A Leg to Stand On

Facilitating Single Limb Stance in Gait and on the Stairs

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Critical Movement Events for Single Limb Stance

- Forward weight shift of the body over the foot with ankle dorsiflexion
- Stable, co-activated trunk
- Stable head with free movement for scanning
- Achieving neutral hip extension and abduction prior to knee extension

Closed Chain Strategies to Challenge Trunk and LE Stability in Stance

- Increase the duration and time the client must sustain SLS
- Challenge balance through perturbations created by the other limb on moveable surfaces
- Increase the ROM the hip and knee must move through while in FWB
Increasing Duration of Single Limb Stance

- Stepping onto a step
- Stepping onto progressively higher surfaces
- Stepping over objects of various sizes

Challenge Balance

- Move an object on the ground with the less affected LE
- Move the less affected LE on a stable raised surface
- Move the less affected LE on a multidirectional mobile surface

Increase the Range of Hip and Knee Motion in SLS

- Train in transitions like stand to stride squats, stand to half kneel, and stepping from a squat or sit position
- Ascend stairs reciprocally
- Descend stairs reciprocally
Why Teach Reciprocal Stair Climbing?

- It is part of normal function.
- It is a way to force the use of the more affected limb.
- Stairs provide a stable environment with definite parameters for motor learning.
- It presents a natural challenge to motor recruitment, strength, grading, ROM, and balance that can enhance function in gait.

How is Stair Climbing Similar to Walking on Level Ground?

- Mid stance alignment is the same
- Generally the demands on the head, neck, and trunk for stability and co-activation are the same.
- Same muscle groups working in similar muscle contractions from loading through terminal stance.

How is Stair Climbing Different from Walking on Level Ground?

- Initial contact on the stairs is on the forefoot
- Loading phase requires a greater ROM into hip and knee flexion and ankle DF. Thus there is a greater demand on the extensor muscles and plantar flexors to reach mid stance.
- Initial swing requires more active hip and knee flexion to clear the foot to the step above.
References