

Literatur zum Artikel von Eduard Kurz und Dirk Hübel: Das Training tiefer Rückenmuskulatur. Wissenschaftliche Erkenntnisse, methodische Herangehensweise, praktische Umsetzung, „Praxis Physiotherapie“ 1/2011, S. 6ff.

- Alaranta H, Tallroth K, Soukka A, Heliövaara M (1993) Fat content of lumbar extensor muscles and low back disability: a radiographic and clinical comparison. *J Spinal Disord* 6: 137-140
- Allison GT, Henry SM (2002) The influence of fatigue on trunk muscle responses to sudden arm movements, a pilot study. *Clin Biomech* 17: 414-417
- Allison GT, Morris SL (2008) Transversus abdominis and core stability: has the pendulum swung? *Br J Sports Med* 42: 930-931
- Allison GT, Morris SL, Lay B (2008) Feedforward responses of transversus abdominis are directionally specific and act asymmetrically: implications for core stability theories. *J Orthop Sports Phys Ther* 38: 228-237
- Barker PJ, Guggenheim KT, Grkovic I, Briggs CA, Jones DC, Thomas CDL, Hodges PW (2006) Effects of tensioning the lumbar fasciae on segmental stiffness during flexion and extension: Young Investigator Award winner. *Spine (Phila Pa 1976)* 31: 397-405
- Beith ID, Harrison PJ (2004) Stretch reflexes in human abdominal muscles. *Exp Brain Res* 159: 206-213
- Beith ID, Synnott RE, Newman SA (2001) Abdominal muscle activity during the abdominal hollowing manoeuvre in the four point kneeling and prone positions. *Man Ther* 6: 82-87
- Bergmark A (1989) Stability of the lumbar spine. A study in mechanical engineering. *Acta Orthop Scand Suppl* 230: 1-54
- Biering-Sorensen F (1984) Physical measurements as risk indicators for low-back trouble over a one-year period. *Spine* 9: 106-119
- Bogduk N, Wilson AS, Tynan W (1982) The human lumbar dorsal rami. *J Anat* 134: 383-397
- Bogduk N, Macintosh JE (1984) The applied anatomy of the thoracolumbar fascia. *Spine (Phila Pa 1976)* 9: 164-170
- Cholewicki J, Simons AP, Radebold A (2000) Effects of external trunk loads on lumbar spine stability. *J Biomech* 33: 1377-1385
- Cholewicki J, Ivancic PC, Radebold A (2002) Can increased intra-abdominal pressure in humans be decoupled from trunk muscle co-contraction during steady state isometric exertions? *Eur J Appl Physiol* 87: 127-133
- Comerford MJ, Mottram SL (2001) Movement and stability dysfunction - contemporary developments. *Man Ther* 6: 15-26
- Edwards AS (1946) Body sway and vision. *J Exp Psychol* 36: 526-535

- Endleman I, Critchley DJ (2008) Transversus abdominis and obliquus internus activity during pilates exercises: measurement with ultrasound scanning. Arch Phys Med Rehabil 89: 2205-2212
- Georgopoulos AP (2000) Neural aspects of cognitive motor control. Curr Opin Neurobiol 10: 238-241
- Hamilton C (2009) Insuffiziente Stabilisation der Wirbelsäule. In: Niemier K, Seidel W (eds) Funktionelle Schmerztherapie des Bewegungssystems. Springer Medizin Verlag, Heidelberg, pp 221-232
- Hasenbring M (2001) Biopsychosoziale Aspekte bei akuten und chronischen Rückenschmerzen. In: Zielke M, von Keyserlingk H, Hackhausen W (eds) Angewandte Verhaltensmedizin in der Rehabilitation. Pabst, Lengerich, pp 518-528
- Hides JA, Stokes MJ, Saide M, Jull GA, Cooper DH (1994) Evidence of lumbar multifidus muscle wasting ipsilateral to symptoms in patients with acute/subacute low back pain. Spine 19: 165-172
- Hides JA, Richardson CA, Jull GA (1996) Multifidus muscle recovery is not automatic after resolution of acute, first-episode low back pain. Spine 21: 2763-2769
- Hodges PW, Richardson CA (1996) Inefficient muscular stabilization of the lumbar spine associated with low back pain. A motor control evaluation of transversus abdominis. Spine (Phila Pa 1976) 21: 2640-2650
- Hodges PW, Richardson CA (1997) Feedforward contraction of transversus abdominis is not influenced by the direction of arm movement. Exp Brain Res 114: 362-370
- Hodges PW, Richardson CA (1998) Delayed postural contraction of transversus abdominis in low back pain associated with movement of the lower limb. J Spinal Disord 11: 46-56
- Hodges PW, Gandevia SC, Richardson CA (1997) Contractions of specific abdominal muscles in postural tasks are affected by respiratory maneuvers. J Appl Physiol 83: 753-760
- Hodges P, Cresswell A, Thorstensson A (1999) Preparatory trunk motion accompanies rapid upper limb movement. Exp Brain Res 124: 69-79
- Hodges PW, Cresswell AG, Daggfeldt K, Thorstensson A (2000) Three dimensional preparatory trunk motion precedes asymmetrical upper limb movement. Gait Posture 11: 92-101
- Juker D, McGill SM, Kropf P, Steffen T (1998) Quantitative intramuscular myoelectric activity of lumbar portions of psoas and the abdominal wall during a wide variety of tasks. Med Sci Sports Exerc 30: 301-310
- Jull GA, Richardson CA (2000) Motor control problems in patients with spinal pain: a new direction for therapeutic exercise. J Manipulative Physiol Ther 23: 115-117
- Kjaer P, Bendix T, Sorensen JS, Korsholm L, Leboeuf-Yde C (2007) Are MRI-defined fat infiltrations in the

