



International Society of Biomechanics Newsletter

ISB Officers

PRESIDENT

Dr. Peter R. Cavanagh
The Centre for Locomotion Studies
Room 10, I.M. Building
Pennsylvania State University
University Park, Pennsylvania
U.S.A. 16802
Tel: + 1 814 865-1972
Fax: + 1 814 863-4755
E-Mail: prc@psu.edu

PRESIDENT-ELECT

Prof. Dr. Günter Rau
Helmholtz-Institut für
Biomedizinische Technik
Pauweisstraße 20
D-52074 Aachen
GERMANY
Tel: (0241) 80-7111
Fax: (0241) 8888-442
E-mail:

PAST PRESIDENT

Dr. Ronald Zernicke
University of Calgary
Department of Surgery
3330 Hospital Drive N.W.
Calgary, Alberta T2N 4N1
CANADA
Tel: + 1 403 220-8666
Fax: + 1 403 270-0617
E-Mail: zernicke@acs.ucalgary.ca

SECRETARY-GENERAL

Dr. Christopher L. (Kit) Vaughan
Department of Biomedical Engineering
University of Cape Town
Observatory, Cape 7925
SOUTH AFRICA
Tel: 27 21 406 6238
Fax: 27 21 448 3291
E-mail: kvaughan@anat.uct.ac.za

TREASURER

Dr. Graeme A. Wood
Department of Human Movement
The University of Western Australia
Nedlands, WA 6907
AUSTRALIA
Tel: + 61 9 380-2361
Fax: + 61 9 380-1039
E-Mail: gwood@uniwa.uwa.edu.au

NEWSLETTER EDITOR

Dr. Mark D. Grabiner
Department of Biomedical Engineering, Wb3
The Cleveland Clinic
Cleveland, Ohio, 44106
Tel: + 1 216 444 7276
Fax: + 1 216 444 9198
E-Mail: grabiner@bme.ri.ccf.org

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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; Comisia 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 President- Peter Cavanagh

What kind of Congress do you want?

My column entitled "BIOMECHANICS: HAS IT COME OF AGE?" in the last edition of the Newsletter brought some spirited responses from various corners of the globe. These included a plea for biomechanists to see themselves as a member of the larger "life sciences" team, a series of upbeat views about the maturity of the discipline, a request for better epidemiology rather than more complex experimentation, a eulogy for Newtonian approaches to Biomechanics, and a statement regarding the importance of biomechanics in the training of clinicians. These, and a number of other thoughtful responses, have been posted on the ISB Web Page (<http://www.kin.ucalgary.ca/isb>) for your review. I encourage you to visit there for some provocative responses to the "Why are we doing this" question that we all occasionally ask ourselves.

Interestingly enough, the question was also taken up in an Open Forum during the recent ESB conference (Leuven, August 28-31, 1996). A number of experts discussed past achievements and prognosticated regarding future developments in biomechanics research. A video tape of this session is available from conference organizers (Jos Vander Sloten - Jos.Vandersloten@mech.kuleuven.ac.be). Former ISB President Bob Norman also reflected on a similar issue in his acceptance speech for a Career Award at the recent Canadian Society of Biomechanics meeting (Vancouver, August 22-24).

All this talk of conferences brings me to my question for this quarter: What kind of ISB Congress would you most like to attend? Your views on this topic are important to the ISB Council as they look to the future in order to plan the meetings of our Society over the next decade. As I am sure you know, the ISB holds a Congress every two years. The XIV Congress was in Paris in 1993, and the XV Congress in Jyvaskyla, Finland in 1995. The XVI Congress will be held in Tokyo in August of 1997 and, at the recent ISB Council meeting, the 1999 Congress was awarded to Calgary, Canada. There is always a great deal of debate over conference formats and organization so let me review some of the frequently asked about Scientific meetings:

◆ *Are there too many meetings?*

It is now entirely possible to do more traveling to meetings than research! There seems to be a proliferation of scientific meetings large and small all over the world. Are we actually gaining new information from all of these meetings or are we just engaging in intellectual play and scientific tourism? (There is an old saying that an expert is someone who travels a long way bearing slides.)

◆ *Why do meetings cost so much?*

The current registration fee for a typical 3-5 day international meeting is in the region of \$US500. This cost does not include the expense of getting to the meeting site or the cost of accommodation.

Where will this price escalation end?

◆ *How can students afford to go to meetings?*

The major losers at the expensive meetings are students who cannot afford to go and cannot persuade their advisors to pay for them to go. Yet meetings are the principal places where a student can make her or his case for future employment since the publication process is so slow. Some meetings have grants to bring the student fee down to bargain basement prices. Why isn't this done more often?

◆ *Why are there so many parallel sessions at meetings?*

Getting the most out of a large meeting requires weeks of planning - plotting strategies for moving from room to room, deciding which interesting paper you want to see least urgently (since often everything looks good!). Inevitably one leaves with a feeling of having been there, yet having missed something very important.

◆ *Why are meetings getting larger and larger?*

I have been to three day meetings where I have not been able to meet with colleagues that I really wanted to talk to. I may have seen them from a distance, or exchanged a quick word as we rushed to different parallel sessions. How big is too big? What is the optimal size? Should each Congress try to cover every topic in a given field or are specialty meetings better?

◆ *Why are posters considered second rate?*

Many people know the secret that posters are actually a much more effective way to engage your colleagues in discussion than podium presentations (discussion time is unlimited, there is no place for grandstanding or self aggrandizing questions, real exchange of information can occur). Yet posters are often considered the consolation prize compared to podium presentations at major

meetings. Some meetings, on the other hand, are ALL posters. Is that a format that works?

◆ *Would electronic "meetings" be as effective?*
Why can't we all stay home and just agree to an exchange of information over a set couple of days on the Internet? There is an endless number of electronic possibilities but would the loss of the personal element of interaction significantly detract from the experience?

◆ *Why aren't there more Symposia at Conferences?*

Some conference goers would prefer to hear long talks from established experts in the field, or discussion sessions by experts with opposing views - rather than hearing short communications from up and coming authors. What should be the balance between Symposia and free communications?

◆ *Why is the standard of slides so bad?*
Easily accessible presentation graphics programs have certainly revolutionized the quality of the average slide presentation. However, one still hears many presenters apologize for the quality of a slide, or more annoyingly, for the quantity of information on a slide. Former ISB President Dick Nelson once made a slide of himself at the front row of a lecture hall with a pair of high powered binoculars. Unfortunately, the slide was only partly in jest! For some presenters, binoculars should be standard issue. Perhaps we should rate presenters immediately after the talk and send them feedback.

◆ *Why are meetings always in North America?*
Many of the major International meetings seem to revisit North America very frequently. Why don't major societies attempt to hold meetings in countries where the scientific discipline is just developing so that it might give a boost to that country's efforts?

If it is not obvious by now, I confess that I have raised many questions and answered none! However, many of the above issues are critical to your enjoyment and learning at major meetings such as the ISB Congress and the ISB Council would be delighted to hear from members regarding their views on the ideal meeting. Any particularly creative approaches to Scientific Meetings that you are aware of and would like to share would also be welcome. Send EMail responses to me at the usual address - prc@psu.edu.

