INSPQ INSTITUT NATIONAL DE SANTÉ PUBLIQUE DU QUÉBEC

Measures to Reduce Sedentary Behaviour and Encourage Physical Activity in Persons 65 And Older Living at Home During the COVID-19 Pandemic

January 22, 2021 – Version 1

Notice

This document was prepared during the health emergency associated with COVID-19. It was written in a short span of time and is based on knowledge derived from prior work carried out at Institut national de santé publique du Québec (INSPQ) and on a summary, non-exhaustive survey of the scientific literature. This document presents findings that may be subject to revision as the scientific knowledge associated with the ongoing pandemic evolves. INSPQ is monitoring the science of COVID-19 so that this document can be updated quickly, if necessary.

Key Messages

To prevent deterioration in physical and mental health and cognitive function that could prejudice the autonomy and independence of persons 65 and older, it is important for them to adopt a physically active lifestyle.

To mitigate the impact of public health measures on physical activity, additional strategies are proposed for the public health network, its partners, and municipalities.

- For the public health network and its partners:
  - Raise awareness of the importance of being active at home and promote regular physical activity to foster wellness and quality of life and help maintain independence (1–7) and good mental health (8) (e.g., targeted campaigns promoting physical activity, promotion of physical activities all year long).
  - Encourage the reduction of extended sedentary behaviours[1] and of their total duration (e.g., active breaks, walking, housekeeping activities).
  - Support the regular practice of simple, safe, and pleasant exercise (e.g., exercise in the home).
- For municipalities:
  - Promote active travel by seniors by providing more pedestrian-friendly spaces.
  - Encourage physical activity by seniors in parks and green spaces by providing universal access to attractive infrastructure, in keeping with public health guidelines.
  - Offer an activity program tailored to seniors and to pandemic conditions in collaboration with sports and recreation organizations.

[1] Definition in Appendix 1.

Québec

Background

The COVID-19 pandemic led Québec, like many jurisdictions around the world, to recommend public health measures to slow propagation of the disease (9). Measures include limiting the number of contacts between individuals, physical distancing, physical barriers, handwashing, breathing etiquette, wearing of masks or face coverings, ventilation, and the disinfection and cleaning of surfaces. These measures are considered effective in reducing COVID-19 transmission and case numbers (10, 11), but have also led to a further reduction in physical activity by seniors in a society where inactivity and sedentary behaviour[2] are more prevalent among seniors than younger generations (12, 13).

Since the onset of the pandemic, a decline in physical activity in persons 65 and older has been observed in a number of countries (14–17). According to Statistics Canada, between April 9 and 12 2020, 35% of people 55 and older reduced their level of physical activity, while 14% of them increased it (16). These figures have remained virtually unchanged since the pandemic began.

Measures to reduce sedentary behaviour and encourage physical activity are of the utmost importance for seniors living at home (18–20). A decrease in physical activity in seniors, even over a short period of time (a few months), can lead to reduced muscle use, sarcopenia[3], and increased risk of frailty (7, 22). Functional capacity may subsequently become impaired, reducing the likelihood of resuming more regular physical activity. This vicious cycle can result in chronic deconditioning (4, 19).

Decreased physical activity on the part of seniors can also lead to a deterioration in their physical health and a decline in muscle strength, balance, mobility, mental health (e.g., depression, anxiety), and cognitive function (23). These outcomes can increase fall risk and fatigability and weaken cardiac and respiratory function (24–26). Social participation and independence can also be affected (27).

In this context it appears especially important to suggest simple and accessible strategies and measures aimed at people 65 and older living at home in order to facilitate physical activity and prevent deconditioning[4]. Such measures are in addition to those already presented in the document entitled *Mesures pour soutenir la pratique d'activités physiques en contexte de pandémie COVID-19* published previously by the INSPQ.

Objectives

This document has two objectives:

- Call attention to the reasons why adopting a physically active lifestyle is recommended for persons 65 and older living at home
- Suggest courses for action so that the public health network, its partners, and municipalities can put in place promising individual and environmental measures specific to this population

The findings and courses of action presented in this document are based on knowledge derived from previous work carried out at the INSPQ, as well as on a brief, non-exhaustive survey and review of the scientific literature. The methodology used in producing this document can be found in Appendix 2.

---

2 "Physical inactivity" and "sedentariness" are defined in Appendix 1.

3 Sarcopenia is the loss of muscle mass, strength, and quality in the elderly (21)].

4 Excluding those living in private and public nursing homes.

Why is it important to adopt an active lifestyle?

Regular physical activity provides health benefits to people of all ages but is of particular importance for those 65 and older. A growing body of scientific evidence shows that physical activity promotes healthy aging in a variety of different ways. Below are the main findings that argue for physical activity after age 65 and the level of support they receive in the scientific literature:

Level of scientific support	Findings
High	▶ A reduction in sedentary behaviour contributes to improved health and lower risk of certain chronic illnesses in seniors (obesity, cardiovascular disease, and mortality from all causes) (28-34). ▶ Regular physical activity of at least moderate intensity reduces the risk of falls and fractures (35–37) and helps prevent the loss of physical function and independence in the aging population in general (38). ▶ Regular physical activity contributes to a reduced risk of developing Alzheimer's disease in adults 65 and older (39). ▶ Physical activity helps reduce anxiety and the risk of depression in seniors (40–42). ▶ Regular physical activity helps prevent several forms of cancer in seniors (43). ▶ Regular physical activity helps prevent the onset of type 2 diabetes and contributes to glycemic control in those living with the disease (44, 45). ▶ Physical activity in any amount, regardless of its intensity, is associated with a reduced risk of mortality from all causes (46). ▶ Regular physical activity reduces the risk of cardiovascular disease and helps prevent hypertension in seniors (47, 48) over the long term (49). ▶ Regular physical activity helps improve cognitive function and reduces the risk of dementia in seniors (50–54).
Moderate	▶ Regular physical activity is associated with body weight maintenance and lower long-term risk of weight gain (49). ▶ Physical activity appears to have good potential for limiting the adverse effects of COVID-19 (55–57), in particular by reducing the risk of cardiovascular disease and positively affecting metabolic syndrome and insulin sensitivity.

What can the public health network and its partners do to reduce sedentary behaviour and promote physical activity in persons 65 and older?

The public health network should continue to raise awareness and promote a physically active lifestyle by suggesting strategies and resources tailored to people 65 and older in the context of the pandemic. Various players (e.g., healthcare and health service workers from the public, community, and private sectors, including those in residences for independent seniors) can play a role in deploying complementary individual and environmental measures.

