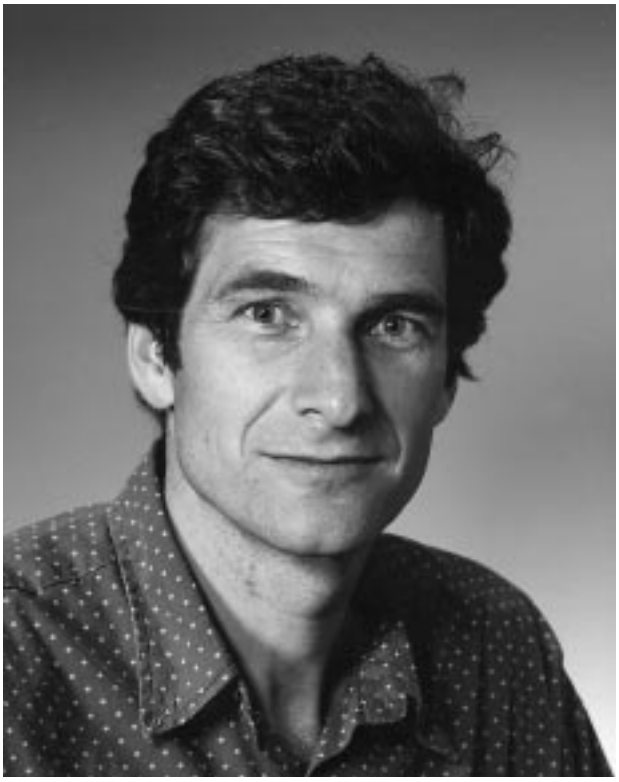
Profile



Dr. Walter Herzog, PhD

Dr. Herzog did his undergraduate training at the Federal Technical Institute in Zurich, Switzerland and his graduate training in Biomechanics at the University of Iowa, USA. Following his doctoral research, he went to the University of Calgary as a postdoctoral fellow in Biomechanics and Clinical Neuroscience, a fellowship that was sponsored by the College of Chiropractors of Alberta.

Currently, Dr. Herzog is a full Professor at the University of Calgary in the Faculties of Kinesiology, Engineering and Medicine. He is also the Associate Dean Research of the Faculty of Kinesiology.

Dr. Herzog's chiropractic research has been focused on the mechanics of spinal manipulation. Specifically, he quantified for the first time the forces exerted by chiropractors on patients for a variety of different treatment modalities, and also recorded the corresponding movements of vertebral bodies and muscular reflex responses. Since 1995, Dr. Herzog is a member of the task force on chiropractic research in Canada and has served in the same capacity as a consultant to the U.S. task force in 1996.

Dr. Herzog has been a member of the International Society of Biomechanics, and serves currently as the Past-President of the Canadian Society for Biomechanics where he served on the Executive Board for eight years. Dr. Herzog was a member of the Medical Research Council (MRC) Biomechanical Engineering Grants Review Committee (1995–1998), and serves in the same capacity on the Scholarships and Fellowships Review committee for the Natural Sciences and Engineering Research Council (NSERC) of Canada.

Dr. Herzog has served (or is serving) on the editorial boards of nine scientific refereed journals including the Journal of the Canadian Chiropractic Association, JMPT, The Journal of Applied Biomechanics, and is an editorial consultant to the Journal of Biomechanics.

Dr. Herzog has written (edited) two books on the Biomechanics of the Musculoskeletal System (with B. Nigg) and on the Theoretical Modelling of Skeletal Muscles (with M. Epstein), and is presently completing a book on the Biomechanics of Spinal Manipulation due to appear in 1999.

Dr. Herzog's list of scientific refereed journal articles for 1998 (as of September 15, 1998) includes:

In press

- Forcinito M, Epstein M, Herzog W. Don't give up on rheological muscle models. Journal of Biomechanics (accepted August 1998).
- Herzog W, Leonard TR, Wu J. Force Depression following skeletal muscle shortening is long lasting. Journal of Biomechanics (accepted August 1998).
- Herzog W, Scheele D, Conway PJ. Reflex responses of back and limb muscles associated with spinal manipulative therapy. Spine (accepted May 1998).

- Maitland M, Leonard T, Frank CB, Shrive NG, Herzog W. A method to assess in-vivo knee stability longitudinally in an animal model of ligament injury. Journal of Orthopaedic Research (accepted April 1998, proofs July 1998).
- Maitland M, Leonard T, Frank CB, Shrive NG, Herzog W. Longitudinal measurement of tibial motion relative to the femur during passive displacements and femoral nerve stimulation in the ACL-deficient cat model of osteoarthritis. Journal of Orthopaedic Research (accepted April 1998, proofs July 1998).
- Suter E, Herzog W, De Souza K, Bray R. Inhibition of the quadriceps muscles in patients with anterior knee pain. Journal of Applied Biomechanics (accepted, April 1998).
- Suter E, Herzog W, Leonard TR, Nguyen H. One-year changes in hindlimb kinematics, ground reaction forces and knee stability in an experimental model of osteoarthritis. Journal of Biomechanics (accepted March 1998).
- Herzog W. Force-sharing among the primary cat ankle muscles. European Journal of Morphology (accepted and revised April 1998).
- Wu JZ, Herzog, W, Epstein M. Effects of Inserting a Pressensor film into an articular joints on the actual contact mechanics. Journal of Biomechanical Engineering (to be published October 1998).
- Koh TJ, Herzog W. Eccentric training does not increase sarcomere number in rabbit dorsi flexor muscles. Journal of Biomechanics (accepted, January 1998).
- Hart DA, Archambault JM, Kydd A, Reno C, Frank CB, Herzog W. Gender and neurogenic variables in tendon biology: possible contributing factors to repetitive motion disorders. Clinical Orthopaedics and Related Research (invited review, September 1997, revised January 1998).
- Banes AJ, Hersovsky G, Larson C, Tsuzaki M, Noel S, Judex S, Archambault JM, Zernicke RF, Herzog W, Kelley S, Miller L. Mechanical load stimulates expression of novel genes in vivo and in vitro in avian flexor tendon cells. Osteoarthritis and Cartilage (invited review, September 1997).
- Koh TJ, Herzog W. Increasing the moment arm of the tibialis anterior induces structural and functional adaptation: implications for tendon transfer. Journal of Biomechanics (accepted with minor revisions, September 1997).