From the Editor - Mark Grabiner

As promised, the length of the Editor's Column is decreasing with increased submissions from the ISB membership. Many of the submissions could not be printed because many ISB members have families with small children who read. You will find a number of new items as well as an old favorite, the Thesis Exchange. Coming up in the gala end-of-the-year issue, be on the look-out for the results of the contest for the Worst Biomechanical Analogies, Letters to the Editor, and the ISB member Santa Claus look-alike. Entries for the latter should be sent to me before November 15. A photograph, photocopy, or hand-drawn rendition of your entry is required for consideration.

Job Market

Director of Biomechanical Research: This position entails heading up a research and clinically oriented foundation. Qualifications include a PhD in Biomechanics, Physical Therapy or Anatomy, three to five years of research experience in an education or medical setting with an orientation towards sports medicine or movement science. Contact: M. Gaudette, MSPT, Joyner Sportsmedicine Institute, Inc., 601 Perimeter Drive, Suite 110, Lexington, KY 40517, Tel:(606) 335-0110, Fax: (606) 269-3318

Assistant/Associate Professor (PhD): A tenure track position starting Fall 1996 is available at St. Andrews Presbyterian College. PhD in Physical Education preferred, ABD acceptable. Ability and expertise necessary to teach exercise physiology and kinesiology are essential. Opportunity to serve as Department Chair is available to interested and qualified applicants. Send letter of application, curriculum vita, three references and transcripts to J.I. Lankford, PhD, Division of Mathematical, Natural and Health Sciences, St. Andrews Presbyterian College, Laurinburg, NC 28352.

Associate/Full Professor(PhD): A tenure track position is available for an individual with the expertise in musculoskeletal biomechanics and injury preventions and control. Candidates should have a Ph.D. degree in engineering or a related field, and must be a U.S. citizen or have a permanent residency in the U.S. The search will be continued until the position is filled. Send a CV and three letters of reference to Dr. Ernest Stokely, Department of Biomedical Engineering, BEC 256, University of Alabama at Birmingham, Birmingham,

AL 35294-4461, Tel: (205)934-8421, Fax: (205)975-4919, Email: stokely@atax.eng.uab.edu
Assistant Professor (PhD): The Department of Human Biology and Nutritional Sciences at the University of Guelph invites applications for a tenure-track position at the Assistant Professor level in the area of Biomechanics and or Ergonomics. Applicants should have a PhD or equivalent with postdoctoral experience being an asset. In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents. The successful candidate's responsibilities will include effective undergraduate teaching in Biomechanics, supervision of undergraduate projects and graduate theses, and the development of an externally funded research program. Send a CV, 2 representative publications, documentation of teaching abilities, and the names of 3 referees. Contact: Chair of the Search Committee, Department of Human Biology and Nutritional Sciences, University of Guelph, Guelph, Ontario, Canada, N1G 2W1, Fax: (519)767-1656

Assistant/Associate Professor (PhD): The Department of Orthopaedics at the University of Virginia School of Medicine is seeking candidates for a tenure track position that carries the title of Engineering Director of the Motion Analysis Laboratory which is located in the Kluge Children's Rehabilitation Center, a satellite hospital of the University of Virginia. The position requires a strong, independent research program with some teaching responsibilities. Collaboration with the department's clinical and research faculty will be encouraged. Candidates with a Ph.D. degree in Engineering and appropriate experience with human and pathologic gait (particularly cerebral palsy and gait analysis) should submit a cover letter, CV and three letters of recommendation. Contact: M.F. Abel, PhD, Motion Analysis Laboratory, Kluge Children's Rehabilitation Center, 2270 Ivy Road, Charlottesville, VA 22903, Tel: (804)982-0893, Fax: (804)982-1727, Email: scg3q@virginia.edu, <http://www.med.virginia.edu/medcntr/gaitlab>

Undergraduate, Graduate, and Postdoctoral Opportunities

Sports Biomechanicist (PhD): The Rebound company of Oklahoma and Malaysia announces a available 1-3 year position for a sport biomechanist. This is one of a number of positions that staff

the Human Performance Laboratory in the National Sport Institute, Bukit Jalil Sport Complex, Kuala Lumpur, Malaysia that is being constructed to host the 1998 Commonwealth Games. Send a complete resume and the names and of at least three persons that can be contacted for references. Send the materials to Rebound America, Inc., TRG, Box 721147, Norman, OK 73070
USA

Postdoctoral Fellowship: A biomechanics/engineering position is available to join ongoing studies of vestibular control of postural coordination. The successful candidate will work on joint projects with Fay Horak and Robert Peterka at Good Samaritan Hospital in Portland, Oregon and with Felix Zajac at Mechanical Engineering Dept. in Stanford U., Palo Alto California. Send curriculum vitae and names of three references to: F. Horak, PhD, Dow Neurological Sciences Institute of Good Samaritan Hospital, 1120 NW 20th Ave, Portland, Or 97209 Email: horak@nsi.lhs.org

Postdoctoral Fellowship: A postdoctoral position is available at the Sensory Motor Performance Program of the Rehabilitation Institute of Chicago to work on learning and adaptation of multi-joint arm movements. The work involves both experimental and theoretical components. The successful candidate will have a PhD in Engineering of Physics with emphasis in Biomedical research and with some substantial background in Classical Mechanics and Control theory. Send a CV, a 1 page statement of interests and goals, and the names, addresses and telephone numbers of at least two reference to D. Pappas Administrative Supervisor, Rehabilitation Institute of Chicago, 345 East Superior Street, Room 1406, Chicago, Illinois 60611, or by Email:

dgpappas@casbah.acns.nwu.edu

Postdoctoral Fellowship: The Mayo Clinic Department of Physical Medicine and Rehabilitation together with the Orthopedic Biomechanics Laboratory has an available postdoctoral position sponsored by the National Center for Medical Rehabilitation Research. Eligible candidates are MDs with training in Physical Medicine and Rehabilitation, Neurology, or Orthopedics, or PhDs with training in rehabilitation-related fields such as occupational therapy, physical therapy, exercise science or biomechanical engineering. Contact: M.M. Merten, PhD, Mayo Clinic Department of Physical Medicine and Rehabilitation, 200 First

Street, SW, Rochester, MN 55905, Tel:(507) 284-2946 Fax: (507) 284-0920

BS/MS: Two positions are available in the Department of Orthopaedic Research and Biomechanics at the University of Ulm. The first, one year, position concerns experimental investigations on the mechanical behavior of fracture fixation devices. Experience in experimental investigations and programming skills (C) are required. The second position concerns the further development of an existing analytical model and is planned as the first two years of a Ph.D. program. Beside programming skills (C, preferable also UNIX) experience in biomechanics research are required. In both instances profound knowledge of the German language is important. Please send your application and CV to G. Duda, PhD, Abtl. Unfallchirurgische Forschung und Biomechanik, Uni-Klinikum Ulm, Helmholtzstr. 14, D-89081 Ulm, Tel: (+49.731.502.3494), Fax (+49 731) 502 34 98, Email: duda@sirius.medizin.uni-ulm.de

Research Associate (PhD): A position is available in the Sensory Motor Performance Program at the Rehabilitation Institute of Chicago, and the Department of Physiology, Northwestern University. Our laboratory is actively examining the neural mechanisms and biomechanics underlying control of the head and neck and the role of head movement in whole body posture. Current work is focused on experiments in both human and primate models using behavioral and kinematic measures, biomechanical modeling, and dynamic neural network modeling to define mechanisms. Email or fax a CV and the names of 3 references to: E. Keshner, PhD, Sensory Motor Performance Program, E809 - Room 1406, Rehabilitation Institute of Chicago, 345 East Superior Street, Chicago, IL 60611, Tel: (312) 908-2228, Fax: (312)908-2208, Email: eak@nwu.edu, <http://sulu.smpp.nwu.edu> and <http://dept-www.physio.nwu.edu/>.

