Let's look at the lunge. Let's say I have a client lunging, but they're wobbly. How should I regress the exercise?

A. Allow the client to support themselves against the wall

B. Decrease the number of reps that the client is doing

C. Have the client do a backflip

D. Make sure you like the video 😎

A. Allow the client to support themselves against the wall

B. Decrease the number of reps that the client is doing

C. Have the client do a backflip

D. Make sure you like the video 😎

Let's say I have a beginner client lunging, they're doing great, and I need to make the exercise harder. How should I progress the exercise?

A. Have the client do jumping lunges

B. Tell the client to perform the movement faster

C. Subscribe to the channel 😎

D. Give the client light dumbbells to hold onto while doing the exercise

A. Have the client do jumping lunges

B. Tell the client to perform the movement faster

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D. Give the client light dumbbells to hold onto while doing the exercise

Let's say I have a client who's squatting and leaning too far forward. Choose the best cueing advice to give this client.

A. Tell the client their squat is a mess

B. Tell the client to shift the weight back onto the ball of their foot, heels, and hips

C. Hand the client light weights for increased stability

D. Stop the squat immediately and don't have that client do them anymore

A. Tell the client their squat is a mess

B. Tell the client to shift the weight back onto the ball of their foot, heels, and hips

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D. Stop the squat immediately and don't have that client do them anymore

Let's take that same client who's squatting and leaning too far forward. Now tell me what muscles are likely overactive and which are underactive.

A. Overactive: Hip Flexors
Underactive: Tensor Fasciae Latae

B. Overactive: Glutes
Underactive: Hamstrings

C. Overactive: Hip Flexors Underactive: Glutes

D. Overactive: Glutes Underactive: Adductors

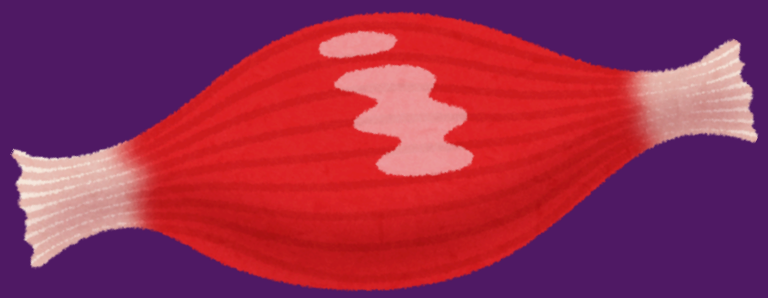
A. Overactive: Hip Flexors
Underactive: Tensor Fasciae Latae

