeks than fathers (Nomaguchi & Bianchi, 2004). In fact, the amount of time that mothers of school-aged children allocate to physical activity has decreased by 35% since 1965, while sedentary time (e.g., watching television) has increased by 40% over the same period of time (Archer et al., 2013). These trends are largely the result of changes in women's social roles—including a significant increase in women's employment and a concurrent reduction in the number of women staying home to perform household duties—and the rise of screen-based entertainment (Archer et al., 2013). Nonetheless, these findings draw attention to the importance of physical activity promotion for women, and mothers in particular.

Motives

Women participate in physical activity and sport for a variety of reasons, including physical health, weight control, psychological wellbeing, enjoyment, achievement, and social affiliation (Kilpatrick et al., 2010; Krouse et al., 2011; Segar et al., 2006). In general, motives that are related to body shape or weight—which are common among midlife women—are associated with "I should" rhetoric (e.g., "I should lose weight/get fit/be healthy"), and lead to lower levels of physical activity participation than motives that are not related to body shape or weight (Segar et al., 2006). In contrast, reasons for participation that are tied to personal fulfillment and positive emotions, such as fun, enjoyment, challenge, competition, and camaraderie, generally lead to higher levels of physical activity (Segar et al., 2006) and participation that is prolonged over time (Kilpatrick et al., 2010). Often, women have multiple reasons for engaging in sport and exercise, which can involve both intrinsic (i.e., enjoyment, personal fulfillment) and extrinsic (i.e., external rewards and punishment) sources of motivation (e.g., Krouse et al., 2011). Regardless, a custom analysis of the Canadian Fitness and Lifestyle Research Institute's 2014-2015 Physical Activity Monitor (CLFRI, 2020) revealed that

the majority of moms believe physical activity is easy (53%), convenient (66%), fun (75%), and important (86%).

Benefits

Mom's participation in physical activity and sport has benefits not only for mom, but for the whole family as well. In general, physically active moms report feeling healthier and happier, which in turn makes them feel like better parents (Hamilton & White, 2010; McGannon et al., 2018). Parents' engagement in and enjoyment of physical activity has also been linked to an active family culture and a connected family unit (Hamilton & White, 2010), and models healthy behaviours for children (Rodrigues et al., 2017; Schoeppe et al., 2016; Trost et al., 2003). In other words, kids are more likely to get in the game when their moms are having fun and playing sports too!

Healthy, Happy Moms

Regular physical activity is associated with a wide range of benefits, including physical health and disease prevention (e.g., 31% reduced risk of premature death), mental health and wellbeing (e.g., 45% lower odds of experiencing depression), and immune system function (e.g., 50% reduced risk of contracting an upper respiratory tract infection, such as the common cold)[2]. In addition, physical activity can improve aging outcomes (e.g., reduced risk of osteoporosis and sarcopenia: Greco et al., 2019) and provide moms with time to focus on themselves, which can assist in coping with the challenges and stresses of motherhood (Limbers, McCollum, Ylitalo, et al., 2020).

Many moms agree that physical activity has health benefits. For example, a custom analysis of the Canadian Fitness and Lifestyle Research Institute's 2014-2015 Physical Activity Monitor indicated that 90% of moms believe that physical activity prevents heart disease, 84% believe that is improves functional ability with age, and 83% believe it helps to manage stress (CLFRI, 2020).

In fact, working moms reported that they felt better, slept better, had personally fulfilling goals, were able to unwind from work (Dixon, 2009) and were more productive at work when they took the time to be active—and the benefits for moms ultimately benefited their families as well (Limbers, McCollum, Ylitalo, et al., 2020). For example, recreational athlete mothers have credited regular participation in sport for not only making them better and more focused athletes, but also enhancing their roles as good mothers (McGannon et al., 2018). Likewise, parents have reported that participation in physical activity provided them with the energy and confidence to be a good parent, as well as a healthy parent (Hamilton & White, 2010). By improving their health, parents

[2] See "Physical Activity and COVID-19: A Review of the Benefits and Effective Behaviour Change Strategies" on SIRC.ca for details. Sources of examples in the order presented: Warburton et al. (2010), United States Department of Health and Human Services (2008), and Strasner et al. (2001).

were making an effort to 'be around' for their kids as long as possible (Hamilton & White, 2010).

