



**FEDERAL UNIVERSITY OF SÃO CARLOS
CENTER OF BIOLOGICAL AND HEALTH SCIENCES
GRADUATE PROGRAM IN PHYSICAL THERAPY**

Concentration: Physical Therapy and Functional Performance

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**COURSE: FIT 156 - Evaluation and Intervention in Cardiovascular and
Respiratory Physical Therapy**

Credits: 12

Course Load: 180 hrs.

Instructors: Aparecida Maria Catai, Ph.D.

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Course Overview:

This course addresses advanced topics related to different evaluation and intervention methods in Cardiovascular and Respiratory Physical Therapy.

Learning Objectives:

To train graduate students on the different evaluation methods and physical therapy procedures in Cardiovascular and Respiratory Physical Therapy.

Course Content:

1. Advanced studies in the assessment and interpretation of pulmonary function using spirometry, maximum respiratory pressures, plethysmography, and diffusion capacity of the lungs for carbon monoxide (DLCO).
2. Application and interpretation of functional tests in Cardiovascular and Respiratory Physical Therapy (6-minute walk test, shuttle walk test, step test, Glittre-ADL test, and pegboard and ring test).
3. Cardiopulmonary exercise test: advanced assessment and interpretation.
4. Psychophysiological aspects and interpretation of pulse oximetry, lactacidemia, and glycemia at rest and during exercise.
5. Advanced studies in the evaluation of cardiovascular autonomic modulation (heart rate and blood pressure variability).
6. Advanced studies in the assessment of hemodynamic and muscle oxygenation.

7. Advanced studies in the assessment of endothelial function and arterial stiffness.
8. Application and interpretation of scales and questionnaires for quality of life, sleep, activities of daily living, and physical activity level.
9. Advanced therapeutic procedures in Cardiovascular and Respiratory Physical Therapy.

Course Materials:

1. An Official American Thoracic Society/European Respiratory Society Statement: Key Concepts and Advances in Pulmonary Rehabilitation, *Am J Respir Crit Care Med.* v. 188, n. 8, p. 1011–1027, 2013.
2. Areas GPT, Mazzucco A, Caruso FR, Jaenisch RB, Cabiddu R, Phillips SA, Arena R, Borghi-Silva A. Flow-mediated dilation and heart failure: a review with implications to physical rehabilitation. *Heart Fail Rev.* 24(1): 69-80, 2019.
3. Brian L. Graham, Irene Steenbruggen, Martin R. Miller, et al. Standardization of Spirometry 2019 Update An Official American Thoracic Society and European Respiratory Society Technical Statement. *American Journal of Respiratory and Critical Care Medicine.* v. 200, n. 8, p.70-88, 2019.
4. Carlo Vignati and Gaia Cattadori. Measuring Cardiac Output during Cardiopulmonary Exercise Testing. *Ann Am Thorac Soc.* v. 14, Supplement 1, p. S48–S52, 2017.
5. Catai AM, Pastre CM, Godoy MF, Silva ED, Takahashi ACM, Vanderlei LCM. Heart rate variability: are you using it properly? Standardisation checklist of procedures. *Braz J Phys Ther.* pii: S1413-3555(18)30797-4, 2019
6. Dick H J Thijssen, Rosa Maria Bruno, Anke C C M van Mil, Sophie M Holder, Francesco Faita, Arno Greyling, Peter L Zock, Stefano Taddei, John E Deanfield, Thomas Luscher. Expert consensus and evidence-based recommendations for the assessment of flow- mediated dilation in humans. *European Heart Journal,* v. 40, n. 30, p. 2534–2547, 2019.
7. Grassi B, Quaresima V. Near-infrared spectroscopy and skeletal muscle oxidative function in vivo in health and disease: a review from an exercise physiology perspective. *J Biomed Opt.* 21(9): 091313, 2016
8. Holland AE, Spruit MA, Troosters T, Puhan MA et al. An official European Respiratory Society/American Thoracic Society technical standard: field walking tests in chronic respiratory disease. *Eur Respir J.* 44(6):1428-46. doi: 10.1183/09031936.00150314, 2014
9. Pessoa, B V.; Arcuri, J F.; Labadessa, I G.; Costa, J N. F.; Sentanin, A C.; Pires Di Lorenzo, VA. Validity of the six-minute step test of free cadence in patients with chronic

obstructive pulmonary disease. *Revista Brasileira de Fisioterapia (Impresso)*, v. 18, p. 228-236, 2014.

10. Raymond R. Townsend, Ian B. Wilkinson, Ernesto L. Schiffrin, Alberto P. Avolio, Julio A. Chirinos, John R. Cockcroft, Kevin S. Heffernan, Edward G. Lakatta, Carmel McEniery, Gary F. Mitchell, Samer S. Najjar, Wilmer W. Nichols, Elaine M. Urbina, Thomas Weber Recommendations for Improving and Standardizing Vascular Research on Arterial Stiffness: A Scientific Statement from the American Heart Association. *Hypertension*. 66(3): 698–722, 2015.