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Meet-the-Professor

Exercise Testing in Clinical Practice, Including Rehabilitation

- In the past, exercise testing (ET) has been mostly utilized to identify the causes of exercise limitation in patients with exertional dyspnea. In the recent years ET is increasingly utilized for the correct measurement of the level of exercise intolerance to be utilized for prognostic evaluation and for the evaluation of the effects of therapeutic interventions.
- It is now well accepted that functional measurements at rest cannot be used alone in the diagnosis and risk stratification of heart and lung diseases severity.
- Exercise intolerance is strictly linked not only to diagnosis but also to prognosis of patients with heart/lung diseases.
- ET has been proven to be useful for: 1) distinguishing between normal and abnormal responses to exercise; 2) differentiating between cardiovascular and pulmonary causes of exercise intolerance; and 3) identifying disorders of pulmonary gas exchange, certain muscle diseases and psychological disorders.
- Perhaps more importantly exercise testing (ET) variables has proven useful in the prognostic evaluation of patients with pulmonary (e.g., COPD, CF, ILD, PPH).
- In COPD patients exercise tolerance can be increased by: 1) reducing exercise ventilatory demand (oxygen supplementation, exercise training) and 2) improving exercise lung mechanics (helium breathing, bronchodilators, LVRS). The effects of these interventions are better evaluated by using high intensity constant work rate protocols with concomitant measurements of pertinent physiologic variables (e.g., dyspnea, IC, EELV, V'E, HR, SaO₂).

References

- *Palange P, Ward SA, Carlsen K-H, Casaburi R, Gallagher CG, Gosselink R, O'Donnell, Puente-Maestu L, Schols AM, Singh S, Whipp BJ. Recommendations on the use of exercise testing in clinical practice. Eur Respir J 27: 529-41; 2007.*

- *O'Donnell D.E., D'Arsigny C., Webb K.A. Effects of Hyperoxia on Ventilatory Limitation During Exercise in Advanced Chronic Obstructive Pulmonary Disease. Am J Respir Crit Care Med 2001;163:892–898.*
- *Palange P., Valli G., Onorati P., et al. Effect of heliox on lung dynamic hyperinflation, dyspnea and exercise endurance capacity in COPD patients. J Appl Physiol 2004;97:1637–1642.*
- *Porszasz J, Emtner M, Goto S, Somfay A, Whipp BJ, Casaburi R. Exercise training decreases ventilatory requirements and exercise-induced hyperinflation at submaximal intensities in patients with COPD. Chest. 2005; 128:2025-34.*