

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

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A diagram illustrating Piaget's stages of cognitive development. On the left is a large blue sphere labeled "Contents". To its right is a vertical dashed blue line with five white circular nodes. Each node is connected to a horizontal white line, which in turn points to a label in a white cursive font. The labels, from top to bottom, are: "Causes", "Principle", "Cognitive stage", "Associative stage", and "Autonomous stage". The background is a dark blue space with white stars.

Contents

*Causes*

*Principle*

*Cognitive stage*

*Associative stage*

*Autonomous stage*



*The Causes of LBP*



# *Low Back Pain*

*Lumber*

*Sacrum*

*Gluteus area*

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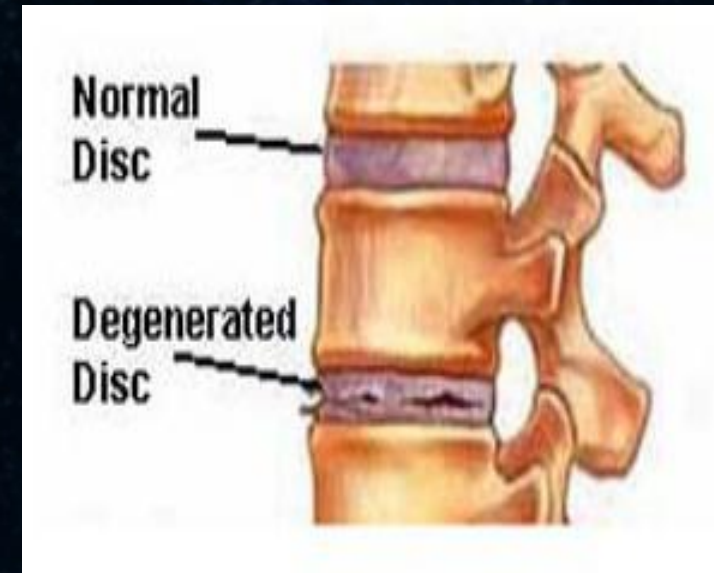
# *Declines of Lumbar Stability*