A **post doctoral fellowship** is available at the University of Virginia in biodynamics, rehabilitation, and impact biomechanics. Work around/with human cadavers is expected for trauma research projects. U.S. citizenship is required. Contact: W.D. Pilkey, PhD, Thornton Hall, University of Virginia, Charlottesville, VA, 22901, Email: wdp@virginia.edu

A **postdoctoral fellowship** is available in 'Gait & Posture' studying the risk of falls in normally and pathologically aging adults. The studies will

combine full 3D kinetics and kinematics as well as surface EMG. Knowledge of the French language is beneficial but not mandatory. Send full CV including academic records and references. Contact: F Prince, PhD, Centre de recherche en gérontologie et gériatrie, Sherbooke Geriatric University Institute, Université de Sherbrooke, 1036 rue Belvédère sud, Sherbrooke, Quebec, CANADA J1H 4C4, Tel: (819)829-7131 ext 2308, Fax: (819)829-7141, Email: fprince@courrier.usherb.ca

Research Engineer (PhD): A three year position is available in the Orthopaedic Biomechanics Laboratory at Boston's Beth Israel Hospital. The successful applicant will work primarily in the area of pediatric orthopaedics investigating optimization of surgical procedures for "containing the hip joint" in the treatment of hip dysplasia, perthes disease and slipped epiphysis; evaluating different methods of fracture fixation in treating pediatric femur fractures and designing a new intramedullary nail; evaluating different brace designs for immobilizing the lumbo-sacral spine for treatment of spondylolysis. Qualifications include a Ph.D. in engineering and research skills in biomechanics. The fellow must be a US citizen or hold permanent residency in the US. Contact: B. Snyder MD PhD, Children's Hospital, Dept. of Orthopaedic Surgery, 300 Longwood Ave., Boston, MA 02115, Email: Snyder_B@a1.tch.harvard.edu

A PhD scholarship is available for European citizens to pursue research in experimental and applied psychology within the School of Sport and Exercise Sciences at The University of Birmingham. The scholarship is for three years and the starting date is negotiable though a start date of October 1996 would be preferable. The applicant will be expected to investigate the visual regulation of locomotion in humans. Applicants should have good mathematical skills and a knowledge of biomechanics. Familiarity with dynamical systems would be advantageous. Prior knowledge of psychology, while helpful, is not a pre-requisite for appointment. Send a CV and the name and address of two academic referees. Contact: F Eves, PhD, School of Sport and Exercise Sciences, The University of Birmingham, Edgbaston, Birmingham B15 2TT, UK, Tel: 0121 414 4133, Fax: 0121 414 4121, Email: evesff@sportex.bham.ac.uk

Graduate Assistantship (PhD): A position is available Jan or Sep 1997 for a Ph.D. student to carry out studies in ultrasound physics and/or bone material biomechanics. The Ph.D. degree is in

Advanced Radiological Sciences, a graduate program with emphasis on applied physics in medical imaging and development of new medical technologies. Contact: S. Mehta, PhD, Dept. Of Radiology, University of Texas Southwestern Medical, 5323 Harry Hines Blvd., Dallas TX 75235-9058, Tel: (214)648-2180, Fax: (214)648-2991, <http://www.rad.swmed.edu/>

Graduate Assistantship (MS): Movement Science Lab at Texas Scottish Rite Hospital for Children, Dallas, TX, Our emphasis is on applied biomechanics with particular areas of focus including normal and pathological locomotion, balance and posture control, and modeling. Applicants should have a B.S. in bioengineering, biomechanics or related field of movement science. and some course work completed towards an M.S. or M.E. degree. Contact: N. Haideri, M.E., Gait Lab Supervisor, Texas Scottish Rite Hospital for Children, 2222 Welborn St., Dallas, TX 75219, Tel:(214)559-7581, Email: SRHGAIT@ix.netcom.com

Graduate Assistantship (MS): An opportunity exists for an entry-level Master's student to pursue a degree through a joint venture between Penn State University and the Cleveland Clinic Foundation. This is a two-year program in which the student will spend the first year at Penn State completing course work under the direction of Dr. Peter Cavanagh and the second year at the Cleveland Clinic conducting research with Dr. Brian Davis. The research will focus on collagen cross-linking in the plantar soft tissue of diabetic and non-diabetic individuals. The student will be expected to perform biochemical assays, use staining and imaging techniques to assess collagen architecture, and employ fluorescence techniques to examine collagen cross-linking. The research will involve non-invasive collection of data from diabetic and control patients as well as work with cadaveric specimens. The expected starting date is January 1997. Contact: B.L. Davis, PhD, Department of Biomedical Engineering, Wb3, The Cleveland Clinic Foundation, 9500 Euclid Avenue, Cleveland, Ohio, 44106, Email:

davis@bme.ri.ccf.org or, P.R. Cavanagh, PhD, CELOS, RM 10, IM Bldg., Penn State University, University Park, PA 16802, Email: pr@ecl.psu.edu

Research Engineer (MS/PhD): A position is available at The National Rehabilitation Hospital's Assistive Technology/ Rehabilitation Engineering Program for a qualified person interested in

exploring promising technologies that can be transferred from military and space agencies to civilian use that will benefit persons with disabilities. Current projects include quantification of 3D human movement, in particular gait and balance, applications of virtual reality in rehabilitation medicine, orthoses, portable evaluation system, sensors, Candidates should hold a degree in bioengineering, mechanical, biomedical, or electrical engineering. Send a CV to T. Dang, PhD, Manager of PDL, Assistive Technology/Rehabilitation Engineering Program, National Rehabilitation Hospital, 102 Irving Street, N.W., Washington, D.C. 20010-2949, Tel: (202)877-1498, TDD: 202.726.3996, Fax: (202)723-0628

Email: tdd1@mhg.edu

Research Engineer (MS/PhD): A position is available in the Biomechanics or Product Design program at the Institute of Ergonomics at the Technical University of Darmstadt in Germany. Research areas include 3D-displays in aircraft, active flightsticks, information systems in automobiles, virtual workplace, product design, manual materials handling, design of production lines, biomechanical modeling, evaluation of stress caused by pushing and hauling etc. The applicant should have a PhD / M.S. in engineering sciences and a strong background in product ergonomics, biomechanics, kinesiology, human movement studies or related fields. Contact: Prof.Dr. Kurt Landau, Director of the Institute of Ergonomics, Technical University Darmstadt, Tel. +49 6151 162987, Fax +49 6151 163488, Email: landau@hrz1.hrz.th-darmstadt.de, <http://www.th-darmstadt.de/fb/mb/iad>