Active, Healthy Families

According to Hamilton and White (2010), physically active parents foster an active family culture in which parents set positive examples of health behaviours for their children. Physical activity also contributes to a happy and connected family unit (Hamilton & White, 2010). In other words: When parents are happy, kids are happy too.

More than 100 studies have examined the influence of parent's physical activity participation on children's physical activity levels (see Yao & Rhodes, 2015). When examined together, this body of research shows that parental modelling of physical activity behaviours predicts children's physical activity participation (Edwardson & Gorely, 2010; Yao & Rhodes, 2015), but the findings of individual studies are mixed (i.e., some studies show strong relationships, while others show no relationship at all). Notably, parents' enjoyment and encouragement of physical activity may be more important for children's physical activity than parents' modelling of physical activity behaviours (Edwardson & Gorely, 2010; Trost et al., 2013; Yao & Rhodes, 2015)

That said, several recent studies have demonstrated that when moms participate in physical activity—including organized sport, outdoor activities, and walking for transport—their kids are more likely to participate in the same activities (Canadian Women and Sport, 2020; Hesketh et al., 2014; Schoeppe et al., 2016; Rodrigues et al., 2017). For example, a recent report from Canadian Women and Sport (2020) showed that school-aged girls (6-18 years) with a mother who plays sports were between 1.5 and 1.9 times more likely to play sports than school-aged girls with a mother who does not play sports[3]. The report also showed that girls with a mother who plays sports were less likely to drop out of sports during adolescence—thus mitigating what is typically a significant decline in sport participation among this demographic. As another example, a growing body of literature indicates that mothers may be especially important role models and sources of support for their daughter's physical activity engagement among East African immigrant families (Thul & LaVoi, 2011; Thul et al., 2016).

Barriers

Despite the benefits of physical activity and sport involvement for moms and their families, low rates of participation are likely the result of unique barriers that many mothers face in their efforts to be active. Up to 75% of mothers experience barriers to physical activity (Verhoef & Love, 1992), ranging from feelings of guilt, pressure, and stress to a lack of time, support, or childcare (e.g., Bean & Wimbs, 2021; Dixon, 2009;

[3] Among moms who play sports, 77% of girls aged 6-12 years and 72% of girls aged 13-18 years play sports. Among moms who do not play sports, 53% of girls aged 6-12 years and 39% of girls aged 13-18 years play sports. Source: Canadian Women and Sport (2020). The Rally Report. https://womenandsport.ca/resources/research-insights/rally-report/

Hamilton & White, 2010; Krouse et al., 2011; McGannon et al., 2013; Limbers, McCollum, Ylitalo, et al., 2020).

Putting the Family First

Mothers often prioritize the needs of their children, partner, and/or employer ahead of themselves (Dixon, 2009; Hamilton & White, 2010; Krouse et al., 2011; Ritondo, 2021). Although many mothers understand the benefits of physical activity, they find it difficult to balance personal time (e.g., to play a sport or go to the gym) with family, household, and work commitments (Hamilton & White, 2010; Bean & Wimbs, 2021). As a result, moms are often required to pre-plan where, when, and how they will participate in physical activity (McGannon et al., 2018; Bean & Wimbs, 2021), or take advantage of opportunities to be active when they arise (Hamilton & White, 2010).

Guilt, Pressure, and Loss of Identity

When mothers take time for themselves, they often experience feelings of guilt and selfishness—they feel as though their own physical activity is taking time away from their children, partner, or household duties (Bean & Wimbs, 2021; Dixon, 2009; Hamilton & White, 2010; Ritondo, 2021; Ritondo, 2022). Correspondingly, many women struggle to balance their multiple identities (e.g., athlete, worker, partner, mother) after having children, which can result in a loss identity altogether (Bean & Wimbs, 2021; Hamilton & White, 2010). Working mothers in particular can experience psychological distress from their own perceived inability to balance work, leisure and motherhood with ease (Hamilton & White, 2010).

