

What Is Chiropractic Rehabilitation?

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The function of the human locomotor system is to produce motion and maintain stability. Korr called the musculoskeletal system the "primary machinery of life," since it is through it that we express ourselves in our chosen activities.¹ The locomotor system incorporates control (central nervous system), passive (articuloligamentous), and active (muscular) components.² According to Panjabi, disease or dysfunction of any of these components results in adaptation and eventual instability.² Modern management of musculoskeletal disorders involves diagnostic triage to rule out disease, activity modification to promote stability, pain control, and rehabilitation of physical performance/functional capacity. Chiropractors can only secure a place for themselves in the future health care delivery system by documenting with superior outcomes their quality and cost competitiveness. By utilizing a partnership of manipulation (passive care) and exercise (active care) chiropractors should accomplish such an outcome.

Spinal disorders are defined as activity intolerances related to pain.³ The goal of modern management is to restore function and eliminate activity intolerances before the onset of a disabling, chronic pain syndrome. Specific human performance and functional deficits are part of the deconditioning syndrome which accompany the transition from acute to chronic pain.⁴ Not only physical, but psychological deconditioning are typically present.⁵ A biopsychosocial approach is required to address both the mind and the body.⁶ Fear of pain is often a greater contributor to relapse than an actual nociceptive problem. Pain coping strategies which reduce fear avoidance, anxiety, depression, and catastrophizing are often essential for a successful outcome.

Chiropractic rehabilitation embraces a continuum of care integrating passive and active treatments.^{7,8} Manipulation is pivotal as it has demonstrated superiority over other methods for providing pain relief, reducing activity intolerances and increasing patient satisfaction.⁹ There is however a danger of overutilization and escalating costs.¹⁰ By applying the modern principles of a biopsychosocial approach, quality assurance is within the grasp of chiropractic. Active care, outcomes management, and early identification of psychosocial risk factors of chronicity are being integrated into a revolutionary new paradigm of care.

Chiropractic rehabilitation specialists learn new skills for assessing and treating myofascial, motor control, and strength dysfunctions. Postisometric relaxation, proprioceptive neuromuscular facilitation, propriosensory, spinal stabilization, and strength/endurance protocols are all core techniques which define the minimum competencies of a rehabilitation practitioner.¹¹ New thinking about functional restoration indicates that motor control should not be ignored in muscle strengthening programs.^{2,12} Janda has shown that predictable muscle imbalances develop with the overuse of postural (anti-gravity) muscles in our largely sedentary society.¹³ Certain muscles like the upper trapezius, sternocleidomastoid, quadratus lumborum, and iliopsoas become overactivated and may eventually shorten and lose endurance. Other muscles which work under dynamic situations tend to become inhibited and eventually weaken from disuse. Examples include the lower fixators of the scapulae (lower and middle trapezius, serratus anterior), gluteus medius (stabilizer of the hip during stance phase of gait), and the multifidus (segmental spinal stabilizer). Specific programs have been developed which enhance spinal stability.¹⁴⁻¹⁷ These focus on improving motor control, in particular speed of contraction, coordination, and endurance of

stabilizers.

Decreased static back extension muscle endurance has been discovered to be a predictor of first time and recurrent episodes of lower back pain.^{18,19} In particular, it has been found that the multifidus is primarily responsible for this lost endurance.²⁰ Acute patients respond especially well to the McKenzie system of exercise which typically incorporates extension exercises.²¹ Chronic patients have been found to have a decreased extensor to flexor muscle strength endurance ratio and to respond favorably to both expensive high-tech back strengthening programs,⁴ as well as less costly low-tech approaches.²²

The goal of rehabilitation is to improve the effectiveness of chiropractic adjustments so as to achieve a positive effect on the entire locomotor system. By finding the key muscle imbalances adjustments last longer and go easier. Appropriate exercises should not hurt, but should instead be performed in the "functional range," which is painless and appropriate for the task at hand.²³ In fact the ideal exercises achieve a maximum contraction of all a muscle's motor units while minimizing the strain on osteoligamentous structures.²³ By combining expert delivery of passive and active care, along with outcomes management, chiropractors are positioning themselves as the benchmark providers for cost-effective yet high quality neuromusculoskeletal health care.

