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**ANATOMY - SHOULDERS**

Polling a group of my Chair Yoga Seniors through a detailed questionnaire, almost 30% of them indicated that neck and shoulder movements were challenging and/or painful. Even more so than back movements, to my surprise. I think this is why...

“The shoulder must be mobile enough for the wide range actions of the arms and hands, but also stable enough to allow for actions such as lifting, pushing and pulling. The compromise between mobility and stability results in a large number of shoulder problems not faced by other joints such as the hip.” *Source: Wikipedia*

**INTRODUCTION**

This section will cover the anatomy of the shoulders and touch on the anatomy of the arms (which we will cover more in depth in the "Anatomy of the Arms and Hands" section) as they are so dependently interconnected. But as with all anatomy, an area of misalignment can affect multiple areas. If the neck and spinal posture is not aligned properly, then the shoulders will most likely follow the dysfunction. If the shoulders are misaligned in their joint sockets, the arms will be restricted in their range of motion.

Looking out at a group of Seniors, it is obvious there are shoulder and neck issues just by seeing how they hold their bodies. We will look at optimum shoulder and arm function in this section, and what Chair Yoga poses will support these functions. In the "Injuries and Conditions of the Shoulders " section, we will go into detail of what happens when there is dysfunction.

We will look at the range of motion of the shoulder joint and associated arm movements to understand how it works as both a hinge and rotation joint. I encourage you to follow along and do these movements as you read through this document so that you can physically feel the movements of the shoulder.

**SHOULDER**

Here is the very basic anatomy of the shoulder joint (aka glenohumeral joint) showing the ball and socket joint where the humerus bone of the arm meets the scapula. As with all joints, there is cartilage on both ends of the connection to allow for smooth movement.

The glenohumeral joint has been analogously described as a golf ball (head of the humerus) sitting on a golf tee (glenoid fossa). It is a much shallower ball and socket joint than the hip – which allows for greater mobility and range of motion, and like the Wikipedia quote above states, means there is much less stability in the joint.
ADDUCTION/ABDUCTION OF THE SHOULDER
This is the movement of the arm as it is raised out to the side (abduction) and lowered back down to the side or across the midline (adduction). We see this movement in Warrior 2 and when combined with external rotation, we use this movement in the arm circles of Sun Salutations.

People with a torn rotator cuff or shoulder impingement may experience pain in the abduction movement (lifting the arm outward), so always reinforce stopping when there is any pain.

Warrior II
Notice how Esme can reach (abduct) both arms to the same height. You will find that many students will drop the back arm down.

Cue tip:
"Look behind you and make sure that your back arm is the same height at your front arm."

Sun Salutation Circle
In this sequence, the palms are facing upward as the shoulders abduct. Thus, this movement both abducts and externally rotates the shoulder joint. You will find that many Yoga sequences utilize combinations of joint motions and thus why Yoga is so beneficial to the health of our joints, muscles and bones. Everything gets love and attention!
Life Force Reach
This shoulder motion requires shoulder mobility and strength, especially if held for several breaths.

Cactus
This pose is a staple in my arsenal for healthy shoulder poses. Ideally, the arms are at a 90 degree angle, but you will find with Seniors, this can be quite challenging.

One Arm Lift
This movement I incorporate into a simple Sun Salutation flow that I use in my Wheelchair class. One arm is raised and lowered with the breath, and then repeated on the other side.

**FLEXION/EXTENSION OF THE SHOULDER**
This shoulder movement is where I see the most restriction when I look out at my group of Seniors. I see their shoulder joint being frozen into a rounded forward position (protraction with slight internal rotation), usually due to a tightness of the pectoralis muscles pulling the shoulder forward. In that situation, their humerus bone is not positioned correctly in the shoulder socket, and this will limit the flexion (lifting the arm forward and up) of the joint.
This image shows a more detailed view of which muscles are involved in the Flexion of the Shoulders in Warrior I.

You will not see this full Flexion of the shoulder very often with our Seniors as their pectoralis muscles are often quite tight restricting the full reach of the arms upward.

Miss Sassy Pants
Here is an example of various versions of shoulder extension (combined with internal rotation). This is an example of a "progressive" series that offers options from easiest to more challenging.

