

# Core Stabilization, Subsystems & Integrated Exercise Selection

*Stabilizing the Core with Intelligent Program Design*

**Dr. Brent Brookbush** DPT, MS, NASM- PES, CES, CSCS, ACSM H/FS

NASM Master Instructor

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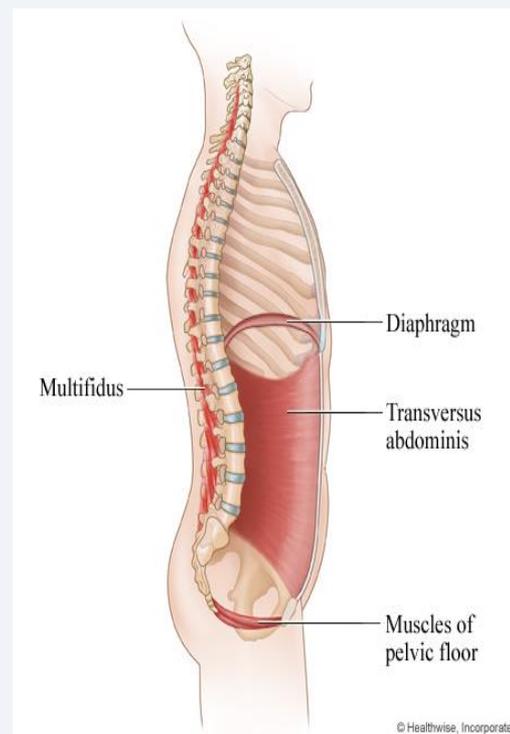
- *A routine is only as effective as the exercises selected – B2*

# Intrinsic Stabilization Subsystem (ISS)

- Transverse abdominis
- Thoracolumbar fascia
- Diaphragm
- Pelvic floor
- Multifidus

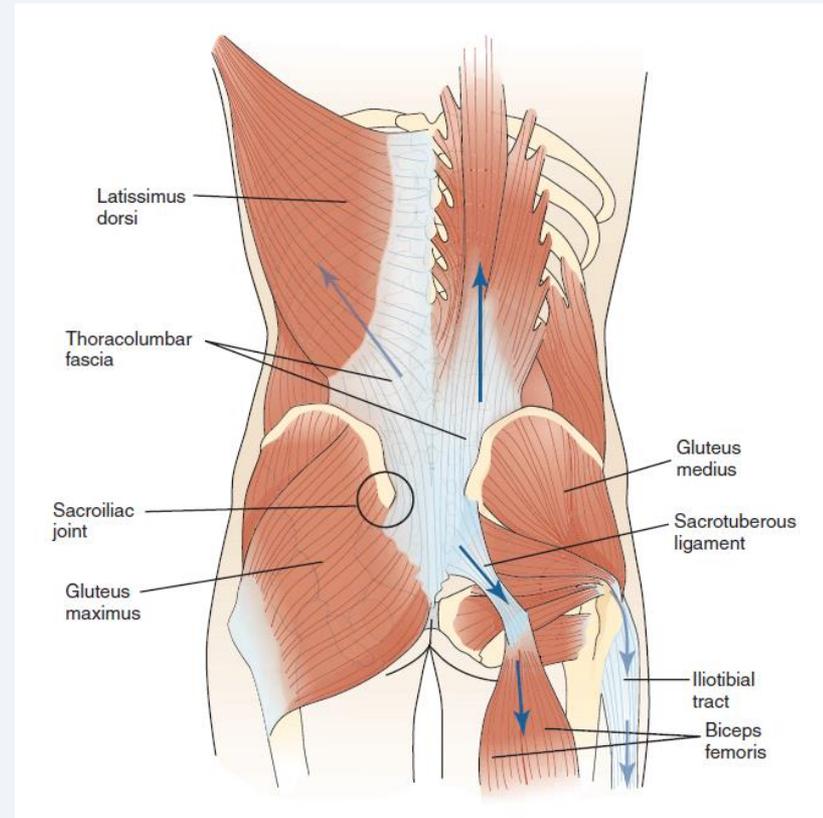
## – Brookbush Institute Additions:

- Internal Obliques
- Transversospinalis



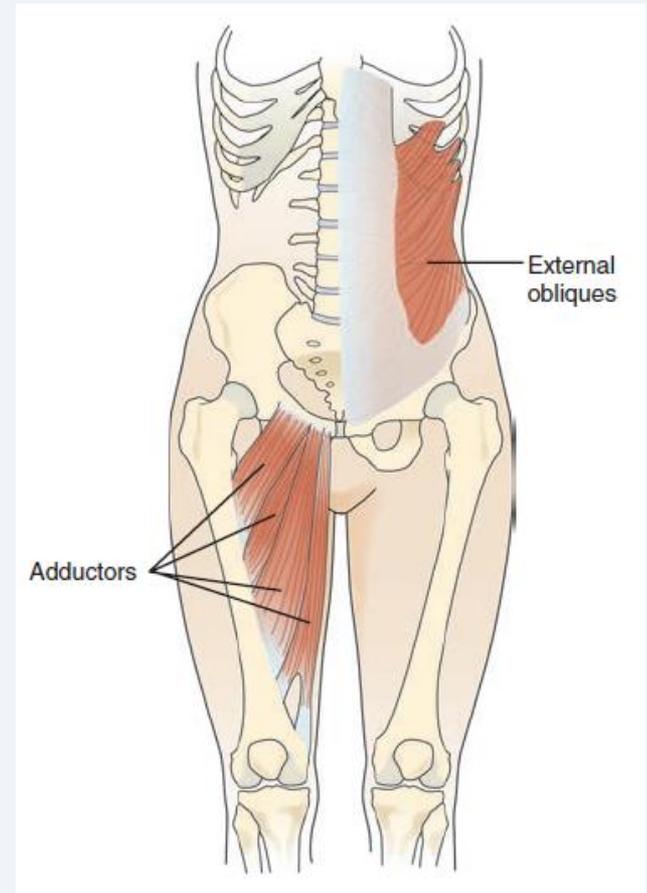
# Posterior Oblique Subsystem (POS)

- Latissimus dorsi,
  - Thoracolumbar fascia,
  - Contralateral gluteus maximus
- **Brookbush Institute Additions:**
- Gluteus medius



# Anterior Oblique Subsystem (AOS)

- External Oblique
  - Abdominal aponeurosis
  - Contralateral adductors
- **Brookbush Institute Additions:**
- Rectus Abdominis
  - Potentially Contralateral Internal Obliques

