

# Proprioception and Motor Control

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**Abstract:** The proprioceptive, or kinaesthetic sense, is related to the capacity to sense position of joints, to sense their direction and velocity of movements, and to determine the effort needed to grasp and lift an object. Proprioception is closely associated with motor system. Muscle vibration is often used to study proprioception, since this is an adequate stimulus for selectively activate the muscle spindle receptor, thereby inducing a vibration-frequency entrained excitation of the primary endings and a train of action potentials in the large-diameter group Ia afferent fibres. Vibration can induce simple reflex effects or more complex effects such as proprioceptive illusions which can produce a change in the egocentric body-centred co-ordinate system during quite upright stance and locomotion. In this presentation, an overview on this technique will be given and some example of possible applications to study sensory-motor integration in humans will be showed. Future implications of neuroengineering in designing new devices to be used in basic and clinical neurophysiology research will be discussed.

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