Arm Reach
In the Posture Chapter, we looked closely at alignment, but this photo will show how full flexion looks: vertical alignment.
Axial Extension-Alternates
This sequence helps to remind the students how important reaching is in their day to day lives. Encourage them to reach for the top shelves or the top of the doorway whenever they can.

On the inhale, raise one arm up while cueing them to lengthen their spine. On the exhale, lower it down. Repeat on the other side and continue for several cycles.

Add the legs and then “March in Place”. Keeping the rhythm of the opposite arm and leg with the breath. Even add a “hup, two, three, four” rhythm!

I love to watch the students trying to alternate the right and left side. I tell them that we will keep on marching until everyone finds the pattern!
EXTERNAL AND INTERNAL ROTATION OF THE SHOULDER
Looking at the muscles involved in this shoulder movement, we can see that the deltoid and pectoralis muscles in the shoulder, along with the latissimus dorsi muscles along the back side, allow for freedom of movement in the joint to its full capacity of rotation. If these muscles are tight and constricted, then the joint will be limited in its motion.

Simple Tray
This movement is one of the best ways to experience the opening across the front of the shoulder joint through internal and external rotation. It stretches the pectoral muscles in the front and strengthens the rhomboids in the back. Additionally, it places the shoulder blades at the most optimum position on the back.

Begin with hands on your stomach, with your shoulders in a neutral position. Open your arms, keeping the elbows bent and upper arm hugged to torso. Notice how the hands are facing up, thereby rotating the shoulders backward and the shoulder blades downward. Tighten your muscles and breathe.
Internal Rotation
This movement is used in the following Yoga poses and helps to keep the musculature of the shoulder flexible to support a healthy range of motion in the joint.

As with all movements, always remind your students that if it hurts to do a pose - back off and stop at the point of support and comfort.

Shoulder Stretch
This is a great prep pose for Eagle. You can see that Paula has significant range of motion and she is keeping her stretched arm straight.

The Hug
The hug is pretty accessible to almost everyone and it stretches the same group of muscles, but not quite as intensely. I always start with this pose in the Eagle "progression".

Eagle
This is the full wrap of the Eagle pose and it is quite challenging for anyone with shoulder issues. Make sure to keep both shoulders down. (My right shoulder is slightly lifted and could be lowered a bit.)
**Shoulder Hinge**

This pose rejuvenates the muscles of the upper back and reminds the shoulder that it has a hinge function as well as a ball and socket. The hinge moves forward and back. This pose can be challenging, always encourage your students to move into the range of motion that is doable and does not cause pain.

Begin with bending your arms and placing your hands so that your palms are facing outward and your fingernails on your temple. Inhale as you begin the sequence.

As you exhale, begin to draw the elbows together as you curl your fingers inward. Keep your thumbs facing down.

See how close you can get the elbows to touch, making sure you keep them aligned. If you find that one shoulder is more mobile than the other, stop at the point where both elbows and shoulders feel even. Repeat the hinging movement several times.
**Key learning Point**

Protraction and retraction of the Scapula: Here is a view of what is happening with the scapula (shoulder blade) in this hinging forward (protraction) and backward (retraction) motion. You can see how it stretches the trapezius muscles which are usually very tight in our Seniors, and the retraction of the shoulders strengthens the rhomboids, which tend to be weak and overstretched because the shoulders are pulled forward and locked in protraction by tight pectoralis muscles. That is why these poses feel good: to stretch something that feels tight, strengthen what is weak and bring circulation and prana to an overworked thoracic spine.

And that is why the Hunch (aka Slump) feels so comfortable - the body takes the path of least resistance!

---

**The Hunch**

This is a default posture that we see so often in Seniors and deskworkers.

Notice the contraction of the pectoralis muscles in the front of the chest, and the expansion of the rhomboid muscles on the back which become lax and weakened.
External Rotation
This is a challenging movement for many Seniors as they can tend to have tight pectoralis muscles along with limited range of motion in their shoulder joint in order to draw their shoulder blades together.

This is the movement of the shoulder blades found in such poses as Cactus, the Back Cleavage and a few others we will see in the following photos. It is the retraction of the scapula as seen in this diagram that is aided by external rotation. This squeezing together motion of the scapula engages and strengthens the rhomboids which are needed to keep the shoulder blades in their correct position.

