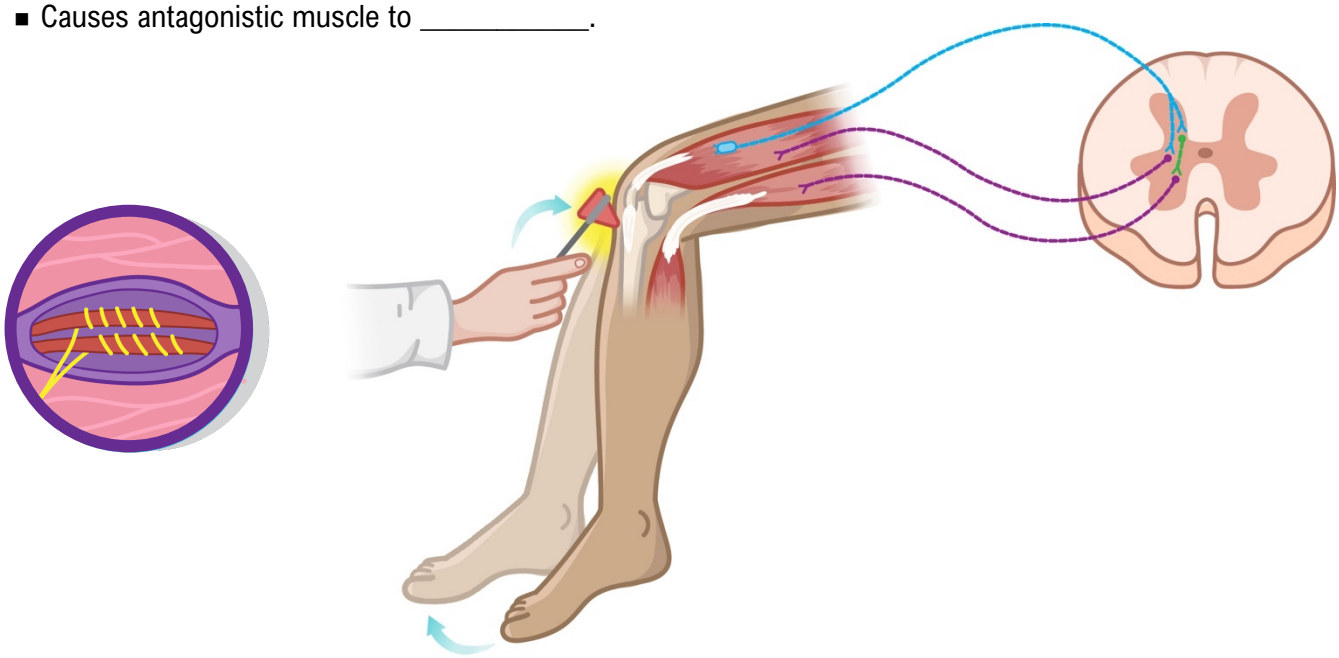
**TOPIC:** REFLEX ARCS

**Stretch Reflex**

- **Purpose**: Prevent muscle strain and tear injuries.
- **Stretch Reflex:** Initiated by muscle spindles in response to being _____.
  - This part of the stretch reflex is _____synaptic.
  - Causes muscle to _____.
- **Reciprocal Inhibition:** Neurons controlling antagonistic muscle are _____ during stretch reflex.
  - This part of the stretch reflex is _____synaptic.
  - Causes antagonistic muscle to _____.



**EXAMPLE:** How does the knee-jerk reflex help you maintain balance if your knees start to buckle?

a) It directly strengthens the quadricep.

b) It inhibits muscle contraction in the quadricep.

c) It generates a strong muscle contraction in the quadricep.

d) It triggers a conscious decision to remain balanced.

**PRACTICE:** Why is reciprocal inhibition an important part of the stretch reflex?

a) It amplifies the contraction of the stretched muscle.

b) It slows down the stretch reflex.

