

INHERITANCE IN HEALTH ENHANCING PHYSICAL ACTIVITY

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Preparatory activities

Learning objectives (200 characters max): To understand basic genetic principles, structures and functions, human genetic variability and mutations and the functional correlation between gene and phenotype.

Online learning resources:

- Caporossi D. “Conceptual map” (presentation)

Reading material

- Thompson & Thompson “Genetics in Medicine”. Ch. 3 “*The Human Genome: Structure and Function of Genes and Chromosomes*” pp. 17-32, 2015
- Bouchard C. “Exercise genomics—a paradigm shift is needed: a commentary” *Br J Sports Med* 2015; 49: 1492–1496

Educational video

- Human Genetics <https://www.youtube.com/watch?v=oivnW7jml3o>
- The molecules behind a living cell <https://www.youtube.com/watch?v=7Hk9jct2ozY>
- From DNA to proteins <https://www.youtube.com/watch?v=gG7uCskUOrA>
- Twin study in complex phenotypes https://www.youtube.com/watch?v=usnv1_xRCvs

Core activities

Learning objectives (200 characters max): To understand simple and complex trait inheritance and the role of genetic variability in health and diseases and gene-environment interactions in relation to movement.

Learning resources: Face-to-face classroom

Online learning resources:

Lecturers’ presentation (to be provided)

Reading material:

- Ramos RG, Olden K. Gene-environment interactions in the development of complex disease phenotypes. *Int J Environ Res Public Health*. 2008 Mar;5(1):4-11.
- Vellers et al., Inter-individual variation in adaptations to endurance and resistance exercise training: genetic approaches towards understanding a complex phenotype. *Mamm Genome*. 2018 Feb;29(1-2):48-62.
- Grazioli et al., Physical activity in the prevention of human diseases: role of epigenetic modifications. *BMC Genomics*. 2017 Nov 14;18(Suppl 8):802.

Educational video:

Introduction to epigenetics: <https://www.youtube.com/watch?v=IAu44BkOaSs>

Epigenetic mechanisms: <https://www.youtube.com/watch?v=9AfBsTAQ8zs>

Video (web link):

Web resources (link):