

Standing Tall

Physical therapy exercises using Pilates equipment for the correction of forward head/rounded shoulder posture

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Poor posture is a common finding during the physical therapy evaluation of a patient with musculoskeletal or neurological pain complaints in the upper quarter. One of the most common postural faults revealed in this patient population is the forward head/rounded shoulder (FHRSP).

One of the first descriptions of this posture was by Janda when he coined the term the “upper crossed syndrome” and described a theory of muscular imbalance that resulted in a poor relationship between the shoulder complex and the spine. The specific postures of forward head and hyperkyphosis were defined and related to other common faulty postures by Kendall, McCreary and Provance.¹ Other helpful models such as the “guy-wire” concept by Neuman have contributed to the understanding of the FHRSP.² Sahrman then applied faulty movement patterns to this posture and defined specific movement impairment syndromes.³

Although there are several specific syndromes associated with the forward head posture, there are common contributing imbalances to assess when observing static posture, including abducted, downwardly rotated and depressed scapula; medially rotated humerus; forward translation of the upper cervical spine with an exaggerated cervical lordosis; or a flattened cervical lordosis, and thoracic kyphosis. The full standing posture of the patient should be assessed, as the forward head posture and thoracic kyphosis are often compensatory postures due to faulty lower quarter postures, such as sway back and hyperlordotic. In these instances it is important to begin correction to these lower body postures for success in correcting the FHRSP.

Activities of daily living such as sitting at a computer or desk, reading, or reaching are additional activities to evaluate. As treatment progresses, each of these contributing postures will need to be adapted to reduce



Seated push-through with the Cadillac push-through bar continues to create balance between the intrinsic cervical flexors and the extrinsic cervical extensors by challenging the spine in an unsupported seated position.

symptoms. Special attention should be given to poor head postures due to visual or hearing problems or eyewear.³

Typically, the FHRSP involves an imbalance in several muscle relationships. In the cervical area, the intrinsic neck flexors become long and weak while the extrinsic neck extensors become short and strong. The pectorals become short and strong while the scapular retractors become long and weak.⁴ These imbalances then lead to new and less efficient movement patterns that can cause degeneration and pain.⁵

Treatment theories for the FHRSP have been based on the theories of Kendall, McCreary, Provance,¹ and Sahrman,³ who propose that prolonged FHRSP would lead to shortening and lengthening of opposing muscles such as the pectorals and the scapular retractors and resultant movement impairment syndromes. Alignment serves as a base

to set the body up for optimal movement. If optimal movement is not achieved, degenerative changes will occur. When poor posture is identified, a program to reduce the occurrence of that posture should be developed by the physical therapist. Therapists can use several different Pilates products to teach the patient to begin in a healthy posture and make their attempts at movement more successful, which will assist the physical therapist in facilitating healthy movement patterns that will lead to pain-free functional movement.

THE CADILLAC

There are three major corrective exercises patients can do using the push-through bar on the Cadillac. The Cadillac is an original apparatus designed by Joseph Pilates that resembles a plinth table with a trapeze attached. The apparatus has an open end and a push-through end, which offer multiple varied spring



An isometric squeeze of the Pilates ring while holding good posture creates balance in the length of the pectoralis muscles during a pectoralis stretch.

attachments and tensions to encourage and challenge movement. The Cadillac, manufactured by Balanced Body, Sacramento, Calif, offers many unique features such as a head extender, lighter leg springs, and adjustment in height of the push-through bar and spring bar that make it exceptional for use with patients of all sizes and abilities. The Cadillac is also available from companies including Peak Pilates, Venice, Calif, and Stott Pilates, Toronto.

One corrective exercise that can help patients improve FHRS posture is supported cervical rolling. Position the patient supine in hook lying on the Cadillac. Resist the push-through bar with one yellow spring from the top and align the shoulders of the patient with the push-through bar. Assist the patient in finding neutral spine by supporting the head with a small folded towel and instructing in neutral pelvis. Bring the ribs in line using the breath and observe that the rib cage is in the sagittal plane. Have the patient hold the push-through bar with both hands so that the arms are supported in forward flexion of about 80° to 90°. Instruct the patient to perform what is called a “cervical nod” in Pilates and described as cervical rolling by Sahmann.³ A good cue is to tell the patient to roll the back of the head as if there were a rod through the ears. Be sure that the lower abdominals stay engaged to maintain the pelvic neutral and the rib cage alignment.

