MINISIMPOSIO

From Philosophy to Neurobiology. The effects of training on man's possible improvement

20 febbraio 2018
Dipartimento di Biologia e Biotecnologie "Charles Darwin"
Aula B "Giorgio Tecce"
Ore 11:00-13:00

11:00-12:00

- **Patrizio Paoletti** - FASE: Aims and construction of the Quadrato Motor Training.

12:00-12:45

- **Tal Dotan Ben-Soussan** – Electrophysiological and neuroanatomical effects of the QMT.
- **Sabrina Venditti** – The molecular side of Quadrato.

12:45-13:00

- Discussion

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ABSTRACT

A growing body of literature demonstrates that mindful practice of movement can yield improvements in cognitive and attentional skills. Movement exemplifies the inseparability of mind and body. The *Quadrato Motor Training* (QMT) is a specifically-structured sensorimotor training that involves sequences of movements in response to verbal commands, developed on the base of a neuroscientific research aimed at finding new means of reducing stress while improving cognition and emotional well-being. QMT is a relatively short training, easy to perform in limited spaces. It requires standing at one corner of a square and making movements toward different corners in response to verbal instructions. QMT involves a state of enhanced attention to the motor response and cognitive processing for producing the correct direction of movement to the next corner in the Quadrato space.

At the electrophysiological level, even a single session of QMT practice significantly increases inter- and intra-hemispheric EEG alpha coherence. In addition, increased neuronal connectivity and arborization following one to three months of daily QMT training was observed. Interestingly, these changes significantly correlated with ideational flexibility and improved creativity, revealed by several test administered before and after the training. These results have underlined an ongoing process of neuronal remodeling, triggered by QMT practice, which possibly involves molecular modifications. In fact, alongside electrophysiological and morphological results, QMT was also shown to be correlated with variations in the salivary levels of BDNF and NGF, two neurotrophins known to modulate neuroplasticity and that are closely related to stress and well-being. Therefore, QMT can affect molecular mechanisms that stimulate neuroplasticity in the brain, that are also reflected in periphery.

In this minisymposium we will report about the philosophical and theoretical principles at the base of the QMT, the electrophysiological and morphological results obtained by EEG and MRI, as well as the molecular studies related to the QMT, focusing on the neurotrophins BDNF and NGF.