Strategies	COVID-19-specific measures
Raise awareness of the importance of being active at home and promote regular physical activity to foster wellness and quality of life and help maintain independence (1–7) and good mental health (58). **Level of scientific support: High**	▶ Develop and put in place promotion campaigns targeting more vulnerable or at-risk subgroups (e.g., less active or obese persons) reminding them of the importance of staying physically active despite the ongoing pandemic, while avoiding condescension and stereotyping (59, 60). ▶ Promote the replacement of sedentary behaviours with light, moderate, or high intensity physical activity (58, 61) that are compatible with people's individual abilities and with the pandemic situation and alert level in effect (e.g., walking outdoors, climbing stairs). ▶ Promote varied physical activities throughout the year (e.g., walking on covered paths, cross-country skiing on flat trails, swimming) (1–3, 62).
Share and promote ways of reducing extended sedentary behaviour and the total duration of such behaviour (5, 6, 63–68). **Level of support: High**	▶ Encourage seniors to get up and move around regularly (63, 65, 66, 68). ▶ Encourage seniors to perform low-intensity activities (69) such as day-to-day living activities (e.g., housekeeping, walking) (64, 65). ▶ Suggest goals that are easy to meet throughout the week: taking one- or two-minute active breaks every 30 minutes (e.g., getting up during TV commercials, using the stairs, standing while talking on the phone) (63–65). ▶ Share and/or make use of the methods and resources provided in the *Directives pour prévenir le déconditionnement chez la personne aînée en contexte de pandémie*[5] and the exercise programs offered by the public health network[6] (58, 62)
Support regular practice of a variety of simple, safe, and pleasant exercises[7,8] (5, 61, 67, 70–74). **Level of support: High**	▶ Develop and offer multi-component exercise programs that incorporate aerobics (69), strength (4, 7) and balance training (75), and coordination, flexibility, and mobility (5, 66, 76–80) and that can be done remotely when the public health situation so requires (e.g., Santé physique by Centre de recherche de l'Institut universitaire de gériatrie de Montréal, *Programme pour éviter le déconditionnement physique et cognitif* by CIUSSS de la Mauricie-and-du-Centre-du-Québec). ▶ Encourage clinicians to prescribe at-home exercises (7, 81). ▶ Offer virtual monitoring/supervision by professionals addressing exercise frequency, intensity, duration, type, amount, and progress (58, 70–72, 82, 83). ▶ Provide motivational support in compliance with public health restrictions and physical distancing measures: encouragement by peers, support from family and health care professionals (74). ▶ Promote the use of physical activity monitoring tools (e.g., watches, accelerometers, activity log) (74, 84). ▶ Provide resources for unsupervised exercise programs for frail seniors on paper or DVD or via mobile apps, online videos, live stream videos, or daily communications on Facebook (91) (e.g., *Physical activity for seniors* from Santé Montréal, *Trucs et conseils pour les aînés - Manger sainement, bouger et maintenir une routine pendant la pandémie de COVID-19* from CIUSSS de l'Estrie).

[5] See Appendix 3.

[6] See Appendix 3.

[7] Before making any changes in the level of physical activity, it is recommended to consult a physical activity or health professional (CSEP Get Active Questionnaire).

[8] See Appendix 4.

What can municipalities do to create and maintain physical activity–friendly environments for seniors who live at home?

Québec municipalities have various tools they can leverage to promote a physically active lifestyle (85), including for seniors, even in a pandemic situation (86). As long as measures, restrictions, and lockdowns remain in place, maintaining a dialogue with seniors on the strategies they recommend is essential (87). Following the *Age-Friendly Municipalities* programs in use in a number of Québec municipalities can be facilitating (88).

Strategies	Proposed actions during COVID-19
Promote active travel by seniors by providing more pedestrian-friendly spaces (89–96) **Level of support: High**	▶ Promote active travel by seniors (90, 95, 96) by creating more pedestrian-friendly spaces conducive to physical distancing (e.g., road sharing, pedestrianization of streets) (89, 91–93, 97). ▶ Overhaul the infrastructure maintenance strategy (e.g., snow removal), focusing on neighbourhoods that are seeing heavier use because of the pandemic and that are more densely populated by seniors, to promote their safety (94, 96, 98) ▶ Extend traffic signal crossing times to accommodate people with reduced mobility and ensure that infrastructure and crosswalks, even temporary ones, are well lit (95, 96, 99–101). ▶ Install benches along travel routes and space them adequately to maintain physical distancing. Develop attractive rest stops (e.g., public art installations) and green spaces (90, 95, 96, 99, 102).
Encourage physical activity by seniors in parks and green spaces by providing universal access to attractive infrastructure, in keeping with public health guidelines (94, 96, 102–107) **Level of support: High**	▶ Maintain access to parks, green spaces, and related infrastructure compatible with the current alert level, including community gardens, so as to encourage physical activity in seniors (85, 91, 92, 94, 97, 103, 104) in outdoor settings that limit the risk of contagion (98, 101, 102). ▶ Develop age-friendly park rest areas (104, 105, 109). Space benches well apart to comply with physical distancing requirements and position them for increased thermal comfort depending on the season (e.g., shaded and sunny areas, storm protection) (94, 104). ▶ Maintain access to restrooms as well as to chalets and shelters (94, 105) in accordance with the health measures in effect (limit to the number of simultaneous users, distancing, etc.). ▶ Help maintain universal accessibility[9] to the parks and green spaces that play a vital role during the pandemic (98, 107) by maintaining accesses and trails (e.g., snow removal) and ensuring adequate area lighting (89, 100). Indicate route changes due to the pandemic (e.g., one-way trails) to enhance real and perceived safety of seniors (100).

[9] Using an inclusive approach, universal accessibility ensures that all persons, regardless of their abilities, are able to independently and simultaneously access services offered to the entire population in an identical or similar way (source: Ville de Montréal https://montreal.ca/en/universal-access

Strategies	Proposed actions during COVID-19
Maintain public transit in operation, with strict health measures, to promote active mobility for seniors who still want to use it (89, 90, 95, 96, 110, 111) **Level of support: moderate**	▶ Encourage seniors to use public transit during off-peak hours: offer seniors reduced fares or free rides outside peak periods (89), as some municipalities now do (e.g., Longueuil, Boucherville[10]). Maintain good service frequency throughout the day despite lower ridership (110, 111). ▶ Protect the most vulnerable users, including seniors, by applying strict health measures (e.g., proper ventilation, frequent cleaning) and promoting compliance with health guidelines (distribute face coverings free of charge, install more hand sanitizing stations, display guidelines in an illustrated and highly visible manner, install ground markers to facilitate physical distancing) (89, 110, 111).
In collaboration with sports and recreation organizations, offer an activity program tailored to seniors and to pandemic conditions (8, 90, 96, 112–115) **Level of support: Moderate**	▶ Prioritize outdoor infrastructure in all seasons and avoid large gatherings. Maintain access to municipal sports facilities in accordance with the alert level in effect in your region. Neighbourhood facilities help promote physical activity by seniors (89, 95). ▶ In parks and green spaces, offer physical activities people can do individually in accordance with health guidelines (97, 99, 105) (e.g., exercise signs). ▶ Support partner organizations so that they can offer a variety of activities and exercise programs (e.g., dance, yoga, etc.) that can be done remotely (e.g., online, community television, etc.) (114), even in small spaces, and using household objects (112, 113). ▶ Maintain low-cost activities (103).