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- Herzog W. (1998) Muscle modelling (invited editorial). Journal of Electromyography and Kinesiology 8:59–60.
- Forcinito M, Epstein M, Herzog W. (1998) A numerical study of the stiffness of a sarcomere. Journal of Electromyography and Kinesiology 8:133–138.
- Suter E, Herzog W, Bray RC. (1998) Quadriceps inhibition following arthroscopy in patients with anterior knee pain. Clinical Biomechanics 13:314–319.
- Koh TJ, Herzog W. (1998) Excursion is important in regulating sarcomere number in the growing rabbit tibialis anterior. Journal of Physiology (London) 508.1:267–280.
- Herzog W. (1998) Letter to the editor re: Colloca CJ, Fuhr AW. JMPT 21:128-129. Journal of Manipulative and Physiological Therapeutics 373–374.
- Herzog W. (1998) History dependence of force production in skeletal muscle: a proposal for mechanisms. Journal of Electromyography and Kinesiology 8:111–117.
- Herzog W, Sokolosky J, Zhang YT, Guimaraes ACS. (1998) EMG-force relation in dynamically contracting cat plantaris muscle. Journal of Electromyography and Kinesiology 8:147–155.
- Herzog W, Hasler EM, Maitland ME, Suter E, Leonard TR, Müller C. (1998) In-vivo mechanics and in-situ stability of the anterior cruciate ligament-deficient knee. An animal model of osteoarthritis. Sportorthopädie-Sporttaumatologie 14.2:67–74.
- Hasler EM, Herzog W, Leonard TR, Stano A, Nguyen H. (1998) In-vivo knee joint loading and kinematics before and after ACL transection in an animal model. Journal of Biomechanics 31:253–262.
- Herzog W. (1998) Torque: Misuse of a misused term. Journal of Manipulative and Physiological Therapeutics 21:57–59.
- Hasler EM, Herzog W. (1998) Quantification of in-vivo patellofemoral contact forces before and after ACL transection. Journal of Biomechanics 31:37–44.
- Wu JZ, Herzog W, Epstein M. (1998) Evaluation of the finite element software ABAQUS for

biomechanical modelling of biphasic tissues. Journal of Biomechanics 31:165–169.
- Wu JZ, Herzog W, Epstein M. (1998) Articular joint mechanics with biphasic cartilage layers under dynamic loading. Journal of Biomechanical Engineering 120:77–84.
- Huber A, Suter E, Herzog W. (1998) Inhibition of the quadriceps muscles in elite male volleyball players. Journal of Sports Sciences 16:281–289.

In the past five years, Dr. Herzog has enjoyed continuous funding from:
- The College of Chiropractors of Alberta
- The Medical Research Council of Canada (MRC)
- The Natural Sciences and Engineering Research Council of Canada (NSERC)
- The Alberta Heritage Foundation for Medical Research
- The Chiropractic Foundation for Spinal Research
- The Arthritis Society of Canada

Dr. Herzog's research group consists presently of three Research Assistants, one Secretary, four M.Sc. students, two Ph.D. students, and four Postdoctoral trainees. People who are directly involved in chiropractic research at present include:
- Bruce Symons D.C. (part-time researcher)
- Jill Hayden D.C. (CMCC research resident)
- Phil Conway D.C. (part-time researcher)
- Gord McMorland D.C. (part-time researcher)
- Esther Suter Ph.D. (Research collaborator)
- Benno Nigg Ph.D. (Consultant)
- Ryan Carter D.C. (part-time researcher)

Current chiropractic research projects include:
- Determination of the stresses and strains on the vagus and phrenic nerves, the carotid and vertebral arteries and the cervical intervertebral discs during different types of chiropractic spinal manipulations in the cervical spine (Principal Investigator: Bruce Symons, D.C.).
- Assessment of changes in muscular stiffness and muscular activation in patients with hypertonic musculature (Principle Investigator: Jill Hayden, D.C.).
- Determination of the effects of sacroiliac joint manipulation on quadriceps muscle inhibition in patients with knee pain and partial loss of quadriceps control (Principle Investigators: Gordon McMorland, D.C., and Esther Suter, Ph.D.).
- The meaning of cavitation in chiropractic spinal manipulation (Principle Investigator: Phil Conway, D.C.).
- The relationships between the forces exerted by chiropractors during spinal manipulation and the corresponding peak and average pressures and contact areas (Principle Investigator: Walter Herzog, Ph.D.).
- Reflex responses associated with spinal manipulative treatments (Principle Investigator: Walter Herzog, Ph.D.), Activator treatments (Principle Investigator: Bruce Symons, D.C.), and Integrator treatments (Principle Investigator: Ryan Carter, D.C.).

On November 15, 1998 at the 1st Canadian Chiropractic Scientific Research Symposium which was held at the University of Calgary, Dr. Walter Herzog received the Researcher of the Year Award in recognition of his commitment and dedication to advancing the research goals of the Canadian Chiropractic Association.