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Exploring Elementary School Principals' Perceptions of Implementing Lighter Intensity Classroom-Based Physical Activity following the "Step" section of the Canadian 24-Hour Movement Guidelines for Children and Youth

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A thesis submitted in partial fulfillment of the requirements for the Master of Arts degree in Kinesiology

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Abstract

Given evidence surrounding the benefits of light-intensity physical activity (LPA) and the amount of time that Canadian children spend at school, the aim of this study was to explore elementary school principals' perceptions of implementing lighter intensity classroom-based physical activity (CBPA) outlined in the "Step" section of the *Canadian 24-Hour Movement Guidelines*. Implementation science suggests that elucidating stakeholder perceptions is an important step in promoting uptake. Principals ($n=8$) participated in semi-structured interviews to discuss perceptions around implementing CBPA as LPA in their schools. Data was analyzed using a thematic analysis. All principals were unaware of the *Movement Guidelines*. They appreciated the value of CBPA; however, implementation barriers and established norms tampered enthusiasm for the role of schools in incorporating more physical activity. With sufficient resources and training, principals agreed that more CBPA could improve student well-being. This research sheds light on the potential role of LPA in promoting student wellness.

Keywords: physical activity, guidelines, implementation science, children, school, administrators

Summary for Lay Audience

Canadian children are not moving enough and spend a lot of time sitting, especially at school. The *Canadian 24-Hour Movement Guidelines for Children and Youth* were developed to help children move more and sit less. These *Movement Guidelines* indicate how long children should be sleeping, sitting and exercising throughout the day. The current study looked at elementary school principals' perceptions of implementing lighter intensity classroom-based physical activity (CBPA), such as standing or slower walking, as outlined in the "Step" section of the *Movement Guidelines*. Eight elementary school principals participated in this interview study. The principals conveyed that the *Movement Guidelines* could be useful in a classroom setting but indicated several barriers to implementation, including time constraints and teacher and administrator intrapersonal factors. It is important that principals understand the purpose and benefits of the *Movement Guidelines* as they would be the ones promoting it to their staff. This research contributes to the unique area of light-intensity physical activity implementation in a classroom setting. It also provides insight for physical activity guideline developers regarding ways to make resources more effective in the classroom setting.

Acknowledgements

I could not have written my thesis without so many incredible people. First, I would like to thank my thesis advisor, Dr. Marc Mitchell. I could not have done it without your guidance, expertise, and patience. You have challenged and pushed me outside of my comfort zone many times and I thank you for that. You always had confidence in my writing, even when I did not. Thank you for helping me overcome whatever obstacle came my way, especially ethics. I am honoured to have the opportunity to learn from you. I will cherish our time together, even though you spelt my name wrong in every email!

A huge thank you to my lab mates: Emma, Dave, Madison and Sean. Thank you for providing honest feedback and suggesting different directions to take my work. Additionally, thank you to my peers in the EHPL for your feedback and assistance.

A special thank you to Dr. Eva Pila for your qualitative assistance. Without your help, I would have been lost in the world of qualitative research. Thank you for answering my hundreds of questions. I am very grateful.

A special thank you to my friends: Haly, Ange, Mariah, and Alyssa. You have all helped me in various ways throughout this journey, whether it was proofreading my work or listening to me ramble on about qualitative research. You all found ways to remind me that everything was going to be okay. I appreciate your listening ears. I would not have been able to make it through if it wasn't for you.

Lastly, a huge thank you goes towards my parents. Even though you might not have a clue about what I was writing about, your constant support and love did not go unnoticed. Thank you for always believing in me.

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List of Abbreviations

Abbreviation	Full Word
CBPA	Classroom-based physical activity
EQAO	Education Quality and Accountability Office
LDCSB	London District Catholic School Board
LPA	Light-intensity physical activity
METS	Metabolic equivalents
Movement Guidelines	Canadian 24-Hour Movement Guidelines for Children and Youth
MVPA	Moderate-vigorous physical activity
Phys. Ed.	Physical education
PE	Physical education
QDPA	Quality daily physical activity

Introduction

Physical activity is associated with a wide range of health benefits (e.g., physical, mental and social) among children and youth (Janssen & Leblanc, 2010; ParticipACTION, 2018; Poitras et al., 2016). A dose-response relationship exists too, with more physical activity generally yielding greater benefit (Janssen & Leblanc, 2010). Unfortunately, physical *inactivity* in childhood is believed to be a major factor underlying increasing obesity rates, among numerous other health consequences (Laurson et al., 2014) leading to the development of costly and debilitating chronic conditions later in life (Government of Canada, 2018). Recent evidence also suggests that children and youth who are more physically active fare better academically (Chu et al., 2019; Kao et al., 2017; Kantomaa et al., 2013). Despite all the purported benefits of an active lifestyle, Canadian children and youth are still moving too little and sitting too much (ParticipACTION, 2018). According to the 2011 and current Canadian Physical Activity Guidelines, it is recommended that children and youth aged 5-to-17 years engage in 60-minutes of moderate-to-vigorous physical activity (MVPA) every day (Tremblay et al., 2016). However, only two of five Canadian children and youth are meeting these guidelines (Statistics Canada, 2019).

Canadian elementary school students spend approximately 6.5 hours per day and 180 days per year at school (Beauchamp, Rhodes & Nigg, 2017). The substantial amount of time students spend at school makes it an ideal setting for physical activity promotion (Carlin, Murphy & Gallagher, 2016; Latimer-Cheung et al., 2016; Watson et al., 2017). However, Canadian kids are not moving as much as they could during school hours (Hinckson et al., 2016). Traditionally, recess and physical education (PE) have provided elementary school students with the opportunity to participate in both structured and unstructured physical activity throughout the

school day (Allison et al., 2016). However, PE and recess opportunities vary across jurisdictions (e.g., provinces, school boards, schools, etc.) leading to a difference in daily physical activity participation (Allison et al., 2016). For example, lower-income schools are less likely to have certain physical activity-promoting resources, such as soccer fields and PE equipment, than higher socioeconomic status schools (Morin, Lebel, Robitaille & Bisset, 2016).

In response to the need for increased physical activity, the Ontario Ministry of Education created a policy to supplement traditional PE and recess. In 2005, a physical activity policy known as *Quality Daily Physical Activity* (QDPA) was implemented to ensure all students have the opportunity to be physically active during the school day (Ontario Ministry of Education, 2017). QDPA requires that “all elementary school students, including students with special education needs, have a minimum of 20-minutes of moderate-to-vigorous physical activity each school day during instructional time” (Ontario Ministry of Education, 2017). The 20-minutes of MVPA can be divided into smaller time allocations (e.g. 5 and 10-minute blocks) if desired (Ontario Ministry of Education, 2017). Unfortunately, 10 years following QDPA legislation, only 46% of Canadian school administrators report having fully implemented QDPA (Canadian Fitness and Lifestyle Research Institute, 2015). Several QDPA implementation barriers have been noted in previous work, including a number of organizational and structural barriers such as a lack of resources and space, scheduling conflicts, and inclement weather (Allison et al., 2016). Additionally, the implementation ‘climate’ of QDPA is important to consider as well (Carlson et al., 2017). A teacher’s inexperience or lack of confidence delivering the policy, unawareness of policy requirements, a belief that the policy is unachievable or unrealistic, administrators lack of

support of the policy, and a low perceived importance/priority of the policy are common examples of teacher and administration barriers (Allison et al., 2016; Carlson et al., 2017).

Despite the health and academic benefits of regular physical activity, too few Ontario children and youth are engaging in daily MVPA. MVPA is only one of several beneficial movement categories (ParticipACTION, 2018). In addition to MVPA, children and youth should engage in light-intensity physical activity (LPA). LPA is defined as any activity with an intensity between sedentary behaviour and moderate-intensity physical activity (1.5-4.0 metabolic equivalents [METs]); (Kwon, Janz, Burns & Levy, 2011). It has been found to be beneficially associated with obesity, markers of lipid and glucose metabolism, and mortality (e.g., Dowd et al., 2014; Füzéki, Engeroff & Banzer, 2017). In 2016, the world's first "integrated" movement guidelines emphasized, amongst other things, the benefits of light-intensity movement. These guidelines, known as the *Canadian 24-Hour Movement Guidelines for Children and Youth: An Integration of Physical Activity, Sedentary Behaviour and Sleep* ('Movement Guidelines'), make recommendations for children and youth aged 5-to-17 years regarding movement-related behaviours across the whole 24-hour day (Latimer-Cheung et al., 2016; Tremblay et al., 2016). Four movement categories in particular are introduced, including: "Sweat", a minimum of 60 minutes of MVPA per day which respects the current Canadian Physical Activity Guidelines; "Step", as much LPA as possible; "Sleep", 8 to 10 hours of sleep per day; and "Sedentary", no more than two hours of recreational screen time per day and limit sitting for extended periods (Tremblay et al., 2016).