[10] *Accès 65 hors pointe* program (source: https://boucherville.ca/residants/transports/acces-65-hors-pointe/)

Références

1. Schepps MA, Shiroma EJ, Kamada M, Harris TB, Lee I-M. Day length is associated with physical activity and sedentary behavior among older women. *Sci Rep* [En ligne]. 26 avr. 2018 [cité le 12 nov. 2020];8(1):6602. Disponible : https://www.nature.com/articles/s41598-018-25145-w

2. Albrecht BM, Stalling I, Recke C, Bammann K. Accelerometer-assessed outdoor physical activity is associated with meteorological conditions among older adults: Cross-sectional results from the OUTDOOR ACTIVE study. *PLOS* ONE [En ligne]. 24 janv. 2020 [cité le 12 nov. 2020];15(1):e0228053. Disponible : https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0228053

3. Aspvik NP, Viken H, Ingebrigtsen JE, Zisko N, Mehus I, Wisløff U, et al. Do weather changes influence physical activity level among older adults? – The Generation 100 study. *PLOS ONE* [En ligne]. 6 juill. 2018 [cité le 12 nov. 2020];13(7):e0199463. Disponible : https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0199463

4. Machado CLF, Pinto RS, Brusco CM, Cadore EL, Radaelli R. COVID-19 pandemic is an urgent time for older people to practice resistance exercise at home. *Exp Gerontol* [En ligne]. 1 nov. 2020 [cité le 21 oct. 2020];141:111101. Disponible : http://www.sciencedirect.com/science/article/pii/S0531556520304496

5. WHO [En ligne]. *Stay physically active during self-quarantine*; 2020 [cité le 26 oct. 2020]. Disponible : https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/publications-and-technical-guidance/stay-physically-active-during-self-quarantine

6. WHO [En ligne]. *Coronavirus disease (COVID-19): Risks and safety for older people*; 8 mai 2020 [cité le 25 nov. 2020]. Disponible : https://www.who.int/news-room/q-a-detail/coronavirus-disease-covid-19-risks-and-safety-for-older-people

7. Roschel H, Artioli GG, Gualano B. Risk of Increased Physical Inactivity During COVID-19 Outbreak in Older People: A Call for Actions. *J Am Geriatr Soc* [En ligne]. 2020 [cité le 25 nov. 2020];68(6):1126-8. Disponible : https://onlinelibrary.wiley.com/doi/abs/10.1111/jgs.16550

8. Sepulveda-Loyola W, Rodríguez-Sánchez I, Perez-Rodriguez P, Ganz F, Torralba R, Oliveira DV, et al. Impact of social isolation due to COVID-19 on health in older people: Mental and physical effects and recommendations. *J Nutr Health Aging*. 2020;1–10.

9. INSPQ. *COVID-19 : Mesures sanitaires recommandées pour la population générale* [En ligne]. Montréal : INSPQ; 2020 p. 9. Disponible : https://www.inspq.qc.ca/sites/default/files/covid/3008-mesures-sanitaires-population-generale-covid19.pdf

10. Anderson RM, Heesterbeek H, Klinkenberg D, Hollingsworth TD. How will country-based mitigation measures influence the course of the COVID-19 epidemic? *Lancet Lond Engl*. 21 2020;395(10228):931-4.

11. Chu DK, Akl EA, Duda S, Solo K, Yaacoub S, Schünemann HJ, et al. Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis. *The Lancet* [En ligne]. Elsevier ; 1 juin 2020 [cité le 12 juin 2020];0(0). Disponible : https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31142-9/abstract

12. Hallal PC, Andersen LB, Bull FC, Guthold R, Haskell W, Ekelund U. Global physical activity levels: surveillance progress, pitfalls, and prospects. *The Lancet* [En ligne]. 21 juill. 2012 [cité le 12 nov. 2020];380(9838):247-57. Disponible : https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(12)60646-1/abstract

13. Consensus Definitions (French Translation) [En ligne]. *The Sedentary Behaviour Research Network* (SBRN). [cité le 7 déc. 2020]. Disponible : https://www.sedentarybehaviour.org/sbrn-terminology-consensus-project/french-translation/

14. Cheval B, Sivaramakrishnan H, Maltagliati S, Fessler L, Forestier C, Sarrazin P, et al. *Relationships Between Changes in Self-Reported Physical Activity and Sedentary Behaviours and Health During the Coronavirus (COVID-19)* Pandemic in France and Switzerland [En ligne]. SportRxiv; avr. 2020. Disponible : https://osf.io/preprints/sportrxiv/ydv84/

15. Yamada M, Kimura Y, Ishiyama D, Otobe Y, Suzuki M, Koyama S, et al. Effect of the COVID-19 Epidemic on Physical Activity in Community-Dwelling Older Adults in Japan: A Cross-Sectional Online Survey. *J Nutr Health Aging*. 2020;24(9):948-50.

16. The Vanier Institute of the Family / L'Institut Vanier de la famille [En ligne]. famille LV de la. *Health Habits During the COVID-19 Pandemic*; [cité le 11 nov. 2020]. Disponible : https://vanierinstitute.ca/health-habits-during-the-covid-19-pandemic/

17. Jedwab J. *De nombreux canadiens prennent du poids, mangent plus et font moins d'exercice depuis le début de la pandémie*. 24 nov. 2020;13.

18. Esain I, Gil SM, Bidaurrazaga-Letona I, Rodriguez-Larrad A. Effects of 3 months of detraining on functional fitness and quality of life in older adults who regularly exercise. *Aging Clin Exp Res* [En ligne]. 1 avr. 2019 [cité le 28 nov. 2020];31(4):503-10. Disponible : https://doi.org/10.1007/s40520-018-0990-1

19. Kortebein P, Symons TB, Ferrando A, Paddon-Jones D, Ronsen O, Protas E, et al. Functional Impact of 10 Days of Bed Rest in Healthy Older Adults. *J Gerontol Ser A* [En ligne]. Oxford Academic ; 1 oct 2008 [cité le 26 nov. 2020];63(10):1076-81. Disponible : https://pubmed.ncbi.nlm.nih.gov/18948558/

20. Heldmann P, Werner C, Belala N, Bauer JM, Hauer K. Early inpatient rehabilitation for acutely hospitalized older patients: a systematic review of outcome measures. *BMC Geriatr* [En ligne]. 9 juill. 2019 [cité le 10 déc. 2020];19(1):189. Disponible : https://doi.org/10.1186/s12877-019-1201-4

21. Rolland Y, Vellas B. La sarcopénie. *Rev Médecine Interne*. 2009;30(2):150-60.

22. Kirwan R, McCullough D, Butler T, Perez de Heredia F, Davies IG, Stewart C. Sarcopenia during COVID-19 lockdown restrictions: long-term health effects of short-term muscle loss. *GeroScience* [En ligne]. 1 oct. 2020 [cité le 10 déc. 2020] ; Disponible: https://doi.org/10.1007/s11357-020-00272-3