Graduate Assistantship (MS/PhD): Support is available immediately for a PhD level (or advanced MS) student in bioengineering to participate in research combining medical image data with continuum mechanics modeling. The ideal candidate will have experience or interest in biomechanics, medical imaging, and computer modeling and Fortran/C programming. Send a CV, research experience and interests, and GPA/GRE scores to: J.A. Weiss, PhD, Department of Bioengineering University of Utah, Orthopedic Biomechanics Institute, 5848 South 300 East, Salt Lake City, UT 84107, jeff@osiris.usi.utah.edu

MS or PhD: A number of part-time teaching and research positions are available in the Department of Exercise and Movement Science at the University of Oregon. Needed areas of expertise

include anatomy, biomechanics, exercise physiology, motor control, sports medicine, and exercise and sport psychology. Send a CV to Open Applicant Pool, Department of Exercise and Movement Science, 1240 University of Oregon, Eugene, OR 97403-1240. For more information call (541)346-4107 or Email kjf@oregon.uoregon.edu.

Graduate Assistantship (MS /PhD): A graduate research assistant position in Motor Control is available September 1, 1996 or January 15, 1997. The research project will develop and refine models of speed-accuracy tradeoffs during aimed arm movements.

Send a CV and cover letter identifying relevant experiences to R. States, PhD, Department of Health and Kinesiology, Texas A & M University, College Station, Texas 77843-4243, Tel: (409)862-3229, Fax: (409)847-8987, Email: states@tam2000.tamu.edu

Graduate Assistantship (MS): A research assistantship in the Orthopedic Biomechanics Laboratory at Boston's Beth Israel Hospital is available. Qualifications include a BS in engineering or related field and experience with material testing systems. Contact: A. Hecker, PhD, Orthopedic Biomechanics Laboratory, Beth Israel Hospital, RN-115, 330 Brookline Avenue, Boston, MA 02215, Email: ath@bihobl2.bih.harvard.edu

Biomedical Engineer (BS/MS): A position is available for an individual to act as a Laboratory Technician/Manager (VA term employee at GS-9 level) and work on Rehabilitation R&D projects. At least a BS degree in biomedical engineering or a related field plus one year's experience is required. A Masters degree is preferred. Primary responsibilities are to provide day-to-day support for laboratory operation and maintenance, preparation for, scheduling of and assistance during experimental sessions, and data reduction and analysis. Contact D. Brown, PhD, PT, Tel: (415)493-5000 x64481, Email: brown@roses.stanford.edu or .

Laboratory Assistant (BS): A position is available in the Department of Orthopaedics, Case Western Reserve University, Cleveland, OH for an individual with a background in Biomedical Engineering, Materials Science, Mechanical Engineering, or related field. The responsibilities include maintaining orthopaedic implant retrieval program and conducting bone mechanics

experiments related to skeletal fragility. Contact C. Rinnac, PhD, Email: cmr10@po.cwru.edu or K.J. Jepsen, PhD, Email: kjj2@falstaff.mae.cwru.edu, or Send a CV and list of references to: Human Resources (CR), Case Western Reserve University, 10900 Euclid Avenue, Cleveland, OH 44106-7047, Fax: 216-368-4678

Sports/injury Biomechanics (BS/MS): A full-time position is available for a biomechanist at The American Sports Medicine Institute. Research at ASMI focuses on quantifying the kinematics and kinetics produced in athletic activities such as baseball, tennis, and exercise as they relate to injury. Responsibilities include participating in designing and conducting studies, analyzing data, and preparing manuscripts. Send a CV and two letters of reference to: G.S. Fleisig, Ph.D., American Sports Medicine Institute, 1313 13th Street South, Birmingham, AL 35205, USA. Tel: (205)918-0000

Research Support Specialist (MS): A position is available immediately for the Musculo-Skeletal Research Laboratories and the Graduate Program In Biomedical Engineering at the State University of New York at Stony Brook. The research support specialist will be directly responsible for the overall management of the facilities in six teaching and research labs. This includes responsibility for the upkeep of the laboratory computer systems (eight networked Unix and five 486-class pc workstations) and BME computer system (five networked Pentium-class Windows95 workstations) as well as upkeep of laboratory equipment. Please send a letter of interest, curriculum vitae, and names of three references to: C. Rubin, PhD, Director, Program in Biomedical Engineering, Health Sciences Center T18-030, State University of New York, Stony Brook, New York 11794-8181

Research Associate (MS): Position Available: Spine-Tech, Inc. designs, manufactures, and markets spinal implants and instruments and is currently taking inquiries and resumes for a full-time research associate position. This individual will work closely with the R&D staff, reporting to the Director of Research and will be responsible for conducting internal and external experimental, pre-clinical research. A large majority of time will be spent in the biomechanical testing laboratory evaluating prototypes and released devices. A minimum of a Master's degree in one of the biomedical or bioengineering sciences is required. Preference will be given to those candidates with experience in 1) spinal and/or orthopaedic biomechanics and 2)

materials testing equipment. Please send resumes via Email to S. Griffith PhD, Email: sgriff@pclink.com

Postgraduate positions: Two positions are available in the areas of neurophysiology of human motor control and dynamical systems approaches to human motor control within the Faculty of Sciences at University of Southern Queensland, Toowoomba, Australia. Contact: Ms. J. Barton, Office of the Pro-Vice Chancellor (Research & Higher Degrees), Tel: 076 31 2633, Email: Barton@usq.edu.au.

Upcoming Meetings, Workshops, Etc.

September

European Society for Movement Analysis in Children, 12-14 Sep 1996, Contact: T. O'Brien, Ph.D., or A. Jenkinson, Gait Laboratory, Central Remedial Clinic, Vernon Ave., Dublin 3., <http://www.iol.ie/tdcrg/gait.htm>

Biomechanics of Man '96, 17-19 Sep, Tichonice, Czechoslovakia. Contact J. Jirova, PhD, Email: jirova@itam.cas.cz.

Gait Analysis in Rehabilitation Medicine, 26-28 Sep 1996 Marriott Crystal City, Arlington, Virginia, Sponsored by National Center for Medical Rehabilitation Research, National Institute of Child Health and Human Development, National Institutes of Health. For information contact: Louis A. Quatrano, Ph.D., NCMRR, 6100 Executive Blvd, Room 2A03, Rockville, MD 20852-7510, Tel: (301) 402-2242, Fax: (301) 402-0832, Email:

QuatranL@hd01.nichd.nih.gov or S.J. Stanhope, Ph.D., Biomechanics Laboratory, Building 10 Room 6s235, 10 CENTER DR MSC 1604, National Institutes of Health, Bethesda, MD 20892-1604, Tel: (301) 496-9891, Fax: (301) 402-0663, Email: Steven_Stanhope@NIH.GOV

Preventing falls in the elderly: 28-29 Sep 1996, Eden Roc Resort and Spa, Miami Beach, Florida, USA. Contact NRE, Tel: 360-696-2299 Fax: 360-699-1351

Movement and behaviour biological aspects of the development of motor coordination, 27-28 Sep, Organised by the Hungarian Biological Society, Section of Movement and Behaviour Biology, in the holiday centre of Agard /Hungary/ on. Contact: K. Keresztesi, PhD, Hungarian University of Physical Education, H-1123 Budapest. Alkotas u.44. Fax: (361)156-6337

October

3rd Russian Conference on Biomechanics, October, 1996, Nizhny Novgorod, Russia, Dr. Nina M. Anishkina. Institute of Applied Physics of the Russian Academy of Sciences. 46 Uljanov St., Nizhny Novgorod, RU-603600. E-mail: nina@appl-sci.nnov.ru

Biomedical Engineering Society Annual Fall Meeting, 3-6 October, 1996, Penn State University, University Park, Pennsylvania. Contact: R. Kline, Tel: (814)865-1407, Fax: (814)863-0490, Email: rxk1@psu.edu.