Implementation science, an area of study consisting of various frameworks for increasing policy/guideline uptake, provides a structure and special insight into the issue of poor physical activity policy uptake (Fizen, Blase, Metz & Van Dyke, 2015). In particular, implementation scientists acknowledge that a gap exists between the promise of scientifically proven health interventions (e.g., physical activity) and their successful implementation in the real world (e.g., QDPA; Colditz, Emmons, Vishwanath & Kerner, 2008). According to Fixen et al. (2015), there are four stages of effective implementation, including: exploration, installation, initial implementation, and full implementation. Our study focused on principal perceptions during the exploration and installation stages of implementation. During exploration, information is exchanged deciding whether an innovation should be incorporated (Fixen et al., 2015). Convening groups of leaders and stakeholders is a crucial part of this step to increase understanding and potentially support the innovation (Fixen et al., 2015). The second implementation stage is installation, where the innovation is agreed upon and resources are obtained (Fixen, Blase, Metz & Van Dyke, 2015). Within the field of implementation science, the nature of the real world is considered to be complex and dynamic, causing inconsistencies between what is published/recommended and reality (Moore et al., 2018). Schools are indeed complex and dynamic systems with varying resources, student/family and teacher demographics, curricular priorities, etc. However, school-based physical activity interventions often overlook the goals of teachers and administrators who ultimately have control over whether or not an intervention is delivered, as they are key stakeholders or ‘gatekeepers’ of the school (Moore et al., 2018). To assess perceptions of these *Movement Guidelines*, Graham et al. (2006) suggest that it is valuable to speak to stakeholders and “end-users”. Since LPA, like standing or slower walking, may be more attainable in an often-limited school setting (e.g., time/space), the

Movement Guidelines, and specifically the “Step” section of these guidelines, present an opportunity to stimulate worthwhile movement in or around (e.g., hallways) the classroom compared to the “Sweat” section, as outlined in QDPA. It is unclear, however, whether elementary school administrators (e.g., principals) are aware of or receptive to these new, potentially easier to implement guidelines, and whether they are interested in or confident in their abilities to incorporate them. Therefore, our study’s primary objective is to explore London, Ontario elementary school principals’ awareness of the *Movement Guidelines* and their perceptions of implementing lighter intensity classroom-based physical activity (CBPA) as outlined in the "Step" section of the *Movement Guidelines*.

Methods

Study Design and Participants

Prior to beginning the investigation, ethics approval was obtained from Western University’s Non-Medical Research Ethics Board (Project ID: 113674) and by the Research and Evaluation Officer at the London District Catholic School Board (LDCSB) (Appendix A). Semi-structured interviews were conducted with a convenience sample of elementary school principals in the LDCSB. The LDCSB was selected due to the proximity to Western University and their willingness to help with research. A recruitment email was sent by the LDCSB Research and Evaluation Officer to all 43 elementary school principals in the board (Appendix B). Those who responded to the email and agreed to participate in an audio-recorded interview were included in the study. Prior to the interview, the primary researcher (MP) emailed an infographic of the *Movement Guidelines* to provide some background information (Appendix C), as well as the Letter of Information and Consent Form (Appendix D).

Data Collection

A semi-structured script with open-ended exploratory questions was used. Open-ended questions were used to generate rich descriptions and experiences (Smith & Sparkes, 2016). A list of questions and topics from the interview guide provided direction for the interview structure, but the participants' responses moulded the course of the interview. The primary goal at the beginning of the interview was to develop rapport with the participant. This was accomplished by asking nonthreatening questions and positioning the researcher (MP) as an observer to interpret the principal's experiences.

The interview was divided into four sections beginning with introductory questions to collect background information (Appendix E). These questions were about both the principal's and their student's physical activity levels throughout the school day. Next, the researcher briefly explained the *Movement Guidelines* and the QDPA policy. This section focused on uncovering the principal's awareness of the QDPA policy and the *Movement Guidelines* (e.g. Can you describe your prior knowledge or exposure to QDPA?) and execution of it (e.g. To what degree, if any, has QDPA been implemented in your school?). The third section explored the principal's perception of the *Movement Guidelines* (e.g. What role do you think the school might play in implementing the *Canadian 24-Hour Movement Guidelines*?) and the barriers and facilitators of implementing these *Movement Guidelines* in school. The final section asked principals to share easy to implement strategies that have worked for them in the past to incorporate more physical activity for their students. If necessary, probing questions were used to allow the principal to clarify or expand their response, while still remaining in their lived experience. Probes were used on an individual basis to gain full understanding to the principals' responses and to invite them to elaborate on or clarify a point (Smith & Caddick, 2012).

All interviews were audio-recorded and transcribed verbatim, which produced 33 pages of typed data. Pseudonyms were assigned to all participants for confidentiality.

Data Analysis

Thematic analysis was used to identify patterns and themes across the qualitative dataset. This allowed for flexibility in the analysis, which emphasized the similarities and differences across the sample (Braun & Clarke, 2006). Braun and Clarke's (2006) six-step approach to thematic analysis was used, which proposes ideas towards the end of the research process as a result of observations (Smith & Caddick, 2012).

Phase One, familiarization of the data: The researcher (MP) read and re-read the transcript noting initial ideas. She listened to the interview audio-recordings and observed the rhetorical context and atmosphere. The researcher created notes focusing on the language, context, and preliminary interpretations closely tied to the participant's narrative. At this stage, the researcher considered personal reflexivity, and how her personal interpretations and characteristics (e.g., a graduate kinesiology student) may have affected her rapport with the participant and interpretation of findings.

Phase Two, generating initial codes: The researcher articulated a concise set of codes and phrases, and collected data relevant to each code while remaining grounded in the participant's account.

Phase Three, searching for themes: The codes were organized into potential themes and all data relevant to each theme were gathered. An idiographic approach was used to display the codes relevant to each theme. Quotes from the transcript were added to validate and contextualize each preliminary theme with the participant's account.

Phase Four, reviewing themes: This step entailed reviewing and refining the initial themes. Specifically, themes were reviewed across the profile to assess for heterogeneity while codes within themes were reviewed for homogeneity (Patton, 1990). Quotes were utilized to ensure that the themes represented the participant’s narrative. This series of steps was repeated for the remaining seven interviews. As each additional transcript was read, themes were used to code similar meaning into the same categories and expand themes to incorporate new ideas as they were identified. Overall, the process was recurring, as new themes were tested against earlier data and adapted as necessary to confirm that each principal’s comprehensive and unique account was highlighted.

Phase Five, defining and naming themes: To best capture the essence of the data across the sample, theme names were revised, if necessary. Additionally, clear definitions and names for each theme were generated.

Phase Six, producing the report: The researcher ensured that all data were properly coded, categorized and represented within the final set of themes by re-reading each transcript. The analysis was related back to the research question, objectives and literature.