These are by far my most favorite shoulder openers to offer to Seniors.

Back Cleavage
This term came from a Yoga teacher in one of our Workshops. I wish I could remember her name so I can give her credit. But it is so descriptive! By engaging the rhomboid muscles between the shoulder blades and squeezing them together, you can actually create a cleavage on the back side of you!

Start in Cactus arms, but do not draw the shoulders or elbows back farther than the front of the chest.

Working only the rhomboid muscles, begin to squeeze the shoulder blades together as if there was a tennis ball in between them and you are trying to keep it in place.

Realize that for many people, this will be a very hard sensation to feel as they have lost a lot of strength in these muscles from overstretching in the forward hunch posture.
**Shoulder Plug-in**

There are perhaps a handful or two of poses that give you that ah-ha moment of either physical release or anatomical understanding. This is one of them. Thank you Kathleen Porter, author of *Natural Posture Pain-Free Living, the Practice of Mindful Alignment* for this ah-ha moment!

This movement sequence brings the whole shoulder joint back and down into its natural position for working on the computer, driving or doing anything with your hands and arms. It counteracts scrunched up shoulders!

---

**Start with arms in Cactus pose pushing the arms slightly back beyond the horizontal shoulder plane.**

---

**Begin to bring the arms down to your sides as low as you can go. Feel what is happening to your shoulder blades. They should feel like they are dropping down your back.**

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**When you arms are down as far as you can go, ideally, you want to feel your elbows squeeze into the sides of your ribs.**

---

**Next, bring the forearms in front of you without moving your shoulder position. The palms should be facing up.**

---

**Now, flip the palms down without moving your shoulder or arm position. You can feel your shoulder blades locked down and securely positioned a bit lower on your back than where they were when you started.**

---

**This is the ideal height for your keyboard, armrest or work space. You can even tilt your fingers down a bit to create more ease in the posture. Or place them on your lap and be still. Ah-ha! Ease!**

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**Key Learning Point**

Elevation (Upward) and Depression (Downward) Movement of the Scapula: This lifting movement of the shoulder is what can cause tight neck and shoulder muscles. Notice the work of the levator scapula (it elevates the scapula), it can get chronically tight in deskworkers or anyone who continually shrugs their shoulders.

Additionally, the trapezius muscles are active in this movement and you can see how these muscles can get tense, tired and chronically contracted by holding the shoulders up.

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**The Shrug**

I kiddingly tell my students to do this pose a gazillion times a day! It is so simple yet so effective.

Inhale and lift the shoulders tightly up toward the ears scrunching tightly.

Exhale and roll the shoulders back and down turning the palms up. Repeat several times. Even add an audible “sigh” to the shoulder release.
Senior Chair Yoga with Sherry Zak Morris

ANATOMY OF THE SHOULDERS

Key Learning Point

Upward and Forward Rotation of the Scapula: This movement allows us to hug, hold, rock a baby and carry things in our arms.

Since this movement stretches the upper back muscles, it actually feels quite good to most people. But, I remind the Seniors that we are stretching muscles (the rhomboids) that are actually pretty weak if the shoulders are rolled forward like in the Hunch. What we really need is a good retraction and adduction of the scapulae!

Cat/Cow

This sequence is a staple in almost every Yoga class as it can be done kneeling, standing behind a chair or sitting in a chair. It imbibes the spinal discs with fluid through a gentle flowing movement with our breath, as well as encouraging healthy shoulder and upper back mobility.

Make sure to scootch forward in the chair to enable space for the back to move in both directions. The pelvis should be tilted forward to begin. On the inhale, arch the back and squeeze the shoulder blades together.

On the exhale, draw the belly in and round the spine back into the chair and tuck the chin. Repeat this cycle following the breath.
MULTI-DIMENSIONAL SHOULDER MOVEMENTS

The following two sequences incorporate many of the shoulder ROM patterns. These are great to do after you have warmed up the shoulders a bit.