B. Overactive: Glutes
Underactive: Hamstrings

C. Overactive: Hip Flexors Underactive: Glutes

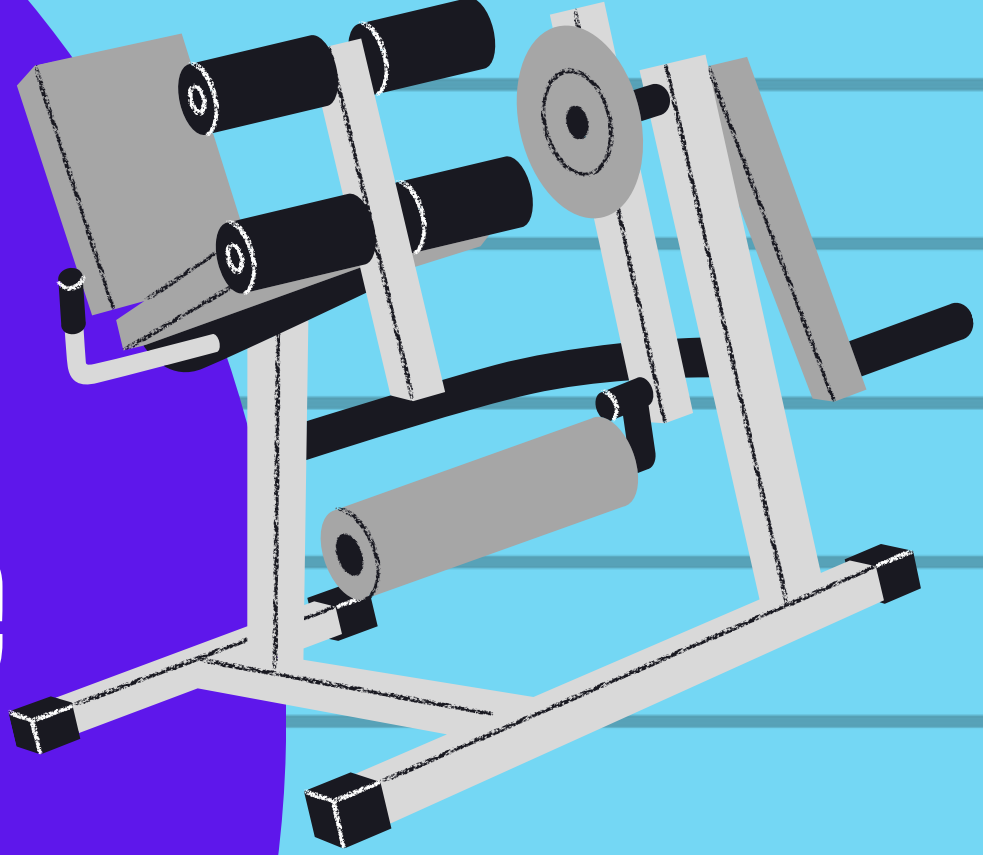
D. Overactive: Glutes Underactive: Adductors

Next up lets talk about agonists and antagonists. An agonist is the prime mover or muscle that does most of the work during a specific exercise. An antagonist is the muscle that opposes the agonist.

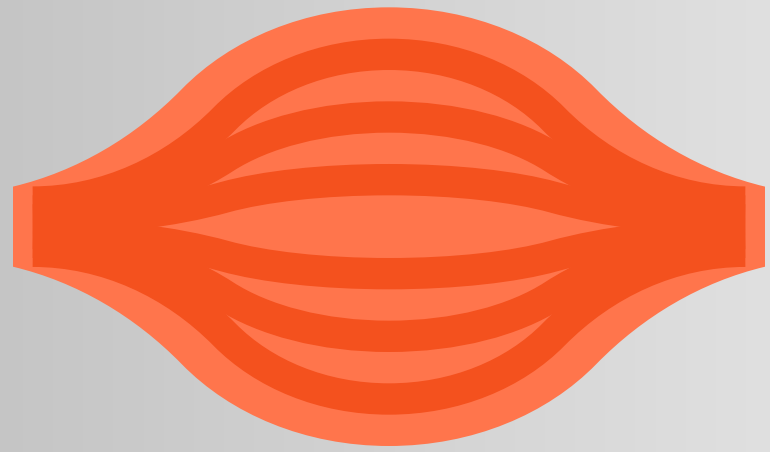


The easiest example of this is the biceps and triceps. When I'm doing a biceps curl the biceps are the agonist, meaning they do most of the work. The opposing muscle group, the triceps, would be the antagonist.

So, if I am doing a leg extension, what muscle group is the agonist and what muscle group is the antagonist?



The agonist would be the quadricep muscles.



The antagonist would be the hamstring muscles.

What is the agonist or prime mover of the exercise being shown, and what is the antagonist muscle?

