



*The Reeducation of
Transversus Abdominis
Movement Control in Low Back Pain*

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- Causes
- Principle
- Cognitive stage
- Associative stage
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The Causes of LBP

Low Back Pain

Lumber

Sacrum

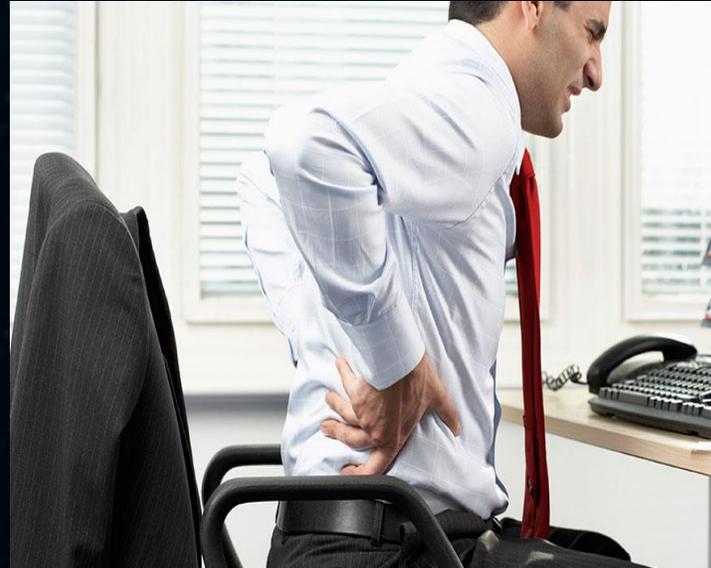
Gluteus area



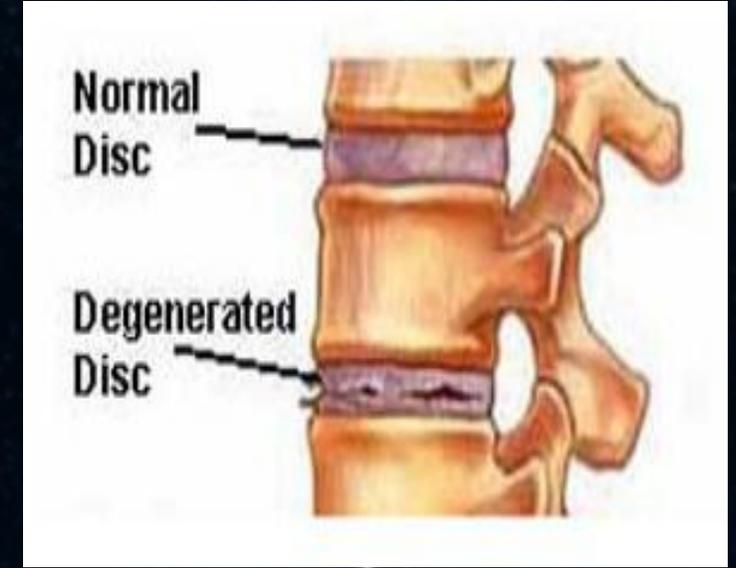
Declines of Lumbar Stability



Muscular Injury



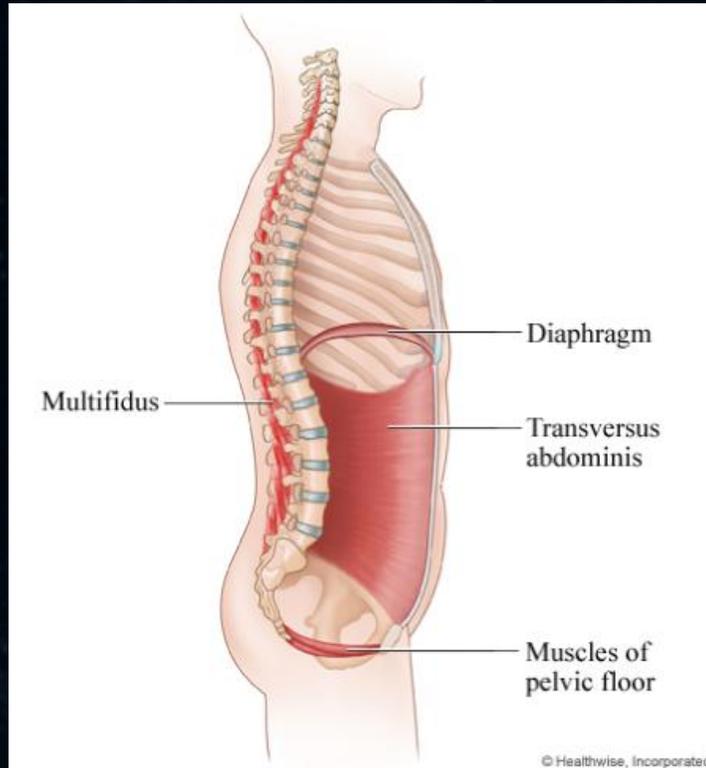
Fatigue



*Facet or Disc
Degeneration*

Decrease in Muscular Control (core muscles)

Core Muscles



Deep Core Muscle Group

Multifidus muscle
Transversus Abdominis
Diaphragm
Pelvic floor muscle

Core Muscles

Core connections

The core refers to any muscle that attaches to the spinal column or the pelvis, which means that back pain can come from an imbalance or injury to any of these muscle groups.

■ Muscles affected

ANTERIOR

POSTERIOR

ABDOMINALS

Rectus abdominis
External obliques

Internal obliques

Transversus abdominis

ADDUCTORS

TRAPEZIUS
Rhomboids

LATISSIMUS
DORSI

SPINAL
ERECTORS and
MULTIDUS

QUADRATUS
LUMBAR

GLUTEAL
COMPLEX

Sources: "Core Advantage: Core Strength for Cycling's Winning Edge,"
by Tom Danielson and Allison Westfahl; images from iStock.com