Methodological Rigour

Qualitative methodology was selected to provide a more in-depth understanding of principals’ perceptions of and attitudes towards the “Step” section of the *Movement Guidelines*. Among qualitative methods, interviews create conversations which describe rich and new knowledge from the participants’ experiences (Smith & Sparkes, 2016). This approach allows for the participants to tell stories providing their expert knowledge and opinions (Smith & Sparkes, 2016). The author maintains a relativist ontological assumption stating that individuals make

multiple meanings of their social world based on their personal experiences and relations with others (Smith & Sparkes, 2016). The author also maintains a subjectivist epistemology, where the researcher believes they are involved in the production of knowledge and cannot be value-free or neutral (Smith & Sparkes 2016). Through this view, the researched and researcher are not separate, and the researcher is able to help with construction of ideas (Smith & Sparkes, 2016). The researcher is a kinesiology student who understands the benefits of physical activity. This epistemology was selected because a semi-structured interview guideline was used, allowing the researcher to ask different probes based on the interaction and answers given by the participant. Data collection and transcription were performed concurrently to identify emerging themes which could be confirmed or denied in later interviews. Additionally, a critical friend appraisal was conducted after the initial set of themes was produced as has been done previously (Smith & McGannon, 2018). The primary researcher (MP) voiced her interpretations of the data to two co-authors of the paper (MM and EP) who offered critical feedback and challenged her construction of knowledge (Smith & McGannon, 2018). As a result, one theme was re-named, and two new sub-themes were identified.

Results

Eight principals volunteered to participate in the study. The number of years of experience as a principal ranged from one to 19. The interviews ranged from 10 to 25 minutes. A saturation point was reached after the eighth interview as no new data emerged.

In general, we found that principals were unaware of the *Movement Guidelines*. While principals noted that they appreciated the value of CBPA, operationally defined as any intensity physical activity in the classroom, a range of constraints outlined made it difficult to implement in

practice. Our thematic analysis revealed three overarching themes in relation to incorporating more CBPA within the classroom, including: (i) benefits of CBPA, (ii) CBPA implementation barriers, and (iii) shifting from established norms (Figure 1 and Table 1).

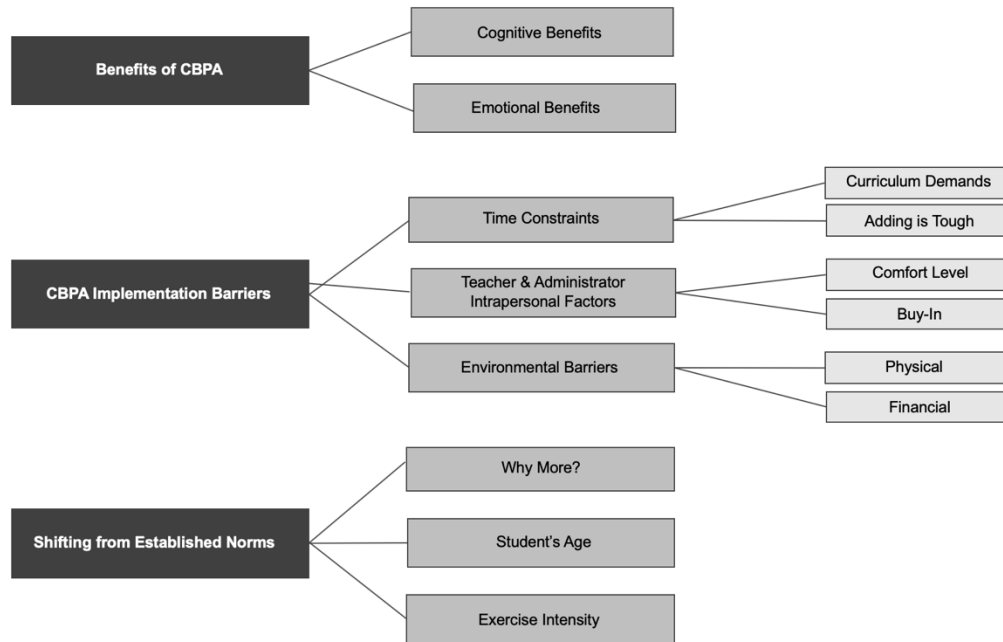


Figure 1: Theme Overview.

Benefits of CBPA

Overall, many principals recognized that there are several benefits to implementing CBPA throughout the school day. The main two benefits mentioned were cognitive benefits and emotional benefits among their students. Although recess is an opportunity for a break from lessons, some principals recognized the importance of using CBPA as brain breaks throughout the school day as well. For example, Principal 6 stated:

“We had training at the board level in terms of interactive activities and why people need that for their brain function as well as their physical ability. Mainly the importance of kind of breaking up sedentary time with those bursts of exercise.”

Principals noted that they found that their students were able to refocus quicker after a sitting break. For example, Principal 5 reported:

“I don’t know if I fully understood at the time the value that it [CBPA] was for kids as far as brain breaks, you know, getting reset before working. I think the more I got more comfortable with it; I recognized the value of it. As a principal, I definitely see the value of it [CBPA] because it gets kids reset and they’re able to focus again and get them back on task.”

Principal 2 recognized that the benefits of taking a break from sitting outweigh the time it takes to refocus: “It takes them a minute to get back to work, but it is worth it.”

Barriers to Implementation of CBPA

Many principals acknowledged the benefits of CBPA. However, the actual implementation of it appears to be lacking. As Principal 4 explained: “I think everybody knows the benefits of exercise and learning. But I don’t know if it is feasible without an investment and the infrastructure.”

Time Constraints

All principals discussed various barriers that would impact CBPA implementation, including physical barriers such as desks, unexpected interruptions to the school day, inclement weather and teacher intrapersonal factors. However, the major restriction identified was the lack of time. Participants agreed that the “Step” section of the *Movement Guidelines* is an important goal to strive towards, but that realistically, they might not meet them every single day. Principal 2 expressed that daily schedules are often interrupted and CBPA can be the first thing to go. “Time constraints and interruptions in the school day with assemblies and things like that happen and it makes it [CBPA] hard to do sometimes.” These interruptions take away from the already

restricted time that students spend in the classroom. With the Ministry of Education currently placing a heavy emphasis on mathematics, there is limited time available for other subjects:

“You’re looking at 60 minutes a day every day of just math. So, when you add another 80 [to account for recess time], that’s down to 240 minutes of just instructional time. Right? So, there’s so many other guidelines and demands from other curricular areas that would be an impact for sure.” – Principal 4

There was consistency among principals about their receptivity towards the “Step” section of the *Movement Guidelines*, as they believed that classroom time constraints are too great to incorporate even *more* activity. With the heavy curriculum demands, teachers are under immense pressure to complete all of the required content. For example, Principal 7 stated that:

“If we ask teachers, we would for sure be told about time with the curriculum demands. I don’t know what kind of flack I would get from that or if that [the “Step” section] would be well received because there is already recesses but you know that when time is interrupted, the teacher’s always feel this pressure for curriculum and the courses.”

By adding an additional task for teachers to accomplish, principals feared that the *Movement Guidelines* would not be well-received. Principal 1 expressed that:

“Adding is tough, right, because there is already too much to do. Teachers don’t want to have to do more stuff. Because that’s a really big thing for teachers. Like, ‘Oh my God, we gotta do this too now? Like what the hell! Please don’t give me one more thing to do!’”

Many principals believed that it was not feasible to add another physical activity requirement on top of current QDPA policy, as there is not enough time in the day.

Teacher and Administrator Intrapersonal Factors

Teachers are autonomous individuals. According to principals, teachers like structure yet do not want to be forced to do something. Principals are in the delicate position of trying to guide and

assist their staff without telling them what to do. An overworked and unhappy teaching staff often does not create optimal learning environments:

“I, as a principal, cannot tell my teachers to do anything if we don’t have a good relationship. So, if your school is a shit show in terms of interpersonally... forget it. Anything I say is going to piss them off. You know. Teachers get pissed off. So, you have to be a little careful.” – Principal 1

Principals are the gatekeepers of the school. They have to buy-into the *Movement Guidelines* first in order to effectively promote them among their staff. If they do not see the value in them, it is very unlikely that their staff will. For example, Principal 6 stated that “I’m not sure that we [staff] would do much with this [“Step” section] yet.”

In addition, the principals who indicated that they frequently engage in physical activity generally expressed that their schools are more physically active compared to their less physically active principal peers. These principals tend to implement school-wide physical activity initiatives. For example, at Principal 3’s school, they use grade 7 and 8 leaders to facilitate weekly physical activity sessions among the younger students:

“We have our student parliament, for example, which uses student leaders as student physical education leaders...Basically they organize weekly physical activity blasts where those students are Phys. Ed. leaders with the teacher’s classrooms of kids. Teachers still had to be there to supervise but the kids would facilitate physical activity. Like grade 7 and grade 8 leaders would facilitate that activity with grade 1s or kindergartens. It is awesome. I say that it builds a good rapport between older and younger kids but gets everyone moving.”

