How to assess, correct and prevent this common condition in your clients.

Fitness professionals often encounter clients who have noticeably rounded shoulders. It is important to understand that this condition—commonly known as round shoulder syndrome—involves more than just compromised posture. In fact, the forward positioned scapulae characterized by this syndrome are usually part of a larger postural problem that affects the entire upper body and spine. Moreover, the syndrome can sometimes be the result of dysfunction in the lower parts of the kinetic chain. Round shoulder syndrome is also accompanied by muscle imbalances of the shoulder girdle and upper spine.

Clients who present with compromised posture and muscular imbalance may be unable to perform certain exercise movements correctly. These limitations can reduce the effectiveness of any training program and put clients at an increased risk of injury. Therefore, fitness professionals need to be able to assess and help correct round shoulder syndrome in the clients they train.
This article identifies the common postural malalignments, muscle imbalances and faulty movements associated with round shoulder syndrome, along with some simplified assessment techniques for effective analysis. Also covered are exercise principles group fitness instructors and personal trainers can employ to help correct and prevent round shoulder syndrome.

**Defining Round Shoulder Syndrome**

Poor posture, muscle imbalances and faulty movement patterns are the hallmarks of round shoulder syndrome. These three components are intimately related in that each one can eventually lead to the others. Round shoulder syndrome can also be the underlying cause of other conditions, such as rotator cuff problems, neck dysfunction, and pain associated with headaches. Note that round shoulder syndrome is sometimes referred to as *upper cross syndrome* (Janda 1998).

**Poor Posture**

Proper posture allows efficient movement and places minimal stress on the body’s tissues. When the upper body is properly postured, the spine is erect with no exaggeration of cervical lordosis and thoracic kyphosis. (*Lordosis* refers to an abnormal, increased degree of forward curvature of the spine, whereas *kyphosis* refers to a humplike curvature of the spine.) The head is centered over the spine with the ears positioned within the body’s plumb line. The scapulae rest against the rib cage with their medial borders near the spine; as a result, the shoulders are positioned within the body’s plumb line. The arms hang down with the palms facing the sides of the body.

The compromised posture seen in round shoulder syndrome generally deviates in the following ways: There is an increase in cervical lordosis and thoracic kyphosis, with the head protracted forward so the ears are positioned to the front of the body’s plumb line. The scapulae are pulled forward on the rib cage so the shoulders are in front of the body’s plumb line. This deviation typically results from excessive kyphosis of the thoracic spine. In addition, the medial borders of the scapulae are often pulled away from the rib cage into a “winged” position. The glenohumeral joints of the shoulders are internally rotated, positioning the arms so the palms face back.

Although the posture associated with round shoulder syndrome is fairly consistent among individuals, it is important to realize that each client can have unique variations. For example, one client may have the syndrome despite displaying fairly good spinal and head alignment. Another client may present with protracted scapulae but without significant winging.

**Muscle Imbalances**

Traditionally, the term *muscle imbalance* has been used to refer to an imbalance of strength between agonist and antagonist muscles. Two classic examples would be strong quadriceps with weak hamstrings and overdeveloped pectoral muscles with underdeveloped posterior deltoids and rhomboids. However, for the purposes of explaining round shoulder syndrome, the definition of muscle imbalance needs to be more comprehensive.

In addition to referring to an inequity in strength between agonists and antagonists, muscle imbalance can refer to an imbalance of *muscle length*. Muscles that are shortened tend to be stronger than their antagonist muscles, whereas muscles that are lengthened tend to be weaker than their antagonist muscles (Sahram 1995).

Perhaps even more germane to round shoulder syndrome is the fact that muscles can be *neurally* imbalanced. Muscles that are strong and shortened are also neurally facilitated, whereas muscles that are weak and lengthened are neurally inhibited. Neurally facilitated muscles contract early and with excessive force during move-ments, whereas neurally inhibited muscles are late to respond and do so with less force. The result is that the muscle groups fire in an uncoordinated way, leading to faulty movements. Facilitated muscles can be compared to a car engine that is “revved up” and will respond excessively once put into gear. Inhibited muscles are like an engine that is sputtering and will be slow and weak to respond.

