

Session Title: Exercise testing and prescription in Cardiac and Pulmonary Rehab: The complex, co-morbid patient.

Session Description

Prescribing exercise at an appropriate, measurable intensity is difficult. There is tremendous value in using evidence including physiologic measures and maximal or submaximal exercise tests. However, what do you do when tests are poorly selected or your patient has an abnormal or unexpected response? In this session we will review exercise test interpretation, individualized test selection, and exercise prescription prior to outpatient cardiac and pulmonary group programs. We will use case studies and examples of abnormal exercise responses, to prescribe exercise in patients with complicated cardiac and pulmonary comorbidities.

Lecture

Discussion

demonstration

Teaching Method

Objectives:

1. Differentiate between appropriate and inappropriate exercise test selections for patients with complex cardiac and pulmonary comorbidities.
2. Interpret physiologic responses and identify abnormal findings during common exercise tests used in cardiovascular and pulmonary rehabilitation.
3. Apply evidence-based principles to develop individualized exercise prescriptions for patients with multimorbidity prior to entry into group-based rehab programs.
4. Analyze case studies to determine safe and effective starting exercise intensities based on functional capacity, desaturation patterns, hemodynamic responses, and symptom reports.

What will be the clinician/educator takeaways/skills that can be utilized immediately?
Ability to select an appropriate exercise test and calculate an appropriate target heart rate.

Recommended Content Level

Intermediate

References (Minimum of 5 references, no more than 10 years old, 2013 or later):

1. Green, Karlyn J. PT, DPT, OCS, CCS1; Montavon, Luke PT, DPT2; Jackson, Megan SPT1. Assessing the Risk of a Cardiac Event Before Initiating Aerobic Exercise: A Scoping Review. *Cardiopulmonary Physical Therapy Journal* 36(4):p 292-303, October 2025. | DOI: 10.1097/CPT.000000000000299
2. American College of Sports Medicine. *ACSM's Guidelines for Exercise Testing and Prescription*. Eleventh Edition. Philadelphia :Lippincott Williams & Wilkins, 2022
3. American Association of Cardiovascular and Pulmonary Rehabilitation. *Guidelines for Cardiac Rehabilitation Programs*. Sixth Edition. 2021
4. Rochester Carolyn, et al. Pulmonary Rehabilitation for Adults with Chronic Respiratory Disease. An official American Thoracic Society Clinical Practice Guideline. *Am J Respir Crit Care Med* Vol 208, Iss 4, pp e7–e26, Aug 15, 2023
5. Donaldson Seth, et al. Validity of a submaximal 6-min Recumbent Stepper Test for Cardiac Rehabilitation. *Journal of Cardiopulmonary Rehabilitation and Prevention*. 2019;39:E14-E17
6. Reeves GR, Gupta S, Forman DE. Evolving Role of Exercise Testing in Contemporary Cardiac Rehabilitation. *J Cardiopulm Rehabil Prev*. 2016 Sep-Oct;36(5):309-19. doi: 10.1097/HCR.000000000000176. PMID: 27120040.
7. Shea MG, Farris SG, Hutchinson J, Headley S, Schilling P, Pack QR. Effects of Exercise Testing and Cardiac Rehabilitation in Patients with Coronary Heart Disease on Fear and Self-Efficacy of Exercise: A Pilot Study. *Int J Behav Med*. 2024 Oct;31(5):659-668. doi: 10.1007/s12529-023-10207-9. Epub 2023 Aug 9. PMID: 37555897; PMCID: PMC11884863.
8. Büsching G, Schmid JP. 6-Minute Walk Test: Exploring Factors Influencing Perceived Intensity in Older Patients Undergoing Cardiac Rehabilitation-A Qualitative Study. *Healthcare*

(Basel). 2025 Mar 26;13(7):735. doi: 10.3390/healthcare13070735. PMID: 40218033; PMCID: PMC11988596.

Speaker Bios:

Stephanie Kostsuca PT, DPT received her Doctor of Physical Therapy degree from Temple University in 2009. In 2017 she became a board certified cardiovascular and pulmonary clinical specialist. She currently is the director of the cardiovascular and pulmonary residency program at the VA in Ann Arbor, MI. Clinically she treats patients in the ICU, subacute rehab, and outpatient Cardiac and Pulmonary Rehab settings. She has spoken nationally at CSM and the Cardiovascular and Pulmonary Fall Conference.

Crystal Gluch, PT, DPT is a double Board-Certified Clinical Specialist in Cardiovascular and Pulmonary and Geriatric Physical Therapy with expertise in exercise testing and rehabilitation for complex cardiopulmonary populations. She completed her Doctor of Physical Therapy Degree (DPT) at Grand Valley State University and a Cardiovascular and Pulmonary Residency at the VA Ann Arbor Healthcare System, where she received the APTA Outstanding Physical Therapist Resident Award. Dr. Gluch's clinical experience spans across settings including facility and home-based cardiac and pulmonary rehabilitation. She is an assistant professor in the Grand Valley State University DPT program while continuing to serve as adjunct faculty in the VA–Ann Arbor Cardiovascular and Pulmonary Residency.

Kayla Jones PT, DPT received her Doctor of Physical Therapy degree from Plymouth State University in 2020. She has prior experience in an LTAC setting predominately with patients with critical illness myopathy. In 2020 she created and ran a rural outpatient COVID protocol for the hospital. In 2022-2023 she attended the University of Miami Cardiovascular and Pulmonary Residency program and in 2024 became a board certified cardiovascular and pulmonary clinical specialist. She currently is on faculty with the cardiovascular and pulmonary residency program at the VA in Ann Arbor, MI. Clinically she treats patients in the ICU and Pulmonary Rehab settings.