

Elastic Resistance Training

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There is a growing tendency to use elastic tubing for therapeutic and corrective exercising for musculoskeletal problems. While traditionalists and rehab purists chuckle at the sight of patients "pumping elastic," the inexpensive and easy-to-use exercise tubing is becoming more commonly accepted. Economic pressures from managed care and increasing focus on self-pay are combining to emphasize cost-effective solutions. The previous high-tech and high-cost approaches to rehab are being questioned, and there is now more focus on home-based programs using this inexpensive type of strengthening equipment.

A large body of literature shows the advantage of early, progressive rehabilitation exercise for all types of musculoskeletal conditions. These benefits include restoration of range of motion; decreased pain; decreased neural inhibition; quicker return of muscle function; and improved performance in sports and all daily activities. Rehabilitation concepts now emphasize functional activities and retraining of normal loading and movement patterns. As chiropractors, we understand that it is especially important to regain full neurological coordination of the surrounding muscles and connective tissues, since that is the true source of joint stability. An important component in addressing these needs is the frequent use of exercise tubing, which can be accomplished at home, without substantial supervision.

Advantages of Elastic Tubing Rehab

Learning new skills and movement habits in a machine generally doesn't translate to improved function during independent, usual activities, or improved sports performance. Much of the time and effort patients spend on open-chain exercises can be questioned. It's also difficult and expensive to get patients into a facility with machines or to a pool to exercise. The value of elastic tubing is especially obvious when dealing with spinal and shoulder rehabilitation.

Exercise tubing allows patients to exercise in a weight-bearing, functional position that is more effective, and has the additional benefit of being easier for most patients. In addition to being more focused and practical, upright exercising trains and strengthens the joints to perform better in everyday activities. Patients like the idea of performing exercises that clearly prepare them for better function during normal activities of daily life. A good example is the use of the pelvic extension exercise. Using double elastic tubing allows a patient to perform a "pelvic tilt" exercise with resistance while standing. This maneuver retrains the deep lumbopelvic stabilizers (especially the *transversus abdominis*) very specifically, to correct for a forward tilted pelvis and lumbar hyperlordosis.

Shoulder Joint Rehabilitation

Elastic tubing is frequently used in shoulder joint rehab. The goals of shoulder rehabilitation include progressive strengthening of the rotator cuff muscles, along with all of the muscles that move and stabilize the shoulder joints. Traditionally, expensive machinery that isolated the muscles (and even controlled the speed of movement - "isokinetics") were thought to be needed; however, elastic tubing has been found to be a safe, effective method of providing progressive resistance

exercises.²

An easy and commonly utilized program starts with an exercise routine using resistance tubing. This is initially performed within a limited, pain-free range of motion, building to full range as pain subsides. An important exercise for many people is external rotation. Once good exercise mechanics and control are demonstrated, a self-directed program of home exercises is appropriate. Elastic tubing also permits exercises to be performed in diagonal and multiplanar motions, which are especially useful in functional shoulder rehab for athletes.²

Progressive Resistance

Elastic tubing provides a unique form of isotonic exercise. The actual amount of resistance varies significantly with the amount of stretch applied to the tubing.³ This is accomplished most effectively by starting a patient exercising with some initial slack in the tubing, thereby ensuring relatively low resistance. As the patient improves, the exercise is performed with no slack, increasing the resistance gradually and safely.

Eventually, the exercise effort is progressed to starting with some "pre-stretch," in order to stimulate and activate a more widespread neurological response to the exercise movement. In this way, most patients are able to advance through their entire joint rehab program with just one piece of exercise tubing, rather than having to purchase several different levels.

Conclusion

Elastic resistance training is very nonthreatening, and has been used extensively in home-based exercise programs for older adults.⁴ Since setup is easy to learn and requires little manual dexterity, it can be used by patients with no gym or weightlifting experience.⁵ Appropriate and progressive rehab programs should be started early in the treatment of all patients with joint conditions - both acute and chronic. Elastic tubing strength retraining programs comprised of simple, isotonic resistance techniques are readily available, none of which requires expensive equipment or substantial time commitments. A closely monitored home exercise program using exercise tubing is recommended, since this allows the doctor of chiropractic to provide cost-efficient, extremely effective and specific rehabilitation care.

References

1. Roy S, Irvin R. *Sports Medicine: Prevention, Evaluation, Management, and Rehabilitation*. Englewood Cliffs, NJ: Prentice-Hall, 1983;195.
2. Kibler WB, McMullen J, Uhl T. Shoulder rehabilitation strategies, guidelines, and practice. *Orthop Clin North Am* 2001;32:527-538.
3. Hughes CJ, Hurd K, Jones A, Sprigle S. Resistance properties of Thera-Band tubing during shoulder abduction exercise. *J Orthop Sports Phys Ther* 1999;29:413-420.
4. Mikesky AE, Topp R, Wigglesworth JK, et al. Efficacy of a home-based training program for older adults using elastic tubing. *Eur J Appl Physiol Occup Physiol* 1994;69: 316-320.
5. Skelton DA, Young A, Grieg CA, Malbut KE. Effects of resistance training on strength, power, and selected functional abilities of women aged 75 and older. *J Am Geriatr Soc* 1995;43:1081-1087.

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