23. OMS [En ligne]. *L'activité physique des personnes âgées* ; [cité le 30 nov. 2020]. Disponible : https://www.who.int/dietphysicalactivity/factsheet_olderadults/fr/

24. Doiron, A. & Dupras, A. 2009. *Comment survivre à son hospitalisation ? Le Médecin du Québec*. 44(1). 51-57. [En ligne]. [cité le 2 déc. 2020]. Disponible : https://fmoq-legacy.s3.amazonaws.com/fr/Le%20Medecin%20du%20Quebec/Archives/2000%20-%202009/051-057DrDoiron0109.pdf

25. Cunningham C, Sullivan RO, Caserotti P, Tully MA. Consequences of physical inactivity in older adults: A systematic review of reviews and meta-analyses. *Scand J Med Sci Sports* [En ligne]. 2020 [cité le 12 nov. 2020];30(5):816-27. Disponible : https://onlinelibrary.wiley.com/doi/abs/10.1111/sms.13616

26. Morin, J. & Leduc, Y. 2004. « Lève-toi et marche ! » ou comment contrer la perte d'autonomie fonctionnelle au cours d'une hospitalisation. *Le Médecin du Québec*. 39(6). 89-94. [En ligne]. [cité le 2 déc. 2020]. Disponible : https://www.icc-cpi.int/RelatedRecords/CR2015_21006.PDF

27. The Conversation [En ligne]. McKendry J. *Gare à la sédentarité! Deux semaines sans bouger peuvent ruiner la santé* ; [cité le 8 déc. 2020]. Disponible : http://theconversation.com/gare-a-la-sedentarite-deux-semaines-sans-bouger-peuvent-ruiner-la-sante-151081

28. Wullems JA, Verschueren SMP, Degens H, Morse CI, Onambélé GL. *A review of the assessment and prevalence of sedentarism in older adults, its physiology/health impact and non-exercise mobility counter-measures*. Biogerontology. 2016;17(3):547-65.

29. Wirth K, Klenk J, Brefka S, Dallmeier D, Faehling K, Roqué I Figuls M, et al. Biomarkers associated with sedentary behaviour in older adults: A systematic review. *Aging Res Rev*. mai 2017;35:87-111.

30. Chau JY, Grunseit AC, Chey T, Stamatakis E, Brown WJ, Matthews CE, et al. Daily Sitting Time and All-Cause Mortality: A Meta-Analysis. *PLOS ONE* [En ligne]. 13 nov. 2013 [cité le 2 déc. 2020];8(11):e80000. Disponible : https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0080000

31. Hajduk AM, Chaudhry SI. Sedentary Behavior and Cardiovascular Risk in Older Adults: a Scoping Review. *Curr Cardiovasc Risk Rep* [En ligne]. 29 janv. 2016 [cité le 2 déc. 2020];10(1):5. Disponible : https://doi.org/10.1007/s12170-016-0485-6

32. Chevance G, Foucaut AM, Bernard P. *État des connaissances sur les comportements sédentaires*. Presse Medicale Paris Fr 1983. mars 2016;45(3):313-8.

33. Ross R, Chaput J-P, Giangregorio LM, Janssen I, Saunders TJ, Kho ME, et al. Canadian 24-Hour Movement Guidelines for Adults aged 18–64 years and Adults aged 65 years or older: an integration of physical activity, sedentary behaviour, and sleep. *Appl Physiol Nutr Metab* [En ligne]. Oct. 2020 [cité le 2 déc. 2020];45(10 (Suppl. 2)):S57-102. Disponible: https://cdnsciencepub.com/doi/10.1139/apnm-2020-0467

34. Rezende LFM de, Rey-López JP, Matsudo VKR, Luiz O do C. Sedentary behavior and health outcomes among older adults: a systematic review. *BMC Public Health* [En ligne]. 9 avr. 2014 [cité le 2 déc. 2020];14(1):333. Disponible : https://doi.org/10.1186/1471-2458-14-333

35. Zhao R, Feng F, Wang X. Exercise interventions and prevention of fall-related fractures in older people: a meta-analysis of randomized controlled trials. *Int J Epidemiol* [En ligne]. 31 juill. 2016 [cité le 30 nov. 2020];dyw142. Disponible : https://academic.oup.com/ije/article-lookup/doi/10.1093/ije/dyw142

36. Gillespie LD, Robertson MC, Gillespie WJ, Sherrington C, Gates S, Clemson L, et al. *Interventions for preventing falls in older people living in the community*. Cochrane Bone, Joint and Muscle Trauma Group, rédacteur. Cochrane Database Syst Rev [En ligne]. 12 sept. 2012 [cité le 30 nov. 2020]; Disponible : http://doi.wiley.com/10.1002/14651858.CD007146.pub3

37. El-Khoury F, Cassou B, Charles M-A, Dargent-Molina P. The effect of fall prevention exercise programmes on fall induced injuries in community dwelling older adults: *Br J Sports Med* [En ligne]. Oct. 2015 [cité le 3 nov. 2020];49(20):1348-1348. Disponible : https://bjsm.bmj.com/lookup/doi/10.1136/bmj.f6234

38. Chase J-AD, Phillips LJ, Brown M. Physical Activity Intervention Effects on Physical Function Among Community-Dwelling Older Adults: A Systematic Review and Meta-Analysis. *J Aging Phys Act* [En ligne]. Janv. 2017 [cité le 30 nov. 2020];25(1):149-70. Disponible : http://journals.humankinetics.com/doi/10.1123/japa.2016-0040

39. Beckett MW, Ardern CI, Rotondi MA. A meta-analysis of prospective studies on the role of physical activity and the prevention of Alzheimer's disease in older adults. *BMC Geriatr* [En ligne]. Déc. 2015 [cité le 30 nov. 2020];15(1):9. Disponible : http://bmcgeriatr.biomedcentral.com/articles/10.1186/s12877-015-0007-2

40. Mura G, Carta MG. Physical Activity in Depressed Elderly. A Systematic Review. *Clin Pract Epidemiol Ment Health* [En ligne]. 12 juill. 2013 [cité le 30 nov. 2020];9(1):125-35. Disponible : https://clinical-practice-and-epidemiology-in-mental-health.com/VOLUME/9/PAGE/125/

41. Schuch FB, Vancampfort D, Rosenbaum S, Richards J, Ward PB, Veronese N, et al. Exercise for depression in older adults: a meta-analysis of randomized controlled trials adjusting for publication bias. *Rev Bras Psiquiatr* [En ligne]. 18 juill. 2016 [cité le 30 nov. 2020];38(3):247-54. Disponible : http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-44462016000300247&lng=en&tlng=en

42. Rhyner KT, Watts A. Exercise and Depressive Symptoms in Older Adults: A Systematic Meta-Analytic Review. *J Aging Phys Act* [En ligne]. Avr. 2016 [cité le 30 nov. 2020];24(2):234-46. Disponible : https://journals.humankinetics.com/view/journals/japa/24/2/article-p234.xml

43. Moore SC, Lee I-M, Weiderpass E, Campbell PT, Sampson JN, Kitahara CM, et al. Association of Leisure-Time Physical Activity With Risk of 26 Types of Cancer in 1.44 Million Adults. *JAMA Intern Med*. 01 2016;176(6):816-25.