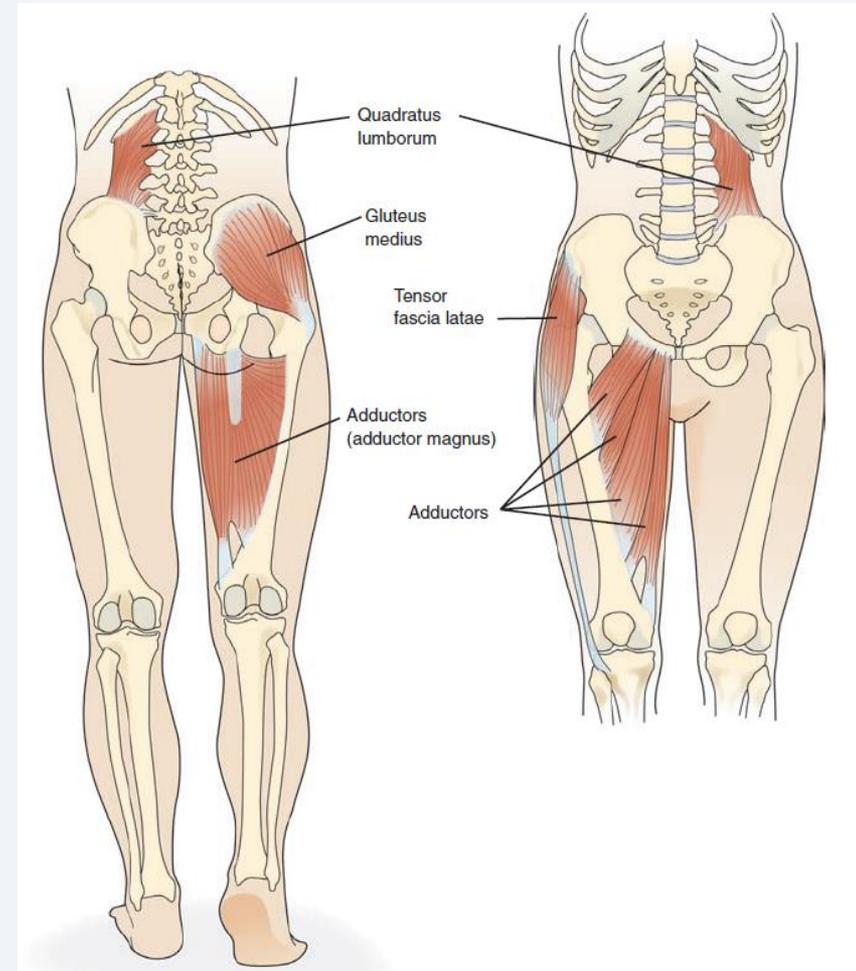


# Lateral Subsystem (LS)

- Gluteus medius
- Adductors
- Contralateral quadratus lumborum

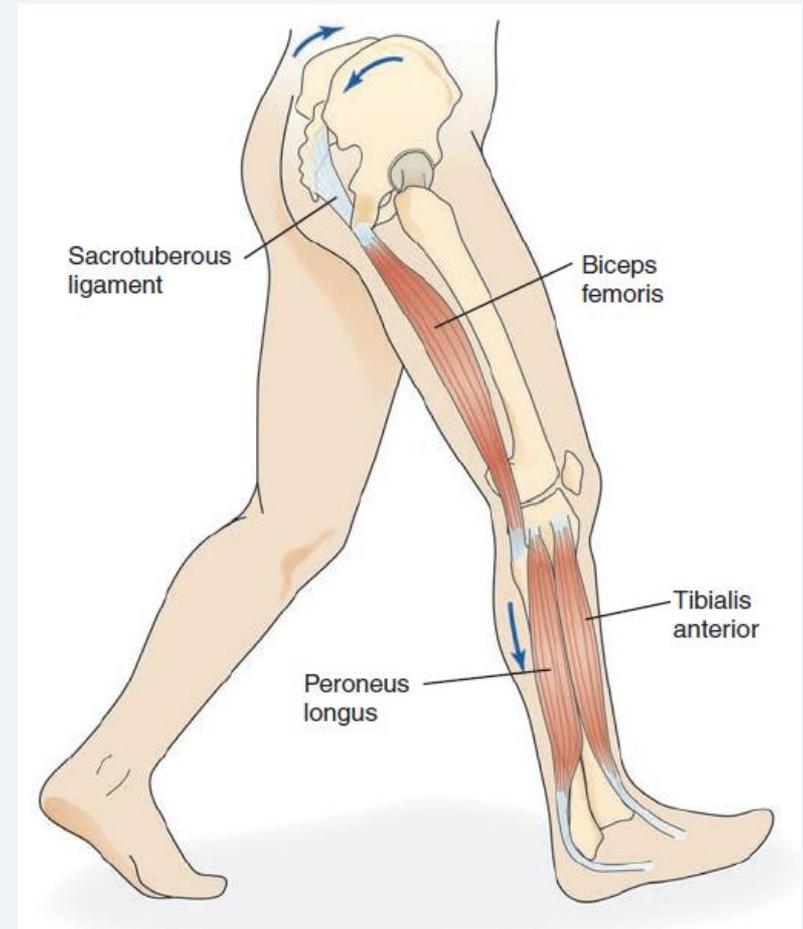
– **Brookbush Institute Additions:**

- Gluteus Minimus
- Tensor fascia latae



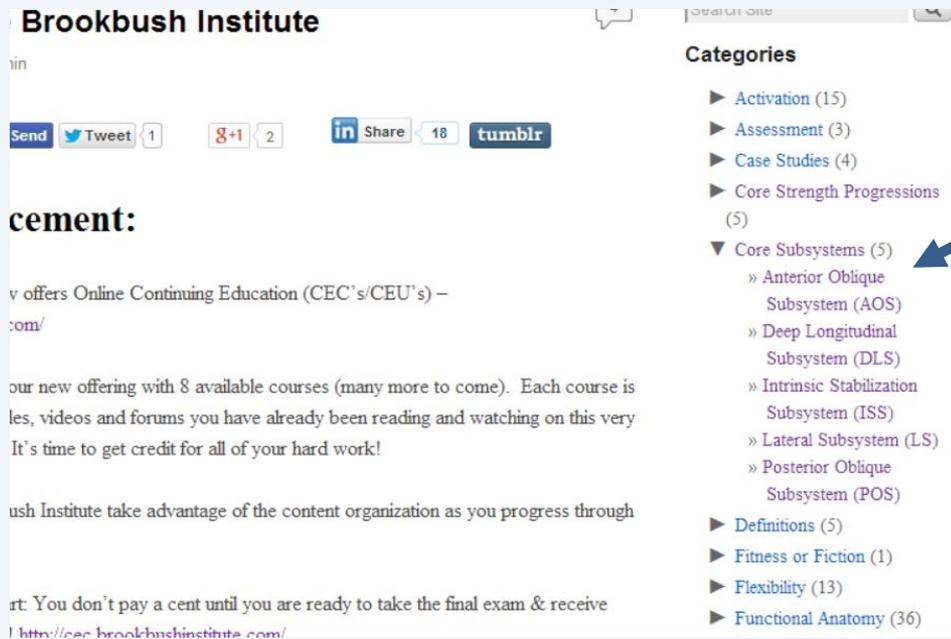
# Deep-Longitudinal Subsystem (DLS)

- Sacrotuberous ligament
  - Biceps Femoris
  - head of fibula
  - Fibularis (Peroneus) Longus
  - Tibialis Anterior
- **Brookbush Institute Additions:**
- Deep layer of thoracolumbar fascia
  - Erector Spinae
  - Potentially the piriformis and adductor magnus via the sacrotuberous ligament



# Further Reading

- BrentBrookbush.com
  - Categories
    - Core Subsystems



The screenshot shows the BrentBrookbush.com website. The main content area is partially visible, showing a section titled "cement:" and text about Online Continuing Education (CEC's/CEU's). The sidebar on the right is titled "Categories" and lists various content categories with their respective counts. A blue arrow points to the "Core Subsystems (5)" category, which is expanded to show its sub-categories: Anterior Oblique Subsystem (AOS), Deep Longitudinal Subsystem (DLS), Intrinsic Stabilization Subsystem (ISS), Lateral Subsystem (LS), and Posterior Oblique Subsystem (POS).