Many principals indicated that teacher buy-in is instrumental. For example, Principal 1 stated:

“So, teachers have this autonomy that you have to be really respectful of, but they also don’t want to have to do more stuff. Buy-in is tricky. They have to want to come on board.”

Often, staff dynamic comes into play, as every teacher is different. Whether or not students are physically active throughout the day, relies heavily on their teacher's intrapersonal factors, including comfort level. For example, Principal 5 indicated that:

“Teachers that have been in their craft longer may be more comfortable with managing their time by incorporating QDPA into activities, into games, you know, the gamification of learning. Where teachers who are newer may not be as confident or comfortable with that. Or the other extreme, when a teacher has been teaching for a long time, like 20 years, they may not be comfortable changing that practice. So, it comes down to the teachers comfort with thinking outside the box with how kids learn.”

Additionally, a more physically active teacher often has a more active classroom, and vice-versa.

Principal 8 suggested:

“I think that if you are active yourself you bring a different energy to the classroom... I think that the more active that you are, you're going to know the benefits and that is going to translate to kids. I think the people who are less active, that's going to translate to the kids too. I think that is human nature.”

In contrast, some principals expressed that physical activity does not belong in the classroom, as the classroom is a space meant for learning. For example, Principal 1 states, “It [CBPA] seems kind of counterintuitive to the nature of a classroom.” According to Principal 1, the majority of teachers at that school do not engage in QDPA, so it is unlikely that LPA as CBPA would be promoted.

Environmental Barriers

The majority of principals emphasized physical barriers, such as desks and lack of space, that make CBPA implementation difficult, as well as a safety concern. Principal 1 highlighted that, “Physical activity in the classroom is in complete contrast with health and safety, like to be standing on their chairs and doing jumping jacks in the classroom.” However, only a few principals acknowledged that the desks and chairs are an intuitive part of the classroom. Flexible seating, such as standing desks and wobble stools are being incorporated into some schools as

alternate ways for students to learn. Whether or not flexible seating is used in the classroom relies on the teacher. Principal 7 explains:

“I think some kids learn better that way [standing]. Some teachers are more comfortable with that compared to others. We have some standing desks in the school, and we have flexible seating in the school. There’s a lot of teachers who have really embraced that kind of you know, flexibility in the classroom, but there are also lots who are uncomfortable with it. It’s only in specific classes where the teacher is open to that.”

These different seating arrangements are often used to help students self-regulate. Principal 5 states, “Some kids have a harder time self-regulating when getting work done. That’s why we give them an opportunity to continue to move at their desks as opposed to sitting.” Standing desks are expensive and would have to be purchased through school-generated funds, which is prohibitive for many schools. However, some teachers are becoming creative with flexible seating classrooms. Principal 6 shared that their school cannot afford standing desks; however, they use cardboard and other materials to raise the desk height giving students an opportunity to stand. Some teachers are adapting to more flexible seating but as Principal 8 pointed out LPA implementation as CBPA would rely heavily on the teacher: “I think because I have mostly athletes here as my teachers, they are incorporating that model in different ways throughout the school day.” Additionally, some principals stated that students have to sit to learn and students would be impacted if they stood during lectures. For example, Principal 4 stated:

“You still have to be accountable for EQAO and you still have to have pencil and paper tests. You still have to do those things. So, the reality is that kids like quiet, and structure, and sitting to learn.”

School generated funds (money generated from school-run fundraisers) typically pay for the bulk of extracurricular equipment, such as QDPA equipment.

“You get 2 chunks of money. You have your chunk that comes from Uncle Doug down there in Queen’s Park and then you have school generated funds which is all your fundraising and stuff. So, Phys Ed. stuff and extracurricular stuff often tends to come out of that second pool. Which means that schools who can generate a lot of money, end up with more extra stuff, right. And schools that are, you know, in a tougher neighbourhood or whatever, don’t. And I would say that actually that it comes through Phys Ed. more than anywhere else because you think of extracurriculars when you think about Phys Ed. Like you would never buy math textbooks based on school-based funds, but you’ll buy dodgeballs from out of there” – Principal 1

Principals at schools with fewer resources, typically in a lower socioeconomic status area, said money was tight when trying to purchase equipment and resources, which does not give the students the same opportunity compared to students at a wealthier school. For example, Principal 5 expressed that:

“We’re a school that doesn’t have a lot of means, necessarily...The problem is that when we’re doing fundraisers and those types of things to build up our school-generated funds to accumulate those resources, not only do we get a smaller budget from the school but we also don’t have the means to fundraise a lot of money to be able to pay for those extra resources...Like some schools that have a lot- like where my kids go to school- it is hard for the principal to spend enough money. Right, like he’s got this enormous amount to put into lots of recourses. For us, we work very hard to give kids the same chances that everybody else gets, but I would agree that it is hard in our community and made harder because of the affluence.”

In contrast, Principal 3 who is at a wealthier school stated, “Yeah, so our school funds, no problem there. I can buy whatever I want.” The schools who have a lower socioeconomic status reported doing more physical activity throughout the school day to counter the amount of sedentary time that their students accumulate while at home. Many of these kids’ parents cannot afford to put them in extra-curricular activities, which translates to more screen time after school.

Principal 5 explains:

“One thing that we are noticing through EQAO scores is around the amount of TV that they watch and the amount time on devices. In our community, it is higher than others...They go home and watch TV and use devices, which in this community is quite extensively. They’re doing that probably 5 hours a day versus what it is listed here [“Sedentary” section].”

When QDPA was initially implemented, there was a big push from the Ministry of Education to implement it. Staff were trained on how to effectively deliver the programming, as well as given several resources and various equipment. Since then, there has been a decreased push from administrators for the implementation of QDPA due to the lack of finances and additional resources. For example, Principal 5 recalls,

“I know that at the beginning of my career when they started the QDPA, they purchased enormous boxes of resources and activities, but the problem is that those bins of stuff are sitting there and haven’t been signed out for 2 years.”

Although teachers are autonomous individuals, most are open to new ideas or resources of how to incorporate more CBPA, identifying a potential window of opportunity for the “Step” section of the *Movement Guidelines*. Most principals mentioned that a toolkit or resource package that outlined the *Movement Guidelines* could be helpful. For example, Principal 1 stated:

“If somebody came to me and said, “Here is a program that you can give to your teachers as a Phys Ed option, it’s already done.” Would they buy in? I would say so. Give me something that I can give to people that is better in some way for them. I think that would be a good idea for sure. As much as people don’t want structure, it is comforting when you have all the handouts that you need and all the video links that you need, and everything like, especially for new teachers, and then it kind of all comes along.”

However, one size does not fit all. It is all about choice. Teachers have to be given the choice of the type, duration, and equipment needed to successfully implement a guideline. For example:

“If you had a plan and said that the plan was optional or you can choose your own activity and choose your own adventure, I think that offering both is good. I think that it would depend on the teacher which one they would select” – Principal 6

Shifting from Established Norms

Concerns regarding adding extra CBPA as LPA throughout the day was frequently discussed.

Some principals noted that their students are already active at recess, in PE, and during QDPA, so there is no need for additional physical activity requirements. For example, Principal 3 stated:

“I think they [teachers] would ask the question, ‘Why is there a need for more?’ Because even – not at this school but at my past schools- they are already active at recess. They’re active at morning recess, lunch recess, afternoon recess and gym times and often on top of – maybe it wasn’t even called QDPA- but teachers would take their kids out to do something related with curriculum. I think that there would be some questions about why extra because we already do a lot already.”

Even though the “Step” section of the *Movement Guidelines* is geared towards LPA and can be achieved by standing during a lesson, principals still saw it as something extra to do. The additional requirement can cause stress, anxiety, and poor mental health among teachers. “I think that it [adding LPA as CPBA] would be a bit overwhelming to be honest as a teacher. You’re trying to do a lot of curriculum and it is very overwhelming to be honest” – Principal 5

Some principals mentioned that CBPA breaks during lessons are interruptive and students have difficulty refocusing after the break. For example, Principal 8 states: “For particular classrooms, it was like, ‘Uh-oh, we’ve got 20-minutes of perceived fooling around.’ Then having to settle them back into work was difficult.” The principals who found CBPA breaks to be disruptive mentioned that few or none of their teachers enforce the QDPA policy. For example, Principal 1 stated, “I don’t think so [reference to QDPA being implemented daily] and I am in every classroom every day. Like I think that I would notice. Maybe you know sometimes, but not as a flat thing... no, I don’t think so.”