multifidus muscles associated with low back pain? BMC Med 5: 2
Kurz E, Herbsleb M, Anders C, Czepa D, Puta C, Hilberg T
(2011) Different functional surfaces alter knee
muscle activation levels during bipedal standing in healthy
subjects - methodological aspects for sensory-
motor programs. 16th International Congress of the World
Confederation for Physical Therapy from 20-23
June 2011 in Amsterdam, submitted

Lühmann D, Müller VE, Raspe H (2003) Prävention von
Rückenschmerzen. Expertise im Auftrag der
Bertelsmann-Stiftung. Lübeck

MacDonald DA, Moseley GL, Hodges PW (2006) The lumbar
multifidus: does the evidence support clinical
beliefs? Man Ther 11: 254-263

Macintosh JE, Valencia F, Bogduk N, Munro RR (1986) The
morphology of the human lumbar multifidus.
Clin Biomech 1: 196-204

Marshall P, Murphy B (2003) The validity and reliability of
surface EMG to assess the neuromuscular response
of the abdominal muscles to rapid limb movement. J
Electromyogr Kinesiol 13: 477-489

McGill SM (2001) Low back stability: from formal description
to issues for performance and rehabilitation.
Exerc Sport Sci Rev 29: 26-31

McGill SM, Sharratt MT, Seguin JP (1995) Loads on spinal
tissues during simultaneous lifting and ventilatory
challenge. Ergonomics 38: 1772-1792

McGill SM, Grenier S, Kavcic N, Cholewicki J (2003)
Coordination of muscle activity to assure stability of the
lumbar spine. J Electromyogr Kinesiol 13: 353-359

Meier H (2005) Neue Aspekte der Rumpfstabilisation im Sport.
Leistungssport 35: 35-37

Meier H (2007) Medizinische Trainingstherapie in der Praxis.
Methodik der MTT. AMS Verlag, München

Moseley GL, Hodges PW, Gandevia SC (2002) Deep and superficial
fibers of the lumbar multifidus muscle are
differentially active during voluntary arm movements. Spine
(Phila Pa 1976) 27: E29-36

O'Sullivan PB (2000) Lumbar segmental 'instability': clinical
presentation and specific stabilizing exercise
management. Man Ther 5: 2-12

Otte C (2010) Therapie auf instabilen Flächen. Grundlagen und
Einsatz in der Neuroorthopädie. Z Physiother 62:
66-71

Pool-Goudzwaard AL, Vleeming A, Stoeckart R, Snijders CJ, Mens
JM (1998) Insufficient lumbopelvic
stability: a clinical, anatomical and biomechanical approach
to 'a-specific' low back pain. Man Ther 3: 12-
20

Richardson CA, Jull GA (1995) Muscle control - pain control.
What exercises would you prescribe? Man Ther 1:
2-10

- Richardson C, Hodges P, Hides J (2004) Therapeutic exercise for lumbopelvic stabilization: a motor control approach for the treatment and prevention of low back pain. Churchill Livingstone, London
- Sapsford RR, Hodges PW, Richardson CA, Cooper DH, Markwell SJ, Jull GA (2001) Co-activation of the abdominal and pelvic floor muscles during voluntary exercises. *Neurourology and Urodynamics* 20: 31-42
- Sapsford R (2004) Rehabilitation of pelvic floor muscles utilizing trunk stabilization. *Man Ther* 9: 3-12
- Taimela S, Kankaanpää M, Luoto S (1999) The effect of lumbar fatigue on the ability to sense a change in lumbar position. A controlled study. *Spine (Phila Pa 1976)* 24: 1322-1327
- Tsao H, Hodges PW (2007) Immediate changes in feedforward postural adjustments following voluntary motor training. *Exp Brain Res* 181: 537-546
- Tsao H, Hodges PW (2008) Persistence of improvements in postural strategies following motor control training in people with recurrent low back pain. *J Electromyogr Kinesiol* 18: 559-567
- Vleeming A, Pool-Goudzwaard AL, Stoeckart R, van Wingerden JP, Snijders CJ (1995) The posterior layer of the thoracolumbar fascia. Its function in load transfer from spine to legs. *Spine (Phila Pa 1976)* 20: 753-758
- Zhao WP, Kawaguchi Y, Matsui H, Kanamori M, Kimura T (2000) Histochemistry and morphology of the multifidus muscle in lumbar disc herniation: comparative study between diseased and normal sides. *Spine (Phila Pa 1976)* 25: 2191-2199