The Denver Post

Superficial Core Muscle Group

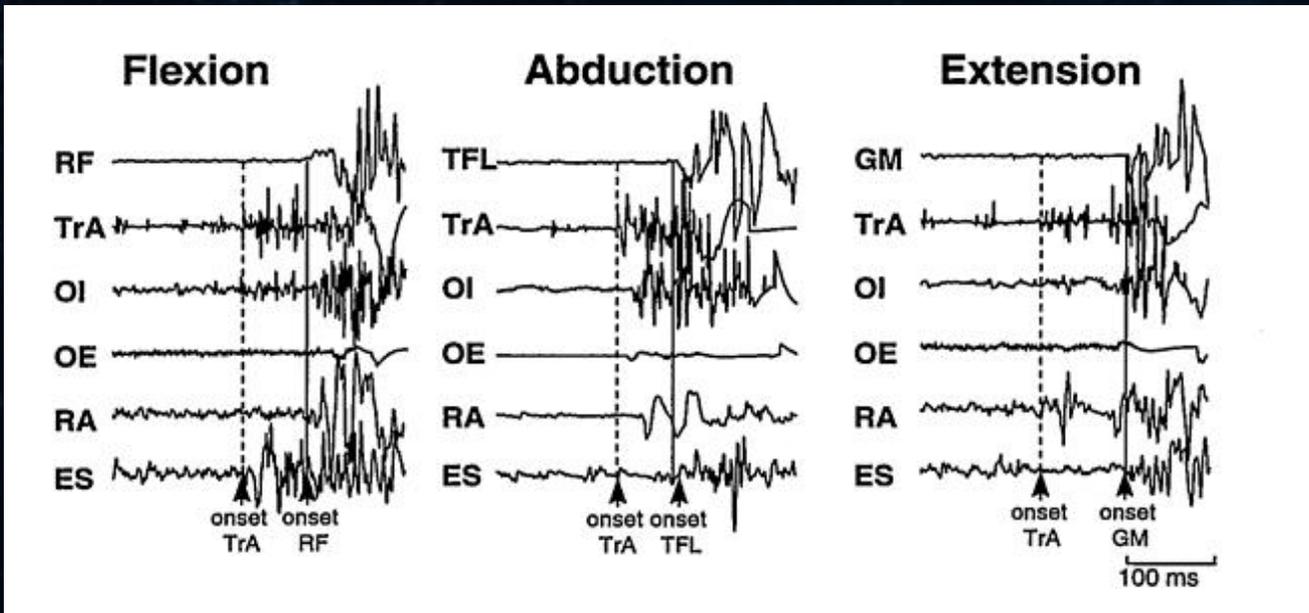
RA & OE & OI

Erector spinae

Quadratus Lumborum

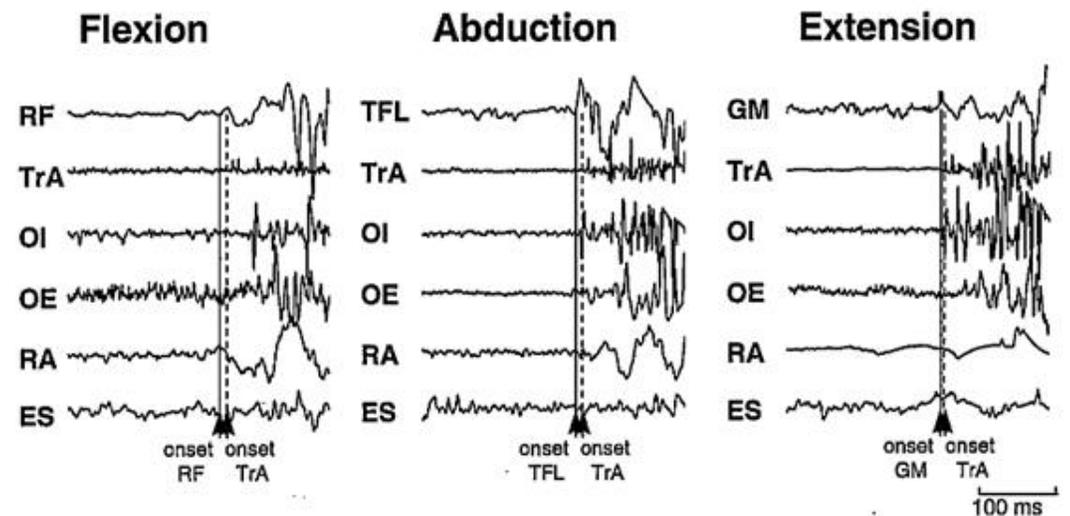
Gluteus muscles

The Delayed Contraction of TrA in EMG



EMG of normal people