When asked about their student’s physical activity levels throughout the school day, the principals consistently highlighted examples of their students engaging in MVPA. For example, QDPA, recess, PE, and intramurals. However, few principals mentioned examples of their students participating in LPA throughout the day. These principals who mentioned LPA talked about rotary periods. Students in grade 7 and 8 typically have rotary, where they travel to a

different classroom for a certain subject. By getting up and walking to another location, these students are engaging in LPA, often without knowing it. Some principals saw the benefit of rotary in terms of LPA and a ‘brain break’: “I mean our kids move around throughout rotary, which I think is good because they get little body breaks in between classes that they have to move around” – Principal 1.

In contrast, others did not think rotary was enough movement (e.g., “They [older students] have rotary classes and they’re going from one class to another. Even walking from one class to another isn’t that much [exercise] because they’re not walking that far” - Principal 6).

Many principals mentioned the amount of physical activity that their kindergarten students engage in. Kindergarten students have built-in and structured outdoor play time. Principals have created designated kindergarten play areas that are fenced-in and have age-appropriate toys for their youngest students. The principals acknowledged the active and energetic nature of the kindergarten students and noted why they try to get them moving more. However, the principals mentioned that physical activity tapers off as the students get older due to the belief that older students can sit and focus longer than the younger ones. Principal 6 states:

“The other thing is that as kids get older, they’re able to sit for longer periods of time. So, we assume that since they’re sitting, they’re actually learning. So, I think that the primary teachers have to do the QDPA because they can’t sit that long. Right? But as these kids are getting older into grade 5, 6, 7, 8, they are able to sit for longer periods of time and I think that we start to believe that they’re actually with you but they’re probably not.”

However, Principal 8 stated that during principal meetings, the staff take standing breaks:

“Even at principal meetings when they say everybody get up and let’s do a little stretch, everybody likes that and you’re able to get back on task. I think everybody was more focused because those endorphins start moving. Children need those quick little breaks and it worked very well and sort of refocusing everybody and the lesson.”

The principals see the benefits first-hand of standing to refocus during their meetings, however; some are still not trying to implement standing among their students.

Discussion

This semi-structured interview study explored London, Ontario elementary school principals' awareness of the *Movement Guidelines* and their perceptions of implementing lighter intensity CBPA as outlined in the "Step" section of these guidelines. All principals were unaware of the *Movement Guidelines*. In general, principals noted that they appreciated the value of CBPA; however, implementation barriers tampered their enthusiasm for the role of schools in incorporating more CBPA than they currently are. Barriers to implementation of the *Movement Guidelines* were largely centred around time constraints suggesting that there is not enough time in the school day to add *more* physical activity, especially with the current QDPA policy. Due to heavy and changing curriculum demands (e.g., the recent focus on mathematics), teachers already have a difficult time trying to deliver entire curriculums. Principals emphasized that it is not feasible to ask them to do more and did not view LPA as CBPA as an attractive alternative to or compliment for QDPA. Additionally, the principals emphasized that teacher intrapersonal factors, such as their comfort level and experiences with delivering CBPA, would greatly affect the implementation of the *Movement Guidelines*. The principals expressed that these *Movement Guidelines* would be perceived as something extra for teachers to incorporate, which could cause feelings of stress and anxiety among teachers.

Our findings should be considered in light of similar work. Stanley et al. (2020) examined stakeholders' perceptions of the acceptability of the *Australian 24-Hour Movement Guidelines for Early Years*. Though Stanley and colleagues interviewed a broader range of stakeholders,

whereas ours examined solely elementary school principals, their findings are consistent with our study findings. Similar to Canada, Australian educators have critical parts of the curriculum that they need to adhere to (e.g., mathematics and science). When the curriculum is demanding, educators tend to put more attention on academic tasks rather than physical activity (Stanley et al., 2020). The principals in our study indicated that the school is still responsible for standardized tests, such as Education Quality and Accountability Office (EQAO), and often physical activity is removed to make time for academic tasks. Additionally, the Australian study focused on guidelines for children aged 0-4 years, where ours focused on elementary school-age children (5-14 years). In addition, Faulkner et al. (2016) and Riazi et al. (2017) explored the perceptions of stakeholders regarding the *Movement Guidelines* for the early years (0-4 years). In both cases, time constraints were a key barrier to uptake for the *Movement Guidelines*. Our results support this as the principals emphasized that lack of time would be the major restriction in implementing the “Step” section of the *Movement Guidelines*. They indicated that there is not enough time in the school day to add more physical activity due to the curriculum demands, especially with the current QDPA policy in place. Additionally, both Faulkner et al. (2016) and Riazi et al. (2017) stated that stakeholders indicated that the *Movement Guidelines* were something else to worry about. This provided a new source of stress among those who would be implementing them. These results are consistent with ours, as the principals explained that teachers become stressed and anxious when asked to do more. Our results add to the literature by diving deeper into the possibility of (and strategies for) implementing the “Step” section of the *Movement Guidelines* in the elementary school system, examining principal attitudes. Finally, Latimer-Cheung et al. (2016) examined implications for practitioners, professionals, and organizations in regard to the *Movement Guidelines*. They concluded that tools need to be

developed to facilitate dissemination of the *Movement Guidelines* through the school system; however, there is no formal plan to share these resources within the school system (Latimer-Cheung et al., 2016). They propose active dissemination through curriculum change and professional development for teachers to gain understanding of the *Movement Guidelines*. These results are similar to our study as the principals indicated that if more resources or toolkits were available to the teachers, they would be more comfortable implementing the *Movement Guidelines*. According to principals, if a teacher is more comfortable with the material and comprehends it, they would be more likely to have greater adherence to delivering it. Additionally, some principals acknowledged that they would be hesitant to implement the *Movement Guidelines* as there is already a mandated physical activity policy (e.g., QDPA) that teachers have to address.

With regard to CBPA policy/guideline uptake issue, an implementation science framework can be used to identify practical solutions. From an implementation perspective, interventions must be more than “evidence-based,” they must also be usable (Fixen, Blase, Metz & Van Dyke, 2015). In the past, schools have had limited success implementing physical activity guidelines (Stone et al., 2012) even though it is an ideal context for physical activity promotion (Faulkner et al., 2016). Students spend a third of their day at school, which provides an excellent opportunity to educate students about the *Movement Guidelines*, the value in partly achieving them while at school, and furnishing students with the skills to meet them both in school and beyond (Faulkner et al., 2016). The results of this study may serve as one step forward in the exploration and installation stages of the implementation science framework designed by Fixen, Blase, Metz, and Van Dyke (2015). The first stage of implementation in this framework is exploration, where

stakeholders gather to give their different perspectives and how the innovation will affect them. Province and/or board-wide change in policy related to the school environment and curriculum surrounding physical activity are required (Latimer-Cheung et al., 2016). Therefore, changes to curriculum may be necessary. Changes could be made to traditional subject areas (e.g., PE), and could also penetrate other aspects of the curriculum and school environment (Latimer-Cheung et al., 2016). For example, the *Movement Guidelines* could be integrated into a geography lesson about longitude and latitude. Additionally, curriculum surrounding awareness of the *Movement Guidelines* and teaching students how to implement them should be included too. Principals' opinions and suggestions should be valued when creating the new curriculum. This provides an opportunity for collaborative work between principals, policymakers, and other important stakeholders, allowing for all parties to voice their opinions and needs. Regarding the second implementation stage, installation, where resources are gathered after the innovation is agreed upon, the principals indicated that there is a lack of resources and motivation when it comes to QDPA implementation, let alone implementing more CBPA as LPA. They mentioned that if there was a toolkit available to the teachers, it would significantly increase uptake and potential activation of the *Movement Guidelines*. Currently, there are no resources developed targeting the schools to initiate these *Movement Guidelines* (Latimer-Cheung et al., 2016). Existing physical activity resources for teachers must be adapted to complement the new *Movement Guidelines*. Latimer-Cheung et al. (2016) recommend that innovative tools designed specifically for the school environment, such as user-friendly digital content, motivational apps and social media triggers that simplify and prompt activation of the *Movement Guidelines* are needed. It is imperative that stakeholders (e.g., principals) assist in the creation of these customized materials, as they are the key to the *Movement Guidelines*' successful implementation. They can provide

feedback about incorporating the *Movement Guidelines* into their school's overall programming, as they have a complete understanding of what is required from the teachers and students. Lack of readiness and lack of resources are frequent impediments to success (Fixen, Blase, Metz & Van Dyke, 2015).