Rigid Schedules and Lack of Time

While balancing work, family, and household obligations, mothers are also subject to the (often) rigid schedules of their workplace and their children's school or childcare centre (Dixon, 2009). Consequently, mothers often feel that they have limited opportunities to "fit in" physical activity, or their preferred type of activity (e.g., organized sports, fitness classes) occurs at times that are unavailable to them, such as evenings and weekends (Dixon, 2009).

Lack of Support

Some mothers do not have the support of a coparent, or their coparent does not provide the support required to participate in physical activity (Dixon, 2009; Hamilton & White, 2010). Such support might include help with household or childcare duties, thus giving mom the time to be active. Envy or resentment can result when one parent is able to be physically active while the other stays home with the kids (Hamilton & White, 2010).

Availability of Childcare

Mother's ability to engage in physical activity can be limited by the availability of support (financial, social) for childcare, childcare facilities, or integrative child-parent program that would allow for mom and child to be active together (Dixon, 2009; Hamilton & White, 2010; Paterson et al., 2016).

Inability to Access to Preferred Activities

In general, women prefer playing sports or exercise in group settings (Dixon, 2009). However, group options are often inaccessible to mothers due to their family and/or work schedules (Dixon, 2009). For example, working moms may be limited to a one-hour lunch break or when their kids are asleep, which limits access to organized sports or fitness classes that are typically scheduled for weekday evenings. Alternatively, mothers of young children often feel that the only way to be active is to integrate their physical activity with their children's activities (Hamilton & White, 2010).

Feeling Intimidated, Judged, or Uncomfortable

According to an online survey of 348 women during the COVID-19 pandemic, up to 87% of the women surveyed felt safe returning to gyms and pools with anti-coronavirus measures in place, but as few as 13% had visited a gym or pool (Sport England, 2020). In addition to safety concerns, most women were avoiding the gym or pool because they felt intimidated or judged (51%) or uncomfortable in their swimwear (73%).

Facilitators

To address or overcome barriers to mom's physical activity and sport participation, a number of facilitators have also been identified. Some of these facilitators, such as self-compassion (Bean & Wimbs, 2021), require a shift in the way moms think about their participation in physical activity, while others require a broader social and cultural reframing of mother's roles in society (Hamilton & White, 2010; McGannon et al., 2018; Paterson et al., 2016). In general, moms need flexibility, social support, and help with childcare to support their participation in physical activity and sport (Bean & Wimbs, 2021; Dixon, 2009; Hamilton & White, 2010; McGannon et al., 2018).

Self-compassion

In a study of mothers who were training for a marathon, participants felt that self-compassion was important for minimizing feelings of guilt and perceived lack of time (Bean & Wimbs, 2021). To facilitate their training, the marathon moms treated their running as "me time"—a time for enjoyment and self-care (Bean & Wimbs, 2021). Additionally, many of the marathon moms noted that practicing mindfulness and self-kindness helped them be more self-compassionate (Bean & Wimbs, 2021).

Flexibility and Planning

Because mothers are often subject to rigid work, school, or childcare schedules while balancing family, household, and work commitments, finding time to be active involves flexibility and planning (Bean & Wimbs, 2021; Dixon, 2009). Mothers may attempt to integrate their participation with their children's activities, or purposefully seek structured participation independent of their children's activities (Hamilton & White, 2010). This often involves detailed planning of how, when, and where physical activity will take place, which requires communicating with coparents and coordinating childcare (Bean & Wimbs, 2021; McGannon et al., 2018). Working moms may also benefit from negotiating with coworkers or supervisors to make time for exercise within the workday (e.g., taking a short lunch break and leaving work early) while their kids are in school or daycare, or at home with their partner (Dixon, 2009; Limbers, McCollum, Ylitalo, et al., 2020).

Social Support

One of the most important facilitators of mom's physical activity and sport participation is social support. When partners (including exes) help with childcare and household duties, moms are more likely to find time to be active (Bean & Wimbs, 2021; Dixon, 2009; Hamilton & White, 2010). Encouragement from partners and children, such as a partner bringing the kids to a game to cheer mom on, can also support mom's participation (Bean & Wimbs, 2021; Dixon, 2009). Beyond the immediate family, extended family (e.g., father-in-law) and friends are also important sources of childcare and emotional support (Bean & Wimbs, 2021; McGannon et al., 2018; Trussell et al., under review). Likewise, training partners or teammates "serve as a resource for mothers to balance between self-time and good mother identities, without having to abandon sport training time to socialize" (McGannon et al., 2018).

