

## **Corticospinal excitability during motor imagery**

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We investigated whether corticospinal excitability during the imagery of an action with an external object was influenced by actually touching the object. In the first experiment, corticospinal excitability was assessed by motor evoked potentials (MEPs) in the first dorsal interosseous (FDI) muscle elicited by transcranial magnetic stimulation over the contralateral motor cortex during imagery of squeezing a ball (4cm) - with or without passively holding the ball. The MEPs amplitude during the imagery when the ball was held was larger than that when the ball was not held. The MEPs amplitude was not modulated just by holding the ball. In the second experiment, we examined MEPs during imagery of pinching a small ball (2cm) - with or without passively holding the ball. The MEPs amplitude in agonist muscle during the imagery when the ball was held was larger than that when the ball was not held. These findings suggest that passively holding objects increased corticospinal excitability during motor imagery of handling the object.