A. Agonist: Hamstrings
Antagonist: Glutes

B. Agonist: Gastrocnemius
Antagonist: Tibialis Anterior

C. Agonist: Hip Flexors Antagonist: TFL

D. Agonist: Hamstrings Antagonist: Quadriceps

A. Agonist: Hamstrings
Antagonist: Glutes

B. Agonist: Gastrocnemius
Antagonist: Tibialis Anterior

C. Agonist: Hip Flexors Antagonist: TFL

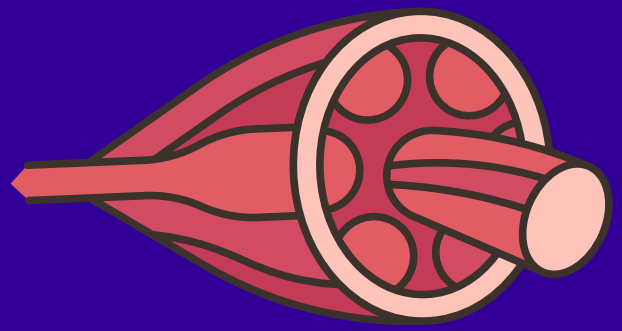
D. Agonist: Hamstrings Antagonist: Quadriceps

You also have synergists which assist prime movers or agonists with movements.

Synergistic dominance: Synergist compensates for an underactive agonist.

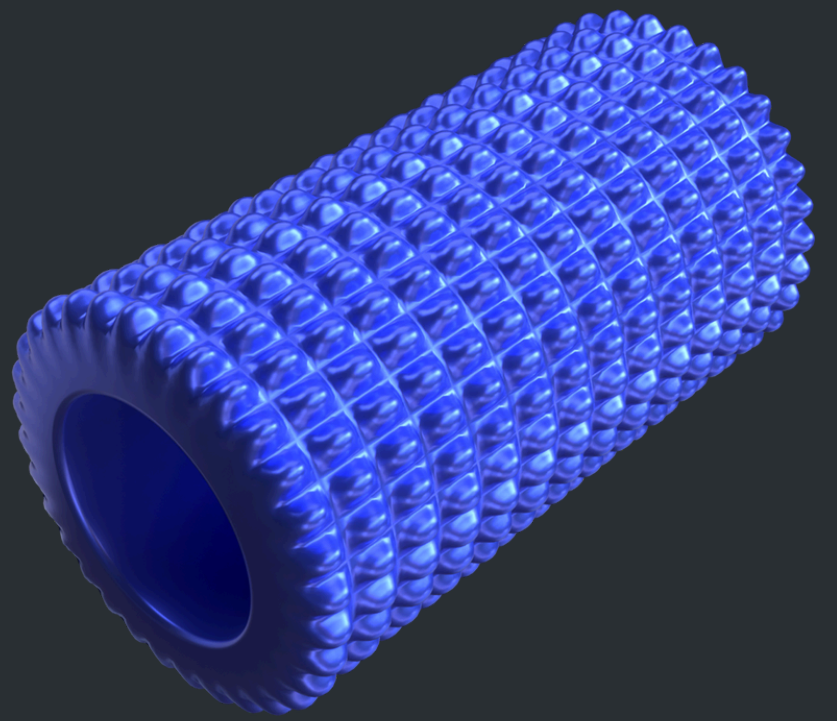
Force-couple relationship: Two or more muscles working together to create movement around a joint.

Stabilizers: Muscles that stabilize movement around a joint.



Ex: rotator cuff muscles when bench pressing

Reciprocal Inhibition: The relaxation of muscles on one side of a joint to accommodate contraction on the other side.



Autogenic Inhibition: The ability of a muscle to relax when it experiences a stretch or increased tension.

Relative Flexibility: When the body moves, joints and soft tissues will move along the path of least resistance.

Altered Reciprocal inhibition: When an agonist is too tight which causes decreased neural drive to the antagonist.

