



International Society of Biomechanics Newsletter

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ISSUE Number 64
November-December, 1996

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AFFILIATE SOCIETIES OF ISB:

American Society of Biomechanics; British Association of Sport and Exercise Sciences; Bulgarian Society of Biomechanics; Canadian Society of Biomechanics/Société canadienne de biomécanique; Chinese Society of Sports Biomechanics; Comitetul de Biomecanica Inginerie si Informatica (Romania); Czech Society of Biomechanics; Japanese Society of Biomechanics; Korean Society of Sport Biomechanics; Polish Society of Biomechanics; Russian Society of Biomechanics; Société de biomécanique (France).

**From the Organizing Committee
Update on the XVith ISB Congress**

With the present issue of Newsletter you will find the Final Announcement of the forthcoming ISB Congress in Japan. Please note the following changes from the booklet:

Tutorial Lectures will be arranged on Sunday, 24 August 1997, 9:00 - 12:00 & 13:00 - 16:00 at Tokyo Metropolitan University. For further information please contact Dr. Fred Yeadon (Educational officer)

<m.r.yeadon@lboro.ac.uk> (Fax: +44-1509-223971).

Young Investigator Awards: Competitors will be judged by the Awards Committee on the quality of their paper and their competence in giving the presentation. Candidates do not need to submit a full-length paper nor a curriculum vitae to the ISB Awards Committee.

For more information of the Congress contact:

Senshi Fukashiro, PhD

Secretary General

XVith ISB Tokyo Congress 1997

Fax: +81-3-5454-9494

E-mail: isb97@idaten.c.u-tokyo.ac.jp

Web-site: <http://idaten.c.u->

IOC-Olympic Prize Awarded

This past summer, the International Olympic Committee- Olympic Prize for science related to human movement, physical exercise and sports was awarded. The recipients of the \$250M award were Jeremy N. Morris, Professor Emeritus of Public Health at the University of London, and Ralph S. Paffenbarger, Jr, Professor Emeritus of Epidemiology at the Stanford School of Medicine. The pioneering studies of these two epidemiologists demonstrated how exercise reduces the risk of heart disease and led to further work that contributed enormously to the knowledge about the relationship between regular physical activity and good health. For information on the winners, and future IOC-Olympic Prizes visit the website at <http://parke-davis.com/iocprize/>.

Job Market

Faculty Positions

◇The Department of Exercise Science and Physical Education at Arizona State University announces

an available position, at the rank of Assistant Professor, for an individual with a specialization in biomechanics and a strong secondary interest in motor control: Responsibilities include undergraduate and graduate teaching and advisement, development of an independent research program, and service to the department, college, and university. Application deadline: February 1, 1997 or the first of each month thereafter until filled. For complete job announcement, contact Philip E. Martin, Chair - Search Committee, Department of Exercise Science and Physical Education, Box 870404, Arizona State University, Tempe, Arizona 85287-0404, Tel: (602) 965-1023, Fax: (602) 965-8108, Email: philip.martin@asu.edu

◇The Department of Exercise Science at The University of Iowa seeks an individual to fill a newly created tenure-track position at the level of Assistant Professor. We seek an individual who can contribute to our teaching mission in the areas of Athletic Training and Anatomy, and who shows a strong potential to develop a vigorous program of independent research. Individuals trained in disciplines such as Athletic Training, Physical Therapy, Sports Medicine, etc may be particularly well-suited for this position. Application review commences January 13, 1997. Send a CV, a statement of research plan, representative publications, and three letters of recommendation to K.J. Cole, PhD, Department of Exercise Science, The University of Iowa, S. 501 Field House, Iowa City, Iowa, 52242

◇Applications are being solicited for a faculty position in the Department of biomedical Engineering at the University of Michigan from those who have displayed or show promise of significant leadership in the area of Biomechanics. Qualifications include an outstanding academic record, significant publications, a PhD related to Biomedical Engineering with at least one engineering degree and a demonstrated commitment to teaching and research. Potential areas of specialization include fluid, cell, or tissue biomechanics, and/or other biomechanics areas. Send a CV and the names of five references before April 15, 1997 to D.B. Chaffin, PhD, Chair of the Search Committee, Department of Biomedical Engineering, University of Michigan, 2350 Hayward, 3304 G.G. Brown, Ann Arbor, MI, 48109.

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◇ The Program in Biomedical Engineering, in conjunction with the Musculo-Skeletal Research Laboratory, at State University of New York at Stony Brook is accepting applications for a faculty position in the area of Tissue Engineering and Biomaterials. Candidates should hold a Ph.D. or equivalent in Materials Science, Biomedical Engineering, or a closely related discipline. Preference will be given to those with a research focus in cell /tissue mechanics, or cell / tissue engineering of musculo-skeletal tissues. Candidates for this position will be expected to develop externally funded research programs and to teach effectively at both undergraduate and graduate levels. Commitment to active collaboration with faculty in the School of Medicine is essential. While it is expected that appointment will be at the assistant professor level, candidates with exceptional records in either academic or industrial research will be considered for appointment at a higher level. Send a CV, list of publications and names of at least three references to: C. Rubin, PhD, School of Medicine, T18-030, State University of New York, Stony Brook, NY 11794-8181.

◇ The Mechanical Engineering Department and Department of Functional Restoration of Stanford University announces an opening for a tenure track faculty position. The level of the appointment will be made depending on the strength of the candidate. Candidates must have a PhD in bioengineering, mechanical engineering, or a related discipline with interests in some specific area of musculoskeletal biomechanics. Send a CV and the names of three references by February 1, 1997 to: D.R. Carter, PhD, Search Committee Chair, Biomechanical Engineering Division, Mechanical Engineering Department, Stanford University, Stanford, CA, 94305-3030, Email: carter@bones.stanford.edu.

◇ The Department of Orthopaedics at the New Jersey medical School is seeking a biomechanical engineer for a tenure track position with a strong background in experimental and analytical (FEA) methods applied to the musculoskeletal system. A strong record of independent research and history of competitiveness in federal and industrial funding is necessary. Send a CV and a description of present and future research interests to: F.F. Behrens, MD, Chair, Department of Orthopaedics, New Jersey Medical School, 90 Bergen Street,

Doctors Office Center, Suite 5200, Newark, New Jersey, 07103.

◇ The Center for Biomedical Engineering of the School of Engineering and Applied Science at Columbia University is seeking applications for three tenure track positions in the areas of cardiovascular research, cellular engineering, and biomedical imaging. Candidates should have a background in a traditional engineering discipline including bioengineering. The level of the appointment will be made depending on the strength of the candidate. Send a CV, a description of present research interests, three samples of publications, record of funding, career goals, and the names of five references to V.C. Mow, PhD, Columbia University, SW Mudd Building, Room 248, New York, New York, 10027, Tel: (212)305-1515, Email: mow@cuorma.orl.columbia.edu.

◇ Children's Hospital - San Diego, has an immediate opening for the director of the Orthopedic Research Center and Motion Analysis Laboratory. The successful candidate will be responsible for the clinical operation of the Motion Analysis Laboratory and will direct a multidisciplinary staff. Applicants should have a doctoral degree in biomechanics, engineering, or other field related to musculoskeletal research, along with a proven record in experimental research and data collection, research design, grant writing, obtaining funding and grant management. Expertise in gait analysis is preferred, but not required. The individual should be eligible for and interested in pursuing a faculty appointment at the University of California, San Diego. Contact: D. Sutherland, MD, or H. Chambers, MD, Motion Analysis Lab, Tel: (619)576-5807, or send your resume to: Children's Hospital-San Diego, Human Resources Department, 3020 Children's Way, MC 5040, San Diego, CA 92123-4282.

