



19th Annual Professional Football Chiropractic Society Educational Seminar 2025 (Indianapolis, IN)

“Thoracic Spine’s Influence on Low Back, Neck, & Shoulder Dysfunction & Pain”

Presented By: Dr. Gary Gray, PT, FAFS | *Gray Institute*®

Outline

- Chain Reaction® Biomechanics of the Thoracic Spine
- Transformational Zone Relationships of the Thoracic Spine to the Lumbar Spine, Cervical Spine, and Shoulders
- 1D, 2D, and 3D Functional Assessment of the Thoracic Spine
- Mobility Treatment of Thoracic Spine Dysfunction
- Stability treatment of Thoracic Spine Dysfunction
- Functional Manual Reaction® (FMR) therapeutic techniques for Thoracic Spine Dysfunction
- Functional Therapeutic Exercise Progressions for Thoracic Spine Dysfunction

Learners Outcomes and Course Objectives

- Understand the Chain Reaction® biomechanics of the Thoracic Spine
- Describe the functional relationships of the Thoracic Spine to the Lumbar Spine, Cervical Spine, and Shoulders.
- Perform a 1D, 2D, and 3D assessment of the Thoracic Spine
- Design and implement mobility treatment for Thoracic Spine dysfunction
- Design and implement stability treatment for Thoracic Spine dysfunction
- Perform FMR (therapeutic techniques) for Thoracic Spine dysfunction
- Prescribe functional therapeutic exercise progressions for Thoracic Spine dysfunction



Thoracic Spine - Functional Analysis

Single Plane	Sagittal Plane	BLH, PST @ OH, Swing
		BLH, PST @ AN, Swing
	Frontal Plane	BLH, LL @ OH, Swing
		BLH, RL @ OH, Swing
	Transverse Plane	BLH, RR @ SH, Swing
		BLH, LR @ SH, Swing

Single Plane Integrated	ANT Chain Reaction®	RF, ANT, Lunge w/ BLH, PST @ OH, Swing
		LF, ANT, Lunge w/ BLH, PST @ OH, Swing
	PST Chain Reaction®	RF, PST, Lunge w/ BLH, PST @ AN, Swing
		LF, PST, Lunge w/ BLH, PST @ AN, Swing
	SSL Chain Reaction®	RF, RL, Lunge w/ BLH, LL @ OH, Swing
		LF, LL, Lunge w/ BLH, RL @ OH, Swing
	OSL Chain Reaction®	RF, LL, Lunge w/ BLH, RL @ OH, Swing
		LF, RL, Lunge w/ BLH, LL @ OH, Swing
	SSR Chain Reaction®	RF, RR, Lunge w/ BLH, RR @ SH, Swing
		LF, LR, Lunge w/ BLH, LR @ SH, Swing
	OSR Chain Reaction®	RF, LR, Lunge w/ BLH, LR @ SH, Swing
		LF, RR, Lunge w/ BLH, RR @ SH, Swing

Dual Plane	Type 1 to R	LH, RR @ SH, Swing w/ RH, LL @ OH Swing
	Type 1 to L	RH, LR @ SH, Swing w/ LH, RL @ OH Swing
	Type 2 to R	RH, RR @ SH, Swing w/ LH, RL @ OH Swing
	Type 2 to L	LH, LR @ SH, Swing w/ RH, LL @ OH Swing

Tri-Plane	Type 1 to R w/ Extension	(CS, Extended), LH, RR @ SH, Swing w/ RH, LL @ OH Swing
	Type 1 to L w/ Extension	(CS, Extended), RH, LR @ SH, Swing w/ LH, RL @ OH Swing
	Type 2 to R w/ Extension	(CS, Extended), RH, RR @ SH, Swing w/ LH, RL @ OH Swing
	Type 2 to L w/ Extension	(CS, Extended), LH, LR @ SH, Swing w/ RH, LL @ OH Swing
	Type 1 to R w/ Flexion	(CS, Flexed), LH, RR @ SH, Swing w/ RH, LL @ OH Swing
	Type 1 to L w/ Flexion	(CS, Flexed), RH, LR @ SH, Swing w/ LH, RL @ OH Swing
	Type 2 to R w/ Flexion	(CS, Flexed), RH, RR @ SH, Swing w/ LH, RL @ OH Swing
	Type 2 to L w/ Flexion	(CS, Flexed), LH, LR @ SH, Swing w/ RH, LL @ OH Swing

Gravity & Ground Reaction Force

Mass & Momentum

3D

Chain Reaction®

NeuroMusculoSkeletal System

Mobility (3D)

Stability (3D) - Load the Deformity

Engage, Encourage, & Empower

Toothbrush Exercises

For more information on Applied Functional Science®, please visit
<https://grayinstitute.com>.