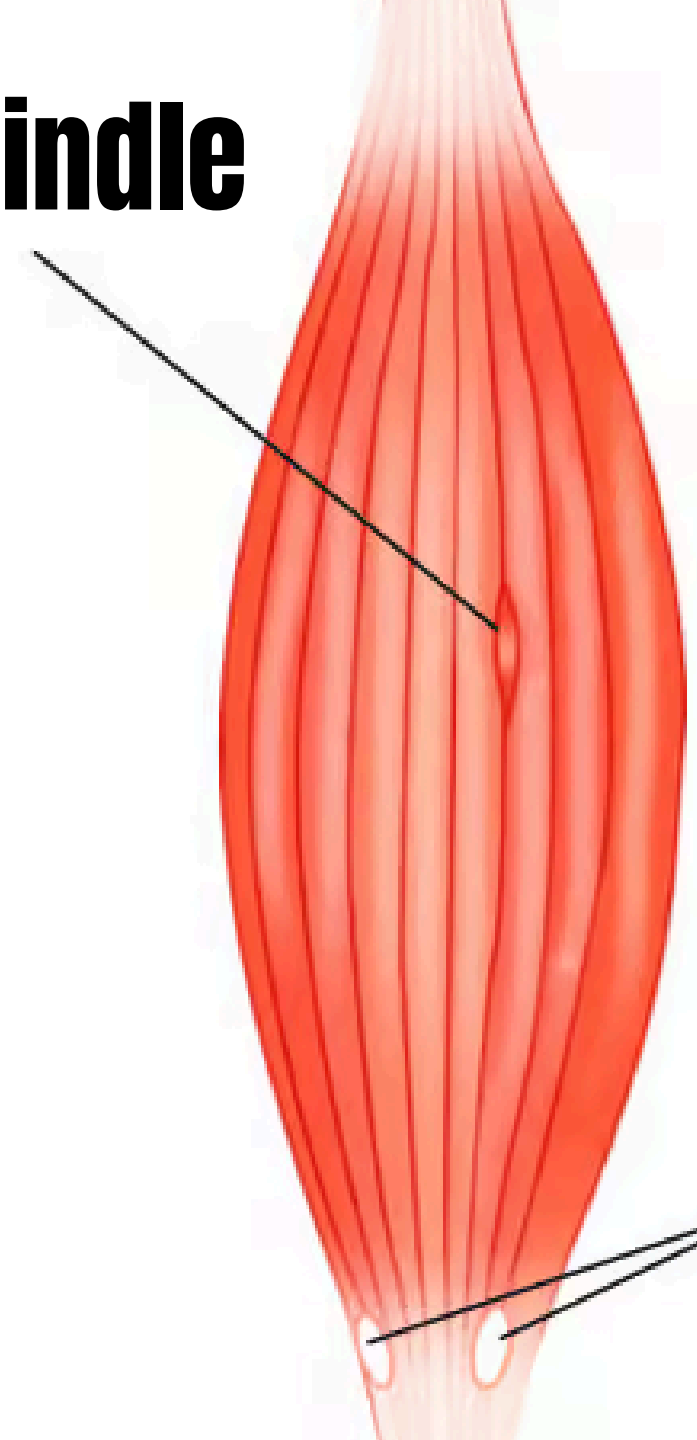
Golgi Tendon Organ (GTO):

Located at the point where the muscle and tendon meet (musculotendinous junction). The GTO is sensitive to change in muscle tension and the speed of tension change.

Muscle Spindle:

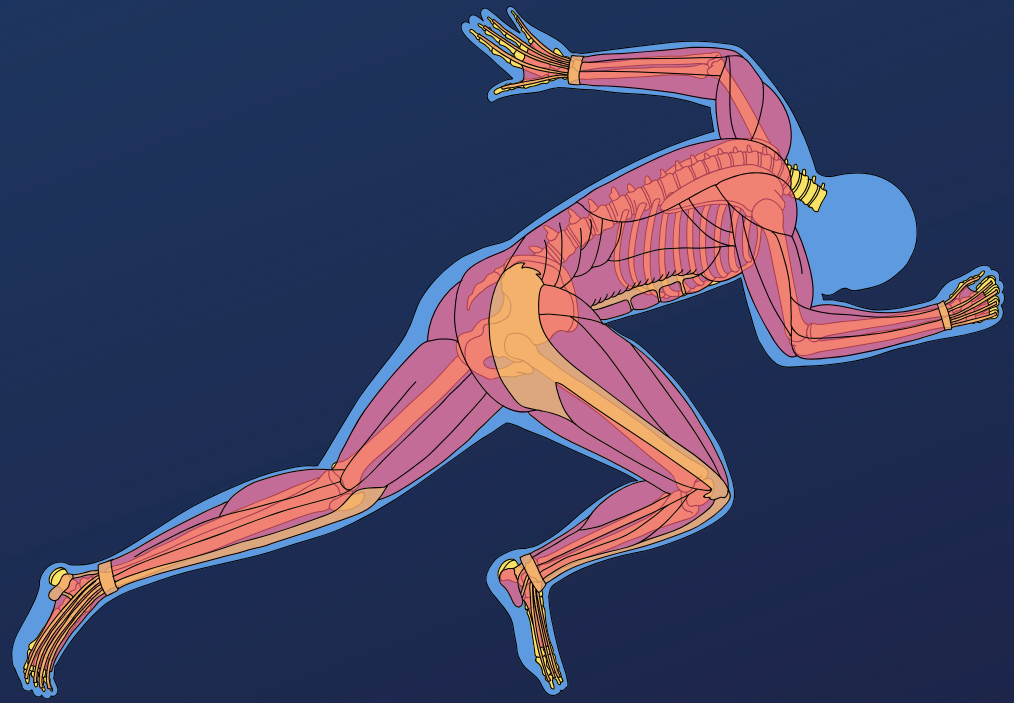
Sensory organs that lie parallel to the muscle fibers. They detect muscle length and the speed/rate at which a muscle is stretching.

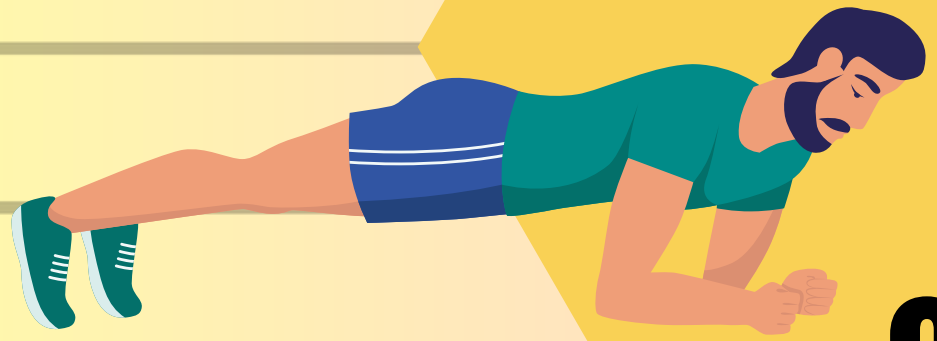
Muscle Spindle



Golgi Tendon Organs

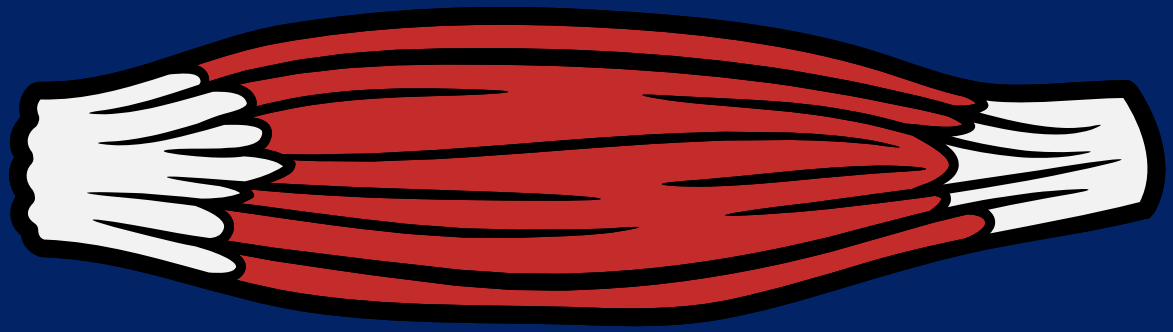
Muscle Contraction Types





First up we have static or isometric contractions. These contractions occur when there is no change in muscle length.