◇ The Department of Physical Therapy at Northwestern University Medical School offers a full-time non-tenure track faculty position in Physical Therapy. Responsibilities include teaching of entry-level and graduate kinesiology and biomechanics, scholarly and clinical service activities. Minimum qualifications include a post-professional master's degree, eligibility for PT licensure in Illinois, previous teaching experience in a clinical or academic setting, and the ability to apply knowledge of kinesiology and biomechanics

to the management of patients with neuromusculoskeletal problems. Applications will be accepted until the position is filled. Send CV and names of three references to L.D. Hedman, MS, PT, Programs in Physical Therapy, Northwestern University Medical School, 645 North Michigan Avenue, Suite 1100, Chicago, IL 60611, Tel:(312) 908-6782, Fax: (312)908-0741, Email: l-hedman@nwu.edu

◇ Two full time, tenure track positions at the assistant or associate professor level are available at Long Island University in the Division of Physical therapy. Cardiopulmonary, biomechanics, motor control and pediatrics are of special interest, however, other areas of experience will be considered. Masters degree required, doctorate or degree in progress, preferred; PT licensure or eligibility in New York State and clinical experience s preferred. Two positions are presently available and two positions will be available September 1, 1997. Contact S. Jaffee-Gropack, M.S., P.T., Division of Physical Therapy, Long Island University, University Plaza-Health Sciences Center, Brooklyn, NY 11201-5372. Tel:(718) 488-1063, Email: sjaffee@aurora.liunet.edu.

◇ The Departments of Physical Medicine & Rehabilitation and Orthopedics of Northwestern University Medical School jointly offer a tenure-track position at the Assistant Professor level for a Biomedical Engineer/Biomechanist to participate in ongoing, collaborative research projects between the two departments. The appointee will be expected to participate in studies dealing with mechanical and reflex characteristics of neurologically impaired limbs, primarily in subjects with brain and spinal cord injury, and in studies concerning mechanisms governing stability of both normal and injured joints, especially knee joints sustaining injuries to cruciate or collateral ligaments. The candidate must have a Ph.D. in Bioengineering/Biomechanics, or a related discipline, a minimum of two years of postdoctoral training. A history of prior successful grant acquisition is a plus. Send a CV, statement of interest, and names, addresses, phone numbers and email addresses (if available) of at least four referees who can evaluate your qualifications and suitability for the position to: Contact: W.Rymer, MD, PhD, Chair, PM&R/Orthopaedics Faculty Position, RIC/SMPP, 345 E. Superior St., Suite

1406, Chicago, IL 60611, Tel:(312)908-3381, Fax:(312)908-2208, Email: w-rymer@nwu.edu

◇ The Department of Orthopaedic Surgery at the Mount Sinai Medical Center in New York is recruiting an individual to help develop and direct a biomechanical and biomaterials research laboratory. Individuals with appropriate backgrounds in biomechanical engineering and a willingness to collaborate with attending and resident orthopaedists should send a CV to: D.S. Springfield, MD, Professor and Chairman, Department of Orthopaedic Surgery, Mount Sinai Medical Center, Box 1188, Gustave L. Levy Place, New York, NY 10029

◇ The Department of Kinesiology at the University of Windsor invites applications for a tenure track position at the rank of Assistant Professor. The appointment will commence July 1, 1997. The successful candidate will hold a Ph.D. in Kinesiology or Physical Education specializing in Biomechanics with an emphasis on biomechanics in the work place. The successful candidate will be expected to teach courses at both the graduate and undergraduate levels. The candidate must also show evidence of strong research training with the ability to conduct both independent and collaborative research within the Applied Human Performance program. This advertisement is directed to Canadian citizens and permanent residents. Applications should be submitted by January 31, 1997. Send a CV and three letters of reference to G.A. Olafson, PhD, Department of Kinesiology, University of Windsor, WINDSOR, Ontario, Canada, N9B 3P4, Tel: 519-253-4232 ext. 2429, Fax: 519-973-7056, Email: g7060@uwindsor.ca

◇ The Department of Kinesiology and Physical Education at California State University, Long Beach has a position at the Assistant or Associate level. Strong teaching skills and a record of research productivity in addition to the ability to communicate effectively with an ethnically and culturally diverse community are required. Contact: M. Lacourse, PhD, Biomechanics Search Committee Chair, Department of Kinesiology and Physical Education, Cal State, Long Beach, 1250 Bellflower Blvd, Long Beach, CA, 90840.

Postdoctoral Positions

◇ Post-doctoral positions are available beginning 1 September 1997 for a program in ``Applied Mathematics for Systems of Oscillators in Biology

& Engineering" at Boston University. The explicit goal of this program is to provide the opportunity for collaborative interdisciplinary research training with faculty in Mathematics, Aerospace & Mechanical, Biomedical Engineering, and Health Sciences. The specific problems to be addressed using this approach fall into three classes of coupled oscillator systems: neural, mechanical, and neuro-mechanical. It is expected that strong candidates will have a substantial research interest in at least one of these areas. Send a 1-page statement that includes your career goals, how this position satisfies those goals, and why you think you are a good candidate; a C.V.; and three letters of recommendation to: Oscillator Search Committee, Department of Mathematics, Boston University, 111 Cummington Street, Boston, MA 02215, <http://eng.bu.edu/INTERDISC/Oscillation/>

◇ A 1-year post-doctoral position is available at the Centre for Studies in Aging, located at Sunnybrook Health Science Centre (University of Toronto). The area of research will involve studies of human postural control, with the underlying objective of understanding the causes of falls in the elderly and developing novel approaches for preventing falls and related injuries. A strong background in the study of human movement control is needed. Previous experience in studying postural control would be a definite asset. Send a CV by FAX or Email to Brian Maki, PhD, Peng, Centre for Studies in Aging, 2075 Bayview Avenue, Toronto, Ontario, CANADA M4N 3M5, Tel:(416)480-6100 x3513, Fax:(416)480-5856, E-mail: maki@srcl.sunnybrook.utoronto.ca, http://www.sunnybrook.utoronto.ca:8080/~csia/gen_info/maki.html

◇ The Vermont Back Research Center, housed in the Department of Orthopaedics & Rehabilitation has an opening for a Ph.D.-level rehabilitation or ergonomic engineer, to plan, direct, and conduct biomechanical and rehabilitation engineering research to reduce back and spine injuries and disability. This position requires previous experience in research and professional publication and the ability to manage multiple projects and project teams. The position available is for a postdoctoral associate but carries the potential for becoming a research, non-tenure-track faculty position. Contact: E. Saganich, Administrator, Vermont Back Research Center, 1 So. Prospect Street, Burlington VT 05401

◇ Two research positions are available in a "virtual arm" project and a project on knee stability the goals of which are to create musculoskeletal models of the arm and leg that incorporate the bones, muscles, tendons, and ligaments and are driven in real time using experimental data. These models are being used to explore ligament loading (about the knee) and neural control of trajectory planning (in the arm). The ideal candidate will have a working knowledge of muscle and joint mechanics, motor control, electromyography, and computational biomechanics. Computer programming skills are a requirement. Send a CV, the names of three references, and at least one sample publication to T.S. Buchanan, Ph.D., University of Delaware, 126 Spencer, Newark, DE 19716, Tel:(302)831-2410, Fax:(302)831-3619, Email: buchanan@me.udel.edu, WWW: <http://www.me.udel.edu/buchanan>

◇ Applications are invited for a position at the Human Performance Laboratory, The University of Calgary that focuses on lower extremity biomechanics. The successful applicant will work on industry driven research projects related to lower extremity function and on ongoing research projects associated with lower extremity kinematics and kinetics. Experience in biomechanics and engineering is desired. Priority will be given to Canadian citizens and permanent residents. Send CV to: D. Stefanyshyn, PhD, Human Performance Laboratory, Faculty of Kinesiology, The University of Calgary, 2500 University Drive N.W., Calgary, Alberta, T2N 1N4, Email: darren@kin.ucalgary.ca

◇ The Center for Locomotion Studies at Penn State University announces a nine-month fellowship open to a postdoctoral candidate with interests in lower extremity biomechanics that are consistent with the ongoing research program of the center. Current CELOS research interests include posture and gait in the elderly, the neuropathic complications of diabetes, foot and lower extremity biomechanics, exercise in microgravity, finite element modeling of the foot, and the role of somatosensory input in motor control. The successful candidate will be expected to teach one graduate-level course in biomechanics and to assume project leadership on one of several funded research projects in the area of posture and gait. Send a CV, one sample of a recent publication or manuscript, and the names of three individuals who can be contacted for a recommendation. Contact: P.R. Cavanagh, Ph.D.; Postdoctoral Fellowship Screening Committee;

Center for Locomotion Studies; Penn State University; Box 1000A; Room 10 IM Building; University Park, PA 16802-2002. Email: prc@psu.edu are encouraged.