Childcare

For mothers of young children, access to childcare facilities (e.g., within the gym or physical activity space), integrated parent-child programming, or support for childcare (i.e., financial resources to support the cost of childcare; friends or family members to share childcare duties) can facilitate mom's participation in physical activity and sport (Dixon, 2009; Hamilton & White, 2010; Paterson et al., 2016; Ritondo, 2022).

Reframing Mother's Social Roles

Reframing mother's social roles can address conflicts that moms experience related to role fulfillment and balancing multiple identities (Hamilton & White, 2010; McGannon et al., 2013). For example, normalizing beliefs about household chores as shared responsibilities within a family, rather than the primary responsibility of the mother, may

help to facilitate the time and support mom needs to be active. Mothers often feel pressured to be dedicated mothers, partners, and workers, and can feel discouraged when they are expected to be “good exercisers” too (Dixon, 2009). Accordingly, framing physical activity as something that won’t take time away from the family, while also benefitting the family, may help to motivate mom’s participation in sport and physical activity (Hamilton & White, 2011).

Exercise Facilities that are Inclusive and Free of Judgment

To combat concerns that women face at the gym or pool, such as feeling intimidated or judged or uncomfortable in swimwear, a recent survey of women revealed five strategies to promote inclusive, judgment-free exercise facilities: (a) a discreet offer from staff to help with equipment; (b) hooks by the pool to hand towels and restrict time walking in swimwear; (c) a code of conduct in weight rooms (e.g., enforcing time limits, re-racking weights after use); (d) women’s only areas and/or dedicated swim times; and (e) fewer full-length mirrors (Sport England, 2020).

Promotional Strategies

Research focused on the motives and benefits associated with mom’s physical activity and sport participation—as well as the barriers and facilitators to their involvement—provides the background necessary for physical activity promotion targeting mothers of school-aged children. Drawing on the small but growing body of literature focused on strategies to promote mother’s participation in physical activity and sport, promising practices are outlined below.

Message Content: Research on Parental Beliefs

To help mothers get active, increasing positive attitudes about mom’s participation in physical activity and sport and reframing beliefs about mom’s social roles are key (Hamilton & White, 2010, 2011). According to Hamilton and White (2011), when parents believe that physical activity participation contributes to ‘good parenting’ and doesn’t take time away from other commitments (e.g., household duties, family time), they are more likely to be active. Mothers, in particular, are also more likely to be active when partners and other parents encourage them to be active, and when they feel like they have personal control over their physical activity behaviour (e.g., they have the time and energy to participate in an activity of their choice; Hamilton & White, 2011).

This research suggests that messages demonstrating how physical activity can improve parenting (e.g., when moms have time to get active and unwind, they are more patient and tolerant with the kids) and benefit the whole family may be effective. Messages are also more likely to be effective when they highlight activities that do not interfere with family time (e.g., moms playing with their kids, or the kids cheering mom on), and express the voices of others, especially partners, encouraging moms to be active.

Finally, messages that show how physical activity can boost energy levels and identify solutions to a lack of time (e.g., taking advantage of lunch hour or the weekend) may enhance mom's beliefs about their personal control of physical activity behaviours. However, messaging around physical activity in moms should be thoughtfully planned to ensure that the messages do not cause feelings of guilt in women who face challenges to getting active (Atkinson et al., 2020).

Digital Solutions for Message and Program Delivery

In terms of how physical activity messages and programs are delivered, recent research suggests that digital technologies are a promising future direction (Chung et al., 2019; Cleland et al., 2013; Mascarenas et al., 2018; Schoeppe et al., 2020). For instance, the Moms Online Video Exercise Study used videoconferencing (e.g., Zoom, Google Hangouts) and mobile apps (e.g., Nike+, Sworkit) to create low-cost exercise groups for mothers (Mascarenas et al., 2018). Inactive women who participated in this study increased their physical activity levels and demonstrated reduced depressive symptoms when compared against a control group (Mascarenas et al., 2018). A "real world" example of this type of program is the JUMP IN for Women's Hearth Health campaign – a virtual 30-day challenge (30 minutes of physical activity for 30 days) to support women's heart health through research, education, and programming at the University of Ottawa Heart Institute and the Canadian Women's Heart Health Centre.