An concentric contraction is when a muscle shortens.



An eccentric contraction is when a muscle lengthens.

Random stuff to know

Davis Law

Soft tissue models along imposed demands. This explains how a muscle will lengthen or shorten in response to stretch or load. You become your lifestyle.

Wolf's law is similar but applies to bone.

Local core muscles: Generally attach on or near the vertebrae. They're important for stabilizing the vertebrae and limiting strain on the spine. (transverse abdominus, Quadratus lumborum)

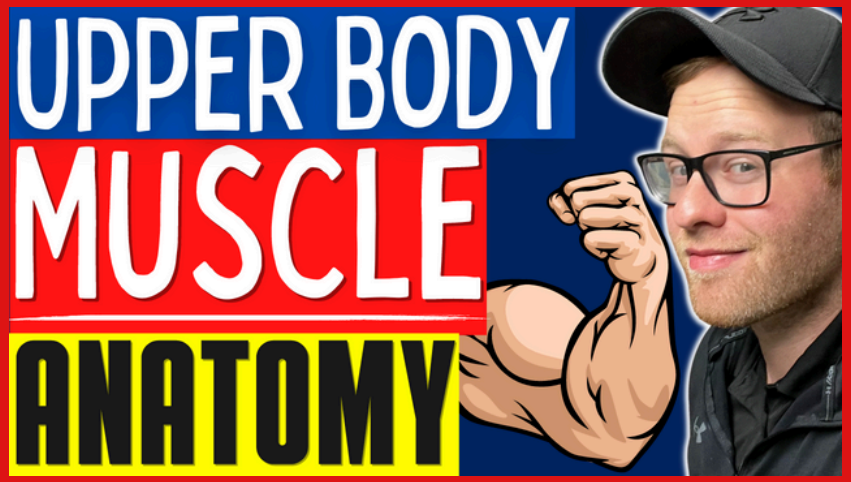
Global core muscles: More superficial. They're more involved when it comes to moving the trunk. (rectus abdominus, psoas)

Epimysium: The fibrous outer tissue envelope that surrounds muscle.

Perimysium: The sheath of connective tissue surrounding a bundle of muscle fibers.

Endomysium: (Inner layer) Surrounds individual muscle fibers within skeletal muscles

Ligaments: attach bone to bone
Tendons: attach muscle to bone



Learn Anatomy

Three stages of learning

Cognitive: Still learning

Associative: Starting to understand

Autonomous: Learned/automatic

Speed: Moving quickly in one direction (sprints)

Agility: The ability to change direction and maintain speed, balance, and coordination (LEFT drill)

Quickness: Reacting to a stimulus in multiple planes of motion (ladder drills)

Training For youths/kids/adolescents

Adolescents: 60 minutes 3 or more days of the week or 3 days per week if vigorous. Emphasize balance, skill, and controlled movements. 2-3 days resist.

1–2 sets of 8–10 exercises 8–12 reps per exercise (40-70% int.) with increases in overload in reps first, then weight

Progression of aerobic training volume should not exceed 10% per period of adaptation

Lower tolerance to environmental extremes, particularly heat and humidity (30m)

Glycolytic enzymes are lower than adults, not as good at certain intense tasks

Training For Older Adults

3–5 days per week of moderate-intensity activities

or 3 days per week of vigorous-intensity activities

Intensity = 45–80% of VO2 peak

lower initial weights and slower progression

1–3 sets of 8–20 repetitions at 40–80% intensity

Progression should be slow, well monitored, and based on postural control.

Valsalva maneuver: Avoid this with all clients, especially the elderly. It's a breathing technique that involves forcefully exhaling air against a closed airway.