

What are the most effective exercises for Core Strengthening?

(As indicated by Literature and Current Concepts)

As more patients are referred for core strengthening secondary to their primary diagnosis, clinicians need to know which exercises are most effective in developing core strength and stability. And the “answer” is....

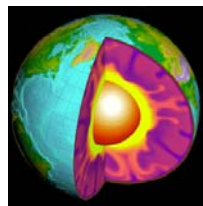
Literature

- 1 A review of EBM revealed a shortage of level 1 and 2 studies relating to specific exercises for core stability.

Note: While some Level 1 and 2 studies were reviewed, they were determined not to be applicable to the current research question or the clinical setting at the VOI.

- 2 In addition to the EBM review, a general literature search of published articles was performed, resulting in a number of descriptive studies and “expert opinion” articles related to core strengthening. (some research findings)

- If goal is to train for stability then training motor patterns incorporating many muscles as opposed to individual muscles would be justified - Kavic, Grenier, McGill (2004)
- Side bridge exercise important for lumbar/spinal stability due to its activation of quadratus lumborum (with minimal spinal loading) - McGill, Childs, Liebenson (1999)
- Influence of surface stability on muscle activity appears to be muscle and exercise dependent - Lehman, Hoda, Oliver (2005)



Current Concepts

(To supplement the limited literature available, the current concepts in core strengthening were explored)

- 3 Various organizations (professional sports teams, university sports medicine programs, etc.) were surveyed to determine current concepts in core strengthening. (a sample of some responses)

Does the program focus on anatomical areas or movement patterns?

“anatomical areas” - Pittsburgh Steelers
 “movement patterns, functional” - Tennessee Titans

How were the exercises in the program determined?

“trial & error; common sense-functional anatomy” - Milwaukee Brewers
 “...past educational experiences, research, trial and error...” - Belmont University

What tests are used to indicate the need for core strengthening?

“Gray Cook’s Functional Movement Screen” - Athlete’s Performance
 “body map, functional squat-SLS” - Milwaukee Brewers

- 4 Additionally group members attended conferences/courses that included focuses on core training (strengthening/stability), including:

The Art & Science of Sport Medicine 2006 (University of Virginia)
 Lexington Clinic Sports Medicine’s 9th Annual Shoulder Symposium
 American Sports Medicine Institute 25th Annual Injuries in Baseball Course

Using information from the Literature Review and Current Concepts Responses 21 exercises were identified and divided into 2 phases (Basic and Intermediate)

Phase I

(Examples of Phase I exercises)



Curl-Up (crunch)



Pelvic Tilt



Supine Bridge



Supermans



Side-lying Hip Abduction



Swimmers



Prone Hip Extensions

Phase I Exercises not pictured: Plank, Side Plank, Theraband Trunk Rotations, Side-lying Clam Shells

Phase II

(Examples of Phase II exercises)



Cobras



Crunch on Swiss Ball



Single-leg Supine Bridge



“Bird Dogs”



Dead Bugs



Theraband Diagonal Chops

Phase II Exercises not pictured: Side Plank on Outstretched Arm, Side Plank with Arm and/or Hip Abduction, Prone Plank on Swiss Ball with Elbow Roll-Outs, Swiss Ball Walkouts



Vanderbilt Rehabilitation Services

Sports Focus Team

Members: Michael Kennedy- Facilitator, Anne Louise McDonald, Emily Preston, Amanda Hankins, Heather Cole, Jasper Richardson

Note: for 20” x 30” poster, increase image by 3x (final 19.5” x 30”); currently 6.5”x10”