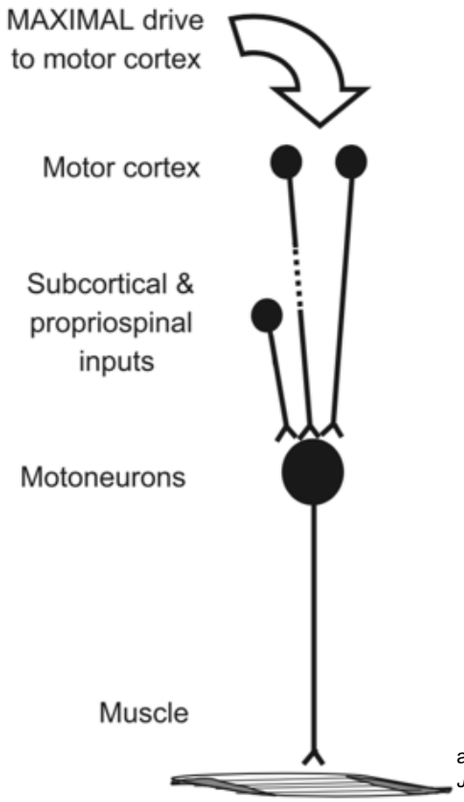
PhD School in LIFE AND HEALTH SCIENCES
PhD Program in Neuroscience, Psychological and Psychiatric Sciences and Movement Sciences

UNIVERSITÀ di VERONA
Dipartimento di NEUROSCIENZE, BIOMEDICINA E MOVIMENTO

Workshop

Principles, insights and potential pitfalls of the measurements of voluntary activation based on transcranial magnetic stimulation over the motor cortex and peripheral nerve stimulation.



adapted from Taylor and Gandevia, *J Appl Physiol*, 2008

Dr. Gianluca Vernillo
Department: Biomedical Sciences for Health (University of Milan)

November 26th 2019 – 9.30-18.00
Aula C, Scienze Motorie Verona.
Via Casorati 43, 37131 Verona.

Info: massimo.venturelli@univr.it

Morning - Theoretical session

Aula C - 9.30 am to 12.00 pm

- The understanding of human motor performance requires knowledge of the force output of the muscles and, therefore, the level of neural drive that muscles receive from the central nervous system (the level of voluntary activation).
- Current applications to detect the voluntary activation involves superimposition of a supramaximal stimulus to the peripheral motor axons during a voluntary contraction (electrical twitch interpolation technique).
- However, this technique has a conceptual limitation since it reveals little about what levels of the nervous system are performing suboptimally.
- Transcranial magnetic stimulation has enabled further elucidation of the site of failure of descending voluntary drive.
- However, quantification of cortically derived voluntary activation is more complex.

During this session, it will theoretically be discussed the principles and key technical challenges associated with measurement of voluntary activation with the above-mentioned techniques.

Afternoon - Practical session

Aula D - 14.00 pm to 16.00 pm: Group #1
16.00 pm to 18.00 pm: Group #2

During this session, it will be demonstrated the application of those techniques during specific and fatiguingexercise tests.