Graduate Assitantships

◇A Graduate Research Assistantship (Ph.D.) at the University of California-Berkeley is available for a highly qualified and motivated student interested in Locomotion Biomechanics. A qualified student could pursue a Ph.D. in the Department of Integrative Biology or in the Graduate Group in Bioengineering. The research project focuses on: 1) the link between musculoskeletal stiffness and the biomechanics of locomotion; 2) the mechanisms for adjusting musculoskeletal stiffness during locomotion. Contact: C.T. Farley, Ph.D. 103 Harmon University of California Berkeley, CA. 94720-4480, Tel:(510) 643 6698 Email: cfarley@garnet.berkeley.edu

<http://garnet.berkeley.edu:80/~hbblomxl/>

◇A PhD student is being sought to participate in collaborative research between the Mechanical Engineering Department, the Center for Locomotion Studies, and the Hershey medical Center at Penn State University. The research is directed at reducing the incidence of proximal femoral fractures due to falls using innovative floor designs. candidates should have an Master's degree, preferably in a traditional engineering discipline, a strong background in mechanical systems, and a strong interest in biomechanical engineering. Contact: D.A. Streit, PhD, 101 Reber Bldg, Penn State University, University Park, PA, 16802, Tel:(814)863-1286, Email:dstreit@psu.edu.

◇The Musculoskeletal Research group at the University of Calgary is interested in receiving applications from individuals who would like to pursue graduate studies or postdoctoral studies in the areas of joint mechanics related to osteoarthritis or muscle mechanics. Funding possibilities for excellent candidates are available. Candidates with a strong theoretical background in mechanics and computing, or an interest in *in-vivo* experimental models should send a CV to: W. Herzog, PhD, Faculty of Kinesiology, the University of Calgary, 2500 University Drive N.W., Calgary, Alberta Canada, T2N 1N4, Tel: (404)220-8525, Fax: (403)284-3553, Email: walter@kin.ucalgary.ca.

◇A graduate research assistantship available to pursue a PhD degree in Bioengineering, Mechanical Engineering, Engineering Mechanics, or Materials

Science & Engineering related to 3-D finite element modeling and fatigue testing of fiber reinforced polymer (FRP) composite components for hip joint arthroplasty. A Master's degree with expertise in finite element modeling and mechanics of FRP composites is required. The position starts no later than mid-Jan 1997. Send CV, transcripts, and name/address/phone number of 3 references to R.A. Latour Jr., PhD, Department of Bioengineering, 501 Rhodes Hall, Clemson University, Clemson, SC, 29634, (864) 656-5552, email: robert.latour@ces.clemson.edu.

◇The Center for Locomotion Studies (CELOS) at Penn State University invites applications from students interested in graduate study. Current CELOS research interests include posture and gait in the elderly, the neuropathic complications of diabetes, foot and lower extremity biomechanics, exercise in microgravity, finite element modeling of the foot, and the role of somatosensory input in motor control. Opportunities exist to pursue both M.S. and Ph.D. degrees in any of these disciplines however, preferential consideration will be given to applicants who already hold the masters degree. CELOS is an interdisciplinary research center having affiliations with Penn State Graduate Programs in Kinesiology, Bioengineering, and Mechanical Engineering. In addition to a number of assistantship opportunities that are available, CELOS has a special endowment that will be used to augment the stipend of highly qualified students who bring with them their own extramural stipend and tuition support. Applications must be received by February 1, 1996. Contact: L. Mulfinger, PhD, at The Center for Locomotion Studies, Room 10 IM Building, Penn State University, University Park, PA, 16802, 814-865-1972, lxm14@psu.edu.

◇This position is available for graduate work at the M.S. or Ph.D. level at the Center for Biomedical Engineering and is part of a project directed at the development and evaluation of adaptive neural network controllers for use in Functional Neuromuscular Stimulation systems. The project includes: 1) the design of adaptive feedforward control systems using neural network techniques, 2) the evaluation and iterative development of the control system using computer simulated musculoskeletal models, and 3) the experimental evaluation of the control system in experiments on human subjects. Contact: J. Abbas, PhD, Center for Biomedical Engineering, University of Kentucky, Lexington, KY 40506-0070, Tel:(606)257-426,

Fax:(606)257-1856, Email: abbas@pop.uky.edu,
<http://www.uky.edu/RGS/CBME/abbas>

◇Graduate assistantships in anatomy and in Biomechanics are available at the University of Nebraska- Omaha. Duties include data collection for research, anatomy laboratory maintenance, assisting teaching laboratories and partially grading in anatomy- or biomechanics-related classes.

Research includes evaluation of performance and human interaction with exercise equipment and a variety of projects related to gait, injury mechanisms, basic lower extremity function and research methodology. Applications must be received by February 1, 1997. Contact: N. Stergiou, PhD, School of HPER, University of Nebraska at Omaha, Omaha, NE 68182-0216, Tel:(402)554-2670, Fax:(402)554-3693, Email: stergiou@coe.unomaha.edu

Master's or Bachelor's Level

◇A research engineer position is available, the responsibilities of which include the design, fabrication, testing and maintenance of equipment and instruments used in experiments; installation, testing, and maintenance of real-time data acquisition systems for biomechanical research that include but are not limited to motion capture systems, force platforms, EMG, and postural control testing. This individual may also be called upon to assist or conduct motion analysis experiments. Contact: F. Gao, PhD, Programs in Physical Therapy, Northwestern University Medical School, 645 N. Michigan Avenue, Suite 1100, Chicago, IL 60611, Fax: (312)908-0741, Email: f-gao@nwu.edu

◇Automotive seat supplier in Michigan has a position available for a "seat comfort research engineer." Ideal candidate will have Masters degree in engineering and will have experience in or academic study of factors relating to seat comfort(lumbar,back,vibration. Contact: R. Millman, Tel: (810)357-5373, Fax:(810)357-5379, Email: autojo19@autojo19.rabbit.net

◇A full-time Research Technician's position is currently open at Legacy Good Samaritan Hospital & Medical Center in Portland, Oregon. The research focus of the laboratory is the control of stance and balance. The position is available September 16, 1997. Responsibilities include assisting with data collection, analysis, and presentation; recruiting and scheduling subjects. Good communication skills and required and

previous research experience with computer programming is desirable. Send a CV, and names and address of 3 people who may be contact as references to: C. Shupert, PhD, or F.B. Horak, PhD, R.S. Dow Neurological Sciences Institute, Legacy Good Samaritan Hospital, 1120 N.W. 20th Avenue, Portland, Oregon 97209, Fax:(503)413-7229

◇Applicants for this entry level research engineering position should have a Bachelors degree in biology, physics or engineering. Previous experience in materials testing, preferably of biologic samples, is required. Basic knowledge of biomechanics, anatomy, engineering mechanics and strength of materials is highly desired. Experience with PC's in DOS and Windows environment is mandatory. Major job responsibilities include preparation of connective tissue samples from basic research projects and preclinical pharmaceutical studies with subsequent completion of routine biomechanical tests. In addition, the position will require the individual to assist in developing new biomechanical tests and design appropriate fixtures and instrumentation. Literature searches and review of scientific journal articles will be required. Limited travel for equipment training, conference attendance and offsite studies may be required. Interested applicants may mail their resumes to: Send a CV to G. Gross, Procter & Gamble Pharmaceuticals, Miami Valley Laboratories, POB 538707, Cincinnati, OH 45253 Email: gross.gj@pg.com

◇Applications are being accepted for a full-time research physical therapist or kinesiologist at the University of Virginia for the Motion Analysis Laboratory. The applicants for this position should have expertise and experience in 3-D gait analysis. The person in this position will perform clinical and research studies on children and adults with cerebral palsy and other neuromuscular conditions. A Masters level preparation is preferred but not required but a strong background in biomechanics is required. The new faculty member will be joining an established, state-of-the-art motion analysis laboratory. More information about the lab may be obtained from our homepage at <http://www.med.virginia.edu/medcntr/gaitlab>. If interested, please send a cover letter, curriculum vitae, and three letters of reference to: M. Abel, M.D. Medical Director Motion Analysis Laboratory Kluge Children's Rehabilitation Center 2270 Ivy Road Charlottesville, VA 22903 (804) 982-4215

Industry, Health care, et al.

