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Autore	Ietswaart Magdalena
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Sommario/riassunto	There is now strong evidence demonstrating that the brain simulates action and other functions. Such action simulation can be evoked through conscious mental rehearsal of movement or imagery, but also through passive action observation watching movements in others. Furthermore, there is evidence to suggest that mental rehearsal of movement, or mental practice, can produce improvements normally attributed to practising actual movements. It is currently assumed that such improvements are due to neural activation associated with action simulation. However the neuroscience of mental practice efficacy is still poorly understood. The aim of this research topic is to clarify the underlying mechanisms of mental practice, bringing evidence from cognitive neuroscience, experimental neuropsychology, sport and movement science, and clinical neurology. It also attempts to address confusion regarding the concepts of imagery and observation, which has hampered the progression of mental practice research both scientifically and applied. As well as reviews, theoretical, and position articles, this research topic includes original neuroimaging, experimental, and patient research addressing, among others, the following issues. Neuroimaging studies provide strong evidence for action simulation, but the link to behavioural change and functional outcome is weak. What is the evidence that mental practice efficacy is driven by neuroplasticity processes evoked by action simulation? This research topic includes contributions on neural correlates and

behaviour with regards to imagery and action observation. Much of the mental practice efficacy evidence comes from longstanding research within sport science. However, what does mental practice entail in these contexts, and to what extent is it compatible with the cognitive neuroscience perspective of action simulation? This research topic will include contributions that consider both evidence and concepts with regards to imagery and action observation, in an attempt to build an interdisciplinary consensus on the nature and application of mental practice. Mental practice is perceived as a promising motor rehabilitation technique, but critically there is lack of clarity or consensus on what mental practice treatment should entail. It is also not clear what are the most appropriate outcomes to measure imagery ability and cognitive or behavioural change following mental practice. A further important issue that needs consideration as part of this research topic is dosage, as it is currently unclear how much mental practice is appropriate and whether this depends on patient variables such as age, cognitive functioning, motor function, or pathophysiology.