Rehabilitation for Clients with Post COVID-19 Condition (Long COVID)

Guidance for Canadian Rehabilitation and Exercise Professionals

Rehabilitation for Clients with Post COVID-19 Condition (Long COVID)

Guidance for Canadian Rehabilitation and Exercise Professionals

Purpose: There is an urgent need for Canadian rehabilitation and exercise professionals to identify a new illness called **Long COVID** and guide safe rehabilitation interventions including therapeutic exercise prescription. Informed by the **World Physio Briefing Paper**,[1] key references[2,3,4] and consultation with the clinical community and stakeholders this living document consolidates resources to inform clinical decision making. Current as of August 2021, visit **(LINK)** for updates.

What is Post COVID-19 Condition (Long COVID)?

Long COVID is an emerging health condition that occurs following an acute infection of COVID-19 that can occur in both hospitalized or non-hospitalized clients, and even in those who had a mild initial infection. At least 10-30% of clients will continue to have symptoms 12 weeks after their acute infection. Long COVID affects multiple body systems and can include impairments of multiple body systems including the respiratory, cardiac, renal, endocrine and neurological systems.

Clients present with a cluster of signs and symptoms in an episodic and unpredictable manner. Clients may be referred to, or seek rehabilitation or exercise in an attempt to manage symptoms.

Common Symptoms:

- Fatigue/Exhaustion
- Cognitive dysfunction/brain fog
- Shortness of breath
- Headache
- Dizziness upon standing
- Palpitations
- Chest pressure
- Joint or muscle pain

Clients report a wide variety of symptoms

Screen all clients for a past medical history of a COVID-19 infection (confirmed or suspected) before assessment and management in a rehabilitation or exercise setting.

Why?

Evidence is still emerging, and it is not known when physical activity (including exercise) is safe/beneficial in people living with Long COVID, and it may be harmful. A cautious approach is required to prevent clients from experiencing worsening symptom and/or worsening of function due to physical activity.[1] **World Physio Rehab and Long COVID Infographic**

What to Screen	How to Screen and Action Necessary
Post Exertional Symptom Exacerbation Worsening of symptoms 24-72 hours following exertion. Exertion refers to cognitive, physical, emotional, or social activity and is often minimal or at a threshold previously tolerated. **World Physio Fatigue and PESE Infographic**	Monitor and teach clients to self-monitor for increased symptoms during and in the days following physical activity, exercise, or following emotional/ cognitive/communicative exertion. Utilize **Questionnaires**.[5] Establish baseline symptoms pre-exercise. Ask clients about tolerance in the days after sessions before progressing. Use **Pacing** for treatment. Refer to a **physiotherapist** or **occupational therapist**.
Cardiac Impairment COVID-19 can cause early or delayed onset of myocarditis and pericarditis or cardiac impairments. It is important to be aware of these conditions and how they present during exercise.	Exercise testing and intervention should be closely supervised. Monitor, and teach clients to self-monitor for symptoms suggestive of cardiac involvement: disproportionate breathlessness, tachycardia, palpitations, chest pressure or pain at rest or exercise. Medical clearance may be necessary. Utilize **readiness questionnaires**.[6] Stop exercise if client is in distress.
Oxygen Desaturation Dysfunction of the respiratory or pulmonary system can be present following COVID-19.	Exercise testing and intervention should be closely supervised. Monitor, and teach clients to self-monitor for symptoms suggestive of respiratory distress: rate > 20 breaths/min, shortness of breath, accessory muscle use, chest pain, fatigue, dizziness, tachycardia or syncope.[7] If available, monitoring using pulse oximetry may be helpful (noting limitations in accuracy and racial bias).[8] Medical clearance may be necessary. Stop exercise if client is in distress.
Dysautonomia Some clients present with the inability to regulate the autonomic nervous system. This presents as variable heart rate, blood pressure, digestive issues, and temperature dysregulation.[10]	Clients may self-report lightheadedness, fainting, unstable blood pressure, abnormal heart rate in response to activity.[9] Clinicians can assess orthostatic intolerance (in adults, sustained increase of HR more than 30 bpm with normal BP from lying to standing within 10 min) using **the Canadian Guidelines**.[10] Medical evaluation may be necessary. In clients with dysautonomia, **recumbent, semi recumbent** or **horizontal exercise therapy is recommended**.[9,10]
Functional Cognition & Cognitive Communication Some clients experience "brain fog" or difficulties with thinking, attention and/or memory. These difficulties can cause cognitive-communication disorders, which may affect talking, understanding conversations, reading, written expression and social interaction.[11,12,13]	Cognition and communication may be affected by many factors such as medical conditions, psychological status, fatigue, medication, and social/productive roles. **Cognitive screens** can identify need for neuropsychological, occupational therapy or **speech-language pathology**[14] assessment.
Voice & Swallowing Some clients may experience hoarse voice or difficulty swallowing.[13]	Clients complaining of, presenting with, a hoarse voice or difficulty swallowing food or liquid need referral to a **speech-language pathologist**. Clients with voice problems also need referral to an Ear, Nose, Throat Specialist.