◇The Orthopaedic Research Institute, Inc. (ORI) of Wichita is seeking a design/development engineer to conduct innovative studies aimed at translating clinical/surgical needs of Orthopaedics and other healthcare related technology into marketable devices, products, implants, and related instrumentation. Qualified individuals will have a Master's degree in Mechanical Engineering with experience in finite element modeling, CAD, (ANSYS) prototype development and testing, and patenting of devices. Experience specifically in orthopaedics and in manufacturing would also be desirable. Leadership ability and creative collaboration with orthopaedic surgeons and other healthcare personnel will be essential. Send a CV to S. Martin, Human Resources, 929 N. St. Francis, Wichita, KS 67214, Fax:(316)291-4570.

◇The National Rehabilitation Hospital, located in Washington D.C., is searching for an individual to fill the position of Director, Rehabilitation Engineering/Assistive Technology. The successful candidate must have a commitment to providing high quality services to patients and clinicians, a proven track record of funded research in assistive technology, and the ability to provide the creative development and administrative supervision of programs and services that implement the utilization of technology for improving patient performance. The candidate should have a minimum of master's degree in engineering or related field and a minimum of 5 years experience in research and management. Send a CV and salary requirements to: W. Peterson, National Rehabilitation Hospital, 102 Irving Street, NW, Washington, DC, 20010.

◇Director of Engineering: Omeros Medical Systems, Inc., a Seattle based firm, develops and commercializes (1) novel surgical/orthopedic, implantable devices and (2) proprietary therapeutic approaches to the management of surgical pain and inflammation, vasospasm, smooth muscle spasm and vascular restenosis. This position will support the Company's engineering and product development initiative in the area of implantable bioabsorbable orthopedic devices, and will require engineering management, product development, design analysis, project planning, FDA process management and engineering team building. Additional responsibilities include: (1) the identification, negotiation, and management of outside engineering organizations, which will be engaged to support the Company's engineering programs; and (2) the

representation of the Company's engineering and manufacturing interests in corporate partnerships and licensing agreements. M.S/Ph.D. Engineering preferred; ideally, the candidate would have breadth of experience including biomechanics, polymer-based technology. product design and instrument ergonomics, senior management experience combined with effective communication skills at all organizational levels; demonstrated success in leadership of both 'in-house' and contracted engineering relationships Polymer based products - surgical application instrument design and development engineering, manufacturing transfer and documentation support Send Cv to L Madison; Omeros Medical Systems, Inc.; 2203 Airport Way South, Suite 405; Seattle, Washington 98134.

Upcoming Meetings, Workshops, Etc.

January

15th Annual Injuries in Baseball Course, 23-26 January, 1997, Contact Judi Gold, Course Coordinator, American Sports Medicine Institute, 1313 13th Street South, Birmingham, AL 35205, Tel: 205/918-2135, Fax: 205/918-0800

February

Orthopaedic Research Society (US), 9-13 February, San Francisco, Ca. Contact: ORS, Tel: (847) 698-1625.

April

16th Southern Biomedical Engineering Conference, 4-6 APRIL 1997, Biloxi, MS, Contact: J.D. Bumgardner, PhD or A.D. Puckett, PhD, Tel: (601) 325-3282 or (601)984-6170, Fax: (601)325-3853 or (601)984-6087, Email:

jbumgard@abe.msstate.edu or

puqua@fiona.umsmed.edu,

<http://abe.msstate.edu/abenews/bumgard.htm>

2nd Annual Meeting of the North American Society of Gait and Clinical Movement Analysis, 9-12 Apr, 1997, Chicago, Illinois, USA, Contact: Carolyn Moore, Bsc, Tel: (312)880-4248, Fax: (312)871-0556, Email: cmoore@nwu.edu.

34th Annual Rocky Mountain Bioengineering Symposium, 11-13 Apr 1997 Dayton, Ohio 45469 Contact Conference Chair, P.K. Bajpai, Ph.D., Dept. of Biology, University of Dayton, Dayton, Ohio 45469-2320, Email :

Bajpai@neelix.Udayton.Edu)

5th International Table Tennis Federation Sports Science Congress, 22-25 April 1997,

Lilleshall National Sports Centre, UK. Contact: I. Maynard, PhD, School of Sports Studies, Chichester Institute of H.E., College Lane, Chichester, West Sussex, PO19 4PE, Tel:01243-816-295, Fax:01243-536-011.

May

3rd International Symposium on Computer Methods in Biomechanics & Biomedical Engineering, 7-10 May 1997, Barcelona, Spain, Contact: J. Middleton, PhD, Biomechanics and Biomedical Engineering, Centre, Engineering Building, University of Wales, Swansea, Singleton Park, Swansea SA2 8PP, Wales, UK., Tel: (01792) 295514/295517. Fax: (01792)295514, Email: J.Middleton@Swansea.ac.uk

World Biomaterials Congress: 29 May-2 Jun 1997; Toronto, Ontario, Canada, Contact Congress Canada, 191 Niagara Street, Toronto, Ontario, Canada M5V 1C9; Tel. 416-860-1772 Fax 416-860-0380

June

XII Annual International Conference on Occupational Ergonomics and Safety Conference, Washington, DC, June 1-4, 1997. Contact: B. Das, PhD, Technical University of Nova Scotia, Industrial Engineering Department, PO Box 1000, Halifax, NS B3J 2X4, CANADA, Tel:(902)420 7606, Fax(902)420 7858, Email:dasb@tuns.ca

International Society of Biomechanics in Sports/4th National Symposium on Teaching Biomechanics, 21-25/25-29 June 1997, Texas Woman's University, Denton, Tx, Contact: C. Ferguson, Office of Continuing Education, TWU, PO Box 425649, Denton, Tx 76204-5649, Tel: (817)898-3408 or Email F_Wilkerson@TWU.EDU

1st International Conference on Cardiovascular Medicine, Surgery, Science, and Mechanics, 6-9 June 1997, Washington, D.C., Contact: J. Vossoughi, PhD, Tel: (202) 274-5175, Fax: (202) 274-5017, Email: vossoughi@msn.com

ASME Summer Bioengineering Meeting (Session on Dynamics) 11-15 June 1997, Sun River Oregon. This meeting covers a broad range of topics, from cellular biomechanics to clinical motion analysis. Complete information on the conference can be acquired from the Contact: Technical Program Chair K.B. Chandran, PhD, chandran@blue.weeg.uiowa.edu

August

XVIth Congress of the International Society of Biomechanics, 25-29 Aug 1997, Tokyo, Japan.

Contact Dr. S. Fukashiro, General Secretary, XVIth ISB, Tokyo Congress, Dept. Life Sciences, University of Tokyo, Komaba 3-8-1, Meguro 153, Japan. Tel & Fax: +81-3-5454-9494, E-mail:ISB97@idaten.c.u-tokyo.ac.jp.

September

5th International Scientific Congress of the International Association of Sport Kinetics. 3-6 September 1997, Magdeburg, Germany. Contact: K. Witte, PhD, Institute of Sport Science, otto-von-Guericke-University Magdeburg, Stresemannstr. 23, 39104 Magdeburg, Germany, Fax: (0)391-6714705.

World Congress on Medical Physics and Biomedical Engineering: 14-19 September, 1997 Nice (French Riviera, [very nice]), France. Contact Didier Geiger, Conference Co-Chair (GEIGER@UNIV-PARIS12.FR), Pierre Aletti, Conference Co-Chair (ALETTI@NANCY.FNCLCC.FR), GENERAL SECRETARY :48, rue de la Procession, F 75724 PARIS CEDEX 15 (FRANCE), Tel : +33 1 44 49 60 60, Fax : +33 1 44 49 60 44, E-mail : NICE97@UNIV-PARIS12.FR.

21st Annual Meeting of the American Society of Biomechanics, 17-20 Sep 1997, Clemson University, Clemson, South Carolina, Contact V.M.Gharpuray, PhD or R.L. Dooley, PhD, Department of Bioengineering, Clemson University, 501 Rhodes Research Center, Clemson, SC 29634-0905, Tel: (864) 656-3051, Fax: (864) 656-4466, Email: vasanti@ces.clemson.edu

1998

6th European Congress on Research in Rehabilitation, 31 May-4 June, 1998, Berlin, Germany, Contact: Congress Secretary ECRR-98, H. Kirsten, c/o BAR, Walter-Kolb Str. 9-11, D-60594 Frankfurt/M, Germany, Tel: + +49-69-605018, Fax: + +49-69-605018-37.

