



LONG COVID WEB ECHO SESSION SUMMARY from 8 May 2026

(i) KEY PRESENTATION:

Approach to Exercise Intolerance – by Dr. Jeff Ratushny

Long Covid ECHO

Approach to Exercise Intolerance?

Dr. Jeff Ratushny

Learning Objectives:

- Describe the clinical concept of 'exertional intolerance' and recognize the value of advanced functional testing in its evaluation.
- Summarize the basic purpose and components of cardiopulmonary exercise testing (CPET) and how it differs from traditional tests of cardiac and respiratory function.
- Recognize underappreciated and emerging causes of exertional symptoms that may be overlooked in routine evaluation.

The speaker framed exercise intolerance as a common but under-characterized complaint in long COVID and other unexplained dyspnea syndromes, noting that routine investigations (labs, ECG, CXR, echo) are often normal despite significant functional impairment.

He contrasted traditional treadmill ECG stress testing (designed in the 1960s for middle-aged men with suspected coronary disease and with poor sensitivity/specificity for modern use) with Cardiopulmonary Exercise Testing (CPET) which measures integrated cardiopulmonary function and can uncover mechanisms missed by standard testing. He highlighted that estimated treadmill capacity often overstates patients' true performance (e.g. "10 minutes" estimated translating to only 6–7 minutes in real life), meaning clinicians may be falsely reassured and disease systematically missed.

Key points for clinicians:

- CPET allows simultaneous assessment of oxygen uptake, cardiac output surrogates, ventilatory efficiency, and hemodynamic responses, enabling differentiation between cardiac, pulmonary, peripheral/muscular, and autonomic causes of exertional symptoms.
- In Long COVID and other unexplained exertional intolerance, CPET can reveal abnormalities such as reduced peak VO_2 , impaired stroke volume augmentation, abnormal blood pressure responses, and excessive heart rate responses despite normal resting echocardiograms and other standard tests.



- Invasive CPET (with right heart catheter and arterial line) can further clarify mechanisms by directly measuring cardiac output, filling pressures, and lactate during exercise; in selected complex cases this reveals patterns like low right-sided filling pressures with inadequate rise in cardiac output.
- The speaker emphasized that many patients with significant functional limitation were previously fit (e.g. former competitive runners), countering assumptions that symptoms are simply due to deconditioning.

Illustrative case and emerging physiology:

Two illustrative cases were presented: one highlighting preload failure with POTS in a young woman post-COVID, and the second demonstrating a breathing pattern disorder in a middle-aged woman with otherwise “normal” cardiopulmonary testing.

Case 1 (22-year-old): Abrupt-onset fatigue, dyspnea, dizziness, chest pain, and palpitations began after mild COVID in a previously fit university student, with normal routine investigations but marked functional limitation. CPET and invasive CPET showed reduced peak VO_2 , inadequate stroke volume and cardiac output, absent rise in right-sided filling pressures, and elevated lactate, consistent with preload failure; a NASA lean test confirmed POTS, linking dysautonomia to her exercise intolerance.

Case 2 (53-year-old): A middle-aged woman with hypertension, prior bariatric surgery, depression/anxiety, and prior COVID had nine months of progressive dyspnea and fatigue with normal labs, ECG, imaging, echo, and spirometry. CPET showed near-normal peak VO_2 and cardiac response but an abnormal, erratic ventilatory pattern with low end-tidal CO_2 , supporting a diagnosis of breathing pattern disorder/dysfunctional breathing as the key driver of her symptoms.

Q & A Discussion Points:

In the discussion, ECHO participants asked where CPET is available and whether it is standard in cardiopulmonary rehab programs; the speaker noted his own sites in rural Nova Scotia (Bridgewater), and that CPET is well-established in cardiac and pulmonary rehab literature but not yet widely implemented as routine for long COVID. He stressed the need for advocacy within internal medicine and allied specialties over the next several years to make CPET more broadly accessible, especially as an indication for long COVID-related exertional intolerance.