What to Screen	How to Screen and Action Necessary
Hearing & Tinnitus Some clients may experience a change in hearing or tinnitus (perception of ringing or other types of noise in the ear) in one or both ears.[15]	Clients complaining of new onset of impaired hearing or tinnitus need referral to an **audiologist**.
Psychological, Social & Spiritual Considerations The onset of a new illness, loss of social roles or lack of social connection are stressful events which can cause anxiety and/or low mood.	Clinicians making assessments should take a holistic, person-centred, and empathic approach. Assessment and treatment should encompass physical, cognitive, communication, psychological, and psychiatric symptoms, as well as functional abilities.[1] Ask questions about how Long COVID affects work, education, and physical or social wellbeing. Utilize **Questionnaires**. Offer resources from **Wellness Together Canada**, or the **Canadian Psychological Association**.

General Considerations for Management of Patients with Long COVID[1, 2]

- Due to the risk of worsening symptoms listed above on exertion and in the days following exertion, physical activity including exercise, needs to be prescribed with caution and clinical decision making.
- Educate clients with Long COVID on **conservative activity and energy maximization**.
- Ensure patients begin with monitoring activities of daily living, and only progress through gentle low intensity physical activity including exercise, once it is known how much is tolerated.
- Consider whether the selected management approach will contribute to function & recovery or result in an exacerbation or decline in function (including cognitive, communication, emotional and social function).
- Recognition, validation, and inclusion of patient experiences can help facilitate a therapeutic relationship.
- Some clients will require integrated, interprofessional rehabilitation, consider referrals to publicly-funded programs and services available at some hospitals, rehabilitation facilities, primary health care settings or use the tools for "**Find a Physio**", "**Find an OT**" , "**Find a SLP/ Audiologists**", or "**Find a Registered Dietician**".
- Detailed considerations can be found in guidelines developed by **Alberta Health Services**[4] or the **Chartered Society of Physiotherapists (Version 2)**.[16]

Specific Consideration for Strength & Conditioning and Return to Sport

- **Canadian Olympic and Paralympic Sport Institute Network have detailed Return to Health and Performance following COVID-19 Infection** for those asymptomatic, with a course of illness > 10 days and for a graduated return to sport.[17]
- All athletes need to progress symptom-free (including fatigue) through a **Graduated Return to Play Protocol**.[18]
- Follow strength and conditioning principles in those without post exertional symptom exacerbation (see above) with a **slow, progressive increase in intensity and volume**.[19]
- Ongoing monitoring of symptoms and vitals may be necessary due the unpredictable and relapsing nature of Long COVID.

Link to Resources

Long COVID Physio: **https://longcovid.physio/**

World Physiotherapy: **https://world.physio/covid-19-information-hub/long-covid**

Physiopedia: **https://www.physio-pedia.com/Long_COVID**

Rehab Care Alliance: **http://www.rehabcarealliance.ca/covid-19-rehab-resources**

We would like to acknowledge the rapid feedback from 24 stakeholders from (AB, NS, ON, QB, SK) in the professions of PT (including Cardiac and Pulmonary Rehab), OT, SLP, Audiology, Kinesiology, Medicine, Strength and Conditioning with input from the Canadian Physiotherapy Association, Speech-Language and Audiology Canada, the Rehab Care Alliance, and a clinician with presumed Long COVID.