This exercise will begin to increase awareness and strength of the intrinsic neck flexors and deep abdominals. As it progresses, it will begin to decrease the dominance of the cervical extensors and encourage a more healthy movement of the cervical spine. This is the most basic exercise and can be started when the patient is having symptoms. The exercise should be pain free.



Supported cervical rolling with the Cadillac push-through bar is the most basic exercise and will begin to increase awareness and strength of the intrinsic neck flexors and deep abdominals.

The following chart describes the progression of supported cervical rolling:

Progression #1

As the patient performs the cervical roll, add a small lift of the head from the table while pushing the push-through bar upward. Tell the patient to follow the push-through bar with their eyes and keep arms straight. A heavier spring can be added if needed. Watch to ensure that no cervical extension occurs during the curl-up. Increase the range of motion as tolerated.

Progression #2

Assure that the push-through bar is positioned high enough that the patient can clear their face as the bar passes over their head. The spring can be removed as the patient demonstrates the ability to support his/her arms without cervical extension. Maintain the neutral spine posture as the patient bends the elbows pulling the push-through bar down and then overhead. Palms will face away the entire time. Keep the elbows in line with the wrists and shoulders, and maintain as neutral of a wrist posture as possible. Reach the arms back over the head as far as possible without losing neutral spine/pelvis, elevating the shoulders, or extending the cervical spine.

Progression #3

Repeat the movement in Progression #2, but turn the palms toward the patient's face. Remember to maintain as neutral of a wrist as possible and avoid cervical extension, loss of neutral pelvis, or shoulder elevation.

Patients can also use the Cadillac to perform a seated push-through. Attach one yellow spring to the push-through bar from the top. Position the patient in long sitting facing the push-through bar. If the patient is unable to long sit with a neutral pelvis, lift their pelvis with a moon or sitting box to allow them to still long sit. With the pelvis in neutral, have the patient extend the spine into neutral and reach long through the top back of the head as they push the push-through bar up with both hands with palms facing away. At the top of the motion, cue the patient out of cervical extension, shoulder elevation of scapular adduction. One of the best cues here is to “roll the back of head as in the exercise above and think of keeping the nose down.” In this position, practice shrugging the shoulders moving the push-through bar up and down with straight elbows. Avoid any shortening in the cervical area or loss of wrist neutral or spine neutral position.

This exercise continues to create balance between the intrinsic cervical flexors and the extrinsic cervical extensors by challenging the spine in an unsupported seated position. There should not be any pain during the exercise.

The following chart describes the progression of a seated push-through:

Progression #1

Maintain the position as described above, and draw the push-through bar down by bending and straightening the elbows. Be sure to keep the elbows under the hands and not let the shoulders shrug. You may need to encourage

Product Resources

The following companies offer more information about Pilates rehabilitation.

Balanced Body Pilates
www.pilates.com

Ball Dynamics International LLC
www.fitball.com

Merrithew Health & Fitness
www.merrithew.com

OPTP
www.optp.com

PHI Pilates
www.phipilates.com

SPRI Products Inc
www.spri.com

scapular retraction. Then repeat the same with the palms facing away from the patient.

Progression #2

Bring the bar down to shoulder height and extend the elbows with the palms facing down. Have the patient perform the cervical roll and push the bar forward toward his/her feet. Watch the neck and stop the motion forward if you see cervical extension or shoulder shrug. Start again with more cues for cervical rolling where there is a rod through the ears. Watch the wrist position as rotation at the humerus will cause the wrists to go into extension. They should remain neutral throughout the forward bending motion.

Finally, to perform a pectoralis stretch on the Cadillac, resist the push-through bar with one yellow spring from the top and have the patient sit with their side to the push-through bar and feet supported in a seated position. Cue a correct seated position with a neutral pelvis. Have the patient grab the push-through bar with their palm facing them and elbow bent (shoulder in abduction and external rotation), and then encourage scapular retraction as needed. The patient should push the bar up as high as possible without shoulder elevation or cervical extension and then pull it back down. Limit the motion until the patient is able to hold their position and add more horizontal abduction as tolerated. If the client has pain or difficulty, support the other arm with a box or pillow.

