

Shanti Yoga Teacher Training

Spine and Reflexes: The Mind-Body Connection, Dynamic Balance of all Systems

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Planes of Movement

Anterior/ Posterior

Superior/Inferior

Proximal /Distal

What does my spine consist of?

Passive Bony Structures (sthira) and Active Structures:

Cervical

Thoracic

Ribs - true 1-7, False - 8 - 12, Floating

Lumbar

Discs

Spinal Curves -

Lordosis

Kyphosis

Posture Assessment

Spinal Landmarks

1. Good Posture
2. Relaxed Posture
3. Flat Back
4. Sway back
5. Kyphosis/Lordosis

Spinal Motion- 1. Is primarily dependent on the facet joints 2. Secondly, dependent on the sizes of IVD, shape of vertebra, local muscle actions, attachment of ribs or ligaments

Flexion - Movement in the sagittal or frontal plane that brings the anterior surfaces toward each other Standing Forward Bend, Cat Pose

Extension - Movement in the sagittal or frontal plane that brings the anterior body away from each other think - Cow, Cobra, Bridge, Camel & Wheel

Lateral Flexion - Movement in the vertical or coronal plane that bends the spine to one side or the other - Side angle, Triangle, Half Moon, and Seated Wide- Angle

Rotation - Movement in the horizontal or transverse plane, around the vertical axis of the spine

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Axial Extension - or removal of sagittal curves- lengthening upward - bandhas potentially in mountain pose.

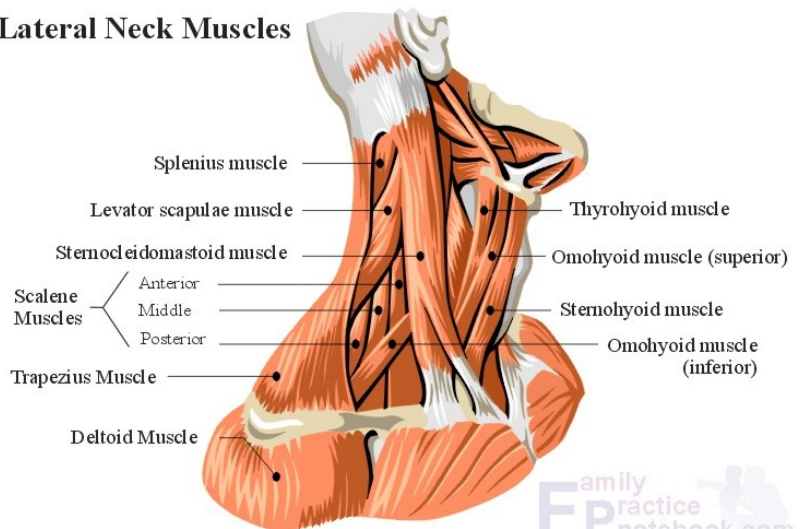
Agonist Vs Antagonist = Flexors vs Extensors, or Adductors vs Abductors

Agonist = mover and Antagonist = one that is responsible for returning a limb to its initial position

	Flexion	Extension	Lateral Flexion	Rotation
Cervical	75	75	35	50
Thoracic	25	25	20	35
Lumbar	35	35	20	5

Physiology of the Joints Volume 3: The Vertebral Column, Pelvic Girdle, and Head, 6th Edition - A.I. Kapandji

