Supporting References:

Eisenberg, D. M., D. E. Post, et al. (2007). Addition of choice of complementary therapies to usual care for acute low back pain: a randomized controlled trial. Spine **32**(2): 151-8.

Kovacs, F., V. Abraira, et al. (2007). A comparison of two short education programs for improving low back pain-related disability in the elderly: a cluster randomized controlled trial. Spine **32**(10): 1053-9.

Adams, M. A. (2004). Biomechanics of back pain. Acupunct Med **22**(4): 178-88.

Granta KP, Rogers E, Moorhouse K. Effects of static flexion-relaxation on paraspinal reflex behavior. Clinical Biomechanics 2005; 20(1): 16-24.

Hides J, Richardson CA, Jull GA. Multifidus Muscle Recovery Is Not Automatic After Resolution of Acute, First-Episode Low Back Pain. [Exercise and Functional Testing] Spine 1996; 21(23): 2763-2769.

Hides J, Richardson CA, Hodges, P. Local segmental control. In: **Therapeutic Exercise for Lumbosacral Stabilization; A Motor Control Approach for the Treatment and Prevention of Low Back Pain; 2nd edition**. 2004: Churchill Livingston: Sydney.

Hides, J. A., W. R. Stanton, et al. (2007). MRI Study of the size, symmetry and function of the trunk muscles among elite cricketers with and without low back pain. Br J Sports Med.

Cornwall, J., A. John Harris, et al. (2006). The lumbar multifidus muscle and patterns of pain. Man Ther **11**(1): 40-5.

Standaert, C. J., S. M. Weinstein, et al. (2008). Evidence-informed management of chronic low back pain with lumbar stabilization exercises. Spine J **8**(1): 114-20.

Cholewicki, J., M. M. Panjabi, et al. (1997). Stabilizing function of trunk flexor-extensor muscles around a neutral spine posture. Spine **22**(19): 2207-12.

Jackson M, Solomonow M, Zhou B, Baratta RV, Harris M. Multifidus EMG and tension-relaxation recovery after prolonged static lumbar flexion. Spine 2001; 26(7): 715-723.

Suter E, Lindsay D. Back muscle fatigability is associated with knee extensor inhibition in the low back. Spine 2001; 26(16): 361-6.

Biedermann, H. J., G. L. Shanks, et al. (1991). Power spectrum analyses of electromyographic activity. Discriminators in the differential assessment of patients with chronic low-back pain. Spine **16**(10): 1179-84.

Meadow J.T.S. **Orthopedic Differential Diagnosis in Physical Therapy**. 1999: McGraw-Hill: New York.

Panjabi MM. The stabilizing system of the spine. Part i. Function, dysfunction, adaptation, and enhancement. Journal of Spinal Disorders 1992a; 5(4): 383-389.

Panjabi, MM. The stabilizing system of the spine. Part ii. Neutral zone and instability hypothesis. Journal of Spinal Disorders 1992b; 5(4): 390-396.

Drake, J. D., S. L. Fischer, et al. (2006). Do exercise balls provide a training advantage for trunk extensor exercises? A biomechanical evaluation. J Manipulative Physiol Ther **29**(5): 354-62.

Verna, J. L., J. M. Mayer, et al. (2002). Back extension endurance and strength: the effect of variable-angle roman chair exercise training. Spine **27**(16): 1772-7.

Mayer, J. M., J. L. Verna, et al. (2002). Electromyographic activity of the trunk extensor muscles: effect of varying hip position and lumbar posture during Roman chair exercise. Arch Phys Med Rehabil **83**(11): 1543-6.

Sparto, P. J. and M. Parnianpour (1998). Estimation of trunk muscle forces and spinal loads during fatiguing repetitive trunk exertions. Spine **23**(23): 2563-73.

Barker, K. L., D. R. Shamley, et al. (2004). Changes in the cross-sectional area of multifidus and psoas in patients with unilateral back pain: the relationship to pain and disability. Spine **29**(22): E515-9.

Choi, G., P. P. Raiturker, et al. (2005). The effect of early isolated lumbar extension exercise program for patients with herniated disc undergoing lumbar discectomy. Neurosurgery **57**(4): 764-72; discussion 764-72.

Whittaker, J. L., J. A. Thompson, et al. (2007). Rehabilitative ultrasound imaging of pelvic floor muscle function. J Orthop Sports Phys Ther **37**(8): 487-98.

Wallwork, T. L., J. A. Hides, et al. (2007). Intrarater and interrater reliability of assessment of lumbar multifidus muscle thickness using rehabilitative ultrasound imaging. J Orthop Sports Phys Ther **37**(10): 608-12.