In general, programs that offer a group component are more effective for improving physical activity among mothers, especially among socioeconomically disadvantaged women (Cleland et al., 2013). Alternatively, culturally tailored webpages are a promising method of enhancing health behaviours for specific target populations (e.g., African American mothers: Chung et al., 2019).

Additional Considerations for New and Expecting Moms

Research shows that new and expecting moms report decreases in their physical activity levels (Atkinson et al., 2020; Paterson et al., 2016). In fact, the 2019 Canadian guideline for physical activity during pregnancy estimated that less than 15% of women meet the minimum recommendation of 150 minutes of moderate-intensity physical activity per week during their pregnancy (Mottola et al., 2019). Moreover, very few women meet the recommended physical activity guidelines in the postnatal period (Lesser, 2022). This is a concern as pregnancy and the transition to motherhood represent significant identity shifts in a women's life where they may be more vulnerable to mental health challenges, including anxiety, stress and depression (Kołomańska-Bogucka et al., 2019; Lesser, 2022; Rice & Williams, 2021). The following section of this report will focus on why physical activity is so important for new and expecting mothers, not to mention their babies!

Mental and Physical Health

New and expecting moms often report higher stress levels and more feelings of anxiety and depression compared to the general public (Atkinson et al., 2020). The ongoing pandemic has further exacerbated the mental health challenges faced by many new and expecting moms (Davenport, Horbachewsky, et al., 2020; Rice & Williams, 2021; Shidhaye et al., 2020). For example, a recent study found that the prevalence of postpartum depression has increased from 15% to 41% since the beginning of the pandemic (Davenport, Horbachewsky, et al., 2020). However, while many moms face mental health challenges, they often hesitate to take medications as they fear these may impact their baby's health (e.g., through breastfeeding; Vargas-Terrones et al., 2020). Exercise may be particularly important for these moms as it can act as a natural form of medicine.

Research shows that women who meet the recommended physical activity guidelines of 150 minutes of moderate-intensity physical activity per week during their pregnancy have lower odds of pre and postnatal depression compared to those who do not exercise (Davenport et al., 2018; Nakamura et al., 2019; Vargas-Terrones et al., 2020). In fact, a recent Canadian report found that physical activity can reduce pregnancy-related depression by at least 25% (Davenport, Horbachewsky, et al., 2020). Additionally, light to moderate physical activity during the postnatal period can help alleviate depressive symptoms and increase the likelihood that depression will resolve (McCurdy et al., 2017). Overall, physical activity can help improve new and expecting mothers' mental health, which can positively impact mom and baby (Davenport, Horbachewsky, et al., 2020; Atkinson et al., 2020).

Perhaps not surprisingly, exercise benefits new and expecting moms' physical health in addition to their mental health. Research shows that women who exercise during pregnancy experience many benefits, including a lower risk of gestational diabetes mellitus, hypertensive disorders, cesarian birth and a lower postpartum recovery time (ACOG, 2020; Adesegun et al., 2019; Davenport et al., 2018; Di Mascio et al., 2016). One Canadian report found that physical activity during pregnancy can decrease the odds of experiencing gestational diabetes, high blood pressure and pre-eclampsia by nearly 40% (Davenport, Horbachewsky, et al., 2020). Additionally, regular exercise during pregnancy can increase the chances of vaginal delivery and reduce the risk of pre-term birth (Berghella & Saccone, 2017; Di Mascio et al., 2016). Furthermore, exercise can help moms manage their weight and their baby's weight (i.e., reduces the odds of having a large newborn; ACOG, 2020; Berghella & Saccone, 2017; Cancella-Corral et al., 2022*;* Wiebe et al., 2015).