**Brookbush Institute**

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**cement:**

offers Online Continuing Education (CEC's/CEU's) –  
com/

our new offering with 8 available courses (many more to come). Each course is  
les, videos and forums you have already been reading and watching on this very  
It's time to get credit for all of your hard work!

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**Categories**

- ▶ Activation (15)
- ▶ Assessment (3)
- ▶ Case Studies (4)
- ▶ Core Strength Progressions (5)
- ▼ Core Subsystems (5)
  - » Anterior Oblique Subsystem (AOS)
  - » Deep Longitudinal Subsystem (DLS)
  - » Intrinsic Stabilization Subsystem (ISS)
  - » Lateral Subsystem (LS)
  - » Posterior Oblique Subsystem (POS)
- ▶ Definitions (5)
- ▶ Fitness or Fiction (1)
- ▶ Flexibility (13)
- ▶ Functional Anatomy (36)

# Signs of Dysfunction

## Overhead Squat

- Feet
  - Feet Flatten
  - Feet Turn-out
- Knees
  - Knees Bow-in
  - Knees Bow-out
- LPHC
  - Excessive Lordosis
  - Excessive Forward Lean
  - Asymmetrical Weight Shift
- Upper Body
  - Arm Fall Forward
  - Shoulder Girdle Elevation

# Signs of Dysfunction

- Intrinsic Stabilization Subsystem (ISS)
  - Abdominal Distension
  - Change in LPHC alignment
    - Excessive Lordosis (APT)
    - Excessive Forward Lean
    - Asymmetrical Weight Shift
- Under-active or over-active?