44. Laaksonen MA, Knekt P, Rissanen H, Härkänen T, Virtala E, Marniemi J, et al. The relative importance of modifiable potential risk factors of type 2 diabetes: a meta-analysis of two cohorts. *Eur J Epidemiol* [En ligne]. Févr. 2010 [cité le 30 nov. 2020];25(2):115-24. Disponible : http://link.springer.com/10.1007/s10654-009-9405-0

45. Cloostermans L, Wendel-Vos W, Doornbos G, Howard B, Craig CL, Kivimäki M, et al. Independent and combined effects of physical activity and body mass index on the development of Type 2 Diabetes – a meta-analysis of 9 prospective cohort studies. *Int J Behav Nutr Phys Act* [En ligne]. Déc. 2015 [cité le 30 nov. 2020];12(1):147. Disponible : http://www.ijbnpa.org/content/12/1/147

46. Ekelund U, Tarp J, Steene-Johannessen J, Hansen BH, Jefferis B, Fagerland MW, et al. Dose-response associations between accelerometry measured physical activity and sedentary time and all cause mortality: systematic review and harmonised meta-analysis. *BMJ* [En ligne]. 21 août 2019 [cité le 30 nov. 2020];l4570. Disponible : https://www.bmj.com/lookup/doi/10.1136/bmj.l4570

47. Cornelissen VA, Fagard RH, Coeckelberghs E, Vanhees L. Impact of Resistance Training on Blood Pressure and Other Cardiovascular Risk Factors: A Meta-Analysis of Randomized, Controlled Trials. *Hypertension* [En ligne]. Nov. 2011 [cité le 30 nov. 2020];58(5):950-8. Disponible : https://www.ahajournals.org/doi/10.1161/HYPERTENSIONAHA.111.177071

48. Cornelissen VA, Smart NA. Exercise Training for Blood Pressure: A Systematic Review and Meta-analysis. *J Am Heart Assoc* [En ligne]. 23 janv. 2013 [cité le 30 nov. 2020];2(1). Disponible : https://www.ahajournals.org/doi/10.1161/JAHA.112.004473

49. Reiner M, Niermann C, Jekauc D, Woll A. Long-term health benefits of physical activity – a systematic review of longitudinal studies. *BMC Public Health* [En ligne]. Déc. 2013 [cité le 30 nov. 2020];13(1):813. Disponible : http://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-13-813

50. Colcombe S, Kramer AF. Fitness Effects on the Cognitive Function of Older Adults: A Meta-Analytic Study. *Psychol Sci* [En ligne]. Mars 2003 [cité le 30 nov. 2020];14(2):125-30. Disponible : http://journals.sagepub.com/doi/10.1111/1467-9280.t01-1-01430

51. Kelly ME, Loughrey D, Lawlor BA, Robertson IH, Walsh C, Brennan S. The impact of exercise on the cognitive functioning of healthy older adults: A systematic review and meta-analysis. *Aging Res Rev* [En ligne]. Juill. 2014 [cité le 30 nov. 2020];16:12-31. Disponible : https://linkinghub.elsevier.com/retrieve/pii/S1568163714000610

52. Wu Y, Wang Y, Burgess EO, Wu J. The effects of Tai Chi exercise on cognitive function in older adults: A meta-analysis. *J Sport Health Sci* [En ligne]. Déc. 2013 [cité le 30 nov. 2020];2(4):193-203. Disponible : https://linkinghub.elsevier.com/retrieve/pii/S2095254613000720

53. Livingston G, Huntley J, Sommerlad A, Ames D, Ballard C, Banerjee S, et al. *Dementia prevention, intervention, and care: 2020 report of the Lancet Commission* [En ligne]. 2020 p. 413-46. Disponible : https://linkinghub.elsevier.com/retrieve/pii/S0140673620303676

54. WHO. *Risk reduction of cognitive decline and dementia: WHO guidelines*. [En ligne]. Genève : Organisation mondiale de la santé ; 2019 [cité le 23 sept. 2020]. 96 p. Disponible : https://www.ncbi.nlm.nih.gov/books/NBK542796/

55. Hudson GM, Sprow K. Promoting Physical Activity During the COVID-19 Pandemic: Implications for Obesity and Chronic Disease Management. *J Phys Act Health* [En ligne]. Human Kinetics; 9 juin 2020 [cité le 8 oct. 2020];17(7):685-7. Disponible : https://journals.humankinetics.com/view/journals/jpah/17/7/article-p685.xml

56. Denay K, Breslow R, Turner M, Nieman D, Roberts W, Best T. ACSM Call to Action Statement: COVID-19 Considerations for Sports and Physical Activity. *Curr Sports Med Rep* [En ligne]. août 2020 [cité le 20 oct. 2020];19(8):326-8. Disponible: https://journals.lww.com/acsm-csmr/fulltext/2020/08000/acsm_call_to_action_statement__covid_19.8.aspx

57. Khoramipour K, Basereh A, Hekmatikar AA, Castell L, Ruhee RT, Suzuki K. Physical activity and nutrition guidelines to help with the fight against COVID-19. *J Sports Sci* [En ligne]. Routledge; 25 août 2020 [cité le 9 oct. 2020];0(0):1-7. Disponible : https://doi.org/10.1080/02640414.2020.1807089

58. Sepúlveda-Loyola W, Rodríguez-Sánchez I, Pérez-Rodríguez P, Ganz F, Torralba R, Oliveira DV, et al. Impact of Social Isolation Due to COVID-19 on Health in Older People: Mental and Physical Effects and Recommendations. *J Nutr Health Aging*. 2020;24(9):938-47.

59. Stead M, Angus K, Langley T, Katikireddi SV, Hinds K, Hilton S, *et al*. Mass media to communicate public health messages in six health topic areas: a systematic review and other reviews of the evidence. *Public Health Res* [En ligne]. Avr. 2019 [cité le 26 nov. 2020];7(8):1-206. Disponible : https://www.journalslibrary.nihr.ac.uk/phr/phr07080

60. Rogers NT, Waterlow NR, Brindle H, Enria L, Eggo RM, Lees S, et al. Behavioral Change Towards Reduced Intensity Physical Activity Is Disproportionately Prevalent Among Adults With Serious Health Issues or Self-Perception of High Risk During the UK COVID-19 Lockdown. *Front Public Health*. 2020;8:575091.

