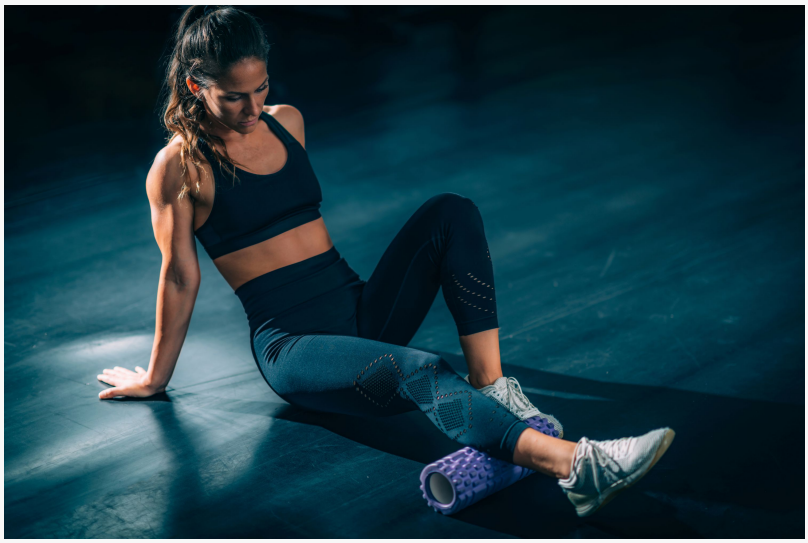
The Brookbush Institute Updated 2 Glossary Terms: Autogenic Inhibition and Arthrogenic Inhibition

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



Autogenic inhibition - https://brookbushinstitute.com/glossary/autogenic-inhibition

NEW YORK, NY, UNITED STATES, February 12, 2025 /EINPresswire.com/
-- - Excerpt from the term: Autogenic Inhibition
- Additional term: Arthrogenic Inhibition
- Related to the Course: Lesson 5: Basics of the Human Movement Systems

DEFINITION:
Autogenic inhibition is a neuromuscular reflex that results in a reduction in muscle activity following an excessive or sustained increase in tension and stimulation of Golgi tendon organs (GTO). If tension is extreme, the inhibitory signal can completely inhibit a muscle's alpha motoneurons, causing the muscle to relax spontaneously. Autogenic inhibition is a negative feedback loop created by a neuromuscular reflex arc at the level of the spinal cord.
- Synonyms: Note that autogenic inhibition may be referred to as Golgi tendon reflex, GTO reflex, tendon reflex, inverse myotatic reflex, or reverse stretch reflex.

Reflex Arcs: The Golgi tendon organ and its Ib sensory afferent fibers enter the spinal cord through the dorsal root to synapse on Ib inhibitory interneurons that terminate directly on the motor neurons that innervate the same muscle. They may also terminate in excitatory synapses on motoneurons that innervate the antagonist muscle. The innervation with motor neurons allows for signals from Golgi tendon organs to affect the excitation of motor neurons.

FUNCTION
- Protective Mechanism: The reflex likely functions as a protective mechanism that may aid in preventing muscles from exerting more force than the muscle tissue, bones, or tendons can handle;

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>
> *Dr. Brent Brookbush, CEO of Brookbush Institute*

Distribution of Load: Autogenic inhibition may also prevent a motor unit from excessive load and aid in distributing load throughout more motor units and muscle fibers.
- Fine-tuning: Because the inhibitory interneurons that the Golgi tendon organ innervate are among several inter-neurons that may influence alpha motor neuron excitation, they may play a role in fine-tuning activity (along with other receptors) within a muscle or potentially groups of muscles, aiding in optimal force production and fine motor skills.
- Muscle Recruitment: The Ib fibers connect widely among motoneurons, innervating various muscles. This suggests that autogenic inhibition may be one reflex in a group of reflexes that aid in muscle recruitment and optimal motion.
- Stretching: Although autogenic inhibition may not allow for more mobility during functional movements due to the faster and potentially stronger influence of myotatic reflex, autogenic inhibition likely plays a role in the feeling of release and increase in length noted with sustained stretches.

FREQUENTLY ASKED QUESTIONS
What is a technique incorporating autogenic inhibition?
- PNF in Practice by Beckers and Buck includes a technique called "PNF agonist-antagonist stretching," which includes both an agonist contraction, which was hypothesized to initiate autogenic inhibition. Additionally, release techniques like foam-rolling and ischemic compression (static manual release techniques) are hypothesized to stimulate autogenic inhibition.

What induces reciprocal and autogenic inhibition?...

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