8th International Symposium of Biomechanics and Medicine in Swimming, 28 Jun-2 Jul, 1998, Jyvaskyla, Finland, Contact the Symposium secretariat, Email: pitkanen@jyu.fi. to get

The Third World Congress of Biomechanics: 2-8 Aug 1998, Hokkaido University, Sapporo, Japan; Contact K. Hayashi, PhD, Biomechanics Laboratory, Department of Mechanical Engineering, Faculty of Engineering Science, Osaka University, Toyonaka, Osaka 560, Japan; Tel: +81-8-850-6170, Fax:+81-8-850-6171

The Third North American Congress on Biomechanics; 14-18 Aug 1998, University of

Waterloo, Waterloo, Ontario, Canada. Contact: S. McGill, Ph.D., host chair, mcgill@healthy.uwaterloo.ca.

International Conference on Weightlifting and Strength Training (in conjunction with the World Weightlifting Championships), November 10-12, 1998, Lahti, Finland, Contact: Ms Pirjo-Leena Pitkanen, Conference Coordinator, ConFinnia Ltd, P.O. Box 35, FIN-40351 Jyvaskyla, Finland, Tel: +358-14-603662, Fax +358-14-603727, Email: pitkanen@jyu.fi, <http://www.jyu.fi/wlconference/>

and you could have been there!

1st International Congress on Skiing and Science (ICSS 96)

The 1st International Congress on Skiing and Science took place from January 7-13, 1996, at the Bundessportheim in St. Christoph a. Arlberg, Austria, and was organized by the Institutes for Sport Sciences in Salzburg and Innsbruck. About 250 participants from 27 nations and 4 continents took part in this conference. The topics were biomechanical, coaching, testing, training, physiological, psychological and sociological aspects of alpine skiing, ski jumping and cross country skiing. The keynote lectures were presented by Benno Nigg (Calgary, Canada), Paavo Komi (Jyvaskyl, Finland), Joachim Mester (Cologne, Germany), Bengt Saltin (Copenhagen, Denmark), Carmelo Bosco (Rome, Italy) and Elk Franke (Berlin, Germany). About 50 oral presentations were complemented by 40 poster presentations on a high scientific level. The high quality of the presentations and the well-balanced social program were the reasons for the great success of this congress. During the Closing Ceremony the Chairman of the conference, Prof. Erich Müller, University of Salzburg, Austria, could announce that the 2nd Congress on Skiing and Science will be organized by the same Organizing Committee at the same place (St. Christoph, Austria) in January 2000. The volume of abstracts of this congress - including the keynote lectures, the oral presentations and the poster presentations - can be ordered at the Institute for Sport Sciences, University of Salzburg, Akademiestr. 26, A-5020 Salzburg, Tel: +43-662-8044-4852, Fax: +43-662-8044-614, E-mail: hermann.schwameder@sbg.ac.at. The price is ATS 450,-- (about US\$ 45). The proceedings of the congress will be published in October 1996 by

Chapman & Hall and can be ordered at the same address.

Thanks to Hermann Schwameder for this submission <hermann.schwameder@sbg.ac.at>

News from the Polish Society of Biomechanics

On September 4-6, 1996 the XIII School of Biomechanics, i.e., the annual seminar of Polish Society of Biomechanics (PBS) was held at the Academy of Physical Education in Poznan, Prof. L.B. Dworak was the chairman of the organizing Committee.

14 plenary lectures and 64 papers (oral and poster) were presented at the School that was attended by 102 scientists. Several foreign visitors attended and presented lectures; namely R. Bombelli (Milan), A. Karsznia and T. Öberg (Jönköping), S. Otáhal (Prague) and V. Baltzopoulos from Manchester Metropolitan University at Crew & Alsager. Plenary lectures presented also Prof. A. Morecki, Prof. K. Fidelus, Prof. K. Kedzior and Prof. R. Bedzinski. Prof. M. Hubbard, member of the ISB Executive Council, was also a Seminar guest. The presentations were in the areas of biomechanics of sport, biomedical engineering and medical biomechanics.

At the School, the III General Assembly of the PSB was organized, the report on the activity for the last four years presented, and the new society Executive Council elected. On behalf of the previous Executive Council the report was presented by Prof. K. Fidelus (president), Dr. R. Maronski (Secretary General) and Prof. B. Macukow (Treasurer). 136 members belong now to the PSB. Good cooperation with the ISB was emphasized in the report. The representatives of PBS: Prof. K. Fidelus and Prof. K. Kedzior took part in the ISB Executive Council meetings in Paris (1993), Amsterdam (1994) and Jyväskylä (1995), while Prof. M. Gagnon, the ISB representative visited our society in 1993. The PSB is a affiliated member of the ISB, while 21 members of the PSB pay individual ISB membership fees. The Polish Society of Biomechanics is affiliated into the IV Department for Technical Sciences of the Polish Academy of Sciences and has the representative in the Committee for Biocybernetics and Biomedical Engineering at this Department.

The following individuals were elected to the Executive Council for the term 1996-1999: President- Prof. Tadeusz Bober (Biomechanics of Sport) Vicepresident- Prof. Krzysztof Kedzior (Technical Biomechanics) Vice president- Jerzy Kiwerski (Medical Biomechanics) Secretary General - Dr. Ryszard Maronski Secretary- Prof. Romuald Bedzinski Treasurer- Prof. Bogdan Macukow. The following members of the Executive Council were also elected: Prof. L. Dworak, Dr. W. Erdmann, Prof. K. Fidelus, Prof. S. Kornecki, Prof. J. Wojnarowski. The Revisory Board (Prof. A. Wit - Chairman) and the Fellow Court (Prof. M. Golema - Chairman) were also elected.

The fifth Andrzej Komor Memorial Award was also judged. The doctors thesis first prize was awarded to Dr. Danuta Roman, (thesis: Ergonomic optimization of the upper extremity workspace under static conditions, supervisor Prof. K. Kedzior), while the two equivalent second prizes were awarded to Dr. Janusz Lapszo and Dr. Marek Matyjewski. The award for a published work was granted to Mr. Tomasz Awlasewicz, MSc.

Thanks to Ryszard Maronski for this submission (maron@meil.pw.edu.pl)

Reflections on the 9th Biennial CSB Conference Simon Fraser University, Vancouver.

Earlier this year I found out that I *did not* need a visa to cross the border into Canada--those of you who know me well know that any task requiring forms to be filled in is a task to be avoided!¹ Anyhow, the "no-visa" option, and the fact that ISB council held a business meeting at the conference was motivation to attend my first CSB meeting.

I was impressed from the start! The taxi driver quoted me \$40 to drive me from the airport to Simon Fraser University, and he stopped the meter when it got to that amount, even though he still drove for another 15 minutes! Moreover, when I arrived at the campus housing office, it was still open at 11.45 pm!

There were well over 200 participants at this meeting, and since the exhibition hall, poster area and lecture rooms were all in close proximity,

there were ample opportunities to renew old acquaintances and make new ones. The meeting itself started off with a focus on muscle--Peter Huijing gave a keynote address on muscle structure and function, followed by a symposium on cellular biomechanics, specifically related to myofilaments and the interaction of actin and myosin. From an instrumentation point of view, one aspect that intrigued me was the description (by Henk Granzier) of a system for measuring forces with a resolution of 10^{-12} Newton!!

The CSB has traditionally emphasized locomotion biomechanics. At this meeting there was a locomotion symposium that examined mobility in the elderly and it provided some interesting concepts. Aftab Patla quoted poetry that described a very logically designed horse. It worked perfectly for a hundred years and then "went to pieces all at once". How convenient this would be for our health care system if humans were designed this way! As part of the same symposium, David Winter described a table of data he had compiled--it had cost him \$30,000 [Canadian]! (It is yours for only \$25 if you send at check to the CSB for the proceedings, and turn to page 36!) Something else that is available *for free* is the data set that Ton van den Bogert used to examine optimal filtering techniques for inverse dynamics analyses (<http://www.kin.ucalgary.ca/isb/data/invdyn>). A thought provoking concept put forward by Ton is that optimal cut-off frequencies are not only different for different limb segments, but also depend on whether you are interested in joint forces or resultant joint moments!