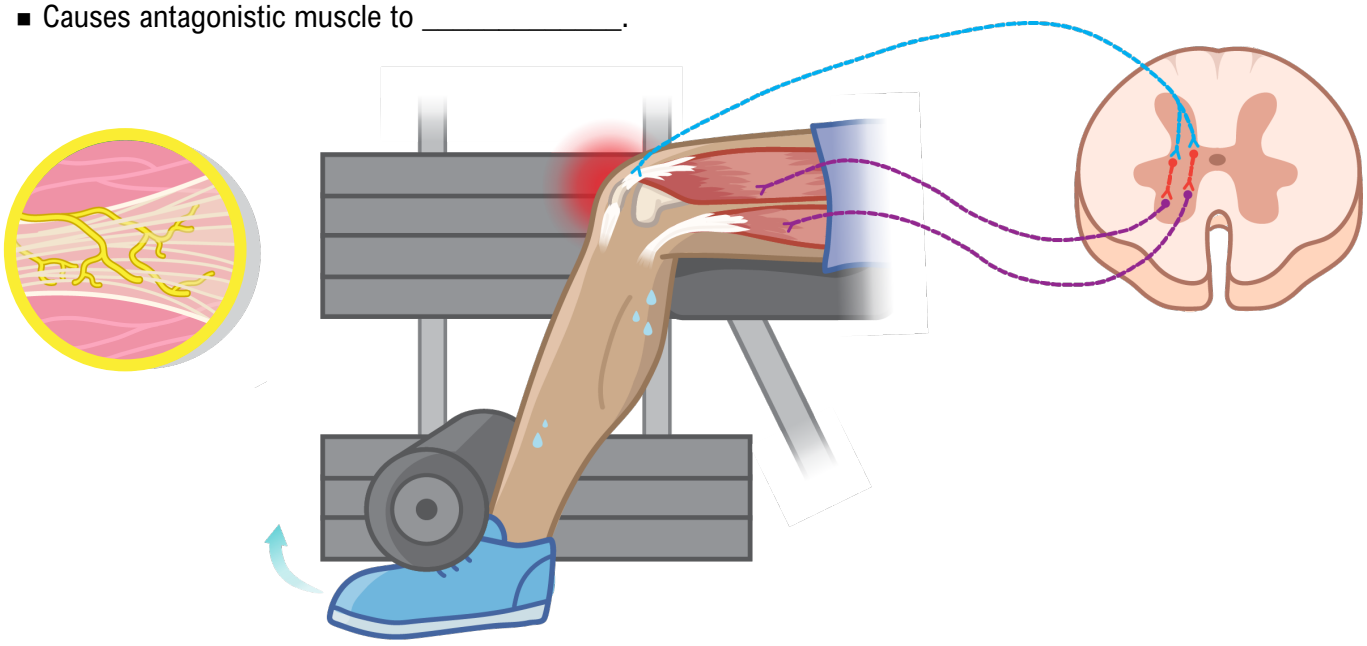
c) It enhances proprioception as the reflex occurs.

d) It allows for smooth movement of extensor and flexor muscles.

**TOPIC:** REFLEX ARCS

**Tendon Reflex**

- **Purpose**: Prevent tendon injury .
- Note: This is a polysynaptic reflex
- **Tendon Reflex:** Initiated by golgi tendon organs in response to _____.
  - Causes muscle to _____.
- **Reciprocal Activation:** Neurons controlling antagonistic muscle are _____ during tendon reflex.
  - Causes antagonistic muscle to _____.



**EXAMPLE:** During a strength training session, Wilfried says his tendon reflex is helping him enhance his muscular endurance. Is he correct? Why or why not?

a) Yes; the tendon reflex allows for muscles to reserve energy.

b) No; the tendon reflex is increasing sensory perception in the muscles.

c) No; the tendon reflex is preventing excessive muscle tension.

d) No; the tendon reflex is stimulating muscle contraction.

**PRACTICE:** Which of these mechanisms causes golgi tendon organs to start firing action potentials?

a) As the muscle contracts, collagen fibers “squeeze” the nerve endings of the golgi tendon organ.

b) As the muscle relaxes, collagen fibers “squeeze” the nerve endings of the golgi tendon organ.