13th Annual Interpretation of Gait Analysis Data/8th Annual Electromyography: Fine Wire Technique, 4-5 October 1996, San Diego, California, Contact Tel: (619) 576-5807, Fax: (619) 576-7134.

Society for Physical Regulation in Biology and Medicine, 16th Annual Meeting, 9-12 Oct 1996 at the University of Chicago and the Midland Hotel. This year's symposia include influences of mechanical forces on vertebrate evolution, physical factors in bone and cartilage remodeling, mechanics of cellular mechanochemical signal transduction. For updated information contact: Tel: 301-571-0680, Fax: 301-530-7049, E-mail: sprbm@faseb.org

20th Annual Meeting of the American Society of Biomechanics: 17-19 Oct 1996, Atlanta, Georgia, USA; Contact R.J. Gregor, PhD, Department of Health and Performance Sciences, Georgia Institute of Technology, Atlanta, Georgia, 30332-0110; Tel. 404-894-1028 Fax 404-894-7025 E-mail: robert.gregor@sac.gatech.edu

Integrative Biology of Exercise, 16-19 Oct 1996, Vancouver, British Columbia, Contact American Physiological Society Conference Office, Tel: (301)-530-7171.

12th Annual Meeting of the American Society for Gravitational and Space Biology, 23-27 October 1996, Charlotte, North Carolina. Contact: D.R. Beem, Tel: (202)628-1500 ext.250, Email: dbeem@aol.com.

Evidence-Based Ergonomics, 28th Annual Conference of the Human Factors Association of Canada, Valhalla Inn - Kitchener, Ontario, 23-26 Oct 1996, Contact Waterloo '96 HFAC/ACE Conference, 6519B Mississauga Rd., Mississauga, Ontario L5N 1A6, CANADA, Tel:(905) 567-7193, Fax:(905) 567-7191

11th Congress of the International Society of Electrophysiology and Kinesiology (ISEK), 27 to 30 October 1996 Contact: ISEK-96 Congress

Secretariat, ACON Convention Services, P.O. Box 560, 7500 AN Enschede, The Netherlands, Tel: 31-53-4335800; Fax: 31-53-4341219; e-mail: acon@pi.net

18th Annual International Conference of the IEEE, Engineering in Medicine and Biology Society, 31 Oct-3 Nov 1996, Amsterdam, The Netherlands, contact: Conference secretariat: Basics International Conference Services, University of Twente, P.O. Box 217, 7500 AE Enschede, The Netherlands, +31-53-4356770

November

2nd Computer Assisted Orthopaedic Surgery Symposium, 7-9 Nov 1996, For further information contact: CAOS-Secretary, M.E. Mueller Institute for Biomechanics, P.O. Box 30, CH-3010 Bern, Switzerland, Phone: +41-31-632-8722, Fax: +41-31-632-4951, Email: caos@mem.unibe.ch, WWW:

<URL:<http://cranium.unibe.ch/cas/caos.html>>

Dynamics, Control, and Measurement of Biomechanical Systems: 1996 International Mechanical Engineering Congress and Exposition, 17-22 Nov Atlanta Georgia, Contact Dr. Y. Hurmuzlu, Dept. Mechanical Engineering, Southern Methodist University, Dallas, Texas, USA 75275, Tel: 214-768-3498, Fax 214-768-1473, E-mail : hurmuzlu@seas.smu.edu

Just over the horizon...

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

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

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.umsmmed.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)

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

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

XVth Congress of the International Society of Biomechanics, 25-29 Aug 1997, Tokyo, Japan. Contact Dr. S. Fukashiro, General Secretary, XVth 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.

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.

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, 10-12 Nov, 1998, Lahti, Finland, Contact: K. Hakkinen, PhD, Email: hakkinen@maila.jyu.fi or H. Kauhanen, PhD, Email: kauhanen@maila.jyu.fi

and you could have been there!

NIA Workshop on Sarcopenia and Physical
Performance in Old Age
Bethesda, Maryland, July, 1996

Impaired mobility, falls and increased risk for functional dependence are well recognized functional consequences of sarcopenia (i.e., loss of skeletal muscle mass, strength and/or quality) in old age. Although there has been an intensive effort in geriatric rehabilitation research to develop strategies to improve strength and to reduce mobility problems in the elderly, there still remain major obstacles to the development of effective interventions to

attenuate or prevent sarcopenia and its consequences. Novel approaches are critically needed to delineate fundamental concepts, such as the clinically relevant parameters of muscle function (e.g., torque, rate of torque development) and the quantitative relationship between age-related changes in these parameters of muscle function and impaired physical performance/disabilities.

The National Institute on Aging (NIA) has been working with the scientific community to stimulate clinical studies addressing these issues, as well as promoting multi-disciplinary approaches towards understanding the functional significance of sarcopenia in the elderly. Recently the NIA sponsored the multi-disciplinary workshop, Sarcopenia and Physical Performance in Old Age the goals/objectives of which were: 1) to encourage the conduct of clinical studies to determine the relationship(s) between different parameters of skeletal muscle function (e.g., force, rate of torque development) and an aged individual's capacity to perform tasks encountered in everyday life (e.g. ADLs, higher order tasks, and timecritical tasks), 2) to promote the inclusion of disabled and frail elderly populations, as well as minority groups in such clinical studies, 3) introduce non-invasive methods of examining muscle physiology permitting the measurement of several muscle properties (e.g. blood flow, fatigue characteristics) per study subject, and 4) to stimulate more detailed analysis of human muscle biopsies (in addition to muscle morphology) through the application of *in vitro* techniques classically used in animal studies to delineate structure-function relationships. The workshop format consisted of three scientific sessions: 1) Specific Study Design Considerations, 2) Physical Performance and Muscle Function and 3) Muscle Quality and Pathophysiology, followed by small group discussions (Population-Based Studies, Small-Scale Clinical Studies). Abstracts of the presentations and summaries of the small-group discussions at the workshop will be published as a supplement of Muscle & Nerve.