Lateral Neck Muscles



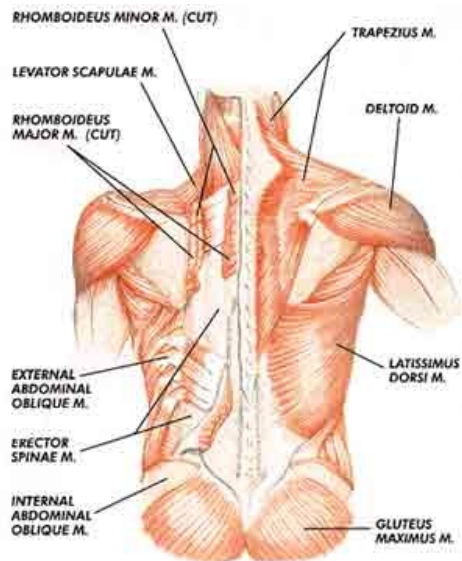
Adapted from Corel Draw 9.0



Major Muscles of the Cervical Spine	Flexion	Extension	Rotation	Lateral Flexion
Sternocleidomastoid	Sternocleidomastoid	Sternocleidomastoid	All	All
Scalene	Yes		All	All
Longissimus Capitis Semispinalis Capitis Splenius Capitis Trapezius		Yes Yes Yes Yes	All All All All	All All All All

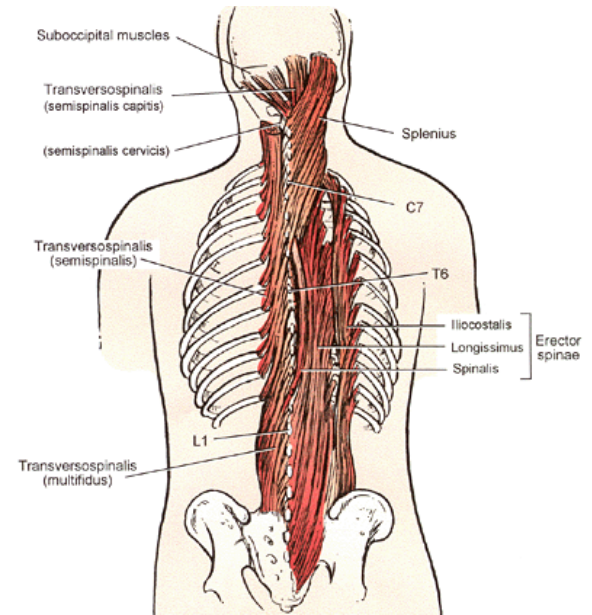
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Muscles of Midback & Chest	Scapular Elevation	Scapular Depression	Scapular Protraction	Scapular Retraction
Serratus anterior "Boxer's Muscle"	Yes		Yes	
Levator Scapulae	Yes		Yes	
Trapezius	Yes			Yes
Rhomboids				Yes
Latissimus Dorsi "Broadest Muscle"		Yes		Yes
Pec Minor		Yes	Yes	
Pec Major		Yes		



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Major Muscles of Lower Trunk	Extension	Flexion	Lateral Flexion
External Oblique		Yes	Yes
Iliacus		Yes	
Internal Oblique		Yes	Yes
Psoas Major		Yes	
Quadratus lumborum		Yes	
Rectus Abdominus		Yes	
Iliocostalis Lumborum	Yes		
Interspinales	Yes		
Longissimus thoracis	Yes		
Multifidus	Yes		Yes
Rotatores	Yes		Yes
Spinales Thoracis	Yes		
Intertransversi			Yes



Flexor Dominance

Sacroiliac joint (SI Joint) - 3-5mm of sagittal movement - Nutation - anterior flexion of the sacrum (ilium moves with it), Counternutation - posterior flexion of the sacrum (ilium moves)

The function of the spine is largely to protect the Central Nervous System. The Central Nervous system consists of the brain and spinal cord

The Peripheral Nervous system consists of

1. Somatic - Spinal Nerves & Cranial Nerves - Voluntary
2. Autonomic - Sympathetic/ Parasympathetic - Involuntary (Not necessarily true for yogis)

Scoliosis - Generally in women, generally a right convexity,

Concavity

Convexity

Teaching a Spinal Class

References

Kinesiology of the Musculoskeletal System: Foundations for Physical Rehabilitation by Donald A. Neumann, PT, PhD

Yoga Anatomy - Leslie Kaminoff & Amy Matthews

Atlas of Human Anatomy - Frank H. Netter, MD

Gray's Anatomy