61. SCPE | CSEP. DIRECTIVES CANADIENNES EN MATIÈRE DE MOUVEMENT SUR 24 HEURES :une approche intégrée regroupant l'activité physique, le comportement sédentaire et le sommeil [cité le 13 oct. 2020]. Disponible : https://csepguidelines.ca/fr

62. Ministère des Affaires municipales, du Sport et du Loisir. 2004. *Un environnement favorable au loisir et à l'activité physique - Un atout pour les aînés en résidence* [En ligne]. [cité le 8 déc. 2020]. Disponible : http://www.kino-quebec.qc.ca/publications/GuideAinesResidence.pdf

63. National Health Service U.K. [En ligne]. *Why we should sit less* ; 30 avr. 2018 [cité le 25 nov. 2020]. Disponible : https://www.nhs.uk/live-well/exercise/why-sitting-too-much-is-bad-for-us/

64. UK. Physical activity guidelines: UK Chief Medical Officers' report. 2019 :66. Disponible : https://www.gov.uk/government/publications/physical-activity-guidelines-uk-chief-medical-officers-report

65. Ricci F, Izzicupo P, Moscucci F, Sciomer S, Maffei S, Di Baldassarre A, et al. Recommendations for Physical Inactivity and Sedentary Behavior During the Coronavirus Disease (COVID-19) Pandemic. Front Public Health [En ligne]. *Frontiers*; 2020 [cité le 25 nov. 2020];8. Disponible : https://www.frontiersin.org/articles/10.3389/fpubh.2020.00199/full

66. Chtourou H, Trabelsi K, H'mida C, Boukhris O, Glenn JM, Brach M, et al. Staying Physically Active During the Quarantine and Self-Isolation Period for Controlling and Mitigating the COVID-19 Pandemic: A Systematic Overview of the Literature. *Front Psychol*. 2020;11:1708.

67. Dogra S, Ashe MC, Biddle SJH, Brown WJ, Buman MP, Chastin S, et al. Sedentary time in older men and women: an international consensus statement and research priorities. Br J Sports Med [En ligne]. *BMJ Publishing Group Ltd and British Association of Sport and Exercise Medicine* ; 1 nov. 2017 [cité le 29 nov. 2020];51(21):1526-32. Disponible : https://bjsm.bmj.com/content/51/21/1526

68. SCPE | CSEP [En ligne]. *Directives canadiennes en matière de mouvement sur 24 heures pour les adultes âgés de 65 ans et plus : une approche intégrée regroupant l'activité physique, le comportement sédentaire et le sommeil* ; [cité le 24 nov. 2020]. Disponible : https://csepguidelines.ca/fr/adults-65/

69. Aubertin-Leheudre M, Rolland Y. The Importance of Physical Activity to Care for Frail Older Adults During the COVID-19 Pandemic. *J Am Med Dir Assoc* [En ligne]. Juill. 2020 [cité le 30 nov. 2020];21(7):973-6. Disponible : https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7190526/

70. Voss ML, Pope JP, Copeland JL. Reducing Sedentary Time among Older Adults in Assisted Living: Perceptions, Barriers, and Motivators. *Int J Environ Res Public Health*. 22 2020;17(3).

71. Goethals L, Barth N, Guyot J, Hupin D, Celarier T, Bongue B. Impact of Home Quarantine on Physical Activity Among Older Adults Living at Home During the COVID-19 Pandemic: Qualitative Interview Study. *JMIR Aging*. Mai 2020;3.

72. McGarrigle L, Boulton E, Todd C. Map the apps: a rapid review of digital approaches to support the engagement of older adults in strength and balance exercises. *BMC Geriatr.* 18 2020;20(1):483.

73. National Health Service U.K. [En ligne]. *Exercise as you get older*; 2 juill. 2018 [cité le 25 nov. 2020]. Disponible : https://www.nhs.uk/live-well/exercise/exercise-as-you-get-older/

74. Spiteri K, Broom D, Hassan Bekhet A, Xerri de Caro J, Laventure B, Grafton K. Barriers and Motivators of Physical Activity Participation in Middle-Aged and Older Adults—A Systematic Review. *J Aging Phys Act* [En ligne]. 1 déc. 2019 [cité le 26 nov. 2020];27(6):929-44. Disponible : https://journals.humankinetics.com/view/journals/japa/27/6/article-p929.xml

75. Ganz DA, Latham NK. Prevention of Falls in Community-Dwelling Older Adults. *N Engl J Med*. 20 févr. 2020;382(8):734-43.

76. Jiménez-Pavón D, Carbonell-Baeza A, Lavie CJ. Physical exercise as therapy to fight against the mental and physical consequences of COVID-19 quarantine: Special focus in older people. *Prog Cardiovasc Dis* [En ligne]. 2020 [cité le 26 oct. 2020];63(3):386-8. Disponible : https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7118448/

77. CEBM [En ligne]. *Maximising mobility in older people when isolated with COVID-19*; [cité le 3 nov. 2020]. Disponible : https://www.cebm.net/covid-19/maximising-mobility-in-the-older-people-when-isolated-with-covid-19/

78. FADOQ. *Gardez la forme dans le confort de votre foyer* [En ligne]. dans Loisirs et événements - Activités physiques et sportives. [cité le 14 oct. 2020]. Disponible : https://www.fadoq.ca/reseau/activites/activites-physiques-et-sportives/gardez-la-forme-dans-le-confort-de-votre-foyer

79. Ministère de la santé et des services sociaux du Québec [En ligne]. 2020. *Directives pour prévenir le déconditionnement chez la personne aînée en contexte de pandémie* ; [cité le 2 nov. 2020]. Disponible : https://publications.msss.gouv.qc.ca/msss/document-002607/

80. Santé Montréal [En ligne*]. Direction régionale de santé publique de Montréal. Activité physique pour les aînés* ; 24 juill. 2020 [cité le 25 nov. 2020]. Disponible : https://santemontreal.qc.ca/population/conseils-et-prevention/activite-physique-pour-les-aines/

81. Exercise is Medicine [En ligne]. *Exercise is Medicine*; [cité le 2 déc. 2020]. Disponible : https://exerciseismedicine.org/canada/

82. Natalucci V, Carnevale Pellino V, Barbieri E, Vandoni M. Is It Important to Perform Physical Activity During Coronavirus Pandemic (COVID-19)? Driving Action for a Correct Exercise Plan*.* *Front Public Health* [En ligne]. 2020 [cité le 25 nov. 2020];8. Disponible : https://www.frontiersin.org/articles/10.3389/fpubh.2020.602020/full

83. Adrin L. Report of the WCPT/INPTRA Digital Physical Therapy Practice Task Force. 2020;25.

84. Oliveira JS, Sherrington C, Zheng ERY, Franco MR, Tiedemann A. Effect of interventions using physical activity trackers on physical activity in people aged 60 years and over: a systematic review and meta-analysis. *Br J Sports Med* [En ligne]. 1 oct. 2020 [cité le 4 nov. 2020];54(20):1188-94. Disponible : https://bjsm.bmj.com/content/54/20/1188