Exercise Guidelines

Few guidelines have been published that provide clear steps on how to exercise during pregnancy and in the months postpartum, but research suggests that exercising in these stages is generally safe unless otherwise indicated by a medical professional (i.e.,

due to a pre-existing medical condition[4]; Mottola et al., 2018). Having said that, it is recommended that new and expecting moms consult a healthcare professional before altering or beginning a new exercise routine (ACOG, 2020; Kołomańska-Bogucka et al., 2019).

Research suggests that women who were active before pregnancy can continue to be active throughout their pregnancy and in the postpartum period (ACOG, 2020, Mottola et al., 2018). In fact, both the 2019 Canadian guideline for physical activity during pregnancy and the American College of Obstetricians and Gynecologists position statement recommend that women continue to meet the recommended physical activity guidelines of at least 150 minutes of activity per week throughout their pregnancies (ACOG, 2020, Mottola et al., 2018). Furthermore, these groups encourage expecting moms to participate in a range of aerobic (e.g., biking and walking) and resistance-based exercises for maximal health benefits (ACOG, 2020; Mottola et al., 2018).

While exercising during pregnancy is generally safe, it is important that expecting moms are cautious to avoid overexertion and take breaks as needed (Berghella & Saccone, 2017*;* Mottola et al., 2018*).* Monitoring for overexertion may be particularly important for pregnant elite athletes who are used to intense training routines (Pivarnik et al., 2016). To help ensure safe activity, researchers recommend that expecting moms pay close attention to their diet and hydration status and that they avoid exercising in extreme weather conditions *(*ACOG, 2020*;* Berghella & Saccone, 2017*).* Additionally, expecting moms should stop exercising if they experience any warning signs (e.g., pain or dizziness) while exercising[5] (ACOG, 2020).

Encouraging new moms to resume physical activity is crucial to supporting lifelong healthy habits (Mottola et al., 2018). New moms can begin exercise as soon as it is medically safe, which can vary in time depending on whether they had a vaginal or cesarian birth (Mottola et al., 2018). In general, in the 6-10 weeks after having a baby, women may resume physical activity as long as they have been assessed by a healthcare professional (Lesser, 2022). After 10 weeks, new moms may consider seeking advice on strengthening their pelvic floor and improving their overall fitness (Lesser, 2022). Finally, after 24 weeks, a mom may begin to return to their prenatal fitness levels (Lesser, 2022). However, a new mom will still require support and encouragement to maintain healthy exercise habits (Lesser, 2022).

Encouraging and Supporting New and Expecting Moms

In addition to the facilitators stated in the earlier portion of this review, there are several things that sport and physical activity organizations can do to better encourage and

[4] Please see the Canadian guideline for physical activity during pregnancy for a list of medical conditions that may make exercising during pregnancy unsafe

[5] A more extensive list of warning signs can be found in the American College of Obstetricians and Gynecologists position statement

support new and expecting moms. In particular, research suggests that including new moms in the design of sport and physical activity programs may help ensure that their needs (e.g., time and facilities) are met (Ritondo, 2022). For example, including spaces and time in tournament schedules to allow for moms to breastfeed may help new moms balance their roles (Ritondo, 2022). Additionally, including new moms in marketing and promotional materials may help them feel empowered to participate (Pritchett et al., 2017; Ritondo, 2022).

New moms should also be encouraged to connect with each other. Physical activity and leisure-based friendships can help new moms navigate the transition to motherhood (Trussell et al., under review). For example, group fitness activities (e.g., mommy and me classes) can provide moms with social support from women who are facing similar demands, which can help them with identity expression and reconstruction (Limbers, McCollum, Ylitalo, et al. 2020; Saligheh et al., 2016*;* Trussell., 2015). Additionally, physical activity based social groups can provide moms with a sense of community and belonging, which have been associated with lower odds of post-partum depression (Gheorghe et al., 2020). While many in-person fitness classes are unavailable during the pandemic, online fitness classes (e.g., yoga classes) and the use of apps and social media can help new and expecting mothers get physically active together (Atkinson et al., 2020; Shidhaye et al., 2020).