# Signs of Dysfunction

- Posterior Oblique Subsystem (POS)
  - Change in LPHC or Femoral Alignment
    - Excessive Forward Lean
    - Excessive Lordosis (APT)
    - Knees Bow In
    - Knees Bow Out
    - Asymmetrical Weight Shift
  - Under-active or over-active?

# Signs of Dysfunction

- Anterior Oblique Subsystem (AOS)
  - Change in LPHC or Femoral Alignment
    - Excessive Forward Lean
    - Excessive Lordosis (APT)
    - Knees Bow In
    - Asymmetrical Weight Shift
  - Under-active or over-active?

# Signs of Dysfunction

- Lateral Subsystem (AOS)
  - Frontal Plane Changes in Pelvis or Hip Alignment
    - Knees Bow In
    - Knees Bow Out
    - Asymmetrical Weight Shift
  - Under-active or over-active?

# Signs of Dysfunction

- Deep Longitudinal Subsystem (DLS)
  - Excessive Lordosis
  - Knees Bow In
  - Knees Bow Out
  - Asymmetrical Weight Shift

– Under-active or over-active?

# Brookbush Institute – Integrated Warm-Up Template

- **Exercise Template:**
  1. **Release**
  2. **Stretch**
  3. Mobilize (When appropriate)
  4. **Isolated Activation**
  5. **Core Support (Optional)**
  6. **Stability Integration (Optional)**
  7. **Reactive Integration (Optional)**
  8. **Subsystem Integration**

# What Exercise?

- Integrated Stabilization Subsystem (ISS)
- Core:
  - TVA Activation (Quadruped)
- Integration:
  - Integrated Movement Patterns

# What Exercise?

- Posterior Oblique Subsystem (POS)
- Core:
  - Bridges (Ball Bridge/Hip Thrust)
- Integration:
  - Legs with Pull (e.g. Squat to Row) with Drawing In

# What Exercise?

- Anterior Oblique Subsystem (POS)
- Core:
  - Chops and Anti-rotation
  - Planks
  - Crunches
- Integration:
  - Legs with Push (e. g. Step-up to Press)

# What Exercise?

- Lateral Subsystem (POS)
- Core:
  - Side Planks
- Integration:
  - Single Leg (Frontal Plane Preferred) with Curl/Scaption/Press

# What Exercise?

- Deep Longitudinal Subsystem (DLS)
  - Inhibit
  - Lengthen
- Integration:
  - No stiff-legged deadlifts
  - No kettle bell windmills
  - No knees out squats

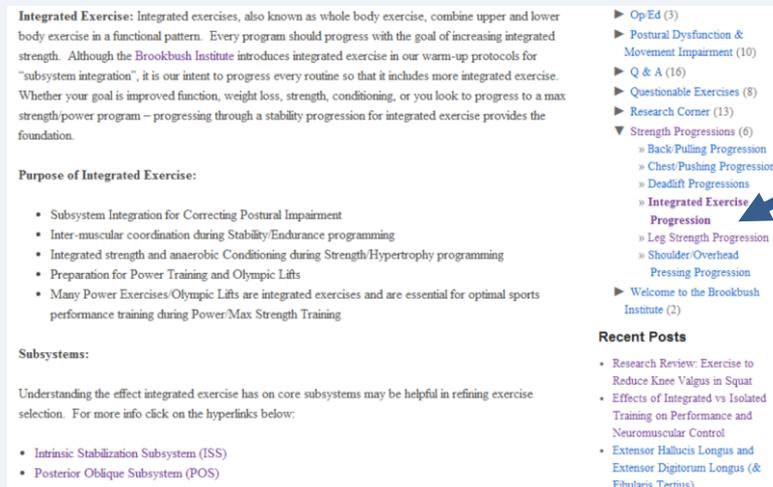
# Further Reading

- BrentBrookbush.com
  - Categories
    - Core Strength Progressions



# Further Reading

- Brentbrookbush.com
  - Categories
    - Strength Progressions
      - Integrated Exercise Progressions



**Integrated Exercise:** Integrated exercises, also known as whole body exercise, combine upper and lower body exercise in a functional pattern. Every program should progress with the goal of increasing integrated strength. Although the Brookbush Institute introduces integrated exercise in our warm-up protocols for "subsystem integration", it is our intent to progress every routine so that it includes more integrated exercise. Whether your goal is improved function, weight loss, strength, conditioning, or you look to progress to a max strength/power program – progressing through a stability progression for integrated exercise provides the foundation.