85. INSPQ [En ligne]. Couture Ménard M-E, Rioux Collin J. *Les compétences et les pouvoirs des municipalités pour créer des environnements favorables à la saine alimentation et au mode de vie physiquement actif*; [cité le 2 déc. 2020]. Disponible : https://www.inspq.qc.ca/publications/2528

86. Gouvernement du Québec. *Politique de l'activité physique, du sport et du loisir - Au Québec, on bouge!* [En ligne]. [cité le 7 déc. 2020]. Disponible : http://www.education.gouv.qc.ca/fileadmin/site_web/documents/loisir-sport/Politique-FR-v18_sans-bouge3.pdf

87. OMS. Pandemic fatigue: *Reinvigorating the public to prevent COVID-19 — Policy framework for supporting pandemic prevention and management* [EN/RU] - World [En ligne]. Copenhagen: OMS; 2020. Disponible : https://reliefweb.int/report/world/pandemic-fatigue-reinvigorating-public-prevent-covid-19-policy-framework-supporting

88. Ministère de la Santé et des Services sociaux. *Guide d'accompagnement pour la réalisation de la démarche Municipalité amie des aînés* 2e édition. 2020.

89. OMS. *Supporting healthy urban transport and mobility in the context of COVID19* [En ligne]. Genève: OMS ; 2020. Disponible : https://www.who.int/publications/i/item/9789240012554

90. Barnett DW, Barnett A, Nathan A, Van Cauwenberg J, Cerin E. Built environmental correlates of older adults' total physical activity and walking: a systematic review and meta-analysis. *Int J Behav Nutr Phys Act*. 2017;14(1):103.

91. OMS [En ligne]. *Se déplacer pendant la flambée de maladie à coronavirus (COVID-19)* ; 2020 [cité le 4 nov. 2020]. Disponible : https://www.euro.who.int/fr/health-topics/health-emergencies/coronavirus-covid-19/publications-and-technical-guidance/environment-and-food-safety/moving-around-during-the-covid-19-outbreak

92. Laverty AA, Millett C, Majeed A, Vamos EP. COVID-19 presents opportunities and threats to transport and health. *J R Soc Med* [En ligne]. SAGE Publications; 1 juill. 2020 [cité le 4 nov. 2020];113(7):251-4. Disponible : https://doi.org/10.1177/0141076820938997

93. INSPQ [En ligne]. Robitaille É, St-Louis A, Pigeon É, Labesse ME, Lavoie M, Maurice P, et al. *Pratique sécuritaire de la marche et du vélo à l'extérieur en contexte de pandémie de COVID-19*; [cité le 30 nov. 2020]. Disponible : https://www.inspq.qc.ca/publications/3010-pratique-securitaire-marche-velo-covid19

94. INSPQ. *COVID-19 et saison hivernale : favoriser le transport actif et la pratique d'activités extérieures*. Paraître 2020.

95. Bonaccorsi G, Manzi F, Del Riccio M, Setola N, Naldi E, Milani C, et al. Impact of the built environment and the neighborhood in promoting the physical activity and the healthy aging in older people: an umbrella review. *Int J Environ Res Public Health*. 2020;17(17):6127.

96. Cerin E, Nathan A, Van Cauwenberg J, Barnett DW, Barnett A. The neighbourhood physical environment and active travel in older adults: a systematic review and meta-analysis. *Int J Behav Nutr Phys Act*. 2017;14(1):1–23.

97. Martinez PD, Nakayama C, Young HM. Age-Friendly Cities During a Global Pandemic. *J Gerontol Nurs*. 2020;46(12):7–13.

98. Agence de la Santé publique du Canada. *Chutes chez les aînés au Canada*. 2014.

99. Klann A, Vu L, Ewing M, Fenton M, Pojednic R. Translating urban walkability initiatives for older adults in rural and under-resourced communities. *Int J Environ Res Public Health*. 2019;16(17):3041.

100. Yen IH, Fandel Flood J, Thompson H, Anderson LA, Wong G. How design of places promotes or inhibits mobility of older adults: realist synthesis of 20 years of research. *J Aging Health*. 2014;26(8):1340–1372.

101. Won J, Lee C, Forjuoh SN, Ory MG. Neighborhood safety factors associated with older adults' health-related outcomes: a systematic literature review. *Soc Sci Med*. 2016;165:177–186.

102. Van Cauwenberg J, Nathan A, Barnett A, Barnett DW, Cerin E. Relationships between neighbourhood physical environmental attributes and older adults' leisure-time physical activity: a systematic review and meta-analysis. *Sports Med*. 2018;48(7):1635–1660.

103. Slater SJ. Recommendations for Keeping Parks and Green Space Accessible for Mental and Physical Health During COVID-19 and Other Pandemics. *Prev Chronic Dis* [En ligne]. 2020 [cité le 19 nov. 2020];17. Disponible : https://www.cdc.gov/pcd/issues/2020/20_0204.htm

104. OMS Europe. *Urban Green Space interventions and health: a review of impacts and effectiveness*. Copenhagen; 2017.

105. Levy-Storms L, Chen L, Loukaitou-Sideris A. Older adults' needs and preferences for open space and physical activity in and near parks: A systematic review. *J Aging Phys Act*. 2018;26(4):682–696.

106. INSPQ [En ligne]. INSPQ. *COVID-19 : Utilisation sécuritaire des parcs et espaces verts urbains en contexte de déconfinement graduel* ; [cité le 30 nov. 2020]. Disponible : https://www.inspq.qc.ca/publications/3043-utilisation-parcs-espaces-verts-covid19

107. Freeman S, Eykelbosh A. COVID-19 and outdoor safety: Considerations for use of outdoor recreational spaces. *Natl Collab Cent Environ Health*. 2020;

108. Tan Z, Lau KK-L, Roberts AC, Chao ST-Y, Ng E. Designing urban green spaces for older adults in Asian cities. *Int J Environ Res Public Health*. 2019;16(22):4423.

109. Leng H, Li S, Zhao H, Song Y, Yuan Q. Planning for Supportive Green Spaces in the Winter City of China: Linking Exercise of Elderly Residents and Exercise Prescription for Cardiovascular Health. *Int J Environ Res Public Health*. 2020;17(16):5762.

