

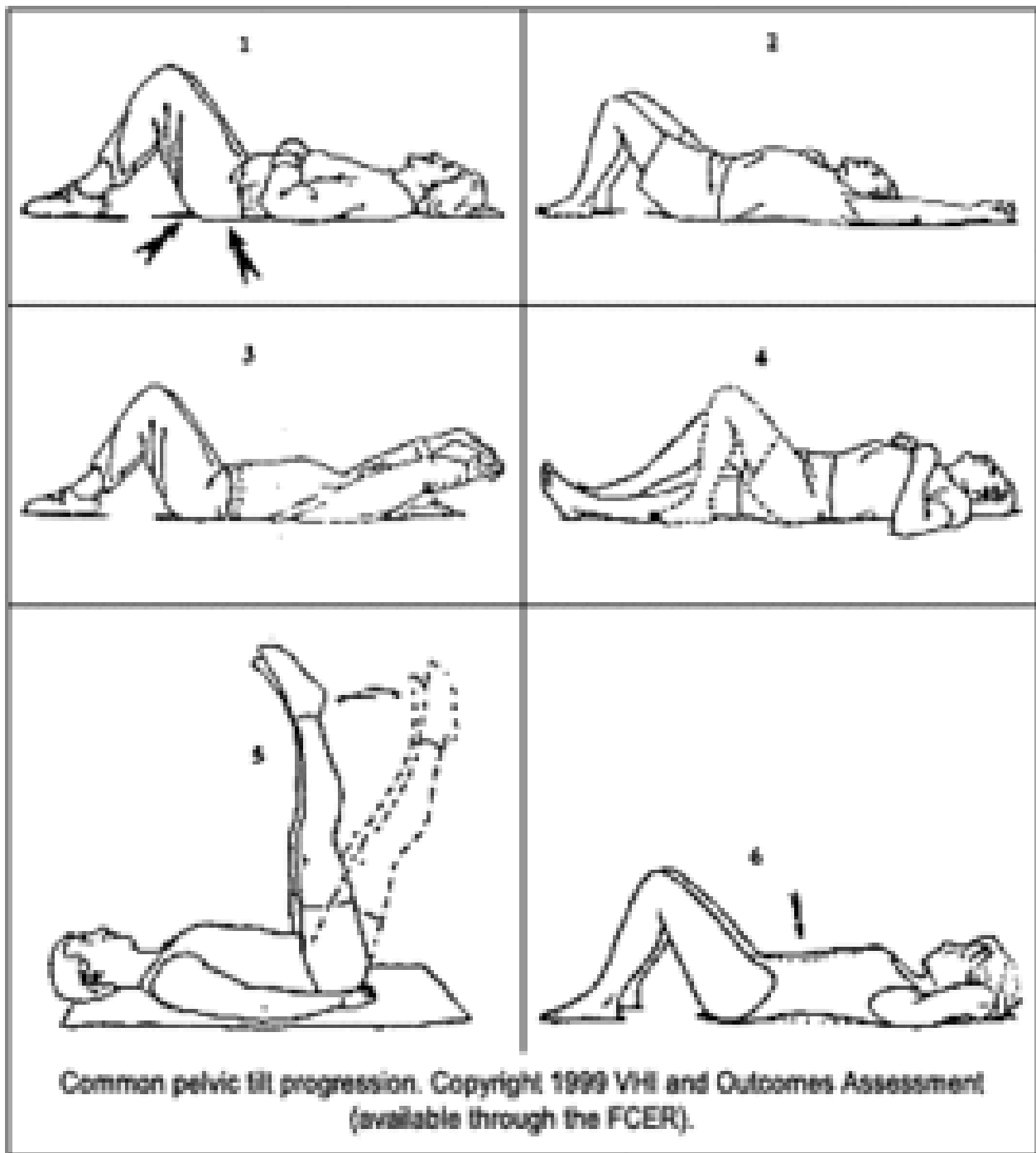
Breathing Exercises in Rehabilitation

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Many chiropractic patients have conditions that are aggravated by spinal muscle tension and restricted breathing. This includes many post-injury victims, who have a fear-arousal stimulus from having recently been injured. Additionally, many chronic pain patients have "generalized hyperalgesia," which makes even moderate stimuli feel painful.¹ This appears to be particularly likely months or even years after a whiplash-type injury to the spine.² There is growing evidence that any treatment program for patients with these types of problems should include breathing and movement awareness exercises for the thoracic spine and rib cage.