For the purposes of this article, muscles that are shortened, stronger and facilitated are referred to as *dominant* muscles; muscles that are lengthened, weaker and inhibited are referred to as *passive* muscles. See “Common Muscle Imbalances” above for a list of the dominant and passive muscles associated with round shoulder syndrome.

It is also important when looking at muscle imbalances to go beyond simply comparing agonists to antagonists. Synergistic muscles that work together to produce a movement can also become imbalanced. Also, antagonist muscles are often imbalanced compared to stabilizers.

**Faulty Movement Patterns**

Clients with round shoulder syndrome will ultimately exhibit faulty movement patterns. Because some muscles are neurally facilitated and some are inhibited, firing patterns of muscle groups become uncoordinated. In addition, because some muscles are shortened while others are lengthened, normal movement patterns become compromised.

### COMMON MUSCLE IMBALANCES

<table>
<thead>
<tr>
<th>Dominant Muscles</th>
<th>Passive Muscles</th>
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</thead>
<tbody>
<tr>
<td>upper trapezius</td>
<td>deep neck flexors</td>
</tr>
<tr>
<td>levator scapulae</td>
<td>serratus anterior</td>
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<tr>
<td>sternocleidomastoid</td>
<td>rhomboids</td>
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<tr>
<td>pectoralis minor</td>
<td>middle/lower trapezius</td>
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<td>pectoralis major</td>
<td>posterior deltoid</td>
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The three common faulty movement patterns related to the muscle imbalances of round shoulder syndrome are “shrugging” of the scapulae, “winging” of the scapulae and protraction of the head.

**Shrugging of the Scapulae**
If the upper trapezius becomes dominant, the scapulae will typically become excessively elevated when performing certain movements; this results in “shrugging” of the scapulae. For example, during shoulder abduction, the scapulae must upwardly rotate for the arms to be properly raised overhead. The upper trapezius, lower trapezius and serratus anterior work together to properly perform the upward rotation of the scapulae (see illustration below).

However, in clients with round shoulder syndrome, the upper trapezius becomes dominant while the lower trapezius and serratus anterior become passive. This imbalance between synergists results in faulty upward rotation of the scapulae, and excessive elevation occurs due to the dominant upper trapezius. Inappropriate elevation of the scapulae can also be observed during other movements that require upward rotation. It is commonly seen during rowing motions when clients attempt to retract the scapulae.

**Winging of the Scapulae**
Winging of the scapulae typically occurs when a passive serratus anterior is accompanied by a dominant pectoralis minor. The medial borders of the scapulae become separated from the rib cage due to this muscular imbalance. This separation increases during forward pressing movements of the upper extremities, such as push-ups. Winging can also occur during front raises (shoulder flexion), especially during the eccentric phase of the motion. If the muscle imbalance is severe enough, winged scapulae will be visible during postural assessment (see the “Round Shoulder Postural Checklist” sidebar).

**Protraction of the Head**
During protraction of the head, the skull moves forward while the chin juts out—a pattern accompanied by an increase in cervical lordosis. This faulty head movement is the result of a muscle imbalance between the passive deep neck flexors and dominant upper trapezius, levator scapulae and sternocleidomastoid muscles. Head protraction often occurs during abdominal crunches and when straining to lift heavy weights in the upright position.

**Causes of Round Shoulder Syndrome**
Round shoulder syndrome doesn’t occur just randomly; also, it is a condition that anyone can develop. Of course, some individuals are predisposed to the syndrome due to heredity or past history of injury. Studies have shown that the onset of the syndrome usually occurs early in life (Janda 1998).