Vera-Garcia, F. J., J. L. Elvira, et al. (2007). Effects of abdominal stabilization maneuvers on the control of spine motion and stability against sudden trunk perturbations. J Electromyogr Kinesiol **17**(5): 556-67.

Stevens, V. K., A. Vleeming, et al. (2007). Electromyographic activity of trunk and hip muscles during stabilization exercises in four-point kneeling in healthy volunteers. Eur Spine J **16**(5): 711-8.

Mayer, J. M., J. L. Verna, et al. (2002). Electromyographic activity of the trunk extensor muscles: effect of varying hip position and lumbar posture during Roman chair exercise. Arch Phys Med Rehabil **83**(11): 1543-6.

Pincus, T., J. W. Vlaeyen, et al. (2002). Cognitive-behavioral therapy and psychosocial factors in low back pain: directions for the future. Spine **27**(5): E133-8.

Linton, S. J. and T. Andersson (2000). Can chronic disability be prevented? A randomized trial of a cognitive-behavior intervention and two forms of information for patients with spinal pain. Spine **25**(21): 2825-31; discussion 2824.

Hodges, P., A. K. Holm, et al. (2006). Rapid atrophy of the lumbar multifidus follows experimental disc or nerve root injury. Spine **31**(25): 2926-33.

Norris C. Spinal stabilisation. Part I. Stabilisation mechanisms of the lumbar spine. Physiotherapy. 1995a; 81(2): 61-64.

Norris C. Spinal stabilisation. Part II. Stabilisation mechanisms of the lumbar spine. Physiotherapy 1995b; 81(2): 72-79.

O'Sullivan PB, Phyty GD, Twomey LT, Allison GT. Evaluation of specific stabilizing exercises in the treatment of chronic low back pain with radiographic diagnosis of spondylolysis or spondylolishthesis. Spine 1997; 22(24): 2959-2967.

Richardson C, Jull G, Hodges P, Hides J. Analysis and treatment of motor-control problems in the local muscles of the lumbopelvic region. **Therapeutic exercises for spinal segmental stabilisation in low back pain**. 1999a; Churchill Livingstone: Sydney

MacDonald DA, Moseley GJ, Hodges PW. The Lumbar Multifidus: Does the evidence support clinical beliefs? Manual Therapy. 2007; 11: 254-263.

Rantanen J, Hume M, Falck B. The lumbar multifidus muscle five years after surgery for a lumbar intervertebral disc herniation. Spine 1993; 18: 568-574.

Sihvonen T, Paljarvi L, Airaksinen O, Patanen J, Tapaninaho A. Local denervation atrophy of paraspinal muscles in postoperative failed back syndrome. Spine 1993; 18: 575-581.

Yoshihara K, Yasumasa S, Yoshihito N, Shinji U. Histochemical changes in the multifidus muscle in patients with lumbar intervertebral disc herniation. Spine 2001; 26(6): 622-626.

Macintosh JE, Bogduk N. The biomechanics of the lumbar multifidus. Clinical Biomechanics 1986b; 1: 205-231.

Bogduk N. **Clinical Anatomy of the Lumbar Spine and Sacrum 4th Ed**. 2005 Churchill Livingston: London.

Lewin T, Moffett B, Viidik A. The morphology of the lumbar synovial joints. ACTA Morphologica Neerlando Scandinavica 1962; 4: 299-319.

Bogduk N. Wilson AS, Tynan W. The Lumbar dorsal Ramus. Journal of Anatomy 1982; 134: 383-397.

Vleeming, A., H. J. de Vries, et al. (2002). Possible role of the long dorsal sacroiliac ligament in women with peripartum pelvic pain. Acta Obstet Gynecol Scand **81**(5): 430-6.

Hyun, J. K., J. Y. Lee, et al. (2007). Asymmetric atrophy of multifidus muscle in patients with unilateral lumbosacral radiculopathy. Spine **32**(21): E598-602.

Wu PB, Date ES, Kingery WS. The lumbar multifidus muscle in polysegmental innervation. Electromyography Clinical Neurophysiology 2000; 40(8): 483-485.

Shindo H. Anatomical study of the lumbar multifidus muscle and its innervation in human adults and fetuses. Nippon Ika Daigaku Zasshi 1995; 62(5): 439-46.

Zoidi G, Grifka J, Boluki D, Willbureger RE, Zoidi C, Kramer J, Dermietzel R, Faustmann PM. Molecular evidence for local denervation of paraspinal muscles in failed-back surgery/post disecotomy syndrome. Clinical Neuropathology 2003;22(2): 71-77.

Warfel J. **The Head and Neck, 5th Ed**. 1985; Lea & Febiger: Philadelphia.

Chow, D. H., K. D. Luk, et al. (1989). Torsional stability of the lumbosacral junction. Significance of the iliolumbar ligament. Spine **14**(6): 611-5.

