

The Brookbush Institute Updated 2 Glossary Terms: "Stretch Reflex" and "Nociceptive Motor Control Alterations"

The Brookbush Institute continues to enhance education with a glossary that is more than just definitions. Examples, common questions, and so much more!

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-- - Excerpt from the term: [Stretch Reflex](#)

- Additional term: [Nociceptive Motor Control Alterations](#)

- Related to the Course: [Lesson 22: Introduction to Movement Assessment and Analysis](#)

DEFINITION

Stretch Reflex (a.k.a. Monosynaptic

Reflex or Myotatic Reflex) Stretch reflex is a neuromuscular reflex in which an increase in muscle length activates receptors known as muscle spindles, which signal an increase in muscle activity. Muscle spindles are sensory receptors whose neurons transmit an excitatory signal to the spinal cord, where a direct synapse with alpha motoneurons triggers a near-immediate contraction of the innervated motor units. The direct synapse with alpha motor neurons and the absence of interneurons is why this reflex is known as "monosynaptic"; there is only one synapse.

- Example: The patellar reflex (knee-jerk reaction) is a tap on the patellar tendon, which activates muscle spindles in the quadriceps, triggering contraction to resist excessive stretch.

FUNCTION:

- Protection: Stretch reflex is a protective mechanism against excessive stretch, reducing the risk of muscle or tendon injury

- Muscle Tone and Posture: Because muscle spindle length and sensitivity may adapt in response to dysfunction, injury, surgery, activity, or prolonged changes in muscle length, the stretch reflex plays a significant and potentially primary role in controlling muscle tone and posture. If muscle spindle sensitivity increases, the stretch reflex will be initiated more often, increasing average motor unit activity (tone). If muscle spindle sensitivity decreases, then fewer instances of stretch reflex will be initiated, and average muscle activity (tone) will decrease.



Patellar tendon reflex is a test of "stretch reflex" - <https://brookbushinstitute.com/glossary/stretch-reflex>



Because muscle spindle sensitivity may adapt in response to dysfunction, the stretch reflex likely plays a significant and potentially primary role in controlling muscle tone and posture.”

Dr. Brent Brookbush, CEO of Brookbush Institute

- Stability, Balance, and Coordinated Motion: By continuously monitoring and adjusting muscle length, the stretch reflex helps counteract unexpected perturbations, stabilize joint positions, and optimize movement efficiency.

- Performance: Stretch reflex likely contributes to the performance of high velocity (power) activities as part of the stretch-shortening cycle (SSC) . That is, the stretch reflex is likely initiated by the quick pre-stretch of ballistic activities, resulting in an increase in motor unit recruitment during the concentric phase.

ADDITIONAL NEUROMUSCULAR REFLEXES:

- Reciprocal Inhibition
- Autogenic Inhibition
- Arthrogenic Inhibition
- Nociceptive Motor Control Alterations
- Stretch Reflex
- Neuromuscular Inhibition

FREQUENTLY ASKED QUESTIONS

Is stretch reflex good or bad?

- Stretch reflex is not good or bad; it is an essential component of our motor control systems. See the functions above.

What does an absent stretch (myotatic) reflex indicate?....

FOR THE FULL TEXT AND SO MUCH MORE, CLICK ON THE LINK

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