Improper posture is the primary cause of round shoulder syndrome. Sitting for hours hunched over an improperly positioned computer can lead to the syndrome. Holding a shoulder in a protective position after a severe injury also contributes to the condition. A new mother continually breast feeding and carrying her child is likewise at risk.

Many individuals develop round shoulder syndrome due to emotional distress. The gangly young boy who doesn’t want to tower over his classmates will slouch down. The adolescent girl who matures earlier than her friends starts to hunch over to hide her breasts. Individuals who are emotionally beaten down may manifest their feelings by assuming a physical slump.

Movement also plays an important role in the development of round shoulder syndrome. Overemphasizing movements in the same direction can lead to muscle imbalances that, in turn, cause poor posture. These repetitive movements can occur during the activities of daily living, in an occupational setting or during recreational pursuits. Individuals confined to a wheelchair, certain factory workers and overenthusiastic bench pressers are all at risk of overemphasizing forward-pushing movements. These types of repetitive movements can lead to overdevelopment of the pectorals, a protracted shoulder girdle and changes in movement patterns.

Lack of movement also contributes to round shoulder syn-

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**ROUND SHOULDER POSTURAL CHECKLIST**

**Side View**
- ✔ Ear is centered with body’s plumb line.
- ✔ Degree of cervical lordosis is not exaggerated.
- ✔ Degree of thoracic kyphosis is not exaggerated.
- ✔ Shoulder is centered with body’s plumb line.
- ✔ Palms are facing the sides of the body.

**Posterior View**
- ✔ Head is level.
- ✔ Shoulders are level.
- ✔ Scapulae are within 3 inches of the spine.
- ✔ There is no visible winging of the scapulae.
- ✔ Elbows are pointing back.
drome, as dominant muscles quickly tighten, leading to muscle imbalance. Tight muscles alter movement patterns and pull the body into malalignment.

Finally, movement compensations after an injury can lead to round shoulder syndrome. For example, a common way to compensate for loss of function at the glenohumeral joint is to excessively elevate the scapula when trying to raise the arm.

**Identifying Round Shoulder Syndrome**

With a little experience, fitness professionals can recognize clients with round shoulder syndrome in a matter of seconds. The forward head, rounded shoulders and backward-facing palms are easy to identify. Personal trainers should perform a total-body postural analysis of all clients prior to training; this analysis should include looking for signs of round shoulder syndrome. Group instructors can scan for the syndrome when checking the form of their class participants; those who exhibit positive signs for round shoulder syndrome can stay after class for an individualized assessment.

**Conducting a Postural Examination**

When performing a postural examination, keep the following points in mind:

- **Know Your Limitations.** Keep the assessment simple. If you are relatively new to performing postural assessments, utilize the expertise of other trainers and health care professionals.

- **Assess the Client’s Posture in a Natural State.** Take notice of the client’s posture when you first meet. During the assessment try to avoid using the word *posture*, as it can cause the client to unwittingly “straighten” up and assume an unnatural stance.

- **Minimize the Clothing Worn by the Client During the Assessment.** In order for you to visibly detect malalignments, suggest that female clients wear shorts and a jogging bra if their comfort level permits. Have males remove their shirt if they have no objections.

- **Look for Associated Muscle Imbalances.** Familiarize yourself with the imbalances associated with round shoulder syndrome (see “Common Muscle Imbalances” sidebar). Look for over- and underdeveloped musculature.

- **Use the Postural Checklist Included in This Article.** See the “Round Shoulder Postural Checklist” sidebar for a handy guide as to what items to observe during the postural assessment.

**Posterior View Assessment**

To begin the postural assessment, stand in back of the client. From that vantage, check that the neck is straight and the head is level (as opposed to being tipped right or left). Note if the shoulders are level. Looking at the medial borders of the scapulae, see if they are roughly 3 inches from the spine (as opposed to being protruded forward); note also if the borders are pulled off the rib cage in a winged position. Check the elbows to see if they are pointing straight back.

