METABOLIC EFFECTS OF EXERCISE PROTOCOLS

Prof. Massimo Sacchetti

Preparatory activities:

Learning objectives (200 characters max):

To review some basic concepts regarding the metabolism of energy substrates during exercise

Online Learning resources:

Reading material:

- Hargreaves M, Spriet LL. Skeletal muscle energy metabolism during exercise. Nat Metab. 2020 Sep;2(9):817-828. doi: 10.1038/s42255-020-0251-4.
- Philippou, Anastassios (et al.) Exercise Metabolism in Health and Disease, pages 57-96. In Kokkinos, Peter, Narayan, Puneet (Eds.) Cardiorespiratory Fitness in Cardiometabolic Diseases - Prevention and Management in Clinical Practice. Springer, 2019

Core activities:

Learning objectives (200 characters max):

Staring from some concepts of basic physiology, the objective of the lectures is to demonstrate the effects of the modulation of the various parameters that characterize exercise and training on the acute and chronic responses of energy metabolism. This to highlight the relevance of this knowledge for the prescription of exercise in health and disease.

Learning resources: Face-to-face classroom

Online learning resources

Lecturers' presentation (to be provided)

Reading material:

- Astorino TA, Schubert MM. Changes in fat oxidation in response to various regimes of high intensity interval training (HIIT). Eur J Appl Physiol. 2018 Jan;118(1):51-63. doi: 10.1007/s00421-017-3756-0.
- Goodpaster BH, Sparks LM. Metabolic Flexibility in Health and Disease. Cell Metab. 2017 May 2;25(5):1027-1036. doi: 10.1016/j.cmet.2017.04.015.
- Haxhi J, Scotto di Palumbo A, Sacchetti M. Exercising for metabolic control: is timing important? Ann Nutr Metab. 2013;62(1):14-25. doi: 10.1159/000343788
- MacInnis MJ, Gibala MJ. Physiological adaptations to interval training and the role of exercise intensity. J Physiol. 2017 May 1;595(9):2915-2930. doi: 10.1113/JP273196.
- Maunder E, Plews DJ, Kilding AE. Contextualising Maximal Fat Oxidation During Exercise: Determinants and Normative Values. Front Physiol. 2018 May 23;9:599. doi: 10.3389/fphys.2018.00599

Further in-depth readings

- Gemmink A, Schrauwen P, Hesselink MKC. Exercising your fat (metabolism) into shape: a muscle-centred view. Diabetologia. 2020 Aug;63(8):1453-1463. doi: 10.1007/s00125-020-05170-z.
- ODonoghue Ob Rev 20 What exercise prescription is optimal to improve body composition and cardiorespiratory fitness in adults living with obesity
- Thyfault JP, Bergouignan A. Exercise and metabolic health: beyond skeletal muscle. Diabetologia. 2020 Aug;63(8):1464-1474. doi: 10.1007/s00125-020-05177-6