Applied Anatomy For The Neck & shoulders

This course is intended to provide a practical understanding of the anatomy and biomechanics of the neck and shoulders that is applicable to your yoga practice. Understanding the fundamentals of the musculoskeletal system, learning the descriptive language of movement and the biomechanics of the joints will help your practice with alignment, safety and the ability to work with all body types.

Cervical Spine (anatomy)

Flexible, protective and shock absorbing column consisting of 7 Cervical vertebra C1 -C7 that protect the spinal column, provide a structure for the attachment of muscles, ligaments and tendons.

- Central Canal- vertical column that protect the spinal cord
- Intervertebral foramen- opening between vertebra allows spinal nerves to exit the spine
- Intervertebral Discs- fibrocartilage disc that absorb shock and control movement.
- Facets / lateral mass- synovial joint that provides controlled movement.

- Lordotic Curve- Cervical spine has a natural front to back sway the same as the lumbar spine which allows for shock absorption.
- C1 atlas and C2 axis atypical upper cervical vertebra with unique characteristics that permit greater range of motion of upper cervical vertebra
- Muscles of the cervical spine- posterior neck (paraspinal and occipital), lateral and anterior (scalenes, sternocleidomastoid)
- Biomechanics of movement- range of motion of cervical spine
- Brachial Plexus- path of spinal nerves that leave the neck and provide nerve supply to the arm.

Cervical pain (clinical)

Neck and low back pain in 2015 were the leading causes of global disability and in most common neck pain is considered non specific and caused by poor posture, poor sleeping positions, repetative movements and sustained positions like computers. These conditions also give rise to head aches and migraines and long term arthritic changes. Yoga is one of the most effective disciplines in the preventive and treatment of neck pain. Understanding the biomechanics of poor posture and our other unconscious habits as a repetative injury can illuminate your yoga practice. Examples are often acquired position like, forward head

protrusion, rounded shoulders and upper back and internally rotated arms. We will also cover a few of the most common cervical pain issues.

- head aches
- Sternocleidomastoid syndrome
- Postural syndrome and ergonomic computer set up
- myofascial pain syndrome, trigger pints and nerve entrapments like SCM syndrome
- Thoracic outlet syndrome
- Impingement syndrome. refers to the impingement of the shoulder bursa
- Degenerative Joint Disease DJD

Shoulder Girdle and Scapular Movement

The shoulder girdle forms the functional connection between the neck and back with the shoulder joint. This platform formed by the (scapula calvicle and sternum) control the positioned of the shoulder joint (gleno-humeral joint) and combined provide the shoulders impressive range of motion. Clinically, these muscles create most of the upper shoulder and neck pain associated with over computer use.

- Bones of the shoulder girdle- Scapula, Cavicle and Sternum

- primary muscles of the shoulder girdle- Levator Scapula, Trapezius, Rhomboid, Serratus Anterior.
- Scapular Movements- elevation, depression, abduction, adduction, upward and downward rotation.
- Recommended corrections for postural related neck and shoulder pain.

  -proper computer ergonomics, yoga practice of tadasana to elongate spine, externally rotate arms, opening chest, and adding extension to upper back.

Rotator Cuff

The term rotator cuff is commonly used to refer to all types of shoulder problems. It actually refers to four muscles that are key to the shoulder joint (glenohumeral joint = GL) proper function. They are essential players providing the stability and alinement for all the complex upper extremity movements. The shoulder has great flexability, for example, the rings in gymnastics, but the trade off for great range of motion is instability and is the joint most dislocated. The GL is inherently unstable because the head of the humerus is large ball in comparison to the small saucer like socket or fossa of the scapula (glenoid fossa). So, you need the rotator cuff

muscles or SITS muscles to keep everything in position. SITS muscles are Supraspinatus, Infraspinatus, Teres minor and Subscapularis.

- Other Joints of the shoulder- Sternoclavicular joint, Acromioclavicular, glenohumeral joint.
- Sub acromial bursa
- joint capsule

There are additional muscles that control the shoulder joint that are major contributors. They are clinically important because they are so powerful when they become contracted and shortened they stress and overwhelm the weaker rotator cuff muscles.

Other shoulder muscles; Latissimus Dorsi, Pectoralis major and minor, deltoid

suggested Reading List:

The Key Muscles of Yoga by Ray Long MD Bandhayoga

The Key Poses of Hatha Yoga by Ray Long MD. Bandhayogq

Anatomy of Movement by Blandine Calais-Germain Eastland Press

Atlas of Human Anatomy by Frank Netter	Novartis
The Physiology of the Joints by I.A. Kapandji	Churchill Livingstone
Anatomy of Yoga by Paul Grillley	Pranamaya