The Impact of COVID-19

The COVID-19 pandemic has significantly impacted mothers' physical activity levels (Limbers, McCollum, & Greenwood, 2020; Davenport, Meyer, et al., 2020). In fact, one Canadian study found that 59% of mothers reported having lower physical activity levels during the pandemic, while 74% of mothers reported increased screen time (Carroll et al., 2020). This shift in physical activity levels may be associated with additional parenting duties and limited access to fitness facilities and organized activities (e.g., exercise classes, sports leagues) during the pandemic.

According to the World Health Organization, it is common for children to be more demanding of parents in times of crisis[6]. Moreover, the United Nations Educational, Scientific, and Cultural Organization estimates that 1.38 billion children have been taken out of school or childcare during the pandemic, with limited access to group activities, organized sports, or playgrounds[7]—meaning that parents have been comforting, supervising, teaching, and entertaining their children around the clock. So, while many moms *want* to participate in physical activity and sport (CFLRI, 2020), the pandemic may have resulted in additional barriers to doing so.

[6] World Health Organization (2020). Mental health and psychosocial considerations during the COVID-19 outbreak. https://www.who.int/publications/i/item/mental-health-and-psychosocial-considerations-during-the-covid-19-outbreak
[7] Cluver et al. (2020). Parenting in a time of COVID-19. *The Lancet, 395*, e64. http://scholar.sun.ac.za/handle/10019.1/108495

Additional parenting demands during the pandemic have not only impacted mothers' physical activity levels, but may have also impacted mothers' mental health. Research shows that the pandemic has led to increased stress levels, including parenting stress, in many working mothers (Limbers, McCollum, & Greenwood, 2020). This increased parenting stress may negatively impact a mothers' quality of life, including decreasing their satisfaction with their environment during the pandemic (Limbers, McCollum, & Greenwood, 2020). That said, researchers have noted that participation in regular physical activity can attenuate some of the stress and mental health challenges associated with the pandemic, which can positively impact not only moms but their children as well (Davenport, Meyer, et al., 2020; Limbers, McCollum, & Greenwood, 2020)

Even during the pandemic, there remains plenty of opportunities to safely participate in physical activity. The use of digital technologies (e.g., online fitness classes) and more accessible forms of physical activity (e.g., walking and gardening) can help mothers get active by themselves or with their children (Atkinson et al., 2020). Additionally, the use of active transport (i.e., walking to the store rather than driving) can help busy moms fit physical activity into their daily routines (Bean & Wimbs, 2021). More examples of how to remain active during the pandemic can be found here.

Summary and Conclusion

Moms are motivated to be active for several reasons, ranging from health and wellbeing to enjoyment, achievement, and social affiliation (Kilpatrick et al., 2010; Krouse et al., 2011; Segar et al., 2006). Physically active moms report feeling healthier and happier, which in turn makes them feel like better parents (Hamilton & White, 2010). They also model healthy behaviours for children, and contribute to an active, connected family culture (e.g., Hamilton & White, 2010; Rodrigues et al., 2017; Schoeppe et al., 2016).

Nonetheless, physical activity and sport participation rates among mothers are lower than fathers and people without children (Bellows-Reicken & Rhodes, 2008). Up to 75% of moms experience barriers to physical activity (Verhoef & Love, 1992), including feelings of guilt, pressure, and stress and a lack of time, support, or childcare (e.g., Dixon, 2009; Hamilton & White, 2010; Krouse et al., 2011; McGannon et al., 2013; Ritondo, 2021).

To address or overcome these barriers, messages and programs should focus on increasing positive attitudes about mom’s participation in physical activity and sport (e.g., self-compassion, encouragement from others) and reframing beliefs about mom’s social roles (e.g., shared household and childcare duties) (Bean & Wimbs, 2021; Dixon, 2009; Hamilton & White, 2010, 2011; McGannon et al., 2018). The delivery of programs and messages using digital technologies (e.g., mobile apps) represents another promising avenue for promotion (Chung et al., 2019; Mascarenas et al., 2018).

Many of us would agree that physical activity is both fun and important, and that moms deserve to enjoy it too! Backed by the evidence, #MomsGotGame encourages, celebrates, and supports mothers in their efforts to be active and play sports.

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