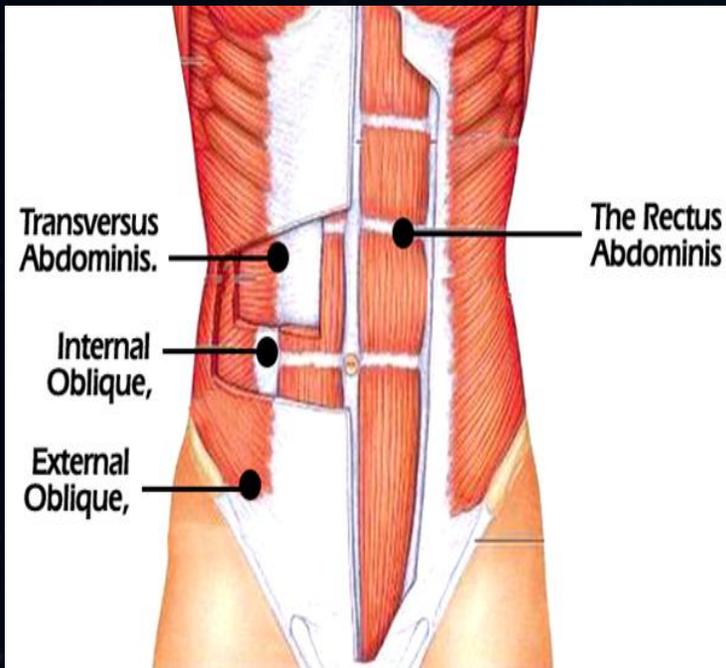
EMG of people with LBP





Principle

The Reeducation Process



www.womenfitness.net



www.ultrasoundcases

Three Stages

- *Cognitive stage*
- *Associative stage*
- *Autonomous stage*

(Richardson, 2001)



