


**Discipline MCP5902**   
**Cardiac Rehabilitation and Physical Exercise in Cardio Oncology: Fundamentals and Scientific Evidences**

**Concentration area:** 5131

**Creation:** 10/10/2024

**Activation:** 10/10/2024

**Credits:** 2

**Workload:**

Theory (weekly)	Practice (weekly)	Study (weekly)	Duration	Total
6	5	4	2 weeks	30 hours

**Professors:**

Carlos Eduardo Negrão

Amanda Gonzales Rodrigues

**Objectives:**

Present in-depth knowledge about the role of physical exercise in Cardio Oncology. Develop a critical view of the role of exercise in the treatment of cardio oncology patients. Create a suitable environment for the presentation and discussion of studies on physical exercise in Cardio Oncology.

**Rationale:**

Although advances in cancer treatment result in increased survival in cancer patients, the condition is becoming increasingly challenging. Some therapies can cause changes in the cardiovascular system, which increases the risk of morbidity/mortality due to cardiovascular disease in cancer survivors. This scenario has naturally led to the search for prevention and care for cancer patients. Recent studies have shown that regular physical exercise is an intervention that can bring significant benefits to patients undergoing cancer treatment. Well-designed and conducted research shows that this non-pharmacological approach can prevent the risk of cardiovascular disease, as well as improve the response to treatment in cancer patients. This knowledge is the basis for this discipline proposal. Through theoretical/practical classes and seminars, the aim is to transmit current knowledge and awaken the student's interest in the role of physical exercise, both in the prevention of cardiovascular disease and in the treatment of cancer patients who have developed cardiovascular disease as a result of drug agents.

**Content:**

1. Theoretical a) Basic concepts of cardio oncology b) Epidemiology and pathogenesis of cardiotoxicity c) Cancer, heart and lifestyle d) Role of physical exercise in the prevention of cardiovascular disease in cancer patients e) Role of physical exercise in cancer patients with cardiovascular disease: neurovascular, hemodynamic, skeletal muscle and physical capacity aspects.

2. Practical a) Exercise prescription in cancer patients: Particularities b) Physical exercise in patients with heart failure caused by cardiotoxicity

**Type of Assessment:**

Participation in classes and seminars Written and oral presentation of a research project on topics developed in the discipline

**Notes/Remarks:**

Maximum students: 25 Minimum students: 05 Special students: 10

**Bibliography:**

a) *Cardiologia do Exercício: Do Atleta ao Cardiopata*; ISBN-10. 8520457150; ISBN- 13. 978-8520457153 ; Edição. 4ª; Editora. Editora Manole

b) Ludmilla Abrahão Hajjar; Isabela Bispo Santos da Silva da Costa, Marcelo Antonio Cartaxo Queiroga Lopes. *Diretriz Brasileira de Cardio-Oncologia da SBC. Arq Bras Arq Bras Cardiol.* 2020 Nov;115(5):1006-1043.

c) [https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//guia\\_atividade\\_fisica\\_07.pdf](https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//guia_atividade_fisica_07.pdf)

d) <https://www.frontiersin.org/research-topics/19721/exercise-and-cancer-from-clinical-association-to-mechanistic-insights>

e) Wilson, R. L., Christopher, C. N., Yang, E. H., Barac, A., Adams, S. C., Scott, J. M., & Dieli-Conwright, C. M. (2023). Incorporating Exercise Training Into Cardio- Oncology Care: Selecting: JACC: CardioOncology State-of-the-Art Review. In JACC: CardioOncology (Vol. 5, Issue 5, pp. 553–569). Elsevier Inc. <https://doi.org/10.1016/j.jacc.2023.08.008>.

f) Gilchrist, S. C., Barac, A., Ades, P. A., Alfano, C. M., Franklin, B. A., Jones, L. W., la Gerche, A., Ligibel, J. A., Lopez, G., Madan, K., Oeffinger, K. C., Salamone, J., Scott,

g) J. M., Squires, R. W., Thomas, R. J., Treat-Jacobson, D. J., & Wright, J. S. (2019). Cardio-Oncology Rehabilitation to Manage Cardiovascular Outcomes in Cancer Patients and Survivors: A Scientific Statement from the American Heart Association. *Circulation*, 139(21), E997–E1012. <https://doi.org/10.1161/CIR.0000000000000679>

h) Scott, J. M., Zabor, E. C., Schwitzer, E., Koelwyn, G. J., Adams, S. C., Nilsen, T. S., Moskowitz, C. S., Matsoukas, K., Iyengar, N. M., Dang, C. T., & Jones, L. W. (2018). JOURNAL OF CLINICAL ONCOLOGY Efficacy of Exercise Therapy on Cardiorespiratory Fitness in Patients With Cancer: A Systematic Review and Meta-Analysis. *J Clin Oncol*, 36, 2297–2305. <https://doi.org/10.1200/JCO>

i) Grumbach, I. M. (2020). Cardio-Oncology at the Beginning of a New Decade. In *Journal of the American Heart Association* (Vol. 9, Issue 2). American Heart Association Inc. <https://doi.org/10.1161/JAHA.120.015890>

j) Hayek, S. S., Ganatra, S., Lenneman, C., Scherrer-Crosbie, M., Leja, M., Lenihan, D. J., Yang, E., Ryan, T. D., Liu, J., Carver, J., Mousavi, N., O’Quinn, R., Arnold, A., Banchs, J., Barac, A., & Ky, B. (2019). Preparing the Cardiovascular Workforce to Care for Oncology Patients: JACC Review Topic of the Week. In *Journal of the American College of Cardiology* (Vol. 73, Issue 17, pp. 2226–2235). Elsevier USA. <https://doi.org/10.1016/j.jacc.2019.02.041>

k) Okwuosa, T. M., Prabhu, N., Patel, H., Kuzel, T., Venugopal, P., Williams, K. A., & Paner, A. (2018). The Cardiologist and the Cancer Patient: Challenges to Cardio- Oncology (or Onco-

Cardiology) and Call to Action. *Journal of the American College of Cardiology*, 72(2), 228–232. <https://doi.org/10.1016/j.jacc.2018.04.043>

l) Scott, J. M., Nilsen, T. S., Gupta, D., & Jones, L. W. (2018). Exercise therapy and cardiovascular toxicity in cancer. *Circulation*, 137(11), 1176–1191. <https://doi.org/10.1161/CIRCULATIONAHA.117.024671>

m) Aboumsallem, J. P., Moslehi, J., & de Boer, R. A. (2020). Reverse Cardio- Oncology: Cancer Development in Patients With Cardiovascular Disease. In *Journal of the American Heart Association* (Vol. 9, Issue 2). American Heart Association Inc. <https://doi.org/10.1161/JAHA.119.013754>.

n) Amanda G Rodrigues. Sympathetic neural overdrive and diminished exercise capacity in reduced ejection fraction heart failure related to anthracycline-based chemotherapy *Am J Physiol Heart Circ Physiol* . 2023 Nov 1;325(5):H1126- H1132. doi: 10.1152/ajpheart.00476.2023. Epub 2023 Sep 8.

o) Santos LS, Rehder MHHDS, Negrao MV, Goes-Santos BR, Toshi Dias E, Paixão CJ, Urias U, Giannetti NS, Hajjar LA, Filho RK, Negrão CE. Aerobic exercise training combined with local strength exercise restores muscle blood flow and maximal aerobic capacity in Jun1;326(6):H1462-H1468. doi: 10.1152/ajpheart.00132.2024. Epub 2024 Apr 19.PMID: 38639741

**Class type:**

Presencial