A number of important secondary findings are worth noting as well, including the inertia of established social norms (and the difficulty of overcoming them) and teacher buy-in. The principals only associated physical activity with MVPA, and few principals mentioned their students engaging in LPA. Physical activity exists on a continuum and there are various levels of intensity that can be incorporated into daily life (Faulkner et al., 2016). The principals perceived that students could only be considered physically active if the intensity was high. Additionally, most principals thought that physical activity breaks could only be met through structured sanctions, such as PE or QDPA. Stretch breaks, non-sedentary time, and CBPA bursts should occur throughout the day, not just in scheduled PE or recess as recommended by Latimer-Cheung et al. (2016). To incorporate the "Step" section of the *Movement Guidelines*, a shift in thinking and lesson planning will be required. Buy-in is crucial for the implementation of the *Movement Guidelines*. In a school setting, principals are the gatekeepers and teachers are the end-users. In order for the *Movement Guidelines* to be effectively promoted in the school, the principals have to buy into the *Movement Guidelines* first. Buy-in from those who deliver the interventions is key (Durlak & DuPre, 2008). If they do not appreciate the value in the *Movement Guidelines*, it is very unlikely that their staff will. However, the teacher's comfort level and buy-in will also determine the likelihood of whether or not the *Movement Guidelines* would be incorporated in their classroom as observed in our interviews. Teachers who are not comfortable

with delivering CBPA as LPA or do not fully understand the benefits of physical activity breaks are less likely to incorporate the “Step” section into their lessons.

Our results should be interpreted with caution given some study limitations. First, given that only eight out of 43 principals volunteered to participate in the study, it is not clear how the responses and opinions from the other 35 principals might have differed to our results. It may be that our sample was more likely to engage in physical activity outside of the school and value the benefits of physical activity more than their less active counterparts. Secondly, the principals, due to the nature of their work, were extremely busy and often could only be interviewed for 15 minutes. Longer interviews may have yielded more detailed transcripts. Next, the interview guide could have been clearer about the definition of LPA and the difference between LPA and MVPA. Many principals saw LPA as an add-on rather than a type of physical activity that might compliment MVPA. Lastly, the researcher maintained a subjectivist epistemology while analyzing the data. This approach cannot be value-free or neutral in the production of knowledge, and only presents the researcher’s interpretation of the data. However, our critical friend appraisal added a level of methodologic rigour with agreement on several themes and sub-themes.

Conclusion

This is one of the first attempts to elucidate principal perceptions of the *Movement Guidelines*. Among all principals, there was unanimous unawareness of the *Movement Guidelines*. Although the principals appreciated the idea of LPA as CBPA, implementation barriers, such as time constraints and teacher intrapersonal factors hindered enthusiasm of the role for schools to incorporate more CBPA. These elements could significantly impact the usability of the

Movement Guidelines. Uptake in the elementary school system will likely be dependent on resources created to facilitate implementation.

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Appendix A: Western University Research Ethics Board Approval Letter



Date: 8 August 2019

To: Professor Marc Mitchell

Project ID: 113674

Study Title: Exploring the Feasibility of Implementing Canada's New 24-Hour Movement Guidelines for Children and Youth in London, Ontario: Semi-Structured Interviews With Primary School Principals

Application Type: HSREB Initial Application

Review Type: Delegated

Full Board Reporting Date: 20Aug2019

Date Approval Issued: 07/Aug/2019 13:26

REB Approval Expiry Date: 08/Aug/2020

Dear Professor Marc Mitchell

The Western University Health Science Research Ethics Board (HSREB) has reviewed and approved the above mentioned study as described in the WREM application form, as of the HSREB Initial Approval Date noted above. 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
Email script	Email Script	18/Jul/2019	003
Interview Guide 002	Interview Guide	18/Jun/2019	002
Letter of Information and Consent 002	Written Consent/Assent	04/Jun/2019	002
Research Protocol	Protocol	18/Jun/2019	001

No deviations from, or changes to, the protocol or WREM application should be initiated without prior written approval of an appropriate amendment from Western HSREB, except when necessary to eliminate immediate hazard(s) to study participants or when the change(s) involves only administrative or logistical aspects of the trial.

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

The Western University HSREB operates in compliance with, and is constituted in accordance with, the requirements of the TriCouncil Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2); the International Conference on Harmonisation Good Clinical Practice Consolidated Guideline (ICH GCP); Part C, Division 5 of the Food and Drug Regulations; Part 4 of the Natural Health Products Regulations; Part 3 of the Medical Devices Regulations and the provisions of the Ontario Personal Health Information Protection Act (PHIPA 2004) and its applicable regulations. The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000940.

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

Sincerely,

Nicola Geoghegan-Morphet, Ethics Officer on behalf of Dr. Philip Jones, HSREB Vice-Chair

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

Appendix B: Recruitment Email Script

Hello!

My name is Madison Page and I am a MA candidate in Kinesiology at Western University. I am the Student Researcher alongside the Principal Investigator, Dr. Marc Mitchell, and am conducting interviews with elementary school principals in the London District Catholic School Board. The title of my thesis is “Exploring the Feasibility of Implementing Canada’s New 24-Hour Movement Guidelines for Children and Youth in London, Ontario.”

I was wondering if you would be willing to be interviewed for my thesis. The interview will last approximately 30 minutes and can be conducted in-person at your school or over the phone. A summary of the findings will be made available to the LDCSB.

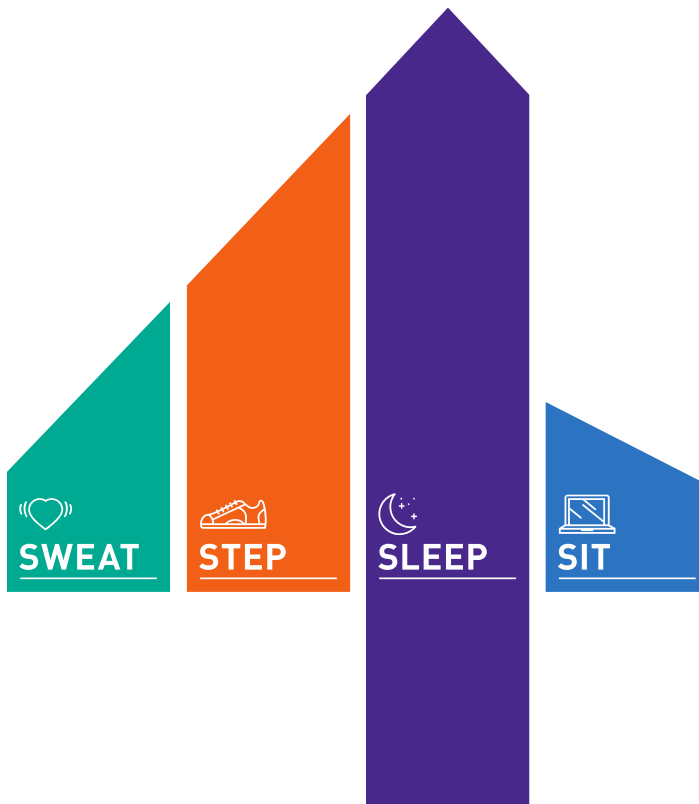
If you have any questions, please do not hesitate to ask. Thank you for your consideration and I look forward to hearing from you.

Madison

BUILDYOURBESTDAY.COM

CANADIAN 24-HOUR MOVEMENT GUIDELINES FOR CHILDREN AND YOUTH

An Integration of Physical Activity, Sedentary Behaviour, and Sleep.