Cite as: *Francis A, Harris J, Coleman J. Rehabilitation for Clients with Post COVID-19 Condition (Long COVID): Guidance for Canadian Rehabilitation and Exercise Professionals.* Version 1. August 2021.

References

1. World Physiotherapy. World physiotherapy response to COVID-19 briefing paper 9. Safe rehabilitation approaches for people living with Long COVID: physical activity and exercise. London, UK: World Physiotherapy; 2021. Available from: https://world.physio/sites/default/files/2021-07/Briefing-Paper-9-Long-Covid-FINAL-English-2021_0.pdf
2. National Institute for Health Care Excellence. COVID-19 rapid guideline: managing the long-term effects of COVID-19. NICE Guideline [NG188]. London, UK: NICE; 2020. Available from: https://www.nice.org.uk/guidance/ng188
3. Nalbandian A, Sehgal K, Gupta A, Madhavan MV, McGroder C, Stevens JS, Cook JR, Nordvig AS, Shalev D, Sehrawat TS, Ahluwalia N. Post-acute COVID-19 syndrome. Nature medicine. 2021 Apr;27(4):601-15.
4. Alberta Health Services, Allied Health Professional Practice and Education. Rehabilitation & allied health practice considerations post COVID-19. Version 1. 2021 Jun. Available from: https://www.albertahealthservices.ca/assets/info/ppih/if-ppih-covid-19-rehab-allied-health-practice-considerations-post-covid.pdf
5. Cotler J, Holtzman C, Dudun C, Jason LA. A brief questionnaire to assess post-exertional malaise. Diagnostics. 2018 Sep;8(3):66.
6. Warburton DER, Jamnik VK, Bredin SSD, and Gledhill N on behalf of the PAR-Q+ Collaboration. The Physical Activity Readiness Questionnaire for Everyone (PAR-Q+) and Electronic Physical Activity Readiness Medical Examination (ePARmed-X+). Health & Fitness Journal of Canada 4(2):3-23; 2011. Available from: http://eparmedx.com/wp-content/uploads/2021/01/ParQ-Plus-Jan-2021-Image.pdf
7. Nurek M, Rayner C, Freyer A, Taylor S, Järte L, MacDermott N, Delaney BC. Recommendations for the recognition, diagnosis, and management of patients with post COVID-19 condition ('Long COVID'): A Delphi Study. Diagnosis, and Management of Patients with Post COVID-19 Condition ('Long COVID'): A Delphi Study. 2021 Apr 8.
8. Sjoding MW, Dickson RP, Iwashyna TJ, Gay SE, Valley TS. Racial bias in pulse oximetry measurement. New England Journal of Medicine. 2020 Dec 17;383(25):2477-8.
9. Raj SR, Guzman JC, Harvey P, Richer L, Schondorf R, Seifer C, Thibodeau-Jarry N, Sheldon RS. Canadian cardiovascular society position statement on postural orthostatic tachycardia syndrome (POTS) and related disorders of chronic orthostatic intolerance. Canadian Journal of Cardiology. 2020 Mar 1;36(3):357-72.
10. Dysautonomia International. Exercise for dysautonomia patients. [place unknown]; [cited 2021 Jul 7]. Available from: http://www.dysautonomiainternational.org/page.php?ID=43
11. Gulick SH, Mandel S, Maitz EA, Brigham CR. Cognitive screening after COVID-19. Practical Neurology, 2021 May; 19-23.
12. Ramage AE. Potential for cognitive communication impairment in COVID-19 survivors: a call to action for speech-language pathologists. American Journal of Speech-Language Pathology. 2020 Nov 12;29(4):1821-32.
13. Royal College of Speech & Language Therapists. Long COVID and speech and language therapy: understanding the medium to long-term speech and language therapy needs and the impact on services. UK; 2021 May. Available from: https://www.rcslt.org/news/new-rcslt-report-on-long-covid-and-speech-and-language-therapy/
14. MacDonald S. The Cognitive-Communication Checklist for acquired brain injury: a means of identifying, recording, and tracking communication impairments. American journal of speech-language pathology. 2021 May 18;30(3):1074-89.
15. Almufarrij I, Munro KJ. One year on: an updated systematic review of SARS-CoV-2, COVID-19 and audio-vestibular symptoms. International Journal of Audiology. 2021 Mar 2:1-1.
16. Chartered Society of Physiotherapy. Rehabilitation of adults who are hospitalised due to acute Covid-19 or long Covid: physiotherapy service delivery. London, UK; 2021 Apr 1. Available from: https://www.csp.org.uk/publications/rehabilitation-adults-who-are-hospitalised-due-acute-covid-19-or-long-covid
17. Canadian Olympic and Paralympic Sport Institute Network. Return to health and performance following COVID-19 infection 2020. Version 1; 2020 Jul 27. Available from: https://casem-acmse.org/wp-content/uploads/2020/08/Return-to-Performance-Following-COVID-19-Infection_EN.pdf
18. Elliott N, Martin R, Heron N, Elliott J, Grimstead D, Biswas A. Infographic. Graduated return to play guidance following COVID-19 infection. British journal of sports medicine. 2020 Oct 1;54(19):1174-5.
19. Gentil P, de Lira CA, Souza D, Jimenez A, Mayo X, de Fátima Pinho Lins Gryschek A, Pereira EG, Alcaraz P, Bianco A, Paoli A, Papeschi J. Resistance training safety during and after the SARS-Cov-2 outbreak: practical recommendations. BioMed research international. 2020 Sep 24;2020.