Space does not permit me to describe the many excellent presentations. Michael Esterle's work on stress analyses around an endosseous implant and Stefan Judex's work on locomotion-induced strain gradients in bone won new investigator awards in the "Masters" and "Open" categories, respectively. Santosh Zachariah won a prize for his poster describing a finite element model of an amputee's residual limb. This model included hard and soft tissue, the materials used to make a prosthetic socket, and pressure and shear forces acting at the skin/socket interface. Besides being relevant to the amputee population, this research is clearly applicable to many other situations where skin is at risk for breakdown.

¹ NL Editor's Comment: This is an unfortunate tendency when it comes to grant-writing

Finally, there was a fitting tribute in the form of a career award to Bob Norman. He has been a pioneer in the field of biomechanics, has long served both the CSB and ISB, and has influenced in one way or another the careers of many present-day biomechanists. He gave a thought provoking account of whether biomechanics has come of age - specifically with regard to occupational biomechanics. If readers are interested in pondering this issue, you may want to read Peter Cavanagh's "President's Message" in the May/June ISB newsletter.

Thanks to Brian Davis, PhD for this submission, davis@bme.ri.ccf.org

Places to "Go"

- ◆ A new neuroscience Web Search Engine
<http://www.acsiom.org/nsr/neuro.html>
- ◆ The relocated NeuromuscularControl Web Site
<http://www.activemed.com/neuromus>
- ◆ ISB '97:
<http://idaten.c.u-Tokyo.ac.jp/ISB97/isb97.html>
- ◆ NACOB 98
<http://www.ahs.uwaterloo.ca/nacob98/>

If you wish upon a Star

The National Operating Committee on Standards for Athletic Equipment (NOCSAE) is again proud to offer funds to support qualified research projects. Since its inception in 1969, The National Operating Committee on Standards for Athletic Equipment (NOCSAE) has been a leading force in the effort to improve the safety of athletic equipment. This effort includes the support of related research and the development of standards for protective athletic equipment. NOCSAE is soliciting scientific grant proposals on the mechanisms and the prevention of sports injuries, as related in some rational manner to protective equipment. Preliminary one-page proposals are due by December 1, 1996. Contact Dr. Crisco for further details and an application form. Eligible institutions are limited to North America. Contact: J.J. Trey Crisco, Ph.D., Director Bioengineering Laboratory, Orthopaedic Research, SWP-3, Rhode Island Hospital, Providence, RI 02903, Tel:(401)444-4231 Fax:(401)444-4559, Email: joseph_crisco_iii@brown.edu

"Alice doesn't live here anymore"

Maury A. Nussbaum, can now be found in the (relatively) warmer climate of the Dept of Industrial & Systems Engineering, Co-Director Industrial Ergonomics Lab, Virginia Tech, 302 Whittemore Hall, Blacksburg, VA 24061-0118, (540) 231-6053 (work), (540) 961-2356 (home), (540) 231-3322 (fax), nussbaum@vt.edu

A New Clinical Research Center

CBC (Centro di Bioingegneria - Ospedale Colletta di Arenzano) was established in early 1995 as a joint effort between the University of Genova and the Health Care Authority of the greater Genova area. It is located in the Hospital at Colletta di Arenzano, which is an hospital focused on rehabilitation problems, particularly for elderly people. The Center is directed by a Bioengineer, Prof. Pietro G. Morasso, and a Rehabilitation Doctor, Dr. Luigi Baratto, who also heads the Motor Rehabilitation Division of the Hospital. The technical staff of the Center includes two bioengineers, a neurologist, a rehabilitation doctor and several undergraduate and graduate students coming both from the engineering and medical facilities.

CBC conducts research related to motor system rehabilitation and provides clinical services. In particular, research is mainly focused on the utilization of techniques of 3D movement analysis, electromyography, functional electrical stimulation, interactive multimedia systems as tools of diagnosis, prognosis, therapy in motor system rehabilitation. Support activities to the research sector are also carried out, related to the design and development of biomedical software or simple biomedical hardware and general clinical engineering services in the hospital. One of the main purposes of the Center is the immediate transfer of the methods and techniques, developed in the lab, to the different clinical divisions of the hospital and, in particular, at the ambulatory level, particularly as regards the balance problems of elderly people and the prevention of falling. However, this intended bias toward clinical application does not obscure the academic background of many of the people and the attention to the research world, with a strongly interdisciplinary attitude. Research is funded by grants of the Regione Liguria, National Health Institute, European Union.

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Thanks to Vittorio Sanguineti for this submission,
sanguini@motion.psych.mcgill.ca

The [proposed] Ten Commandments for Manuscript Review

Albeit far from perfect, the peer review is the process of choice by which the acceptability of papers for publication in scientific journals is judged. As such, the peer review process wields a substantial influence on the life of scientists. An Editor selects reviewers thought to have sufficient experience in the subject matter of the manuscript, and solicits their opinions regarding the suitability of the manuscript. Generally, specific guidelines are not provided to the reviewer, allowing him wide range authority to scrutinize a manuscript. Thus, such authority, if given to an inexperienced person, and subsequently undirected or unsupervised by the editor may give rise to considerable frustration and anger.

In over two decades as a scientist, I have published nearly 100 articles in refereed journals as well as book chapters. I have also served as a reviewer for over 20 journals of disciplines including Bioengineering, Biomechanics, Orthopaedics, Rehabilitation, and Neurophysiology/Physiology. In the last 10 years, I have served as an editor and associate editor, being responsible for directing the peer review process. This combined experience has caused me to form opinions regarding what I view as a lack of a clear, uniform standard delineating the peer review process and the specific roles of editors and reviewers in this process. Based on my experience, I submit for your consideration what I believe to be the ten important directives with which every editor and reviewer of a scientific article should consider. I have designated these directives as the "Ten Commandments" ⁱⁱ and hope to solicit feedback from readers on their utility to editors, reviewers and also authors.

ⁱⁱ Newsletter Editors note: it is possible that this title has been copyrighted.

- I. Respect the paper you were entrusted to review. The work may represent weeks, months or even years of effort. Thus, regardless of its acceptability, the paper should be treated with respect.
- II. Originality is a prerequisite for acceptance of a paper. Originality should be inclusive or separately determined for the key idea, protocol, analysis, instrumentation, etc. Something new must be presented, or a controversy resolved, and therefore present the readership with a benefit.
- III. Flawless methods, protocols, analyses, procedures and conclusions are the ideal prerequisites for acceptance. If a flaw or error are present, the reviewer must determine if it is fatal, properly describe it and its impact on the objective. If the flaw is not fatal, the reviewer should determine if the manuscript is salvageable.
- IV. Clarity of the presentation is mandatory. If an experienced reviewer has difficulty understanding the manuscript, what chance does the less experienced reader have?
- V. Criticism should be held against a standard of fairness. Express criticism constructively on issues requiring modification, clarification or complete revision in order to make the paper scientifically sound and publishable. Don't pick on minor details or force the author to justify commonly accepted issues or those that are not controversial or self-explanatory.
- VI. Thou shall not use the manuscript as a forum to express your own point of view. With the verified presence of originality, scientific soundness and clarity of presentation, the authors have a right, a privilege to express their opinion. It may be contrary to your opinion, but it is not your paper.
- VII. Thou shall not change the objective of a manuscript nor the method of its accomplishment. If the objective is well-defined with a reasonable application and satisfactory method of accomplishing the objective, the authors should not be burdened with revising it to conform to your opinion as to more acceptable objectives and methods.
- VIII. Thou shall not review a paper, the topic of which requires experience in excess of that which you can offer. Since the peer review has a constructive objective of helping authors improving and presenting their paper, one expects that the reviewer will have at least equal,

but ideally more experience than the authors in the subject matter. If you feel insecure, promptly return the manuscript to the editor and ask that it be re-assigned.

- IX. Thou shall not express direct or indirect personal or personally offensive statements.
- X. Reviewing manuscripts is a responsibility, not an honor and certainly not to be used as a position of power over the work of authors.

Thanks to Moshe Solomonow, Ph.D for this submission.