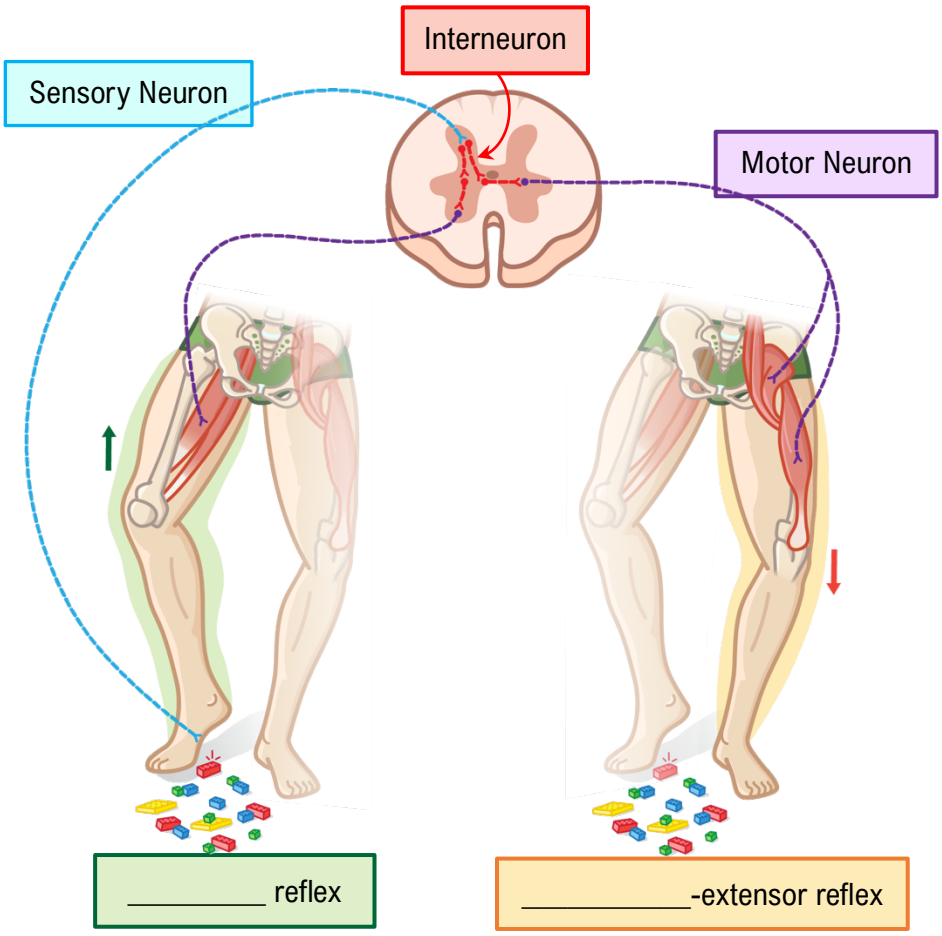
c) As the muscle contracts, free nerve endings in the golgi tendon organ are compressed by muscle fibers.

d) As the muscle stretches, free nerve endings in the golgi tendon organ are compressed by muscle fibers.

**TOPIC:** REFLEX ARCS

**Flexor & Crossed-Extensor Reflexes**

- **Flexor (withdrawal) reflex:** Rapid withdrawal of a body part from _____ stimulus.
  - Causes flexor muscles in limb to contract.
  - **Ipsilateral reflex** - motor activity occurs on _____ side of the body as the stimulus.
- **Crossed-extensor reflex:** Occurs simultaneously with flexor reflex, causing extension of opposite _____.
  - Helps maintain _____ during flexor reflex.
  - **Contralateral reflex** - motor activity occurs on _____ side of the body as the stimulus.




**EXAMPLE:** Which of the following reflexes is contralateral?

a) Flexor reflex.
b) Crossed-extensor reflex.
c) Knee-jerk reflex.
d) Pupillary light reflex.
e) All of the above.