This exercise creates length in the pectoralis muscles throughout a full range of shoulder motion. By adding scapular retraction additional balance is created in these opposing muscle groups.

THE SPINE CORRECTOR

Another device that can be used in FHRSP rehabilitation is the Spine Corrector, or Baby Arc. The spine corrector is an original apparatus designed by Joseph Pilates that has a seat and a barrel. It is a small apparatus and is quite portable for home or clinic use. Balanced Body offers several shapes of spine correctors, including one that it calls the Arc that is made entirely of foam. It is inexpensive, light, and perfect for home programs. Peak Pilates offers a spine corrector that is adjustable in size, which is also a nice feature for different-size patients.

The Basic Roll Down/Up⁵ using the Spine Corrector can teach healthy cervical flexion and lengthen the cervical extensors while strengthening the short cervical flexors. To perform this

exercise, have the patient long sit with their buttocks against the barrel end of the spine corrector and legs together in external rotation. The patient should hold the Pilates ring out in front of them at a height just below the shoulders to maintain chest and shoulder position. As the patient reclines back to support the lower spine and sacrum with the barrel, encourage proper neck flexion by promoting the use of the short neck flexors. The client will stop at a position of thoracic and cervical flexion and then reverse the motion to sit back up into the long seated position. To make this exercise more challenging, use the Baby Arc instead of the Spine Corrector.

THE PILATES RING

The Pilates ring designed by Joseph Pilates has certainly evolved from its original metal form. Modern rings are light and pliable, and have comfortable handles on both the inside and outside of the ring. I recommend the ultra lite ring sold by Balanced Body, or the ring sold by OPTP, Minneapolis. Both are inexpensive, light, and perfect for home exercise programs.

Patients can use the Pilates Ring to perform the pectoralis stretch, which stretches the pectoral muscles and opens the chest. Have the patient stand with legs together and hips in external rotation. Align the pelvis and ribs in neutral and lengthen the neck by reaching out of the top back of the head. Encourage the patient to align the acromion with the ear while holding the pilates ring in a vertical position behind the back. Keeping the elbows extended, ask the patient to gently squeeze the ring isometrically.

THE REFORMER

Corrective exercises can be done using the Reformer, an original apparatus designed by Joseph Pilates known as the workhorse of Pilates because of the many exercise options that it provides. There are several companies that offer Reformers, including Balanced Body, Peak Pilates, and Stott Pilates. Balanced Body's new Allegro II Reformer features a wide foot bar that is extremely adjustable and a super light yellow spring tension, which are useful in the Prone Press Out exercise.

To perform Prone Press Outs, have the patient lie prone on the long box with their chest off the box, head toward the foot bar, and legs together in external rotation. Bring the foot bar to a height where the patient can maintain a neutral pelvis, rib cage, and cervical spine with arms fully extended and the carriage

pushed back. Use resistance of one blue or one red spring. The hands should be positioned at the width of the shoulders. Bring the carriage in while keeping the creases of the elbows up and the wrists neutral. Then push it back as far as possible without allowing the crease of the elbow to change in orientation. Be sure to cue the cervical spine to a neutral alignment during the exercise. This exercise lengthens the latissimus dorsi and biceps, and teaches correct alignment of the cervical spine while assisting the deep neck flexors with gravity.

Poor posture leads to poor movement patterns, which can cause degeneration, dysfunction, and derangement in the spine. Generally, the pain is from the persistence of these poor movement patterns over long periods. If neck posture can be improved and the proper movement pattern restored, pain is often reduced.

Forward head posture progresses over time and can be a difficult habit to correct. This is where the Pilates equipment becomes the most important tool in the clinic. The machines promote healthy movement and give the patient an environment in which they can move pain free. By creating an environment where the physical therapist can choose exercises for the patient to practice that allow proprioceptive feedback, assistance, resistance and even direction, the Pilates equipment not only creates muscle balance, but an entirely new set of movement patterns. **PTP**

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