

Client Description

ClientX was a 70 year old female, diagnosed with chronic mild low back pain (LBP) and stiffness resulting from a sedentary lifestyle. The doctor prescribed increased physical activity (PA), and exercises for lumbo-pelvic hip (LPHC) and trunk stabilization.

ClientX was in good health (managed diabetes and cholesterol medication and diet), slightly overfat and sedentary.

ClientX reported no problems with activities of daily living (ADLs), and her only PA was walking with friends.

ClientX's static posture was normal, and her chief complaint was mild LBP/stiffness after extended standing/sitting.

Marching Progressions

0. (<https://youtu.be/bj1UnF37mvQ>)

Task Requirements/Constraints (TRC).

Lie supine; arms alongside body; knees bent; feet flat. Perform abdominal bracing (AB). Lift one foot off the floor in a slow, controlled manner maintaining AB. Lower the foot back down. Repeat alternating feet.

Environmental Requirements/Constraints (ERC).

Lie on the floor or mat.

Organism Requirements/Constraints (ORC).

Use abdominals to stabilize. If the pelvis rotates excessively or the back arches from neutral then the client needs to use smaller movements, position the arms to help stabilize, or just regress and work on AB.

1.

TRC.

Marching seated on the edge of a chair, with arms crossed over the chest.

ERC.

Sit on the edge of a stable, armless, chair.

ORC.

This variation reduces stability and support, requiring greater effort from the trunk musculature.

2.

TRC.

Marching seated on the edge of a chair, with trunk rotation. Simultaneously bring the opposite elbow towards the opposite knee.

ERC.

Same.

ORC.

This further reduces stability and support; requires greater effort from the trunk musculature; introduces rotation; challenges balance and control.

3.

TRC.

Seated on the edge of a chair, brace abdominals, and bring both knees up simultaneously.

ERC.

Same.

ORC.

This requires the greatest effort from the trunk musculature by reducing stability and support (removal of grounded leg).

Hip Bridge Progressions

0.

TRC.

Lie supine, knees bent, feet flat shoulder-width apart on the floor, and arms at the side. Lift the pelvis off the floor engaging the core, forming a line with the knees-hips-shoulders.

ERC.

The client should lie on the floor or mat.

ORC.

This exercise emphasizes trunk musculature (and stability) and the gluteals, promoting lumbopelvic hip control (Park, Oh, & Kim, 2014).

1.

TRC.

Single leg bridge. Start with a bent leg and progress to a more difficult straight leg.

ERC.

Same.

ORC.

This variation reduces stability and support, requiring greater effort from the trunk musculature and gluteals. This variation requires the ability to stabilize.

2.

TRC.

Two-legged bridge on an stability disc.

ERC.

Same.

ORC.

Removal of stable support requiring more effort from trunk musculature, gluteals, and lower body. Increases proprioceptive challenge.

3.

TRC.

One-legged bridge on stability disc.

ERC.

Same.

ORC.

Further reduction of support and stability via removal of one leg. Increases proprioceptive challenge.

Cat-Camel to Bird-Dog

0.

TRC.

Cat-Camel. Start on hands and knees with neutral spine posture. Spinal flexion and extension.

ERC.

Use a mat on the floor (or physiotherapy table).

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ORC.

The client must have a good range of motion performing spinal flexion and extension, without pain; also must be comfortable on hands and knees (McGill & Karpowicz, 2009).

1.

TRC.

Bird-Dog. Start on hands and knees on a mat with neutral spine posture. Raise and extend the opposite arm and leg simultaneously together, hold, then bring them back down. Repeat on the opposite side.

ERC.

Same.

ORC.

Further challenges the client to stabilize, engaging the trunk musculature, working on balance plus proprioception. This should be done in a slow and controlled manner

2.

TRC.

Repeat the Level 1 except after the extension, bring the opposite elbow and knee in together. Repeat X repetitions before switching.

ERC.

Same.

ORC.

Increases the challenge and endurance by adding the momentum. Stability and control must be maintained.

3.

TRC.

Repeat the Level 1 version of bird-dog except place stability discs under the knees/hands.

ERC.

Same.

ORC.

Increases the challenge by decreasing stability.

Motor Control.

The spinal cord level of control is responsible for reflexively activating stabilizers to help maintain postural control and equilibrium (Cech & Martin, 2012). The brain stem is responsible for longer reflexes in attempt to maintain stability and balance; while the midbrain controls the Labyrinthine righting reflex. The motor cortex is "director" and is responsible for learning (expanding) the task requirements/constraints; the motor cortex is responsible for coordinating those volitional movements (e.g. raising alternative legs in marching plus all the increasing challenges) (Cech & Martin, 2012).

References

- Cech, D., & Martin, S. (2012). *Functional movement development across the life span*. [electronic resource]. St. Louis: Saunders.
- McGill, S. M., & Karpowicz, A. (2009). Original article: Exercises for spine stabilization: Motion/motor patterns, stability progressions, and clinical technique. *Archives Of Physical Medicine And Rehabilitation*, 90, 118-126.
- Park, H., Oh, D., & Kim, S. (2014). Original article: Effects of integrating hip movements into bridge exercises on electromyographic activities of selected trunk muscles in healthy individuals. *Manual Therapy*, 19, 246-251.