Cognitive stage

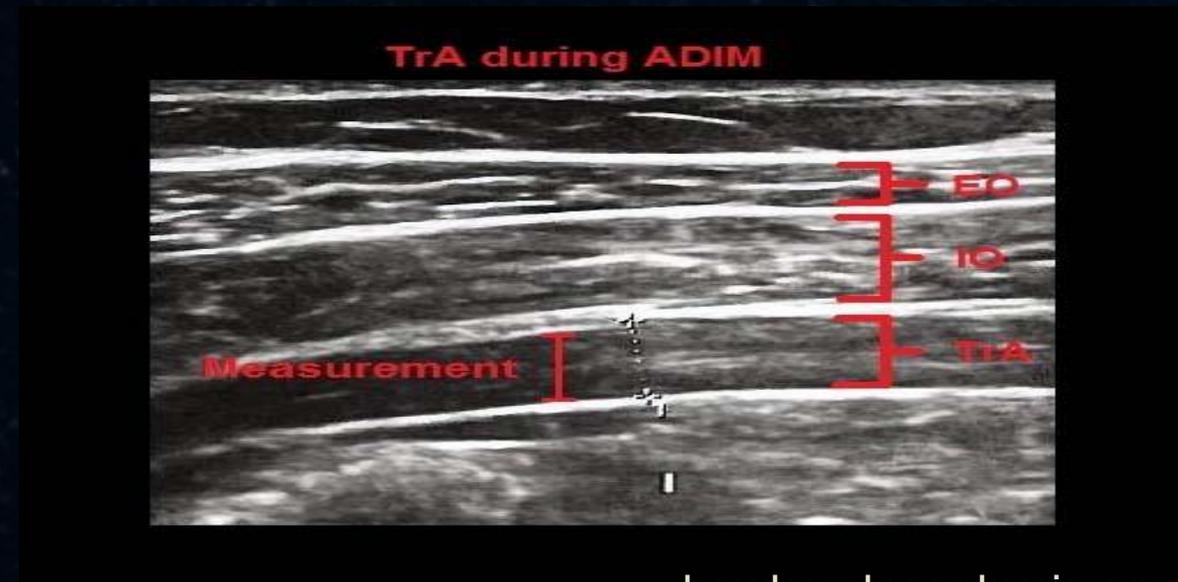
Method

Position: variable

Procedure: education, breath, and maintain

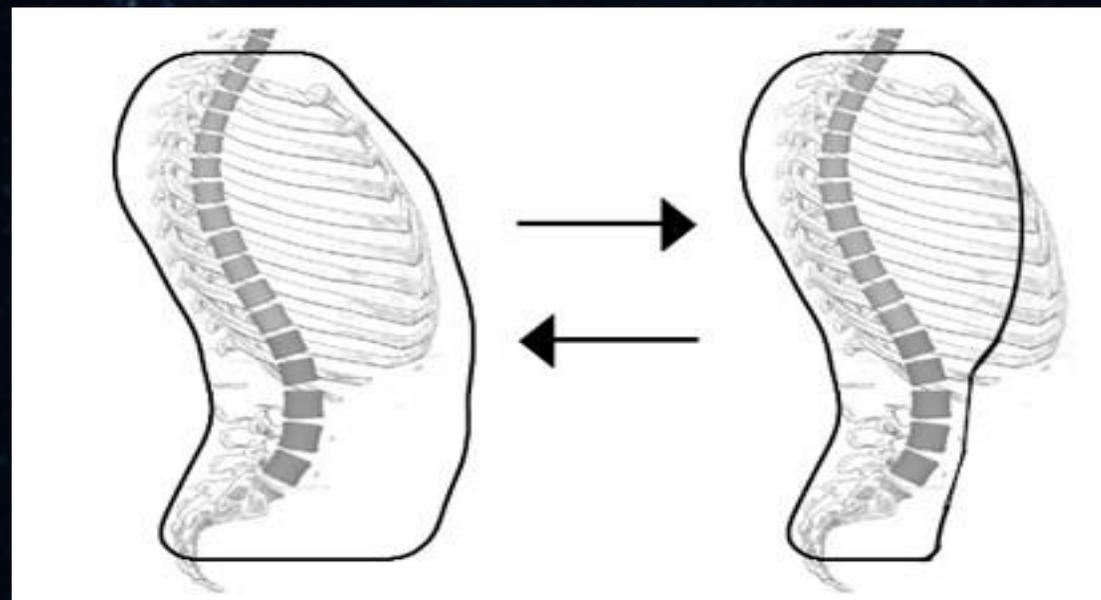
Attention: no substitute patterns

Biofeedback: pressure, surface electrodes, and US



Abdominal Drawing-in Maneuver (ADIM)