Celtic Cross

I never want to make generalizations about any person or any condition, but often times there is a disconnect from the body when people have suffered injuries or have mobility limitations in certain areas. This is a somatic movement that is small enough, and perhaps a little complicated enough, to force the student to have to pay attention and make that connection from their brain to their body. The movement incorporates elevation, aDduction, suppression and aBduction of the scapula as it touches 4 separate points in the movement - thus a "Celtic Cross". Once the connection is made, the movement can become more fluid and circular. Take it 3-4 circles on each side, slowly, while paying attention to the movement and which areas feel more fluid.

Up: Lift one shoulder up and scrunch the shoulder to the ear - elevation.

Back: Roll the shoulder back, drawing the scapula toward the spine - aDduction, and the arm turns slightly open.

Down: Depress the scapula down making more space between the ear and shoulder.

Forward: Roll the shoulder forward, aBducting the scapula and then lift it back up to neutral and begin again.
The Tray
I like this multi-dimensional sequence for an invigorating flow for the shoulders, arms and wrists. After 4-5 rounds, you can feel the warmth and mobility throughout the upper body. And it is fun to try NOT to spill the tray! It is great for deskworkers and Seniors love it too! It is a complicated movement flow, so it stimulates the brain while it stimulates the body.

I only do the first 3-4 poses of this sequence in my Wheelchair Yoga class and take it very slow so they can follow me.

Start with the hands open in front of you, like you are holding a tray.
Move the arms outward and lift them up toward your shoulders, keeping the palms facing up at all times.
Turn the hands inward toward the ears.
And even more so if the wrists will move a bit more.
Next, take the hands out and around until the fingers point in towards the middle of your body. Remember to keep the palms up and don’t spill anything!
Turn the hands backward and start to move the arms back.
Start to straighten the elbows and turn the wrists outward, again keeping the palms facing up.
Move the hands back in towards you and bring them back to the original starting position. Continue this sequence at least 3-4 times because that is how long it takes to get the hang of it!
CIRCUMDUCTION
This is the ball and socket rotation of a joint. There are so many fun and creative ways to encourage full rotational movement in the shoulder joint. I often refer to this movement as "multi-dimensional" which I learned from Erhard Rohrmuller, a Physiologist specializing in Soma-Kinetic movement.

Life Force Reach - with arm circles
This is a variation of a common pose I like to offer to my Seniors. In this version, we are rotating the arms in the shoulder joint to lubricate and encourage mobility.

Arm circles supports the healthy ball and socket function of the shoulder joint, so this sequence helps the student to feel this rotation. If you find that they are bending their elbows in order to get their palms facing upward, then most likely their shoulder mobility is restricted and they are using their wrists to perform this action. Cue for the movement to originate in the shoulder.

This pose could be broadened to include full circumduction of the shoulder joint by letting the circles grow bigger. This is referred to as doing "capsule work" (i.e. working the joint capsule to encourage mobility). Do this slowly and progressively with Seniors and anyone with Rotator cuff injuries, if there is sharp, shooting or tingling pain in the shoulder or down the arm stop the movement.

Extend both arms out to the side and keep reaching and extending. The elbows are straight and imagine someone is pulling your fingers on each side, making you longer and straighter. Encourage the students to feel the sensation in the inner elbow, under the forearm and through the fingers. That is life force energy moving inside.

With the arms extended, elbows straight, and palms down, rotate the arms forward in circles.

Reverse the movement by turning the palms up and rotating the shoulder joint backward.
(Note how my right palm is not completely facing upward due to my restricted shoulder joint mobility in my right shoulder. This will be a common issue with Seniors.)
SHOULDER MUSCLES

Muscles - Locked Long and Locked Short
I really like this concept of "locked" muscles as it explains how our muscles get into a position that is hard to get out of. As we have seen many times throughout this Chair Yoga Training program through photos and discussions, many Seniors have the forward leaning kyphotic posture. Most of everyday life patterns (answering the phone, unlocking doors, cleaning, typing, etc.) use only 50% of our shoulder function.

Looking at the muscles of the shoulder, we can now understand how the front shoulder muscles (pectoralis group) are contracted and thus termed "locked short". The muscles that support the shoulders on the backside (rhomboid group and trapezius primarily) are expanded, "locked long". Being locked into these positions, the muscles are weakened and cannot function in their appropriate way to keep the shoulder girdle vertically aligned above the pelvic girdle. Sedentary postures requiring minimal activity actually disables both sets of muscles and thus the entire shoulder girdle unit can gradually break down. The result - poor posture and the pain that goes with it.

