

When undertaking a rehabilitation program it is important to determine the goal behind the rehabilitation and the qualities of the muscles being trained. There are two primary types of muscles to consider when performing spinal rehabilitation.

- A) **Tonic muscles**, made up of primarily slow twitch fibers, are postural muscles designed to fight gravity. These muscles tend to be more of an endurance muscle.

- B) **Phasic muscles** are faster twitch muscles that help you move but have less endurance than tonic muscles.

Some muscles tend to become overly tight while others become weak. (Review the list on page 227 of the textbook.) Those muscles that are too tight tend to pull us into improper postures while the weak muscles do not have the strength and endurance to counter balance these tight muscles. For example, the tightness of the pectoralis muscles in the chest pull shoulders forward; however, the weakness of the rhomboids and lower trapezius cannot overcome the strength of the pectoralis to keep the shoulders back. Often we need to stretch, or lengthen the tight muscles and strengthen the weak muscles to create and maintain proper posture positions.

Proprioception

With many injuries, including most spinal conditions, proprioception abilities become diminished or altered. Proprioception is the body's ability to identify where its limbs and head are in space. The brain receives this information from 1) what a person sees and 2) information from mechanoreceptors, or what a person "feels" in muscles, fascia, tendons, and joints. When there is proprioceptive dysfunction it is typically exhibited by altered muscle balance, coordination, and performance. This dysfunction can lead to further stress on joints leading to more degeneration and chronic pain. Exercises that restore proprioception can alter this dysfunction and improve overall body mechanics and neurological feedback.

Strengthening and Rehabilitation Concepts and Tips

Most often in the chiropractic setting, doctors utilize low-tech rehabilitation equipment. This means that the tools needed to perform the exercises are easy to use and can often be used at home by the patient. These may include free weights, balance boards, exercise bands, stretching mats, and therapy putty among many others. The pictures on the next page show some examples of low-tech rehabilitation equipment.



Fig. 3.1: Low-Tech Rehabilitation Equipment

Some practices may utilize high tech equipment in their practices. This equipment is typically some form of workout machine requiring weight stacks and larger amounts of space. This equipment is what is found at many gyms and large physical therapy centers.



Fig. 3.2: High-Tech Rehabilitation Equipment

Regardless of the type of equipment being used, the tips and techniques shown in this workbook and in the textbook will be applicable in helping patients rehabilitate correctly. It is important to remember that independently of whichever method of rehabilitation and exercise people perform, their focus needs to be on their posture, recruiting the proper muscles, and understanding the correct techniques needed to make the exercise beneficial.

When teaching a strengthening exercise, one of the main goals is often to correct the body’s faulty “muscle memory.” If the body is in one position for extended periods of time it will “remember” this position and want to stay in it. When performing rehabilitation, it is important to create new muscle memory that puts the body in a more functional, less damaging position. If the muscle is primarily a stabilizer muscle, a light weight and higher repetition activity that uses a slower, smooth motion will help attain motor control and range of motion. If the muscle is a dynamic (power) muscle a heavier resistance activity that uses full range of motion while remaining smooth and controlled will increase strength and endurance.

The phase of rehabilitation a person is in will make a difference in the type of strengthening or rehabilitation exercises they are to perform. The chart below demonstrates the primary goal of rehabilitation exercises in each of the phases of rehabilitation.

PHASE OF REHABILITATION	REHABILITATION FOCUS	EXERCISE EXAMPLES
1) Reduce	<ul style="list-style-type: none"> - reduce pain and inflammation - begin isolated muscle contractions of dysfunctional muscle - passive or very mild active range of motion work 	abdominal hollowing, gluteal squeezes, quad setting, ankle pumps (ROM), modified wall angel, rotator cuff muscle isolations
2) Restore	<ul style="list-style-type: none"> - restore full range of motion - increase muscle contractions from specific muscle towards entire muscle group - begin proprioceptive work to improve muscular communication 	active and resisted active ROM, straight leg raises, short foot, single leg balance, dead bug, floor bridge, light resistance exercises with free weight or resistance bands
3) Remodel	<ul style="list-style-type: none"> - advance muscle strengthening - training entire kinetic chain of involved muscle groups - create proper muscle memory patterns - advanced proprioception work to restore joint stability and brain communication 	rocker board, wobble board, core training on exercise ball, squats, plyometrics, pulls and rows with resistance band or weight equipment, superman