With respect to the utility of biomechanics in filling the critical gaps in our current knowledge on the functional consequences of sarcopenia, biomechanical studies offer a powerful means of directly determining the affected parameters of muscle function which may lead to the inability of an elderly individual to perform a specific task. That is, biomechanical/kinematic analysis permit the measurement of muscle function during the

performance of a specific task. The quantitative nature of the data derived from such studies could be used to determine muscle performance requirements in these tasks, set performance goals for treatment, and identify which treatment modalities best help to achieve these goals. Such information could also be useful in predicting those individuals at risk for functional impairment, and who might benefit from preventive interventions. Another important contribution is that biomechanical studies could guide the focus of clinical studies of muscle physiology (e.g., muscle blood flow, metabolism) so that mechanistic data could be correlated to specific functional outcomes and vice versa. Given the heterogeneity of the elderly population, integrated studies of functional independence, biomechanics, and muscle morphology/ physiology should yield data valuable in designing targeted interventions for the functional consequences of sarcopenia in the elderly. *Thanks to Chhanda Dutta, PhD, Director, Musculoskeletal Research, Geriatrics Program, National Institute on Aging, for this item.*

Report of ISBS Congress Madeira Portugal 1996

The XIVth International Symposium of Biomechanics in Sports was held in Funchal, Madeira, Portugal - a superb setting for the main event in the ISBS calendar. After what can only be described as an "interesting" approach and landing on the world's shortest runway, I thought it was certain that things would improve rapidly. Delegates were welcomed at an opening ceremony co-hosted by the ISBS President and conference chairman, along with the President elect of the International Society of Biomechanics, Professor Gunther Rau, whose address included the proposal of increasing co-operation between the two societies.

The Geoffrey Dyson Memorial Lecture award went to David Winter whose work over the past twenty years should put him on anyone's list of worthy recipients, and his lecture on total body kinetics was enthusiastically received. Each of the four days of the conference began with two keynote lectures. These included presentations by Peter Bruggemann of Germany, Jesus Depena and Joe Hamill (both from USA) and others from a range of continents. Delegates could also view poster presentations during breaks between sessions an

invitation strengthened by serving coffee and biscuits in the same room.

The social side included a tour of a Maderia wine making company and a trip to Porto Moniz which involved a narrow cliff side road (which was barely wide enough for a car, never mind a 50 seater coach) during the hours of darkness. The banquet on the final evening was held outdoors in the Magnolia Gardens, a few minutes walk from the hotel, which featured a group of Maderian entertainers. The setting was excellent, the food was of a similar standard, and everyone went home happy (or Merry at least).

Attendance at the conference totaled 200, with 12 Keynote, 58 Oral and 76 poster communications. Finally, congratulations to Laurie Malone (Canada) who won the New Investigator award for her presentation on "The effects of wrist restraints on wheeling biomechanics". Hopefully, we will see more of her work at future ISBS conferences. Here's looking forward to Denton 1997.

Thanks to Stuart Miller, University of Wales Institute, Cardiff, for this review.

9th International Conference on Mechanics in Medicine and Biology 30 June - 4 July, 1996, Ljubljana, Slovenia

This was the second International Conference on Mechanics in Medicine and Biology organized in Ljubljana in a short period, since the 7th conference, scheduled for Ljubljana in 1991, was moved over the border to Poertschach in Austria due to a short war in Slovenia that year. The 9th ICMMB gathered 167 participants from 23 countries. Presentations were divided into 13 sections: Clinical Biomechanics, Sport Biomechanics, Rehabilitation, Functional Electrical Stimulation, Muscle Biomechanics, Bone Structure, Pharmacokinetics and Electrochemotherapy, Blood Flow, Simulation and Modelling, Gait and Posture, Biorobotics, Cardiac Mechanics and the last section that dealt with bone implants, biomaterials and dental mechanics.

Eight invited lectures were delivered by: T. Yamamuro (Japan) on collaboration between engineers and clinicians on development and clinical application of new bio-substitutes, H. Thoma (Austria) on rehabilitational engineering, R.J. Jaeger (USA) on the implications for advanced respiratory neural prosthesis of the

mechanical contribution of abdominal musculature to ventilation, H. Hatze (Austria) on the sensitivity of human motion to random perturbations of neural control inputs, F.M. Scalzo (USA) on the pharmacokinetics of phencyclidine and cocaine in neonatal piglets, Wen-Jei Yand and P.P.T Yang (USA) on the design principle of a filter/reabsorber type bioartificial kidney, A. Pedotti (Italy) on the clinical applications of gait analysis, and A. Voloshin (USA) on the modifications in the musculoskeletal shock absorption due to fatigue. All lectures and oral presentation were given in a plenary form to enable everyone to listen to all the presentations for exchange of the knowledge in different areas of biomechanics. At the conference, a strong emphasis was also given to the communication between practice and science. The proceedings of the conference are available by contacting Mrs. A. Kregar, Cankarjev dom, Presernova 10, 1000 Ljubljana, Slovenia, Fax: +386 61 217 431. *Thanks to Vojko Strojnik (vstr@uni-lj.si) for this report*

Places to "Go"

ISB '97:

<http://idaten.c.u-tokyo.ac.jp/ISB97/isy97.html>

11th ISEK meeting:

<http://www.introweb.nl/~rrd/isekpage.htm>

ESB '96

<http://www.mech.kuleuven.ac.be/bmgo/esb.html>

The National Centre for Prosthetics and Orthotics,
LaTrobe University, Melbourne, Australia

<http://www.latrobe.edu.au/www/ncpo/>

↓ Whoa!! Check this out! ↓

The Society for Neuroscience has announced that the complete Journal of Neuroscience is now on-line during our trial period and can be accessed on the Internet at the following address:

<http://www.jneurosci.org>

Visitors will have electronic access to the Journal in its entirety with full text and graphics of each article. During the trial period, the Journal is available to anyone on the Internet. However, beginning January 1, 1997, access to the complete Journal on-line will be limited to Society for Neuroscience members only.

CAREERS OnLine: an offered resource from the Federation of American Societies for Experimental Biology

<http://www.faseb.org/careers>

Nature

<http://www.america.nature.com>

If you don't ask you won't get

The American Federation for Aging Research (AFAR) is accepting applications for the 1997 Research Grant Program. The program is targeted toward investigators in the early stages of their independent research careers. The deadline is December 16. Contact: amfedaging@aol.com

"Alice doesn't live here anymore"

Here's another attempt at something new- if you think that anyone would care to know and if you send to me changes in your whereabouts, I will let the ISB community know.

P.N. Grimshaw, Biomechanics Division, School of Education, University of Exeter, Heavitree Road, Exeter EX1 2LU, United Kingdom, Tel: 01392263263, Fax: 01392 264922, Email: P.N.Grimshaw@EX.ac.uk

If it were easy then everyone would be doing it...

While the Olympics are still fresh in our minds I thought that a few pointers for the uninitiated from an old hand of Olympic Research expeditions might be helpful for the future. While the Olympics do provide some of the best examples of elite performances for sports biomechanists to analyze they also pose some of the greatest challenges for the unwary researcher. Having obtained the required IOC approval for a research project there are a number of details to be sorted out prior to the event.

Camera locations: The key feature of camera location is to choose somewhere that is not too attractive and that disturbs none. If you think you have found the perfect spot for an ideal view you may be assured that Network Television will eventually discover that they want it. If you choose somewhere that could be visible from a commercial camera position or could block a

spectators view then again you could find yourself short of a camera position.