- *Abdominal hollowing exercise* (凹腹运动)
 - *Abdominal vacuum* (真空收缩)
- key : draw the belly button toward the spine



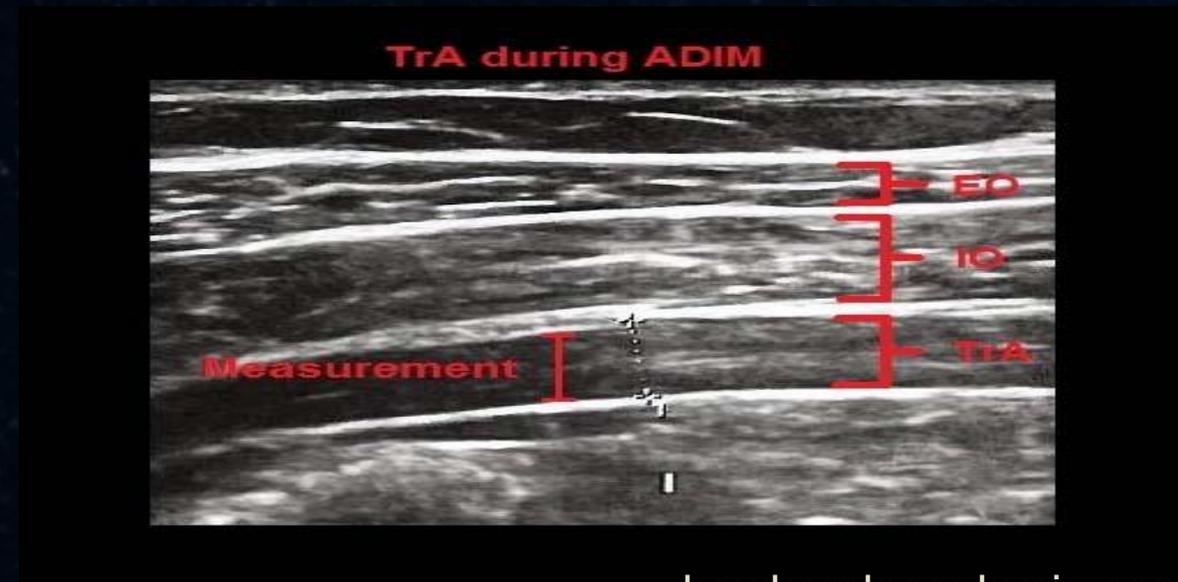
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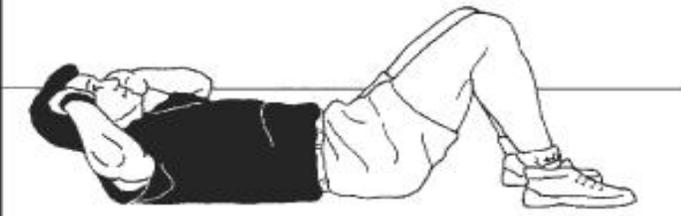




Associative stage

Associative stage

The curl-up movement



Curl-up

Bird-dog



Bridge Exercise

Side Bridge Exercise

Sling Bridge Exercise

1. Lift hips



2. Lift hips in the air



3. Balance plate



4. Abduct





Autonomous Stage

Autonomous Stage

Autonomous movement

Meet the need of daily activity of living

References

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- [2] Gardner-Morse M, Stokes IAF, Laible JP. Role of muscles in lumbar spine stability in maximum extension efforts. Jour Ortho Res. 1995;13(5):802-808.
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- [4] Paul W.Hodges and Carolyn A.Richardson.Delayed postural contraction of transversus abdominis in low back pain associated with movement of the lower limb. journal of spinal disorders.Vol.11,No.1,pp.45-46.
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The image features a dark blue, starry background. In the center, there is a glowing sphere composed of a network of interconnected nodes and lines, resembling a molecular or data structure. This sphere is enclosed within a larger, faint dashed circle. The text "Thank You" is centered over the sphere in a clean, white, sans-serif font.

Thank
You