A HEALTHY 24 HOURS INCLUDES:

SWEAT

MODERATE TO VIGOROUS PHYSICAL ACTIVITY

An accumulation of at least 60 minutes per day of moderate to vigorous physical activity involving a variety of aerobic activities. Vigorous physical activities and muscle and bone strengthening activities should each be incorporated at least 3 days per week.

STEP

LIGHT PHYSICAL ACTIVITY

Several hours of a variety of structured and unstructured light physical activities.

SLEEP

SLEEP

Uninterrupted 9 to 11 hours of sleep per night for those aged 5 to 13 years and 8 to 10 hours per night for those aged 14 to 17 years, with consistent bedtimes and wake-up times.

SIT

SEDENTARY BEHAVIOUR

No more than 2 hours per day of recreational screen time and limited sitting for extended periods.

Preserving sufficient sleep, trading indoor time for outdoor time, and replacing sedentary behaviour and light physical activity with additional moderate to vigorous physical activity can provide greater health benefits.

VISIT BUILDYOURBESTDAY.COM AND CREATE THE BEST DAY EVER!



Appendix D: Letter of Information and Consent



Exploring the Feasibility of Implementing Canada's New 24-Hour Movement Guidelines for Children and Youth in London, Ontario

Dr. Marc Mitchell, RKin, PhD – Principal Investigator

Madison Page, MA Candidate – Student Researcher

Invitation to Participate:

You are invited to participate in a research study conducted by Madison Page (Western University) and Dr. Marc Mitchell (Western University). You are being invited to help expand our research and understanding on the new Canadian 24-Hour Movement Guidelines for Children and Youth: An Integration of Physical Activity, Sedentary Behaviour and Sleep. Additionally, the data from this study is for the purposes of satisfying Madison's degree requirements. You are eligible to participate if you (a) are older than 18 years of age, (b) are a principal of an elementary school in London, Ontario, and (c) can read and speak in English. If you do not meet these criteria, you will be ineligible to participate at this time.

This letter of information and consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It informs you about the research and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask the student investigator (Madison Page). Please take the time to read this carefully and to understand any accompanying information.

Why is this study being done?

The purpose of this study is to explore the attitudes towards and the practicality of implementing the "Step" section of the Canadian 24-Hour Movement Guidelines from an elementary school principals' perspective. Additionally, the study aims to examine how/if the "Step" section of the Canadian 24-Hour Movement Guidelines complement with the current QDPA policy

How long will you be in this study?

There will be one meeting with the student investigator for the total interview process. The interview will be approximately 30 minutes of your time. There is no designated time, sessions may be longer or shorter based on a participant's answers. Participants may choose to stop or end the interview at any time.

What are the study procedures?

Participants will be interviewed (and answers will be recorded) by the student investigator (Madison Page). Answers will be audio-recorded for further analysis after the interview. The student investigator (Madison Page) will briefly describe the new guidelines and then will ask questions about your attitudes towards and potential implications about them. In addition, questions will be asked about the current Quality Daily Physical Activity (QDPA) policy. There is no follow up interview. De-identified direct quotes will be used in the dissemination of results.

What are the risks and harms of participating in this study?

Participation in this study will involve the disclosure of personal opinion that will be recorded. For example, your feelings about the new guidelines, and this may make you feel uneasy. Therefore, we ask you to make only those comments that you feel comfortable making in a public setting. The risks associated with the study are not expected to surpass the risks associated with daily life.

What are the benefits of participating?

There are no direct benefits of participating in this study.

Can participants choose to leave the study?

Participation in this study is voluntary. Participants are under no obligation to participate and if they choose to participate, they may withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. Should a participant choose to withdraw, data (recorded interviews) will be deleted following the interview process.

How will participants information be kept confidential?

If you decide to participate in the study, the information that you share will remain confidential. Personal answers and comments made will only be used to examine the research questions of this study. Only the Co-Investigator (Dr. Marc Mitchell) and the Principal Researcher (Madison Page) will have access to your email address, audio files and transcripts made during the interview process, and these will be kept on a password protected USB device in a locked file cabinet in the Kinesiology Graduate Students office space at Western University, as well as on the Student Researcher's password protected and encrypted personal laptop. Your personal information (i.e., email address) will only be used for initial contact to set up an appointment time. Aggregated data stemming from this research may be presented at academic conferences and/or published in academic journals. Neither your name nor your contact information will appear in any publications stemming from this research.

This data will be stored in paper (consent form), word documents (transcribed interviews) and audio recorded files on the Student Researchers password protected and encrypted personal laptop and a USB device in a locked filing cabinet in the Kinesiology Graduate Students office space for seven years post completion of the study. Once data has been transcribed into a typed document form, this information will be saved on a password protected USB stick and lock in a file cabinet in the Kinesiology Graduate Students office space. Representatives of The University of Western Ontario's Non-Medical REB may require access to your study-related records to monitor the conduct of the research.

Are participants compensated to be in the study?

There will be no compensation for participants who complete the study.

What are the rights of the participants?

Participation in this study is voluntary. You are under no obligation to participate and if you choose to participate, you can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. You may choose to withdraw from the study by emailing the Principal Investigator or Student Researcher, or by refraining from answering the questions.

Contact: Madison Page, MA Candidate at Western University
Dr. Marc Mitchell, School of Kinesiology at Western University

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Human Research Ethics (519) 661-3036, email: ethics@uwo.ca

This letter is yours to keep for future reference.



**Exploring the Feasibility of Implementing Canada’s New 24-Hour Movement Guidelines
for Children and Youth in London, Ontario**

Dr. Marc Mitchell, RKin, PhD – Principal Investigator

Madison Page, MA Candidate – Student Researcher

I have read the letter of information, have had the nature of the study explained to me and I agree to participate. I agree to allow my interview to be recorded in order to help answer the research questions examined in this study. All questions about the study have been answered to my satisfaction.

I consent to the use of de-identified quotes obtained during the study in the dissemination of this research

Participant’s Name, Signature and Date

My signature means that I have explained the study to the participant named above. I have answered all questions.

Investigator’s Name, Signature and Date

Appendix E: Interview Guide

Exploring the Feasibility of Implementing Canada's New 24-Hour Movement Guidelines for Children and Youth in London, Ontario

Thank you for taking the time to meet with me today. Your insight into this topic will provide an opportunity to explore the feasibility of implementing components of the new Canadian 24-Hour Movement Guidelines for Children and Youth within the school system. The interview will take approximately 30 minutes. I will be audio recording our conversation so that I can transcribe and more accurately analyze our conversation. Please take your time in answering the questions. Within this semi-structured interview style, I may ask for clarification or more information about your answer. Do you have any questions before we begin?

1. How long have you been a principal?
2. Thinking about your personal life, can you tell me about your physical activity?
3. Thinking about your students during school hours, can you tell me about their physical activity?

A little background...Now I'd like to briefly describe the Canadian 24-Hour Movement Guidelines for Children and Youth: An Integration of Physical Activity, Sedentary Behaviour, and Sleep. In 2016, these new guidelines for children aged 5-17 years were created and respect the natural and intuitive integration of movement behaviours across the whole day (24-hour period). The guidelines provide evidence-informed recommendations comprising of 4 different categories, including moderate-to-vigorous physical activity (sweat), sedentary time (sedentary), sleep (sleep), and low-intensity physical activity (step). Now, I will quickly explain the current Quality Daily Physical Activity (QDPA) policy. Since 2005, Ontario's Ministry of Education mandates that all elementary school students, including students with special education needs, have a minimum of twenty minutes of moderate-to-vigorous physical activity each school day during instructional time.

4. Can you describe your prior knowledge or exposure to QDPA?
5. To what degree, if any, has QDPA been implemented in your school?
6. With that in mind, what role do you think the school might play in implementing the Canadian 24-Hour Movement Guidelines?
7. We are interested in exploring the implementation of the "Step" section of the guidelines. In your experience, how might the "Step" guidelines be implemented in your institution?
8. What might be the barriers and facilitators for implementing the "Step" section of the Canadian 24-Hour Movement Guidelines in light of your experiences with implementing DPA?
9. Can you recommend some easy-to-implement strategies your principal peers may find useful when thinking about incorporating the Step part of the Canadian 24-Hour Movement Guideline?