Accreditation: If at all possible obtain accreditation before you travel. It is inevitable that you will not have quite the right accreditation to access all parts of the venue that you need to. Still something is better than nothing. At least you will be less disappointed than the athlete who cannot get onto the track because his accreditation is not quite right. (This does not happen too often.)

Travel: Before traveling obtain all relevant details of accommodation, phone numbers, fax numbers, city map. If you are being met at the airport find out where exactly and what sign will be displayed. Failure to do so may result in your becoming a lost soul in a foreign land at a time when thousands of others are clogging up the system. If local travel arrangements do not fit in with your requirements you are advised to make your own arrangements - that is unless you like to travel to the venue at 7 am and return at 11 pm.

Accommodation: Having arrived at your destination after some 22 hours of travel, try smiling when the accommodation officer says that she has no record of you. The alternative strategy of growling has been tried and found to be less productive.

Venue: To gain access to the venue the help of a local coordinator is indispensable. Your cameras can sometimes be taken straight in and sometimes require their own accreditation. Once in the venue set up your equipment in the reserved space before someone else spreads into it. The use of clamps with fitted tripod heads is recommended since there is usually something to clamp on to. Tripods can move in the night which provides interesting calibration challenges.

Camera calibration: The motto here is "Do it today for tomorrow may bring changes". If you don't do it today the venue may be closed the next day or you may not be allowed into the competition area. Groundsmen are notorious for protecting their grass from non-elite feet. Be prepared to calibrate in the dark. The use of active markers is most helpful under these conditions.

Camera sway: Soon after you have clamped your camera rigidly to the 10 metre tower upon which you have been assigned space, you may notice that the whole structure sways in time with the 300

pound disco soul who loves the stadium music. Now all you have to do is to figure out the best way to model the sway in order to remove its effect from your data. Other challenges take the form of developing software to correct for pan, tilt and focal length changes induced by the night shift who have brought in another dozen heavy cables the night before competition.

Data collection: Here you need a mind like a steel trap. The inevitable danger is that of enjoying the competition or worse - watching other events. This leads to poor camera technique where you forget to turn the camera off which leads to the classic "camera off" when the action starts again. Better to concentrate now and then go home to watch the rest of the Olympics on the television with the other viewing billions.

Staying sane: Operating a camera on/off button for several consecutive days can have a numbing effect on the mind unless this activity is at the upper end of your intellectual capabilities. To offset this you must find something of interest to focus upon. This may take the form of a "Didjano" announcer who presents interesting information on relevant topics such as "Didjano that in the women's beam event the beam is 4 inches or twelve centimetres wide?" Presumably this gives an advantage to the European competitors with an Olympic inch of three centimeters. ISB Committee beware the dangers of standardization!

Never again: The challenges of data collection can sometimes seem too much for even the veteran Olympic researcher. "This will be my last Olympics". I don't believe a word of it Mont. See you in Sydney at the end of the millennium.

Fred Yeadon

ISB PUBLICATIONS

The following Society publications can be obtained at the special member rates by writing to the supplier shown.

BOOK OF ABSTRACTS, XVth Congress of the International Society of Biomechanics.

Price: 450 FIM (includes postage)

Supplier: University of Jyväskylä

Payment: Pay to the order of-

University of Jyväskylä
Account No. 800013-10171

Banker POSTIPANKKI
00007 Helsinki, FINLAND
SWIFT PSPBFIHH
Telex 121 698 pgiro sf.

Refer to "ISB Congress book 5620"

(NB: No cheques, foreign currency or credit cards will be accepted)

Then fax a copy of the receipt to:

Minna Korhonen at the University of Jyväskylä

Fax: +358 41 602 071

Tel: +358 41 602 070

E-mail: minnakori@maila.jyu.fi

BOOK OF ABSTRACTS, XIVth Congress of the International Society of Biomechanics.

Price: 550 FF plus postage

Supplier: Professor S. Metral

Explorations Fonction. du Systeme Nervueux
C.H. Bicetre, 78 Avenue du General Leclerc
94275 Kremlin Bicetre, FRANCE
Fax: (33.1) 45.21.27.14

BOOKS OF ABSTRACTS, XIIth and XIIIth Congresses of the International Society of Biomechanics.

Price: \$AUS 40 plus postage (\$AUS40 airmail) ea.

Supplier: Graeme A. Wood

Department of Human Movement
The University of Western Australia
Nedlands, WA 6009, AUSTRALIA
Fax: +61 9 380-1039

BIOMECHANICS XI-A and XI-B, Proceedings of the XIth Congress of the Intn'l. Society of Biomechanics.

Price: 200 Dfl (includes both volumes and postage)

Supplier: Peter Hollander

Faculty of Human Movement Sciences
Vrije Universiteit
van de Boechorststraat 9
1081 BT Amsterdam
THE NETHERLANDS
Fax: +31-20-6442043

BIOLOCOMOTION: A CENTURY OF RESEARCH USING MOVING PICTURES, edited by A.Cappozzo, M.Marchetti and V.Tosi (ISB Book Series-Volume 1; Hard-bound, 356 pages, 180 b&w and 7 colour figures).

Price: \$AUS 65 plus postage (\$AUD 20 airmail)

Supplier: Graeme A. Wood (address as above)

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.

Hamstring Contraction Latency Following Anterior Cruciate Ligament Rupture, Reconstruction and Rehabilitation

David John Beard

Supervisor: Mr Hamish Simpson, FRCS
Oxford Orthopaedic Engineering Centre
University of Oxford, 1996.

The long-term functional outcome of individuals sustaining anterior cruciate ligament rupture is variable. Why some patients, but not others, having torn the ACL are able to maintain a high functional level remains unclear. Understanding the mechanisms has implications for both surgical and conservative treatment for this injury. This thesis investigated one possible factor for the varied outcome following cruciate rupture; the ability of the thigh muscles to respond and protect the unstable joint against applied perturbation.

It is well established that the hamstrings and the ACL can act in synergy to resist anterior translation of the tibia. Therefore, the objectives of this study were to develop measurement methods to test the hypothesis that contraction latency of the hamstrings muscles, in response to tibial displacement, is increased in the anterior cruciate ligament deficient (ACLD) knee. Then to examine the effect of surgical reconstruction and the effect of conservative treatment on hamstring contraction latency in ACLD patients.

The validity and repeatability of the instrument designed to measure hamstring contraction latency (HCL) was established. A study of 20 normal subjects revealed no difference between limbs in HCL. A significant increase in contraction latency was found in the injured limb in 54 ACLD patients and a weak positive correlation was found between HCL and functional impairment. Furthermore, the inter-limb difference in hamstring contraction latency was found to decrease following surgical reconstruction. Non surgical treatment, consisting of rehabilitation exercises, was also found to reduce

any deficit in HCL. The efficacy of conservative treatment was assessed using measures of both contraction latency and function in a randomized controlled trial of 51 patients. A new functional rehabilitation program was found to be more effective than a traditional strengthening program. Validity and reliability of functional scoring methods, knee laxity measures and muscle strength were also examined.

It is suggested that the ability of the hamstring muscles to respond to perturbation of an unstable joint is one of many factors responsible for the variation in outcome of patients who tear the anterior cruciate ligament. Theoretical models for contraction latency deficit and change following intervention are discussed using support from further control experiments. It is argued that the increased latency in the ACLD knee and changes due to intervention, as recorded in this study, are predominantly the effect of mechanical alterations around the knee joint on a reflex of muscle spindle origin.

