

An extensor driving motion on its own

What's the problem with using a single muscle to move a bone?

A flexor and extensor driving motion

Why do you need at least two muscles to drive controlled motion?

Why is muscle coordination important when co-contracting muscles?

Two extensors driving motion

What's the problem with only contracting the vastus lateralis when extending the knee?

Why is it beneficial (for knee function and stability) to co-contract the vastus lateralis and medialis and how could this relate to patellar tracking disorders?

Two flexors driving motion

Why might it be beneficial (for knee function and stability) to co-contract the semimembranosus/semitendinosus and biceps femoris?

Do you think the pattern of two muscles on the same side of a joint co-contracting is common for joints? If yes, why? If no, why not?

Agonist-antagonist muscles stabilizing a joint

Which two muscles would you use to stiffen or prevent flexion-extension rotation at the knee joint?

Which muscles would you use to stiffen/prevent both flexion-extension and tibial long-axis rotations at the knee joint?

Can co-contraction of muscles help to prevent ACL and MCL injuries? If yes, why? If no, why not?

Agonist-antagonist muscles stabilizing a joint (continued)

Based on your simulations, what do you think stabilizes the knee joint: ligaments, muscles, or both? If you think both, which do you think should make a greater contribution in a healthy knee, ligaments or muscles, why?

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