The Process of Breathing

Pulmonary oxygenation with full, diaphragmatic breathing is a cornerstone of health and well-being. During this process, the diaphragm moves downward into the abdomen during inhalation, pressing on the viscera and causing abdominal expansion. This massages and mobilizes all of the abdominal organs, squeezing and releasing them like sponges. All of the organs of digestion, assimilation and elimination lie below the diaphragm and can be stimulated during full respiration. This contributes directly to their effective functioning, and full breathing is essential for complete digestion and elimination, and for the processing of toxins.



When restricted breathing results in organs receiving insufficient compressive stimulation, including reduced flow of blood and nutrients to the tissues, they are subject to deterioration.³ Sensory nerves flood the spinal column with irritative stimuli, causing overactivation of motor nerves and inflammation of nearby muscle and fascial tissues.⁴

Chronic Muscle Tension

When the diaphragm doesn't expand and contract fully, the accessory respiratory muscles must come into play. This inevitably causes muscle tension to develop throughout the body. As the muscles of the chest and neck take on more of the work of breathing, chronic tension develops in the muscles of the upper back, rib cage, neck and jaw. The systemic tension that is produced fosters a vicious cycle of chronic muscle tension that reduces blood flow, causing localized ischemia, which, in turn, results in further irritation of the muscle and further pain exacerbation.

Chest breathing is also one of the chief characteristics of the "flight or fight" response; it is a hallmark of hyperarousal of the sympathetic nervous system.⁵

Rehab Techniques for Breathing

In addition to providing better tissue oxygenation, relaxed breathing automatically promotes a reduction of excess muscle tone, since it requires the muscles of the torso to release chronic muscle holding patterns. All rehabilitation exercises should emphasize full diaphragmatic breathing, and avoid breath-holding. For many people, this will require a significant amount of conscious effort, at least initially. Eventually, this breathing awareness becomes ingrained, and little to no effort is required to maintain it.

A good example of the use of diaphragmatic breathing in spinal rehabilitation occurs during the pelvic tilt exercise.

Although this maneuver is usually performed while lying on the floor, it is even better to practice it in the standing, upright posture. The first step is to ask patients to pay attention to the muscles they are contracting while they perform the pelvic tilt exercise. They should scan their bodies and determine which muscles are working and tensing. Specifically, are they using muscles in their legs, buttocks, back, shoulders, or neck? This is an exercise for the abdominal muscles, and primarily the transverse abdominis, when done correctly. So, if patients notice other muscles in other areas working, they will begin to recognize some of their inappropriate muscle tension patterns.

Patients should perform the relaxed pelvic tilt exercise while breathing fully and evenly. Many will have been holding their breath, or they have restricted their breathing. They must decide to make diaphragmatic breathing a priority, and not sacrifice the breathing pattern to the exercise. The breath cycle should be on a different rhythm and timing than the pelvic tilt exercise, in order to foster independence of the two muscle patterns. So, try doing two tilts to one breath cycle, and then also holding the tilt for two breath cycles - in other words, mix it up!

Once patients can readily perform a relaxed pelvic tilt with little accessory muscle tension, and while breathing deeply and independently, they should begin to walk around in the pelvic tilt position. This will help retrain the deep neuromuscular coordination necessary for spinal stabilization, so the leg muscles and diaphragm can function, as needed, while the pelvis posture is maintained. Finally, the addition of resistance, in the form of exercise tubing, will stimulate a greater training response for the neuromuscular pattern. This must still be done with muscle relaxation awareness and proper deep breathing.

Conclusion

Taking diaphragmatic breathing into account during rehabilitation exercises for spinal imbalances can help patients develop healthier movement patterns. It can also aid in focusing awareness on the status of other muscle groups. As the exercise described illustrates, enhanced breathing promotes more efficient, coordinated muscle use, and a better awareness of muscle tension or relaxation. The integration of full, easy diaphragmatic breathing and reduced muscular effort provides a foundation on which patients can begin to move toward a mobile, pain-free and active lifestyle.

References

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