*Muscular Injury*



*Fatigue*

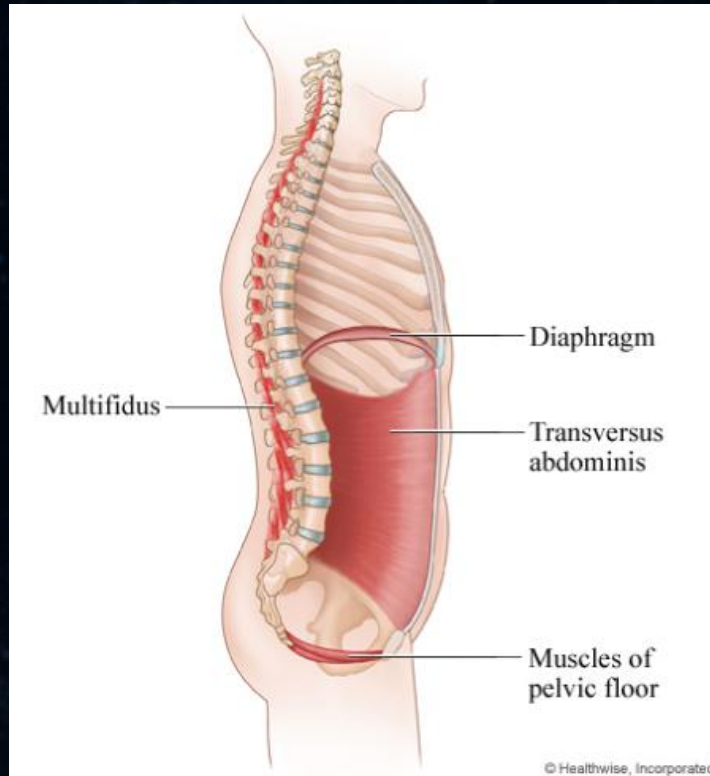


*Facet or Disc  
Degeneration*

*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*

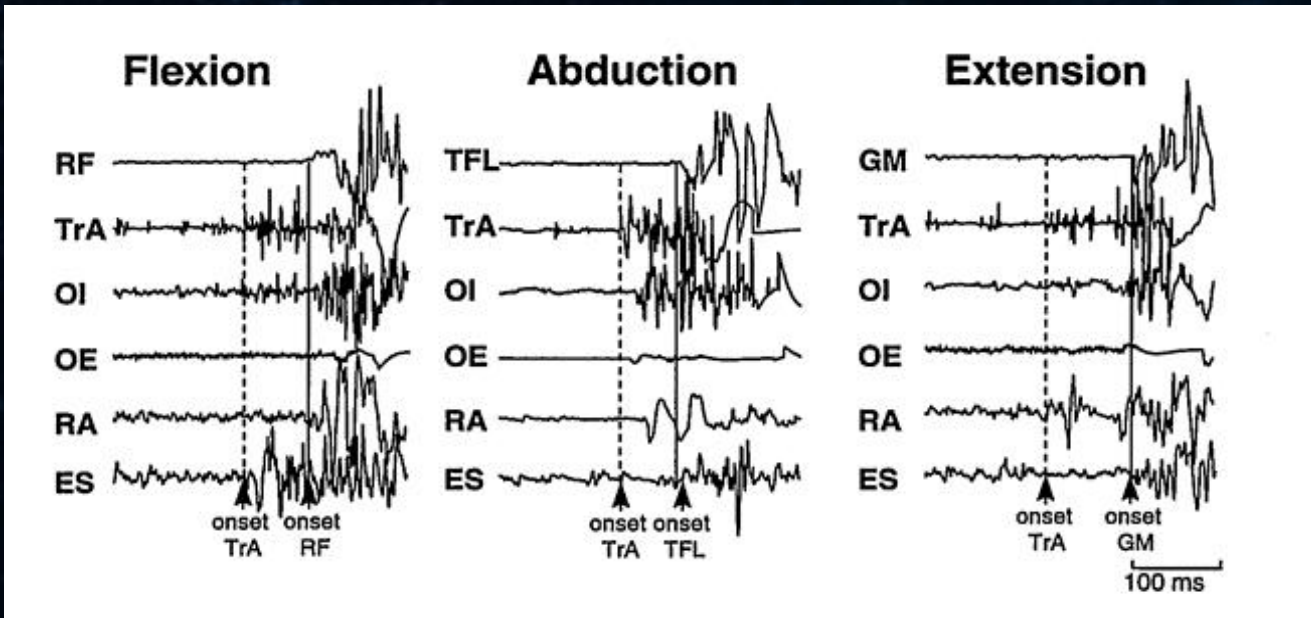
*Erector spinae*

*Quadratus Lumborum*

*Gluteus muscles*

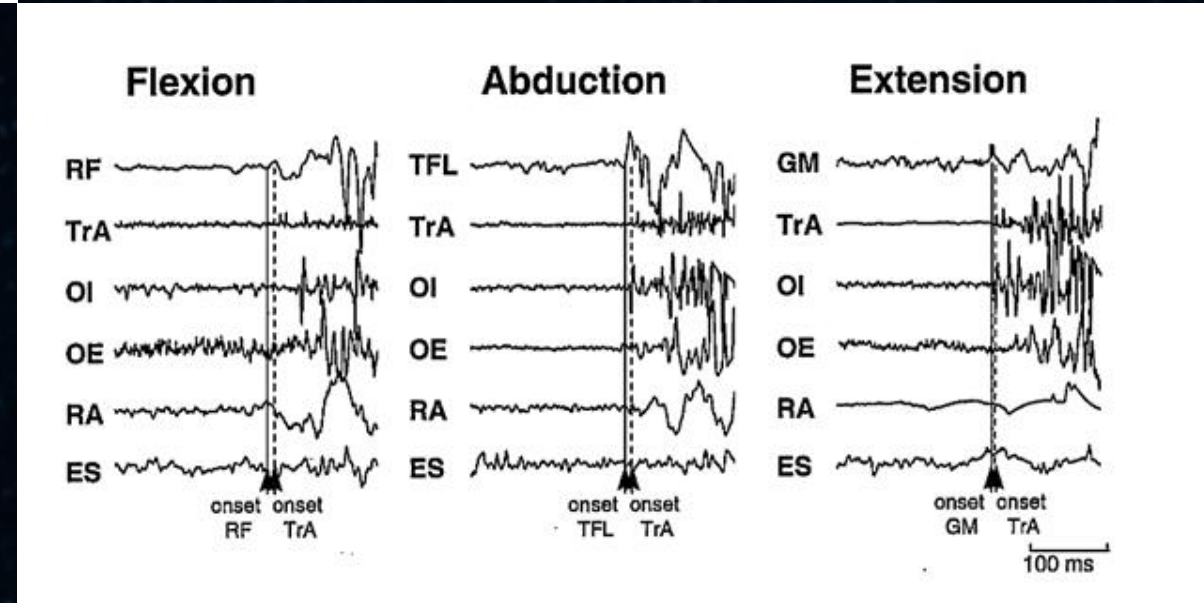


# *The Delayed Contraction of TrA in EMG*



*EMG of normal people*

