



Assessment of Exercise Tolerance for Development of Safe Exercise Prescription

Part II: The Oxygen Transport System and Normal/Abnormal Responses to Exercise

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Note to Participants: There are interactive pop-up questions throughout this lecture. If you choose to pause the lecture and return at a later time, a natural break time would be after answering the interactive questions. (You are able to pause at any time and the presentation will "remember" where you were. It's just a more natural time to pause after the interactive questions.) For your convenience, this outline reflects where/when within the lecture the interactive questions occur.

This lecture has 90 slides and is 144 minutes in duration.

- I. The components of the oxygen transport system
 - A. Ventilation
 - B. Diffusion
 - C. Circulation
 - D. Delivery of O₂ to muscle
- II. Measuring the TRUE maximum function of the O₂ transport system: maximal vO₂ testing
 - A. Maximal vO₂
 - B. Cardiac output
 - 1. Normal cardiac output
 - 2. Stroke volume
 - C. Oxygen delivery
 - D. Arterial–venous oxygen difference in the muscle

Interactive Questions — slide 21 @ 31 minutes

- III. What should I monitor? How much should I monitor?
 - A. Heart rate responses
 - 1. Vs. oxygen consumption
 - 2. With increasing age
 - 3. Maximal heart rate
 - 4. What is the heart rate affected by?
 - 5. Case examples
 - 6. Training heart rate
 - 7. Abnormal heart rate responses
 - 8. Arrhythmias
 - B. Blood pressure
 - 1. Recommended treatment guidelines
 - a. BP management
 - b. Hypertension
 - c. Dark chocolate?
 - 2. What is blood pressure affected by?

Notes

3. BP responses to activity
 - a. Normal
 - b. Abnormal
4. BP monitoring recommendations
5. Case examples

Notes

Interactive Questions — slide 53 @ 88 minutes

- C. Effects of Medications
 1. Beta blockers
 2. Diuretics
 3. Calcium channel blockers
 4. Cardiac glycosides
 5. ACE inhibitors and ARBs
 6. Anti-depressants
 7. Nitrates
 8. Anti-arrhythmia meds
 9. Lipid-lowering drugs
- D. Other responses to assess
 1. Oxygen saturation (SpO₂)
 2. Respiratory rate
 3. Symptoms
 4. Rating of perceived exertion

Interactive Questions — slide 69 @ 117 minutes

- IV. How do I monitor?
- A. Monitoring in different settings
 - B. What monitoring equipment should I use?
 - C. Case example
 - D. Other considerations
 1. Arm vs. leg exercise
 2. Static vs. dynamic exercise
 - E. Effects of assistive devices
 - F. Importance of warming up and cooling down
 - G. Changes in blood lactate, post-exercise

Interactive Questions — slide 87 @ 141 minutes

- V. Why monitor?
- A. Danger of untoward events in CVD
 - B. Clinical instability
 - C. Effects of PT interventions
 1. On healthy volunteers
 2. In patient/client groups
 - D. Documentation
 - E. Case example

Bibliography

Articles

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