Saunders S, Rath D, Hodges P. Postural and respiratory activation of the trunk muscles changes with mode and speed of locomotion. Gait and Posture 2004; 20(3): 280-90.

Moseley G, Hodges P, Gandevia S. External Perturbation of the trunk in standing humans differentially activates components of the medial back muscles. Journal of Physiology 2003; 547(Part two): 581-587.

Richardson C, Jull G, Hodges P, Hides J. Overview of the principles of clinical management of the deep muscle system for segmental stabilization. In. **Therapeutic Exercise for Spinal Segmental Stabilization in Low Back Pain**. 1999e; Churchill Livingstone: Sydney.

Ford D, Bagnall KM, McFAdden KD, Greenhill B, Raso J. Analysis of vertebral muscle obtained during surgery for correction of a lumbar disc disorder. ACTA Antaomica (Basel).1983; 116(2): 152-157.

Bagnall KM, Ford DM, McFadden KD, Greenhill BJ, Raso VJ. The histochemical composition of human vertebral muscles. Spine 1984; 9(5): 470-473.

Matilla M, Hurme M, Alaranta H, Paljarvi L, Kalimo H, Falck B et al. The Multifidus muscle in patients with lumbar disc herniation. A histochemical and morphometric analysis of intraoperative biopsies. Spine 1986; 11(7): 732-738.

Solomonow, M., B. H. Zhou, et al. (1999). Biomechanics of increased exposure to lumbar injury caused by cyclic loading: Part 1. Loss of reflexive muscular stabilization. Spine **24**(23): 2426-34.

Solomonow M, Zhou M, Baratta RV, Burger E. Biomechanics and electromyography of a culmulative lumbar disorders: response to static flexion. Clinical Biomechanics 2003; 18(10): 890-898.

Williams M, Solomonow M, Zhou BH, Baratta RV, Harris M. Multifidus spasms elicited by prolonged lumbar flexion. Spine 2000; 25(22): 2916-2924.

Solomonow M, Zhou B, Barratta RV, Zhu Lu Y. Neuromuscular disorders associated with static lumbar flexion; a feline model. Journal of Electromyography Kinesiology 2002; 12(2): 81-90.

Solomonow M, Zhou M, Baratta BH, Harris M. Multifidus spasms elicited by prolonged lumbar flexion. Spine 2000; 25(22): 2916-2924.

Solomonow M, Baratta RV, Zhou BH, Burger E, Zieske A, Gedalia A. Muscular dysfunction elicited by creep of lumbar viscoelastic tissue. J Electromyogr Kinesiol. Aug 2003;13(4):381-396.

Urquhart, D. M., P. J. Barker, et al. Regional morphology of the transversus abdominis and obliquus internus and externus abdominis muscles. Clin Biomech 2005; Bristol, Avon **20**(3): 233-41.

Arokoski JP, Valta T, Airaksinen O, Kankaanpaa M. Back and abdominal muscle function during stabilization exercises. Archives of Physical Medicine and Rehabilitation 2001; 82(8): 1089-1098.

Danneels LA, Vanderstaeten GG, Cambier DC, Witvrouw EE, DeCuyper HJ. CT imaging of trunk muscles in chronic low back pain patients and healthy control subjects. European Spine Journal 2000; 9(4): 266-272.

Kader DF, Wardlaw D, Smith FW. Correlation between the MRI changes in the lumbar multifidus muscles and leg pain. Clinical Biomechanics 2000; 55(2): 145-149.

Laasonen EM. Atrophy of sacrospinal muscle groups in patients with chronic diffusely radiating lumbar back pain. Neuroradiology 1984; 26(1): 9-13.

Armstrong L, Carmichael C. **The Lance Armstrong Performance Program**, 2006: Rodale: Holtzbrinck Publishers.

Usabiaga J, Crespo R, Iza I, Aramendi J, Terrados N, Poza JJ. Adaptation of the lumbar spine to different positions in bicycle racing. Spine 1997; 22(17): 1965-1969.

Fanucci, E, Masala S, Fasoli F, Cammarata R, Squillaci E, Simoneti G. Cineradiographic study of the spine during Cycling: effects of changing the pedal unit position on the dorso-lumbar spine angle. Radiolgia Med(Torino) 2002; Nov-Dec. 104(5-6): 472-476.

Cameron MH. **Physical Agents in Rehabilitation; from Research to Practice**, 1999: W.B. Saunders Company: Philadelphia.

Gersh MR. **Electrotherapy in Rehabilitation**, 1992: F.A. Davis Company: Philadelphia.

Keller TS, Colloca CJ, Harrison DE, Moore RJ, Gunzburg R. Muscular contributions to dynamic dorsoventral lumbar spine stiffness. European Spine Journal 2007; 16(2): 345-254.