Contributors

Allison Francis, PT, BHK, MPT, DPT – Clinician, ReActive Physiotherapy ON (Project Lead)

Jaimie Coleman, PT, BPHE, MScPT, MHM – Assistant Professor, Teaching Stream, Department of Physical Therapy, University of Toronto

Jennifer Harris, PT – Cardiovascular Rehabilitation, University of Ottawa Heart Institute

Jessica DeMars, PT – Breath Well Physio, Clinician AB

Prashna Singh, PT, BScPT, MScPT, CRE – Pulmonary Rehabilitation ON

Stephanie McCarville, BScHK, MPT – Physiotherapist, Primary Health Care, Nova Scotia Health

Faith Delos-Reyes, RKin – Cardiovascular Rehabilitation, Women's College Hospital, ON

Debbie Childerhose, PT – Cardiovascular Rehabilitation, Women's College Hospital, ON

Helena Van Ryn, PT – Cardiovascular Rehabilitation University of Ottawa Heart Institute, ON

Katie Churchill, Occupational Therapist, Senior Consultant – Rehabilitation Advice Line, Alberta Health Services

Meredith Wright, PhD – Director of Speech-Language Pathology, Speech-Language & Audiology Canada

Lynda Gibbons, MSc., Aud(C), Reg. CASLPO – Director of Audiology, Speech-Language & Audiology Canada

Lisa Carroll – Canadian Physiotherapy Association, Director Policy & Research

Amanda Smart – Ontario Physiotherapy Association, Director of Practice & Policy

Kyra Perry, BSc. PT – Clinician with presumed Long COVID

Melody Nguyen, MD – Physiatry, Sunnybrook Hospital

Paul Oh, MD – Cardiovascular Rehabilitation, University Health Network

Scotty Butcher, PhD, PT, RCEP, CF-L1, CMMT – Associate Professor, School of Rehabilitation Science, University of Saskatchewan

Charissa Levy MHSc, BScOT, OT Reg (Ont) – Executive Director - Rehab Care Alliance

Adam Brown BSc PT, MCISc PT – University Health Network, Cornerstone Physiotherapy

Joncarlo Gosso – Student PT, University of Toronto

Lora Giangregorio PhD – Professor and Schlegel Research Chair in Mobility and Aging, Department of Kinesiology, University of Waterloo

Michelle Kho, PT, PhD – School of Rehabilitation Science, McMaster University, Canada Research Chair in Critical Care Rehabilitation and Knowledge Translation

Simon Décary, PT, PhD – Assistant Professor of Rehabilitation, Université de Sherbrooke, Research Director - Long COVID Physio