References

1. Korr IM. The sympathetic nervous system as mediator between the somatic and supportive processes. *The Physiologic Basis of Osteopathic Medicine*, 1970, 21-38.
2. Panjabi MM. The stabilizing system of the spine. Part 1. Function, dysfunction, adaptation, and enhancement. *J Spinal Disorders* 1992;5:383-389.
3. Bigos S, Bowyer O, Braen G et al. Acute Low Back Problems in Adults. Clinical Practice Guideline No. 14. AHCPR Publication No. 95-0642. Rockville, MD; Agency for Health Care Policy and Research, US Department of Health and Human Services. December 1994.
4. Mayer TG, Gatchel RJ, Mayer H, Kishino ND, Keeley J, Mooney V. A prospective two-year study of functional restoration in industrial low back injury. *JAMA*, 1987;258:1763-1767.
5. Mayer T, Gatchel R. *Functional Restoration for Spinal Disorders: The Sports Medicine Approach to Low Back Pain*. Philadelphia, Lea & Febiger, 1988.
6. Waddell G. A new clinical model for the treatment of low-back pain. *Spine* 1987; 12:634-644.
7. Murphy D. The passive-active care continuum. *JNMS* 1996;4:1-7.

8. Liebenson CS. The continuum of care from passive to active care. *Dyn Chir* 1996: February.
9. Shekelle PG, Adams AH, Chassin MR, et al. Spinal manipulation for low-back pain. *Ann Intern Med* 1992;117:590-8.
10. Carey TS, Garrett J, Jackman A, McLaughlin C, et al. The outcomes and costs of care for acute low back pain among patients seen by primary care practitioners, chiropractors, and orthopedic surgeons. *N Engl J Med* 1995;333:913-7.
11. Liebenson CS. Los Angeles College of Chiropractic Rehabilitation Diplomate course knowledge, skills and attitudes. Whittier, CA.
12. Cholewicki J, McGill SM. Mechanical stability of the in vivo lumbar spine: implications for injury and chronic low back pain. *Clin Biomech* 11:1;1-15, 1996.
13. Janda V. On the concept of postural muscles and posture in man. *Aus J Physioth* 1983;29:83-84.
14. Richardson CA, Jull GA. Muscle control -- pain control. What exercises would you prescribe? *Manual Therapy* 1995;1:2-10.
15. Hyman J, Liebenson C. Spinal stabilization exercise program. In Liebenson C (ed) *Spinal Rehabilitation: A Manual of Active Care Procedures*. Williams and Wilkins, Baltimore 1996.
16. Saal JA, Saal JS. Nonoperative treatment of herniated lumbar intervertebral disc with radiculopathy. *Spine* 1989;14:431-437.
17. Timm KE. A randomized-control study of active and passive treatments for chronic low back pain following L5 laminectomy. *JOSPT* 1994;20:276-286.
18. Biering-Sorensen F. Physical measurements as risk indicators for low-back trouble over a one-year period. *Spine* 1984;9: 106-119.
19. Luoto S, Heliovaara M, Hurri H, Alaranta H. Static back endurance and the risk of low-back pain. *Clin Biomech* 10:6;323-324, 1995.
20. Ng JK-F, Richardson CA. Reliability of electromyographic power spectral analysis of back muscle endurance in healthy subjects. *Arch Phys Med Rehabil* 1996; 77:3;259-263.

21. Spinal Publications, Waikanae, New Zealand, 1981.
22. Alaranta H, Rytokoski U, Rissanen A, et al. Intensive physical and psychosocial training program for patients with chronic low back pain. Spine 1994;19:1339-1349.
23. Morgan D. Concepts in functional training and postural stabilization for the low back injured. Top Acute Care Trauma Rehabil 2:8, 1988.

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