ADVANCED CORE TRAINING & CONDITIONING

Dean Somerset
BSc. Kinesiology, CSCS, MES
Today’s Webinar will....

- Show you that core training is more than just crunches
- Go through how the core works, in normal situations and also in pain
- Come up with some ways to train the core that most trainers tend to miss
- Develop an action plan for your workouts so they train the core for both Show and for GO!!
Quick Promo!!!

Check out Muscle Imbalances Revealed: Lower Body for more awesome presentations!!
Allow Myself to Introduce…..Myself

- BSc. Kinesiology, University of Alberta
- CEP - CSEP
- CSCS – NSCA
- MES – AAHFRP
- Medical & Rehabilitation Coordinator, World Health
- Clientele range from pre-post surgical, MVA, cancer patients, up to athletes & “weekend warriors”
- Written articles for T-Nation, ThePTDC.com, and a few others
Imagine Your Core is This Guy...
What is the Core??
What is the Core??

- Common belief of “inner core” and “outer core”
- Inner core – diaphragm, pelvic floor, TvA, multifidus
- Outer core – QL, ROE, ROI, rectus abdominis
- Forgets to include latissimus dorsi, ilipsoas, transversari, spinalis, glutes, thoracolumbar & intraabdominal fascial sheaths........
Control Tension of Outer Unit

Control Tension of Inner Unit

Lumbar Stability
What is the Core??

- **Australian Method:**
- **Belief that TmA is major influencer of spinal stability**
- by activating it through a “drawing in” motion of abdomen it can influence multifidus function and increase spinal stability
What is the Core??

- McGill Model
- Popularized by Dr. Stuart McGill in *Low Back Disorders*
- Says that drawing in disrupts natural mechanics of core, and can lead to more instability.
- “Bracing” of the abdomen (contracting everything equally to resist deformation) gives the best stability, increases compression and reduces shear force to spare lumbar spine
What is the Core??

TABLE 2. Average peak muscle activation for the trunk and selected hip and thigh muscles recorded during all strongman events (the case study of the KWRS, KWLS, and SL are included).

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FW = farmer’s walk; RHSC = right-hand suitcase carry; LHSC = left-hand suitcase carry; YW = superyoke walk; LL = log lift; TF = tire flip; KWLS = kog walk—left shoulder; KWR = kog walk—right shoulder; SL = Atlas stone lift; RRA = right rectus abdominis; LRA = left rectus abdominis; REO = right external oblique; LEO = left external oblique; RIO = right internal oblique; LIO = left internal oblique; RLD = left latissimus dorsi; LLD = left latissimus dorsi; RUES = right upper (thoracic) erector spinea; LUES = left upper (thoracic) erector spinea; RLES = right lumbar erector spinea; LLES = left lumbar erector spinea; RGMED = right gluteus medius; RGMAX = right gluteus maximus; RBF = right biceps femoris; RRF = right rectus femoris.

What is the Core??
What is the Core??
What is the Core??

- Loosely defined – all muscles that control the movement of the pelvis and thoracic cage in relation to the lumbar spine
- More specific – Everything under the Champ-belt region
What the Hell Does it Do?

- More tonic than phasic in nature
- Most muscles that are easily injured have short moment arms, meaning they stabilize and resist spinal segmental motion
- 3 Main Functions:
  1. Allows transfer of force from arms to legs & vice versa
  2. Resists deformation of spine while allowing a high degree of movement from pelvis and shoulders
  3. Assists in breathing mechanics
Spinal Stability

Who has the Better Core??

Shane Hamman,
237.5 kg Clean & Jerk (US)

Usain Bolt:
9.58 seconds 100m (WR)
19.19 seconds 200m (WR)

Goeffrey Mutai
2011 Boston winner
2:03:02 (WR)

Young gymnast
Just plain weird
Who Has The Better Core??

- Stiff & Stable
- Elastic & Malleable
Who Has The Better Core??

- Core must be:
  - Stiff enough
  - Elastic enough
  - Deformable enough
  - Fatigue-resistant enough
- To do all the tasks asked of it.
- If it’s not, it gets injured
Core Function and LBP

- With spinal instability, core muscles downregulated → specifically TvA and segment-specific multifidus
- Lack of muscle support leads to more instability, which leads to more pain and dysfunction
- End of pain does NOT mean normal core function is restored, just that threshold for pain hasn’t been reached
Core Function and LBP

- With same resistance, the further the weight is from the centre of gravity, the greater the resultant strain on the low back.

- Pelvic-spinal position, as well as distance of weight from body (spinal angle) contribute to low back strain when lifting.
Forward bending with flexed spine, anterior pelvic tilt, or elevated/protracted shoulders increases pressure on spine.
Repetitive Strain

Adaptive Phases

DEPENDENT ON TIME, MAGNITUDE, AND DIRECTION OF FORCE APPLICATION

Mueller & Malluf. Phys Ther, Vol. 82, No. 4, April 2002, pp. 383-403
Repetitive Strain

Effect of Prolonged Low Stress Lowers Thresholds for Subsequent Adaptation and Injury

Baseline condition

- Increased tolerance (e.g., hypertrophy)
- Maintenance
- Decreased tolerance (e.g., atrophy)

Lower “set-points” for thresholds

- Increased tolerance (e.g., hypertrophy)
- Maintenance
- Decreased tolerance (e.g., atrophy)

Physical stress level

Mueller & Malluf., 2002
The Law of Repetitive Motion

\[ I = N F / A R \]

- \( I \) = Insult or injury to tissues
- \( N \) = Number of repetitions
- \( F \) = Force or tension applied to tissues as % of maximum muscle strength
- \( A \) = Amplitude (frequency) of stressor
- \( R \) = Relaxation time between stressors
Understandable, But Still Bad For You
Sweet Baby Jeebus
MAKE IT STOP!!!
Stages of Core Conditioning

- Recently injured
- Use Australian method of core conditioning, focusing on maintaining stable spine position
- Find posture that causes least pain and maintain
- Work on keeping core tight while performing movements at the hip and shoulder
- Focus on posterior chain strength before anterior chain strength
Stages of Core Conditioning

- Beginners
- Combination of Australian & McGill methods of core activation, individualize when necessary, → compound bracing
- Postural corrections as needed
- Get upright and moving as much as possible
- Work hip & T-spine mobility, lumbar stability
- Groove movement patterns with minimal weight, working on technical execution. Add weight when movements are precise
Stages of Core Conditioning

- Intermediate
- Can perform basic lifts like deadlift, front squat, 1-foot squat to parallel, with optimal joint mobility
- Work on anti-rotation, flexion & extension movements
- Focus on resisting spinal deformation!!!
- Work hamstrings & lats in 2:1 to quad & pec work
- Focus on technical precision with resisted overload ➔ NOT MOVEMENT FAILURE!!!
Stages of Core Conditioning

- Advanced
- Can perform basic lifts with max weight
- Allow some spinal movement with resisted overload → not terminal ROM
- Focus on speed development through hips, shoulders, and trunk power transference
- Technical components of lifts, working on max weight
- Core specific work, if needed, focuses on movements for goal activity
Show vs. Go??

- Ripped abs are made in the kitchen
- No exercise program will make you lean if your diet is crap.
- Genetics play a role, but so does training, eating right and getting enough sleep
- Fat cells have a memory, once fat, greater chance of staying or becoming fat again
THANK YOU!!!!!!

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- www.deansomerset.com