The Pectoralis Major and Minor
These muscles in the front of the body need to be opened and lengthened. Tight pectorals can inhibit breathing and heart function over time.
These are locked short.

The Rhomboids
These muscles are lengthened and weak. Oftentimes people feel they should stretch them to bring relief to the tightness, when in actuality, they need to be shortened and strengthened.
These are locked long.

The Erector-Spinalis-Thoracis muscles
These muscles are responsible for keeping your posture straight and for arching or extending your back. Weak spinalis thoracis muscles may contribute to poor posture and mid-back pain.

Lengthen - all chest opening poses are beneficial to expanding the front body.

Strengthen - virtually any pose that involves extending your mid-back and trying to bring your shoulder blades closer together strengthens your rhomboid and spinalis thoracis muscles.
Cactus
I love Cactus for the heart-opening pose that it is, but I find this pose to be quite challenging to hold for too long for many of the Seniors.

If your Senior has a Cactus pose that looks like this, there is not much benefit of a heart or chest opening stretch happening.

These are great options for Norma. See how she can move her shoulders back so much easier without having to lift her arms up. Just holding and breathing into this pose is so beneficial for her.

Rotator Cuff
Because shoulder pain, stiffness and injuries are quite common in many people, I created an entire section on "Conditions and Injuries of the Shoulder", so please refer to it for more specifics. Below is the basic anatomy of this particular muscle group so we can understand its function when all is normal.

The rotator cuff is a group of tendons and muscles in the shoulder, connecting the upper arm (humerus) to the shoulder blade (scapula). The rotator cuff tendons provide stability to the shoulder; the muscles allow the shoulder to rotate.

The muscles in the rotator cuff include:
- Teres minor
- Infraspinatus
- Supraspinatus
- Subscapularis

Each muscle of the rotator cuff originates at the scapula, and has a tendon that attaches to the humerus. Together, the tendons and other tissues form a cuff around the humerus.

Source:
### ANATOMY OF THE SHOULDERS

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<th>Attachment on humerus</th>
<th>Function</th>
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<tr>
<td>Supraspinatus muscle</td>
<td>supraspinous fossa</td>
<td>superior and middle facet of the greater tuberosity</td>
<td>abducts the arm</td>
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<tr>
<td>Infraspinatus muscle</td>
<td>infraspinous fossa</td>
<td>posterior facet of the greater tuberosity</td>
<td>externally rotates the arm</td>
</tr>
<tr>
<td>Teres minor muscle</td>
<td>middle half of lateral border</td>
<td>inferior facet of the greater tuberosity</td>
<td>externally rotates the arm</td>
</tr>
<tr>
<td>Subscapularis muscle</td>
<td>subscapular fossa</td>
<td>lesser tuberosity (60%) or humeral neck (40%)</td>
<td>internally rotates the humerus</td>
</tr>
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**Chest Stretch**

This sequence strengthens the supraspinatus and infraspinatus muscles.

Using the breath to link with the movement, begin with the arms forward at shoulder height and the palms facing each other. Exhale, on the inhale open the arms as wide as you can, and exhale back to center. Complete several rounds of the movement linked to the breath.
Deltoid Muscle
It is called so because it is in the shape of the Greek letter Delta (triangle). It is also known as a common shoulder muscle and performs the following functions:

- Lateral portion - abducts the shoulder.
- Anterior portion - flexes and medially rotates the shoulder.
- Posterior portion - extends and laterally rotates the shoulder.


Muscle atrophy represents the end result of many causes, including aging and disuse, which can eventually restrict the ability to lift the arms and carry things - which our Seniors continually need to do. Thus why holding strengthening poses for several breaths can help build muscles mass and strength.

Life Force Reach
Any pose that is held for several breaths can help to strengthen the muscles and the bones. Offer up some wrist movements to deflect the attention from the holding time.

Airplane Twist
This sequences provides multiple benefits for both shoulder strength and a healthy unleveraged twist for the spine.

Begin with arms out to the side. Inhale, and on the exhale draw the belly in and twist to one direction. Inhale back to center, and exhale to the other direction. Repeat several times building more arm strength.