*EMG of people with LBP*

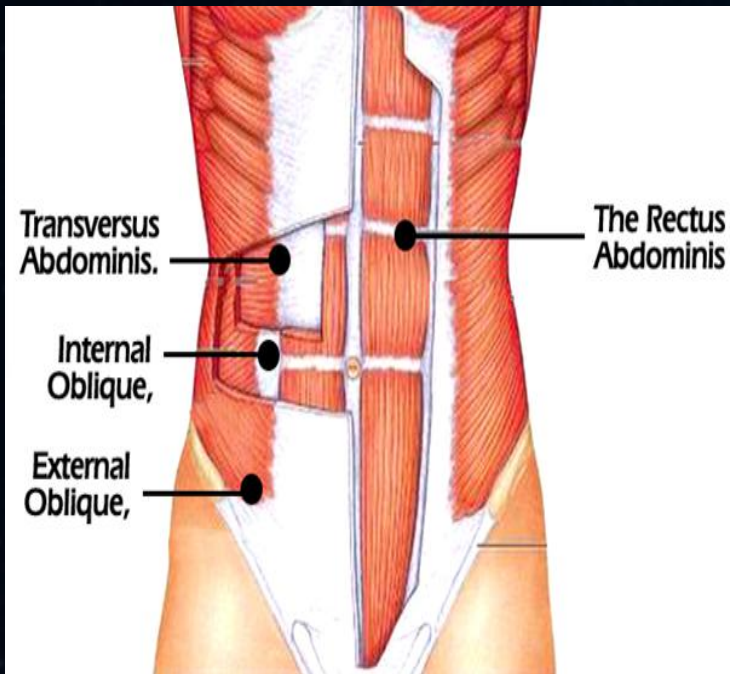






*Principle*

# *The Reeducation Process*



[www.womenfitness.net](http://www.womenfitness.net)



[www.ultrasoundcases](http://www.ultrasoundcases)

## *Three Stages*

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

(Richardson, 2001)