Following the posterior assessment, take this opportunity to quickly check for overdevelopment of the upper trapezius and other neck extensors. Note any lack of development in the rhomboids, middle and lower trapezius, and posterior deltoid.

**Side View Assessment**

Have the client turn to the side. From this angle, check again to see if the head is centered; the ear should fall within the body’s plumb line. Note the degree of cervical lordosis and thoracic kyphosis. See if the shoulder is centered within the body’s plumb line. Observe whether the palm faces the side of the body or if it faces backward due to an internally rotated glenohumeral joint.

After performing the side assessment, take a moment to note any overdevelopment of the pectorals and atrophy of the deep neck flexors. Check the client from both the side and the front.

**Analyzing Movement Patterns**

After conducting the postural assessment, you need to analyze how the client performs several basic moves. This step will enable you to identify faulty movement patterns, such as shrugging or winging of the scapulae and protraction of the head. The movement patterns you will want to observe include shoulder abduction and flexion, a modified push-up and neck flexion.

- **Shoulder Abduction & Flexion Test.** Stand behind the client and have her lift her arms to the side and overhead. Check for any shrugging of the scapulae caused by a dominant upper trapez-

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**CAUSES OF ROUND SHOULDER SYNDROME**

Although round shoulder syndrome is often genetic or the result of a past injury, it can affect anyone. Here are some causes of the syndrome; note that most are avoidable and correctable.

- poor posture
- emotional distress
- repetitive movements that overemphasize one muscle group
- movement compensations due to injury
- lack of movement
Having the client lie supine on the floor. Standing behind the client, have her perform a modified push-up off the floor or wall. Check the scapulae for any winging, which would indicate a passive serratus anterior.

**Neck Flexion Test.** Have the client lie supine on the floor. Ask her to lift and hold her head one inch off of the floor. Check to see if her head protracts and her chin juts out, indicating passive deep neck flexors and a dominant sternocleidomastoid.

Faulty movements that show up during any of these tests are also likely to show up during traditional exercises. Therefore, you should constantly be observing the form with which your clients perform all movement patterns.

**Corrective Exercises**

The majority of clients who present with round shoulder syndrome can be helped with an exercise program. Obviously, when the syndrome is severe or accompanied by pain, clients should be referred to a qualified medical professional.

In an ideal world, there would be a standard protocol or “menu” of exercises for clients with round shoulder syndrome. However, that isn’t possible since each individual’s physical and emotional makeup is different, as is the environment in which each functions. Instead, what follow are some exercise principles that can be applied when working with clients with round shoulder syndrome.

**PRINCIPLE 1: Train for Postural Awareness**

It is a good idea to start by instilling postural awareness in your clients. You can do this by beginning with exercises designed to improve alignment and positional awareness of the spine. This awareness will help promote good form in all other exercises that follow. Examples of postural awareness exercises include sitting upright on a stability ball and standing tall on a wobble board. Taking time to develop postural awareness at the beginning of the exercise program will prove a worthwhile investment. It is especially important to include this step if a client’s postural assessment shows significant malalignment of the spine.

If the spine is out of alignment, it is most likely that the shoulder girdle will also be out of alignment. Cue clients to “stand tall.” One way to get this concept across verbally is to have them pretend they are “hanging from a string attached to the center of their head.” Another way to improve postural habits is to have clients try standing, sitting and walking on unstable wobble boards, stability balls and balance beams. As they practice these postural exercises, have them “tune in” to how efficient alignment “feels.” This will help develop body awareness.

 Movements that develop kinesthetic awareness of scapular position are also an integral part of the training program. Have clients protract, retract, elevate and depress their scapulae. (If working one-on-one with clients, you can provide light resistance with your hands during these movements.) Teach clients to “set” their scapulae in proper alignment. Suggest that clients practice doing this at intervals throughout the day; however, caution them to hold the position for no more than a few minutes, since doing so for longer can lead to strain. As muscle balance and spinal posture improve, the scapulae should start to hang in balanced alignment.

