Dynamic Chiropractic

SPORTS / EXERCISE / FITNESS

The Quadruped Pushback for Reflexive Core Stability

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What is core stability, and how can we train it automatically without conscious thought? Core stability "describes the ability of the trunk to support force production, and withstand forces acting upon it."[1] Core stability is often confused with core strength, whereby the central torso muscles are trained with high-threshold exercises in order to produce and withstand large force demands.

True core stability is motor control, encompassing timing proportion and sequencing of the muscles in a chain of activation. These chains comprise the intrinsic reflexive core (diaphragm, transverse abdominis, multifidi and pelvic floor) and the outer unit subsystems of deep, lateral, anterior and posterior. I would also include the posterior fibers of the internal oblique and the deep neck flexors to the deep stabilizing intrinsic core system.

Optimizing function of the intrinsic core supersedes training of the outer units. You need proximal stability for optimal distal mobility.[2] Optimal training of the deep reflexive system should be done with minimal coaching or cueing. Using movements that "switch on" the mechanism without conscious thought is the end goal. The quadruped pushback exercise can do just that when done correctly with quality sequencing.

<iframe width="560" height="319"src="http://www.youtube.com/embed/Z-WcdWSX9Bc?rel=0" frameborder="0"allowfullscreen></iframe>

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The quadruped movement is successful when the patient can do the exercise without pain. As soon as pain comes on board, the neural network of learning corrective patterns is sabotaged. The body will compensate and fall back on poor movement patterns to accomplish the given task. Watch the video below to understand these critical factors to monitor for a quality execution:

- Maintain neutral spine. Use dowel rod or stick to help proprioceptive feedback: feeling the head, thoracic spine and sacrum in line.
- Position knees below hips and hands below shoulders aligned with ball against the wall on the ischial tuberosity.
- Watch for breath holding. Exhale on pushback and once in position, maintain for three full diaphragmatic breaths in and out via the nose, not the mouth. Strive for 360-degree expansion of the abdomen and posterior wall.
- Watch for jaw clenching as a compensation for stability. Teeth should remain separated and mouth together.
- Slight pressure back into the stability ball. Too much pressure will negate form and engage other systems.
- Patient should feel core engage automatically with pressure from ball pressing into the buttock.

- Pressure into glenohumeral joint will engage rotator-cuff muscles for stability via compression.
- Ensure ankles remain in a dorsiflexion position and toes in extension.
- Fingers should be palm to the ground with wide base of support.
- Perform 6-10 repetitions with good form.
- When the patient can perform with both hands on the ground, progress to single-arm flexion pattern as demonstrated on the video. This pattern challenges rotational core stabilization with the necessary oblique sequencing. The weaker side will be very evident when one arm is compared to the other.
- On the weaker side, restrict arm flexion to a height that the quality of movement can be retained.
- Progress until both sides are as symmetrical as possible.
- Watch for the shoulder coming up to the ears in elevation, indicating dominant upper trapezius and inhibited middle and lower trapezius.
- Pressure into the ball increases intra-abdominal pressure from the bottom of the cylinder (pelvic floor) combined with the diaphragmatic breathing and multifidi / transverse abdominis activation.

"Active movements demonstrate basic control and are followed by static stabilization under load. This is followed by dynamic stabilization under load. From this framework, our freedom of movement and controlled movement patterns are developed for transitions in posture and position, maintenance of posture, locomotion and the manipulation of objects."[3] Functional stability of the core can reduce injury risk by minimizing musculoskeletal stress, managing outside forces, and increasing balance and control. What better way to help maximize quality of life during activities of daily living, sport and play? Discover how much patients enjoy the exercise and the fast-acting results in terms of how they feel.

References

1. Elphinston J. *Stability, Sport, and Performance Movement: Great Technique Without Injury*. Chichester, England: Lotus Pub., 2008.
2. Web blog post by Charlie Weingroff, doctor of physical therapy, Jan. 31, 2013.
3. Cook G. *Movement: Functional Movement Systems : Screening, Assessment, and Corrective Strategies*. Aptos, CA: On Target Publications, 2010.

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