110. European Centre for Disease Prevention and Control. *Considerations for infection prevention and control measures on public transport in the context of COVID-19* [En ligne]. European Centre for Disease Prevention and Control; 2020. Disponible : https://www.ecdc.europa.eu/en/publications-data/covid-19-prevention-and-control-measures-public-transport

111. Gouvernement de l'Ontario [En ligne]. *Guidance for public transit agencies and passengers in response to COVID-19* | Ontario.ca ; 2020 [cité le 4 nov. 2020]. Disponible : https://www.ontario.ca/page/guidance-public-transit-agencies-and-passengers-response-covid-19

112. Davies N, Frost R, Bussey J, Hartmann-Boyce J, Park S. Maximising mobility in older people when isolated with COVID-19. *Cent Evid-Based Med*. 2020;

113. Chtourou H, Trabelsi K, H'mida C, Boukhris O, Glenn JM, Brach M, et al. Staying physically active during the quarantine and self-isolation period for controlling and mitigating the COVID-19 pandemic: a systematic overview of the literature. *Front Psychol*. 2020;11.

114. Blauwet CA, Robinson D, Riley A, MacEwan K, Patstone M, Dubon ME. Developing a Virtual Adaptive Sports Program in Response to the COVID-19 Pandemic. *PM&R*. 2020;

115. WHO [En ligne]. *Coronavirus disease (COVID-19): Staying active* ; 2020 [cité le 4 nov. 2020]. Disponible : https://www.who.int/news-room/q-a-detail/coronavirus-disease-covid-19-staying-active

Appendix 1 Definitions

The terminology for sedentary behaviours was the subject of a consensus project led by the **Sedentary Behavior Research Network,** which gave rise to the following definitions used in this document:

- Sedentary behaviour: Any waking behavior characterized by an energy expenditure ≤1.5 metabolic equivalents (METs), while in a sitting, reclining or lying posture.
- Physical inactivity: An insufficient physical activity level to meet present physical activity recommendations.

Appendix 2 Methodology

Literature search

A survey of the scientific and grey literature was carried out to identify strategies for mitigating the effects of the pandemic on physical activity. To do so, researchers consulted the COVID-19 and physical activity science watch produced by INSPQ since March 24, 2020.

The following data bases were consulted for the INSPQ's science watch: *Ageline, CINAHL, ERIC*, *Environment Complete*, *Health Policy Reference Center*, *Political Science Complete*, *Psychology and Behavioral Sciences Collection*, *Public Affaire Index*, *SocINDEX*, *PubMed*. A manual sort of the articles was then performed to identify those addressing physical activity.

An additional survey of the grey and scientific literature was also carried out by identifying documents in Google and Google Scholar and on various public health agency websites (e.g., World Health Organization, government and institutional sites).

The level of scientific support for the findings and strategies mentioned in this document was analyzed to take into consideration the number and type of documentary sources used and the concordance of their results. The type of documentary source was determined using the parameters shown below.

In addition to addressing strategies for promoting physical activity, a number of publications suggested ways and means of adapting activities to the pandemic situation. Note that, unlike for the strategies, it was not possible to assess the level of scientific support for these various suggestions within the framework of this publication.

Level of scientific support

The level of scientific support was evaluated based on the following criteria:

- Type of documentary sources used:
  - Type 1: Meta-analysis, systematic literature review, review of reviews, guidelines when based on a review of evidence.
  - Type 2: Recommendations and frames of reference produced by experts at recognized public health agencies (CDC, WHO, UN, etc.), non-systematic literature review, research articles on interventions for addressing the issue at hand.

- Type 3: Research articles on the determinants of the issue at hand, foreign experience, data from the community, opinion/editorial/perspective in a scientific journal.

- Number of documentary sources bearing on a finding or strategy.
- Concordance between documentary sources.

Note that both published and pre-publication documents were included.

Level of scientific support	Type of documentary source	Number of documentary sources	Documentary source concordance
High	Type 1	1 or plus	Yes, within the review article
Moderate	Type 2	3 to 5 or more	Yes, through the various documents
Moderate	Type 3	5 to 7 or more	Yes, through the various documents
Limited	Type 2	3 to 5 or more	No concordance between data sources
Not included	Type 3	Less than 3 articles	No concordance between data sources

Appendix 3 Exercise guidelines and programs to prevent deconditioning

Directives pour prévenir le déconditionnement chez la personne aînée en contexte de pandémie

These guidelines for preventing deconditioning in seniors during a pandemic are based on the components of the *Approche adaptée à la personne âgée en milieu hospitalier au Québec* (MSSS-AAPA) (Updated November 10, 2020).

They contain extensive advice for private seniors' residence and home care managers and workers concerning autonomy and mobility, but also nutrition, hydration, and cognitive and psychological states. They also include numerous references to tools and websites and to sample activities and exercises that can be used.

Exercise programs

Although exercise programs were not evaluated, it seems worthwhile to list some of the programs available through the public health network.

Santé physique – Centre de recherche - Institut universitaire de gériatrie de Montréal

Trucs et conseils pour les aînés - Manger sainement, bouger et maintenir une routine pendant la pandémie de COVID-19 – CIUSSS de l'Estrie

Programme pour éviter le déconditionnement physique et cognitif - CIUSSS de la Mauricie-et-du-Centre-du-Québec

Physical activity for seniors - Santé Montréal

Appendix 4 Physical activity measures and guidelines

Physical activities that are safe during the pandemic, and Canadian 24-hour movement guidelines.

- We recommend consulting the following document to view the various protective measures put in place to safeguard the health of the population during physical activity: *Mesures pour soutenir la pratique d'activités physiques en contexte de pandémie*.
- *Canadian 24-Hour Movement Guidelines for adults aged 65 and over: An Integration of Physical Activity, Sedentary Behaviour, and Sleep* is available on the Canadian Society for Exercise Physiology website: https://csep.ca/

Measures to Reduce Sedentary Behaviour and Encourage Physical Activity in Persons 65 And Older Living at Home During the COVID-19 Pandemic

AUTHORS

Cinthia Maheu, Scientific Advisor
Pascale Bergeron, Scientific Advisor
Étienne Pigeon, Specialized Scientific Advisor
André Tourigny, Public Health Medical Advisor
Direction du développement des individus et des communautés

UNDER THE COORDINATION OF

Pierre Maurice, Medical Advisor
Éric Robitaille, in-house researcher
Direction du développement des individus et des communautés

PROOFREADERS

Isabelle Dionne
Irène Langis
Julie Riopel-Meunier
Chantal Sauvageau
Ginette Trudeau

LAYOUT AND FORMAT

Marie-Cloé Lépine
Direction du développement des individus et des communautés

TRANSLATION

Isaiah Ceccarelli

ACKNOWLEDGMENT

The translation of this document has been made possible through a financial contribution from the Public Health Agency of Canada through funding for the National Collaborating Centre for Healthy Public Policy (NCCHPP).

This document is available in its entirety in electronic format (PDF) on the Institut national de santé publique du Québec Web site at: http://www.inspq.qc.ca.

The French version is entitled Mesures pour réduire la sédentarité et pour soutenir la pratique d'activités physiques chez les personnes de 65 ans et plus vivant à domicile en contexte de pandémie COVID-19 and is also available on the web site of the Institut national de santé publique du Québec at: https://www.inspq.qc.ca/publications/3105

Publication No.: 3105 - English version

Institut national de santé publique Québec