Motor control (Overview)

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Motor control is defined as the underlying substrates of neural, physical, and behavioral aspects of movement[1]

Subtypes:

- Reactive motor control: Movements are adapted in response to ongoing feedback (e.g., muscle stretch causes an increase in muscle contraction in response to a forward weight shift)[1]
- Proactive (anticipatory) motor control: Movements are adapted in advance of ongoing movements via feedforward mechanisms (e.g., the postural adjustments made in preparation for catching a heavy, large ball)[1].

1 Terminology

- Motor plan: an idea or plan for purposeful movement that is made up of component motor programs
- Motor program: an abstract representation that, when initiated, results in the production of a coordinated movement sequence[1]
- Motor learning: a set of internal processes associated with feedback or practice leading to relatively permanent changes in the capability for motor skill[1]
- Motor recovery: the reacquisition of movement skills lost through injury Schema: a set of rules, concepts, or relationships formed on the basis of experience[1]
- Schema: serve to provide a basis for movement decisions and are stored in memory for the reproduction of movement[1]

  - Recall schema: the relationship among past parameters, past initial conditions, and the movement outcomes produced by these combinations[1]
  - Recognition schema: the relationship among past initial conditions, past movement outcomes, and the sensory consequences produced by these combinations[1]

- Task analysis: a process of determining the underlying abilities and structure of a task or occupation[1]
- Task organization: how the components of a task are interrelated or interdependent[1]
  - Low organization: Task components are relatively independent[1].
  - High organization: Task components are highly interrelated[1].

2 Motor recovery

Motor recovery refers to the reacquisition of movement skills lost through injury[1].

3 Motor Compensation

Motor compensation differs from motor recovery since refers to changing motor plans instead of regaining old methods. Motor compensation refers to the performance of an old movement in a new manner that can be achieved through adaptive compensation or behavioral substitution[1].

1. O'Sullivan SB, Schmitz TJ, eds. *Improving Functional Outcomes in Physical Rehabilitation*. 2nd ed. F.A. Davis Company; 2016.