All the World is a Stage and
All the Actors are Biomechanists

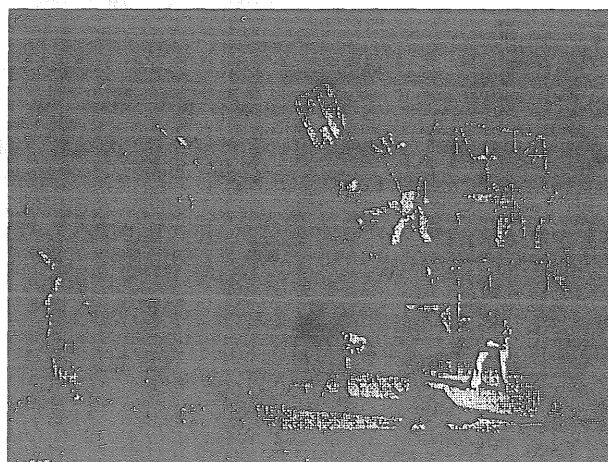
I was strolling through the halls of academe the other day, really, no kidding, when I noticed a dark, seldom used passageway. Posted above the entrance was, "Art in Motion," and down the dim corridor, barely illuminated, was a faint notion of staged human movement. Wondering what wisdom waited along this way, I wandered in and witnessed a most unexpected biomechanical phenomenon, Vsevolod Meyerhold's avant garde Russian theatre of the 1920s.

The Russian revolution was a political upheaval that changed many aspects of Russian life. Along with the political revolution came a revolution in Russian art that continues to influence our society's aesthetic, architectural and design sensibilities. Vsevolod Meyerhold (1874-1940) was the leader of the New Theatre in Russia after the revolution and biomechanics was the central tenet to Meyerhold's philosophy. Meyerhold sought to develop the "new actor," using human movement as the basis of theatrical expression. Through exquisite control of one's body, the actor could precisely express any particular emotion or thought. Meyerhold envisioned the biomechanical actor with,

"Man at last will begin to harmonize himself in earnest. He will make his business to achieve beauty by giving the movement of his own limbs the utmost precision, purposefulness and economy....Movement is the most powerful means of theatrical expression...(and it) is more important than any other theatrical element....Since the art of the actor is the art of plastic forms in space, he must study the mechanics of his body. This is essential because any

manifestations of a force, including the living organism, is subject to constant laws of mechanics and obviously the creation by the actor of plastic forms in space is a manifestation of the force of the human organism."

Meyerhold formulated his system from the work of western, industrial visionaries Frederick W. Taylor and Frank and Lillian Gilbreath, the cultural revolution in Russia, and the physiology giant Ivan Pavlov. Taylor and the Gilbreaths revolutionized industrial production in the 19th and early 20th centuries with motion and time studies. These early ergonomists delineated efficient, functional movements for laborers to increase productivity. Efficient human movement was part of the broader sociological philosophy of man-as-machine, a by-product of the Industrial Revolution and the current, seminal applications of mechanics to human movement. Constructivists, revolutionary artists contributing to the new utopian state, called for the end of ornamental art and the birth of utilitarian art, the art of production, the art of function. Meyerhold synthesized the ideas of efficient movement in his actors and utilitarian art in set and costume design into his revolutionary theatrical system of biomechanics. Efficient actor movement was optimized in the utilitarian, constructivist environment. Meyerhold's theatre symbolized man's functional role in industrial Soviet society, society's tool for production, man-the-living-machine. The photograph from, "The Magnanimous Cuckold," (1921) shows biomechanically trained actors in Liubov Popova's constructivist set design emphasizing production materials and function over aesthetics.



Pavlov developed the concept of reflexology, a conditioned response to a stimulus. Meyerhold used this idea in his biomechanical training to bring the actor to a, "point of excitability," so that a theatrical stimulus would elicit a reflexive movement response in the actor. According to Meyerhold, "The biomechanical system of acting, starting from a series of devices designed to develop the ability to control one's body within the stage space in the most advantageous manner, leads on to the most complex questions of acting technique, problems concerning the coordination of movement, words, the capacity to control one's emotions, one's excitability in performance. The emotional state of the actor, his temperament, his excitability, the emotional sympathy between the actor as artist and the imaginative process of the character he is performing - all of these are fundamental elements in the complex system of biomechanics."

Meyerhold developed his methods during the first two decades of this century and he brought the system to fruition at the Meyerhold Workshop in 1921. The Workshop was Meyerhold's school for training biomechanical actors and the curriculum included theoretical and applied course work comparable to our modern, scientific training. Meyerhold taught courses in biomechanics that included lectures on functional anatomy of the upper and lower extremities and the trunk, motor action of the human body and stimulation of muscle, balance and the body center of gravity, the human organism as an automotive mechanism and the mechanism of reaction in the nervous system. The applied course work included movement-based classes in which the actor learned and practiced numerous gymnastic-like actions or, "études," to hone his or her physical skills. All of these courses were taught in the Laboratory of Biomechanics, probably the first laboratory so named. As biomechanics laboratories have today, Meyerhold's Laboratory had research assistants, the most notable being Sergi Eisentein, the future film director. Vsevolod Meyerhold and his research assistants created a biomechanical niche in the world of theatre that explored the artistry and expressiveness of efficient human movement. Their work continues today in our laboratories as we explore the science and effectiveness of the same movements.

Who knew?

Paul DeVita, PhD, East Carolina University

The author gratefully acknowledges Lisa DeVita's and Tibor Hortobagyi's editorial assistance and Mary Flesher's contributions toward identifying the origin of the word, "biomechanics." Unfortunately, I could not identify its origin by press time. I therefore ask the reader, who invented the word, "biomechanics," and when did this occur?

References:

- Braun, E. (1995) Meyerhold: A Revolution in Theatre. University of Iowa Press, Iowa City.
Gilbreath, F. (1911) Motion Study: A Method for Increasing the Productivity of the Workman. D Van Nostrand, NY.
Hoover, M. (1974) Meyerhold: The Art of Conscious Theater. University of Massachusetts Press, Amherst.
Leach, R. (1989) Vsevolod Meyerhold. Cambridge University Press, Cambridge.
Rudnitsky, K. (1988) Russian and Soviet Theater 1905-1932. Abrams Publishing, NY.
Taylor, F. (1911) The Principles of Scientific Management. Harper and Brothers, NY.

Biomechanics and Technology

Many of us involved in biomechanics research and development seek to improve performance in athletics by improving the equipment used by participants. The following is a case of "run-away" technology. Prior to our tee-time at a local golf club, a friend of mine excitedly told me about his latest golfing acquisition. What looked and felt like a regular golf ball apparently was a sensor-laden high tech device. I was told, if you lose the ball in the rough, high grass, trees, etc. the ball emits a distinctive alternating frequency tone. If the day grows old and the light grows dim, the ball will begin to glow brightly. If the ball senses submersion in water it can engage microtechnology that will cause it to float to the surface and remain there for up to 60 minutes. I was both impressed, but being engaged in technology and manufacturing, I was skeptical because of the likely associated pricetag. I asked him, "How much did that cost?". The astounding reply was 'I don't know, I found it'.
Thanks to Jay Hurley, Fort Lauderdale, Florida for this submission.

The Thesis Exchange

Editor's note: This newsletter component provides a vehicle through which graduate students can disseminate, reasonably rapidly, the results of their Masters and Doctoral studies to the biomechanics community (see detailed instructions on next page). These abstracts are intended also to provide impetus for interactive discussions on these topics among members and, thus, may provide valuable feedback to the author. Comments may be directed to the newsletter Editor for inclusion in future issues.

Force Measurement during Spinal Mobilisation

Michele C. Harms, PhD, MSc, MCSP
Supervised by D.L. Bader, PhD Msc

Department of Materials,
Queen Mary and Westfield College
University of London

Spinal mobilization or manipulation techniques are frequently used by physiotherapists in the treatment of musculoskeletal disorders. Despite the reliance on these techniques in clinical practice, there is little scientific evidence to substantiate their use.

A standard mobilization couch was instrumented to enable measurement of the forces applied to the trunk during mobilization of the lumbar spine. Six load cells were incorporated into the couch frame and linked to a personal computer to facilitate data collection. The couch allowed the assessment of the magnitude of the mobilization force, its direction and the variation in applied load over time. The system was found to be reliable and sensitive over the range of forces applied during mobilization.

The system was used to collect data from a sample of 30 experienced therapists to evaluate repeatability and reproducibility during the application of four grades of a posteroanterior mobilization and an End Feel, on the third lumbar vertebra. Whilst some therapists demonstrated considerable variation in the forces applied both within one measurement session and over a two week period, others were found to be relatively consistent. The range of forces used by different therapists when performing the same technique was substantial and ranged between 63 N and 347 N for a Grade IV mobilization.