*Cognitive stage*

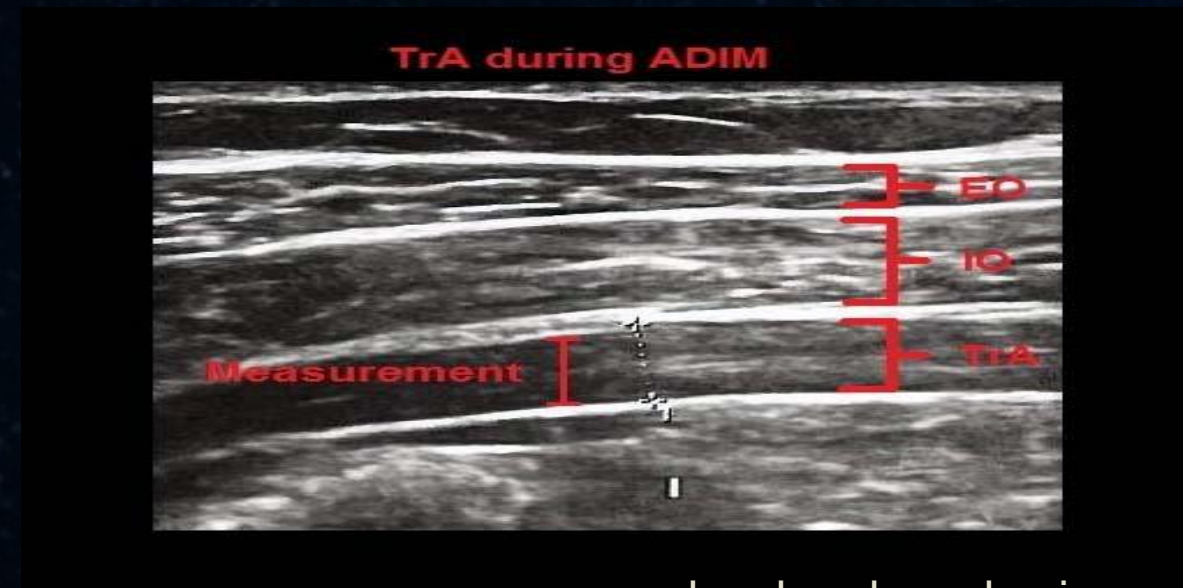
# Method

*Position: variable*

*Procedure: education, breath, and maintain*

*Attention: no substitute patterns*

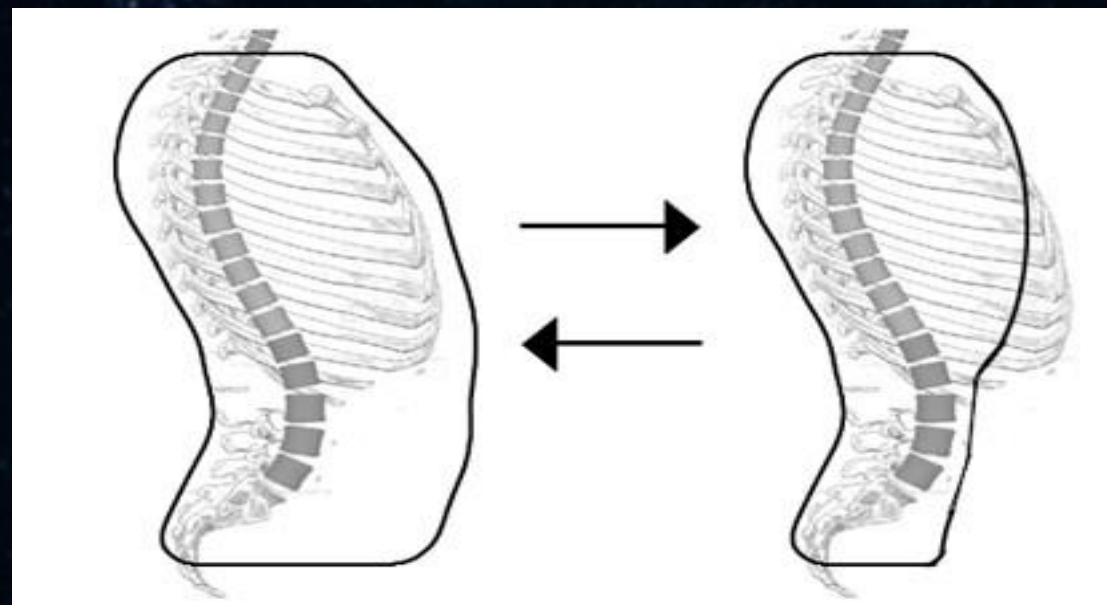
*Biofeedback: pressure, surface electrodes, and US*





# *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*



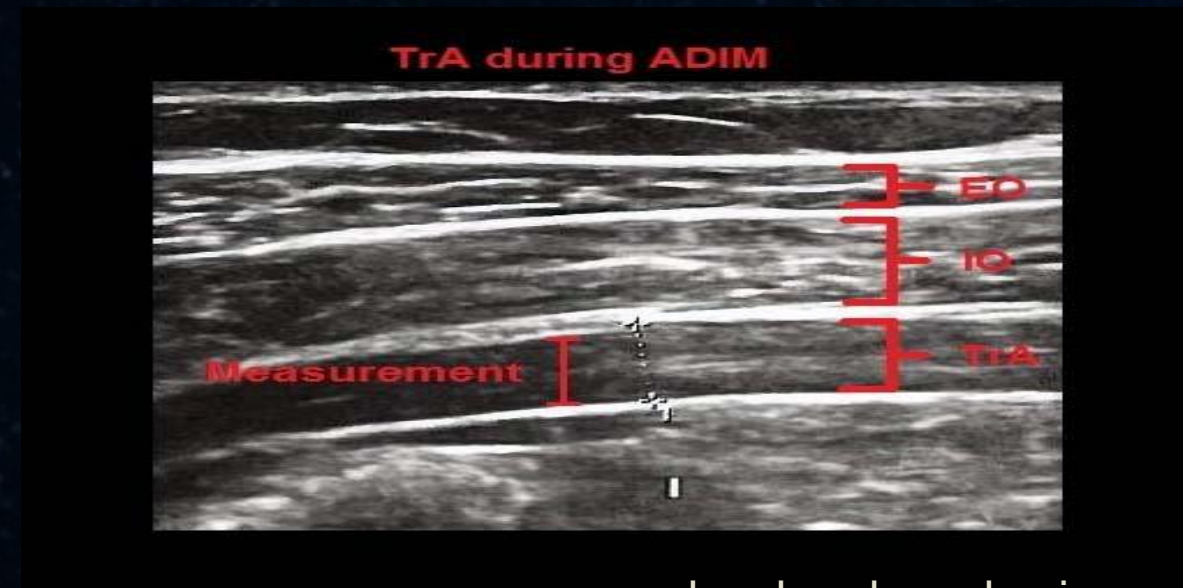
# Method

*Position: variable*

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*Biofeedback: pressure, surface electrodes, and US*



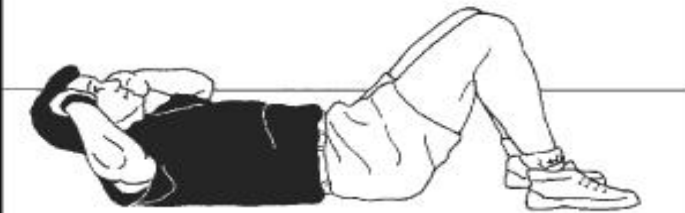




*Associative stage*

# *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*

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*Autonomous movement*

*Meet the need of daily activity of living*

# References

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Thank  
You