Trying to develop kinesthetic awareness to stabilize winged scapulae against the rib cage can be difficult. If the condition is moderate, concentrate on restoring muscle balance (see below for suggestions). Coupled with more general postural training, this should help improve the condition. If winging is severe, refer the client to a good physical therapist who can prescribe kinesthetic awareness exercises to develop scapular stabilization.

**PRINCIPLE 2: Restore Muscle Balance With Isolated Movements**

Muscles identified as weak and long need to be strengthened; this is best done through isolated exercises that emphasize recruitment of the muscles in question. Muscles that are strong and short need to be lengthened; this can be accomplished using active-range-of-motion exercises that will lengthen and inhibit these muscles.

Typically, actively shortening a passive muscle will lengthen and inhibit its dominant antagonist. Thus, a single exercise can be used to stretch one muscle and strengthen another. For example, contracting the deep neck flexors through a full range of motion will strengthen them while simultaneously lengthening tight neck extensors. Performing seated rowing with the elbows at shoulder height will strengthen the posterior deltoid, rhomboids and middle trapezius while simultaneously lengthening the pectorals. As muscle balance improves, you should start to replace isolated exercises with more complex movements.

In cases of severe muscle imbalance, passive stretching exercises can be beneficial. Passively stretching a tight muscle not only lengthens it but also has a positive effect on the neural balance of that muscle and its antagonist. However, passive stretching can cause joint laxity and should be performed only under the supervision of a medical professional.

**PRINCIPLE 3: Eliminate Faulty Movement Patterns**

After constantly repeating a particular faulty movement pattern, clients need to be reprogrammed to perform that movement.
correctly; this can be difficult, as the faulty movement is now ingrained in the central nervous system and has led to muscle imbalance and poor posture. As a case in point, you would want to discourage a client with inadequate scapular stabilization from continuing to do push-ups incorrectly. But if you simply tell him to quit doing push-ups, he might tell you to get lost.

Rather than eliminating an exercise from a client’s program, suggest modifications that will eliminate the faulty movement. In the above example, encourage the client to try exercises designed to develop all the chest muscles, including the serratus anterior. Have him perform movements that emphasize recruitment of this muscle. He would benefit from properly performing a modified “push-up plus” while consciously using the serratus anterior. A push-up plus involves fully protracting the scapulae at the top position of the exercise.

Many clients will have an overactive upper trapezius, which can lead to excessive scapular elevation when raising their arms. Undoubtedly, some will want to continue doing dumbbell laterals as part of their training. But loading faulty shoulder abduction with a dumbbell will lead to further problems associated with round shoulder syndrome.

To address this condition, put your clients’ postural awareness (developed early in their training) to use. Teach clients to do the movement unloaded without shrugging the scapulae. Advise them to practice this on their own time. Once they can do the unloaded movement properly, add a moderate load using resistance tubing. Attach the tubing waist high to a wall (or post). Position each client so the hand holding the tubing is against the side of the body farther from the wall. Then give the cue to abduct the working arm and pull the tubing “out toward the opposite wall” (as opposed to upward). This will discourage over-involvement of the dominant upper trapezius. Explain that using a dumbbell, which has a downward pull, and raising the arm upward rather than outward can exacerbate an overactive upper trapezius.

Another common faulty movement is protracting the head when it should be stabilized in a centered position. This often happens during the end range of a seated rowing motion. To correct this, have clients focus their attention on cervical alignment and have them use somewhat lighter resistance. Emphasize that the scapulae should be fully retracted during the end range of the motion.

**Back on Track**
As posture, muscle balance and movement patterns improve, progress to more functional total-body movements. Make sure the training program is balanced and the exercises you employ offer plenty of variety.

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** References**