A study was carried out involving 26 young healthy subjects, to determine the characteristics of a mobilization force applied to an asymptomatic spine. A further study was undertaken involving a clinical sample of 16 patients, between 47- 64 years of age, to evaluate the effect of age related degenerative changes of the lumbar spine on the application of those techniques. The magnitude of the mobilization force was found to be similar for the healthy and the patient groups with median forces of 175 N and 171 N during a Grade IV procedure, respectively. However, the forces applied to the patient group exhibited a statistically significantly smaller amplitude and higher frequency of oscillation than the healthy group for the same procedure ($p < 0.01$). Such measurements are essential for the assessment of the efficacy of these techniques in clinical practice.

EDITOR'S NOTE

The ISB Newsletter is published quarterly: February-March (Spring); May-June (Summer); August-September (Autumn), and November-December (Winter). Deadlines for material and articles are the first day of each first named month, and the Newsletter is mailed to members early in the second named month. Members are encouraged to submit just about anything they would like to relate to the biomechanics community. The content of the Newsletter does not necessarily reflect the philosophy and opinions of the ISB but may reflect the day-to-day sense of humor of the Editor. Naturally, serious items such as *Letters*, *Special Articles*, *Affiliate Society News*, *Laboratory Features*, *Reports*, or *Announcements of Meetings, Conferences, and Jobs Available*, *Reviews* of relevant conferences and other serious biomechanics-related information is desirable. *Thesis Abstracts* can be published. Thesis abstracts should provide an Introduction that includes the rationale and hypotheses of the study, description of the methods, the key results, and important conclusions. The title of the work student's name, department and institution, the degree earned and the conferring institution and supervisor's name should also be provided. In special circumstances a complete edition of the Newsletter can be devoted to the publishing of a Society's "Proceedings". Material may be submitted electronically or on a computer disk as a text-only file, and in English..

New Members to ISB

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FORTNEY, Virginia L. (#1760)
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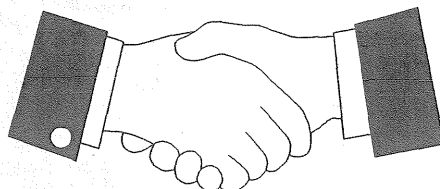
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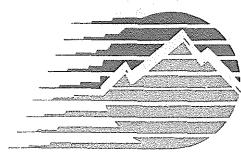


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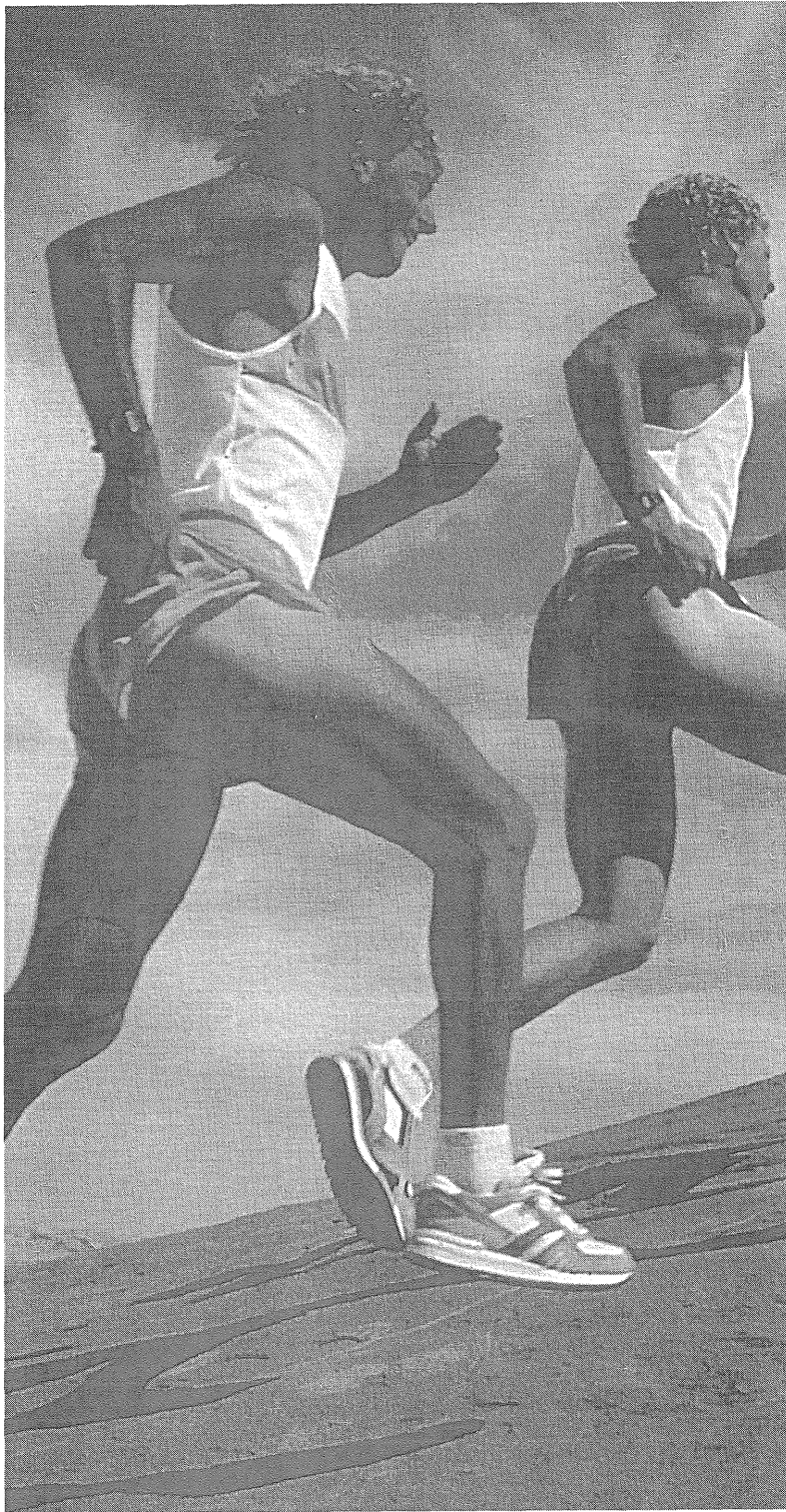
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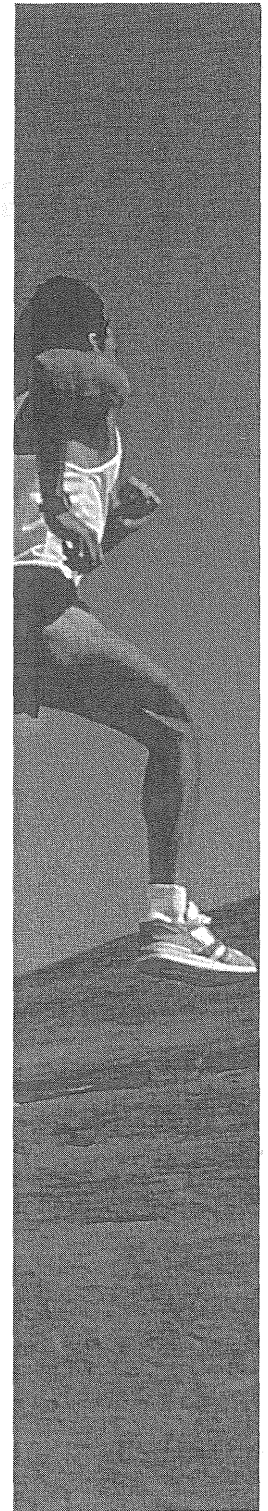
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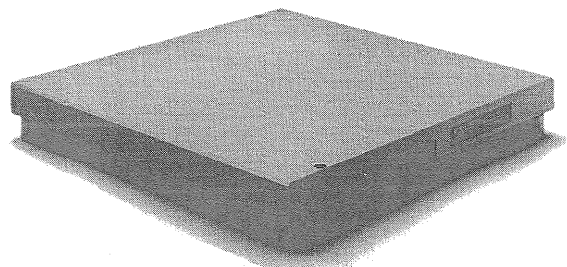
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