**Purpose of Integrated Exercise:**

- Subsystem Integration for Correcting Postural Impairment
- Inter-muscular coordination during Stability/Endurance programming
- Integrated strength and anaerobic Conditioning during Strength/Hypertrophy programming
- Preparation for Power Training and Olympic Lifts
- Many Power Exercises/Olympic Lifts are integrated exercises and are essential for optimal sports performance training during Power/Max Strength Training

**Subsystems:**

Understanding the effect integrated exercise has on core subsystems may be helpful in refining exercise selection. For more info click on the hyperlinks below:

- Intrinsic Stabilization Subsystem (ISS)
- Posterior Oblique Subsystem (POS)

**Recent Posts**

- Research Review: Exercise to Reduce Knee Valgus in Squat
- Effects of Integrated vs Isolated Training on Performance and Neuromuscular Control
- Extensor Hallucis Longus and Extensor Digitorum Longus (& Fibularis Tertius)

**Navigation Menu:**

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  - ▶ **Integrated Exercise Progression**
  - » Leg Strength Progression
  - » Shoulder/Overhead Pressing Progression
- ▶ Welcome to the Brookbush Institute (2)

# Relative Activity in Postural Dysfunction

<b>Subsystem</b>	<b>ISS</b>	<b>POS</b>	<b>LS</b>	<b>AOS</b>	<b>DLS</b>
<b>Upper Body Dysfunction</b>	Underactive	Underactive		Overactive	
<b>LPHC Dysfunction</b>	Underactive	Underactive		Underactive	Overactive
<b>Lower Leg Dysfunction</b>		Underactive	Underactive		Overactive

# Effect on Exercise Selection

	<b>Activate</b>	<b>Subsystem Integration</b>	<b>Limit/Inhibit</b>
Upper Body Dysfunction	ISS	POS	AOS
LPHC Dysfunction	ISS	AOS then POS	DLS
Lower Leg Dysfunction	ISS	POS then LS	AOS & DLS

# Common Activity of Each Subsystem

Subsystem	Integration	Common Behavior	Clue
Intrinsic Stabilization	TVA Activation	Under-active	“TVA and Friends”
Posterior Oblique	Legs with Pull (Row)	Under-active	“Almost always underactive”
Lateral	Single Leg w/ Shoulder Series; Frontal Plane Preferred	Dysfunctional	“Victim system”
Anterior Oblique	Legs with Push (Chest Press)	Over-active > Underactive	“Jeckyl & Hyde”
Deep Longitudinal (DLS)	Inhibit	Over-active	“Almost always overactive”

# Brookbush Institute – Integrated Warm-Up Template

- **Exercise Template:**
  1. **Release**
  2. **Stretch**
  3. Mobilize (When appropriate)
  4. **Isolated Activation**
  5. Core Support (Optional)
  6. Stability Integration (Optional)
  7. Reactive Integration (Optional)
  8. **Subsystem Integration**

# Lab Time

- Core
  - Quadruped
  - Bridge
  - Chop or Anti-rotation
- Integration
  - Squat to Row
  - Step-Up to Push
  - Side Step to Balance to Scaption

# Not Sure What to Do?

- Release
- Lengthen
- Activate
- Then:
  1. Quadruped
  2. Bridges
  3. Squat to Row

# Contact Information

- Brent Brookbush
  - [Brent.brookbush@nasm.org](mailto:Brent.brookbush@nasm.org)
  - [Brent@BrookbushInstitute.com](mailto:Brent@BrookbushInstitute.com)
- NASM
  - [www.nasm.org](http://www.nasm.org)
  - 800.460.6276

# Thank You!

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