ECHO participants also raised questions about interprovincial referrals and local barriers; the speaker indicated he does see referrals from neighboring provinces like New Brunswick and PEI, while the ECHO Co-Lead (Iram Anees) described how CPET in Newfoundland is run by respirology colleagues who are largely unaware of or skeptical about its utility in long COVID, illustrating current knowledge and attitude gaps. Another key concern was feasibility and safety for patients with PEM, ECHO participants questioned how long the test lasts and whether patients can tolerate it; the speaker explained that CPET appointments are booked for a similar length as standard stress tests, the main additions being mask fitting and spirometry, and that protocols are individualized to achieve roughly 10 minutes of graded exercise starting from unloaded cycling and ramping workload based on predicted capacity and patient report. He argued that CPET-derived workloads and physiologic thresholds could allow more precise and safer exercise prescription than heart-rate-based



approaches, reducing the risk of “overcooking” patients in rehab and moving beyond outdated treadmill ECG protocols.

Resources shared by members in the session:

1. From Iram Anees, Co-Lead:

Lau, R. I., Su, Q., Lau, I. S. F., Ching, J. Y. L., Wong, M. C. S., Lau, L. H. S., Tun, H. M., Mok, C. K. P., Chau, S. W. H., Tse, Y. K., Cheung, C. P., Li, M. K. T., Yeung, G. T. Y., Cheong, P. K., Chan, F. K. L., & Ng, S. C. (2024). A synbiotic preparation (SIM01) for post-acute COVID-19 syndrome in Hong Kong (RECOVERY): a randomised, double-blind, placebo-controlled trial. *The Lancet. Infectious diseases*, 24(3), 256–265.
[https://doi.org/10.1016/S1473-3099\(23\)00685-0](https://doi.org/10.1016/S1473-3099(23)00685-0)

2. From Jane McKay, Co-lead:

Zhang, L., Xu, Z., Mak, J. W. Y., Chow, K. M., Lui, G., Li, T. C. M., Wong, C. K., Chan, P. K. S., Ching, J. Y. L., Fujiwara, Y., Chan, F. K. L., & Ng, S. C. (2022). Gut microbiota-derived synbiotic formula (SIM01) as a novel adjuvant therapy for COVID-19: An open-label pilot study. *Journal of gastroenterology and hepatology*, 37(5), 823–831.
<https://doi.org/10.1111/jgh.15796>

3. From Gerry Bourne:

“On Minocycline, which is now being studied in Holland.”

van de Wijgert, J. H. H. M., Schoevers, J. M. H., Swarthout, T. D., Bouwman, W. J. T., van Rosmalen, J., Leffelaar, E. R., Lalmohamed, A., Loch, C., van den Wijngaard, C. C., Pratymerich, C., Schotsman, J. J., Verheijen, E. D., van der Bom, J. G., & Bonten, M. J. M. (2026). The RECLAIM adaptive platform trial for the evaluation of treatments for post-COVID condition in the Netherlands: core protocol. *Trials*, 27(1), 238.
<https://doi.org/10.1186/s13063-026-09570-1>

Miwa K. (2024). Oral minocycline therapy as first-line treatment in patients with Myalgic encephalomyelitis and long COVID: A pilot study. *eNeurologicalSci*, 38, 100537.
<https://doi.org/10.1016/j.ensci.2024.100537>

4. From Esther McDonnell:

“I haven't read this recently but might have some tips.”

[Nutrition and COVID-19 recovery knowledge hub - University of Plymouth](#)

5. From Rebecca Henderson:

“An article about diaphragm and covid virus.”

Pietranis, K. A., Kostro, A. M., Dzięcioł-Anikiej, Z., Moskal-Jasińska, D., & Kuryliszyn-Moskal, A. (2024). Impact of COVID-19 on Diaphragmatic Function: Understanding Multiorgan Involvement and Long-Term Consequences. *Journal of clinical medicine*, 13(21), 6493. <https://doi.org/10.3390/jcm13216493>



*****NEXT SESSION*****

Friday June 19, 2026

Topic: Rehabilitation in Long COVID

Speaker: Dr. Kelly O'Brien PhD, PT

1:30– 3:00 PM EST

Keep up-to-date with session topics: <https://www.longcovidweb.ca/echo>
and keep an eye out for the Post-ECHO survey that will be coming out in June/July 2026.



POST-ECHO survey

**Coming out in
June/July 2026**



**We need your feedback to continue
our program!**