This is the end of the interview. Thank you for talking the time to meet with me and provide your insights.

Table 1: Themes and Corresponding Quotes

Theme	Sub-Theme	Sub-Sub Theme	Example
CBPA Implementation Barriers	Time constraints	Curriculum demands	<p>“You’re looking at 60 minutes a day every day of just math. So, when you add another 80 [to account for recess time], that’s down to 240 minutes of just instructional time. Right? So, there’s so many other guidelines and demands from other curricular areas that would be an impact for sure.” – Principal 4</p> <p>“If we ask teachers, we would for sure be told about time with the curriculum demands. I don’t know what kind of flack I would get from that or if that would be received well because there is already recesses but you know that when time is interrupted, the teacher’s always feel this pressure for curriculum and the courses” – Principal 7</p>
		Adding is tough	<p>“Time constraints and interruptions in the school day with assemblies and things like that happen and it makes it [CBPA] hard to do sometimes.” – Principal 2</p> <p>“Adding is tough, right, because there is already too much to do. Teacher’s don’t want to have to do more stuff. Because that’s a really big thing for teachers. Like, ‘Oh my God, we gotta do this too now? Like what the hell! Please don’t give me one more thing to do!’” – Principal 1</p>
	Teacher & administrator intrapersonal factors	Comfort levels	<p>“I, as a principal, cannot tell my teachers to do anything if we don’t have a good relationship. So, if your school is a shit show in terms of interpersonally... forget it. Anything I say is going to piss them off. You know. Teachers get pissed off. So, you have to be a little careful.” – Principal 1</p> <p>“Teachers that have been in their craft longer may be more comfortable with managing their time by incorporating QDPA into activities, into games, you know, the gamification of learning. Where teachers who are newer may not be as confident or comfortable with that. Or the other extreme, when a teacher has been teaching for a long time, like 20 years, they may not be comfortable changing that practice. So, it comes down to the teachers comfort with thinking outside the box with how kids learn” – Principal 5</p> <p>“I think that if you are active yourself you bring a different energy to the classroom... I think that the more active that you are, you’re going to know the benefits and that is going to translate to kids. I think the people who are less active, that’s going to translate to the kids too. I think that is human nature.” – Principal 8</p>
			Buy-in

	Environmental barriers	Physical	<p>“I think some kids learn better that way [standing]. Some teachers are more comfortable with that compared to others. We have some standing desks in the school, and we have flexible seating in the school. There’s lot of teachers who are really embraced that kind of you know, flexibility in the classroom, but there are also lots who are uncomfortable with it. It’s only in specific classes where the teacher is open to that.” – Principal 7</p> <p>“Some kids have a harder time self-regulating when getting work done. That’s why we give them an opportunity to continue to move at their desks as opposed to sitting” – Principal 5</p> <p>“I think because I have mostly athletes here as my teachers, they are incorporating that model in different ways throughout the school day.” – Principal 8</p> <p>“I know that at the beginning of my career when they started the QDPA, they purchased enormous boxes of resources and activities, but the problem is that those bins of stuff are sitting there and haven’t been signed out for 2 years.” – Principal 5</p> <p>“If somebody came to me and said, “Here is a program that you can give to your teachers as a Phys Ed option, it’s already done.” Would they buy in? I would say so. Give me something that I can give to people that is better in some way for them. I think that would be a good idea for sure. As much as people don’t want structure, it is comforting when you have all the handouts that you need and all the video links that you need, and everything like, especially for new teachers, and then it kind of all comes along.” – Principal 1</p> <p>“If you had a plan and said that the plan was optional or you can choose your own activity and choose your own adventure, I think that offering both is good. I think that it would depend on the teacher which one they would select” – Principal 6</p>
		Financial	<p>“You get 2 chunks of money. You have your chunk that comes from Uncle Doug down there in Queen’s Park and then you have school generated funds which is all your fundraising and stuff. So, Phys Ed. stuff and extracurricular stuff often tends to come out of that second pool. Which means that schools who can generate a lot of money, end up with more extra stuff, right. And schools that are you know, in a tougher neighbourhood or whatever, don’t. And I would say that actually that it comes through Phys Ed. more than anywhere else because you think of extracurriculars when you think about Phys Ed. Like you would never buy math textbooks based on school-based funds, but you’ll buy dodgeballs from out of there – Principal 1.</p> <p>“We’re a school that doesn’t have a lot of means, necessarily... The problem is that when we’re doing fundraisers and those types of things to build up our school-generated funds to accumulate those resources, not only do we get a smaller budget from the school but we also don’t have the means to fundraise a lot of money to be able to pay for those extra resources... Like some schools that have a lot- like where my kids go to school- it is hard for the principal to spend enough money. Right, like he’s got this enormous amount to put into lots of recourses. For us, we work very hard to give kids the same chances that everybody else gets, but I would agree that it is hard in our community and made harder because of the affluence.” – Principal 5</p> <p>Yeah, so our school funds, no problem there. I can buy whatever I want.” – Principal 3</p>
Benefits of CBPA	Cognitive benefits	N/A	<p>“We had training at the board level in terms of interactive activities and why people need that for their brain function as well as their physical ability. Mainly the importance of kind of breaking up sedentary time with those bursts of exercise” – Participant 6</p>

			“It takes them a minute to get back to work, but it is worth it.” – Principal 2
	Emotional benefits	N/A	““I don’t know if I fully understood at the time the value that it [CBPA] was for kids as far as brain breaks, you know, getting reset before working. I think the more I got more comfortable with it; I recognized the value of it. As a principal, I definitely see the value of it because it gets kids reset and they’re able to focus again and get them back on task.” – Principal 5
Shifting from Established Norms	Why more?	N/A	<p>“I think they [teachers] would ask the question, ‘Why is there a need for more?’ Because even – not at this school but at my past schools- they are already active at recess. They’re active at morning recess, lunch recess, afternoon recess and gym times and often on top of – maybe it wasn’t even called QDPA- but teachers would take their kids out to do something related with curriculum. I think that there would be some questions about why extra because we already do a lot already.” – Principal 3</p> <p>“I think that it [adding CPBA] was a bit overwhelming to be honest as a teacher. You’re trying to do a lot of curriculum and it is very overwhelming to be honest” – Principal 5.</p>
	Exercise intensity	N/A	<p>“I mean our kids move around throughout rotary, which I think is good because they get little body breaks in between classes that they have to move around” – Principal 1.</p> <p>They [older students] have rotary classes and they’re going from one class to another. Even walking from one class to another isn’t that much [exercise] because they’re not walking that far” - Principal 6</p> <p>“Kagan Strategies is where kids are getting out of their desks to, you know, share ideas, that kind of thing, to music. That is something else that teachers are implementing when it comes to collaborative learning.” – Principal 2</p>
	Student’s age	N/A	“The other thing is that as kids get older, they’re able to sit for longer periods of time. So, we assume that since they’re sitting, they’re actually learning. So, I think that the primary teachers have to do the QDPA because they can’t sit that long. Right? But as these kids are getting older into grade 5, 6, 7, 8, they are able to sit longer periods of time and I think that we start to believe that they’re actually with you but they’re probably not.” – Principal 6

Curriculum Vitae

Name: Madison Page

Post-secondary Education and Degrees: Western University
London, Ontario, Canada
2014 – 2018 B.A. Honors Specialization in Kinesiology

Honours and Awards: Western Scholarship of Distinction
2014

Dean's Honor List
2016, 2017, 2018, 2019

Western Scholar Athlete Award
2016, 2017, 2018, 2019

Western Graduate Research Scholarship
2018 – 2020

Earle F. Zeigler Scholarship in Kinesiology
2019

Ontario Graduate Scholarship
2019 – 2020

Conference Abstracts: **Page M.,** Pearson, E., White, L., Mitchell, M. (2018). Using smartphones to increase fruit and vegetable consumption in British Columbia [abstract]. In: *Society of Behavioural Medicine 2019 Annual Meeting and Scientific Sessions*; 2019 March 6 - 9; Washington, DC. Abstract ID: 588731.

Page, M (Acknowledged Contribution). (2018). Little Nudges for Little People. *Public Healthcare of Canada Carrot Reward Report*.