Whitman: Poet or Closet Biomechanist?

I found myself strolling through the halls of academe the other day, in my mind, when my mind's eye saw, and my mind understood, a subtle, developmental influence of modern biomechanics from the 19th century. This influence came not from medicine, physics, nor biology but from the world of literature and poetry. Walt Whitman writes in 1855 (1),

"The love of the body of man or woman balks account,
the body itself balks account,
That of the male is perfect and that of the female is perfect.
The expression of the face balks account,
But the expression of a well made man appears not only in his face,
It is in his limbs and joints also, it is curiously in the joints of his hips and wrists

It is in his walk, the carriage of his neck, the flex of his waist and knees, dress does not hide him."

Thus does Whitman tell of his secret passion. Thus does he reveal himself to be the poet-biomechanist of the 19th century. Certainly, literary criticism has focused on the sexual and homoerotic essence of Whitman's poetry. But what do literary critics know of the human body and human movement? They simply have not recognized the essence of human existence, neuromusculoskeletalality, as Whitman has. Read Whitman, then read yourself. Does he not describe the upper extremity as you might?

"Strong shoulders, scapula, hind shoulders, and the ample side round of the chest, Upper arm, armpit, elbow socket, lower arm, arm sinews, arm bones, Wrist and wrist joint, hand, palm, knuckles, thumb, fore-finger, finger joints ..."

Does he not describe the lower extremity, both structurally and functionally, as you might?

"Hips, hip sockets, hip strength, inward and outward round,... Strong set of thighs, well carrying the trunk above, Leg-fibers, knee, knee pan, upper-leg, under-leg, ankles, instep, foot-balls, toes, toe joints, the heel..."

Whitman revolutionized poetry with *Leaves of Grass*, originally published in 1855 and revised many times until the *Deathbed Edition* of 1892. Throughout these years, the poet-biomechanist explored the people of America, espousing his religion of humanity,

"If anything is sacred, the human body is sacred..." along with, "And if the body is not the soul, what is the soul?"

Through his poetry and life, Whitman moved society toward a greater love of our physical existence, the corporeal world, the body-politic. Today, we assess muscle strength, factors affecting neural transmission, stiffness of body tissues, and mechanics of cellular membranes. Whitman's

efforts are not isolated from our own but lead directly into them through the works of Braun, Fischer, Fenn, Elftman, and others, all of whom shared with Whitman a love of the human body. Whitman's affection for the human form was realized through his artist's vision while our affection is manifested through our scientists' vision. These perspectives are not mutually exclusive however, as art can lead to science and science to art (2). Both Whitman and we observe and dissect, in various ways, individual body components as shown above and with,

"Examine these limbs, red, black or white, they are cunning in tendon and nerve..."

All of which leads to an appreciation of the human form in movement,

"Swim with the swimmers, wrestle with the wrestlers, march in line with the firemen..." and,

"The bending forward and backward of rowers in row-boats..." and, about women directly,

"She...moves with perfect balance."

The world is wide and human endeavor weaves a wonderful web. The threads of Walt Whitman's work reach out to us with a poetic prophecy predicting present biomechanical processes.

(1) All references to Whitman's poetry come from, "I Sing the Body Electric," one of many poems contained in, "Leaves of Grass." The title of the poem itself, predates society's general understanding of the relationship between neuromuscular function and electricity.

(2) The works of Leonardo DaVinci and Piet Mondrian demonstrate this point.

Thanks to Paul DeVita, a not-so-recent graduate of Walt Whitman High School, Huntington, NY, for this contribution.

DIRECTORY of ISB EXECUTIVE COUNCIL MEMBERS

(Officers are listed on the cover)

Brian L. Davis
Department of Biomedical Engineering /
Wb3
The Cleveland Clinic Foundation
Cleveland, Ohio 44106
U.S.A.
Tel: +1-216-444-1055
Fax: +1-216-444-9198
E-Mail: davis@bme.ri.ccf.org

Bruce C. Elliott
Department of Human Movement
The University of Western Australia
Nedlands, Perth, AUSTRALIA 6009
Ph Office: +61 9 380 2374
Fax: +61 9 380 1039
E-Mail: belliot@uniwa.uwa.edu.au

Mont Hubbard
Dept. Mechanical, Aeronautical and
Materials, Dynamic Systems and
Controls
University of California
Davis, CA, USA 95616
Ph. Office: +1 916 752 6450
Fax: +1 916 752 4158
E-Mail: mhubbard@ucdavis.edu

Toshio Moritani
Lab. for Applied Physiology
Graduate School of Human &
Environmental Studies
Kyoto University
Sakyo-ku, Kyoto 606, JAPAN
Ph. Office: +81 75 753 6888

Sandra J. Olney
School of Rehabilitation
Queen's University, Kingston, ON
CANADA K7L 3N6
Ph. Office: +1 613 545 6726
Fax: +1 613 545 6776
E-Mail: olney@qucdn.queensu.ca

Alf Thorstensson
Biomechanics and Motor Control Lab.
Department of Neuroscience
Karolinska Institute
Box 5626, S-11486 Stockholm
SWEDEN
Ph. Office: +46 8 4022246
Fax: +46 8 4022287
E-Mail: alf.thorstensson@neuro.ki.se

Savio L-Y. Woo
Department of Orthopaedic Surgery
Musculoskeletal Research Lab.
University of Pittsburgh, M272 Scaife
Hall
Pittsburgh, PA 15261, U.S.A.
Ph. Office: +1 412 687 5913
Fax: +1 412 687 0802

M.R. (Fred) Yeadon
Department of Sports Science
Loughborough University
Loughborough, Leics LE11 3TU
UNITED KINGDOM
Ph. Office: +44 1509 223283
Fax: +44 1509 223971
E-Mail: m.r.yeadon@lut.ac.uk

Anton J. (Ton) van den Bogert
Human Performance Laboratory
The University of Calgary
Calgary, Alberta T2N 1N4
CANADA
Ph. Office: 403 220 3436
Fax: 403 284 353
E-Mail: bogert@acs.ucalgary.ca

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..

Journal Subscriptions - the Good News

- the not-so-good News

Elsevier Sciences have recently offered the *Journal of Electromyography and Kinesiology* to ISB members at a special discounted price. This journal is the official journal of the International Society of Electrophysiology and Kinesiology (ISEK).

All journal prices are set to rise from 1997, but in most instances this will be accompanied by an increase in pages or issues. The new prices are shown in the 1997 Membership Application Form below.

**International Society of Biomechanics
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(NB: Student subs to the JAB are \$AUS 18 less)		
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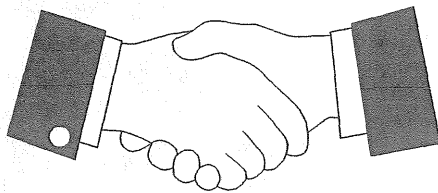
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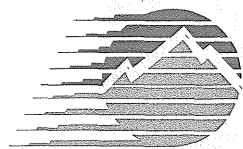


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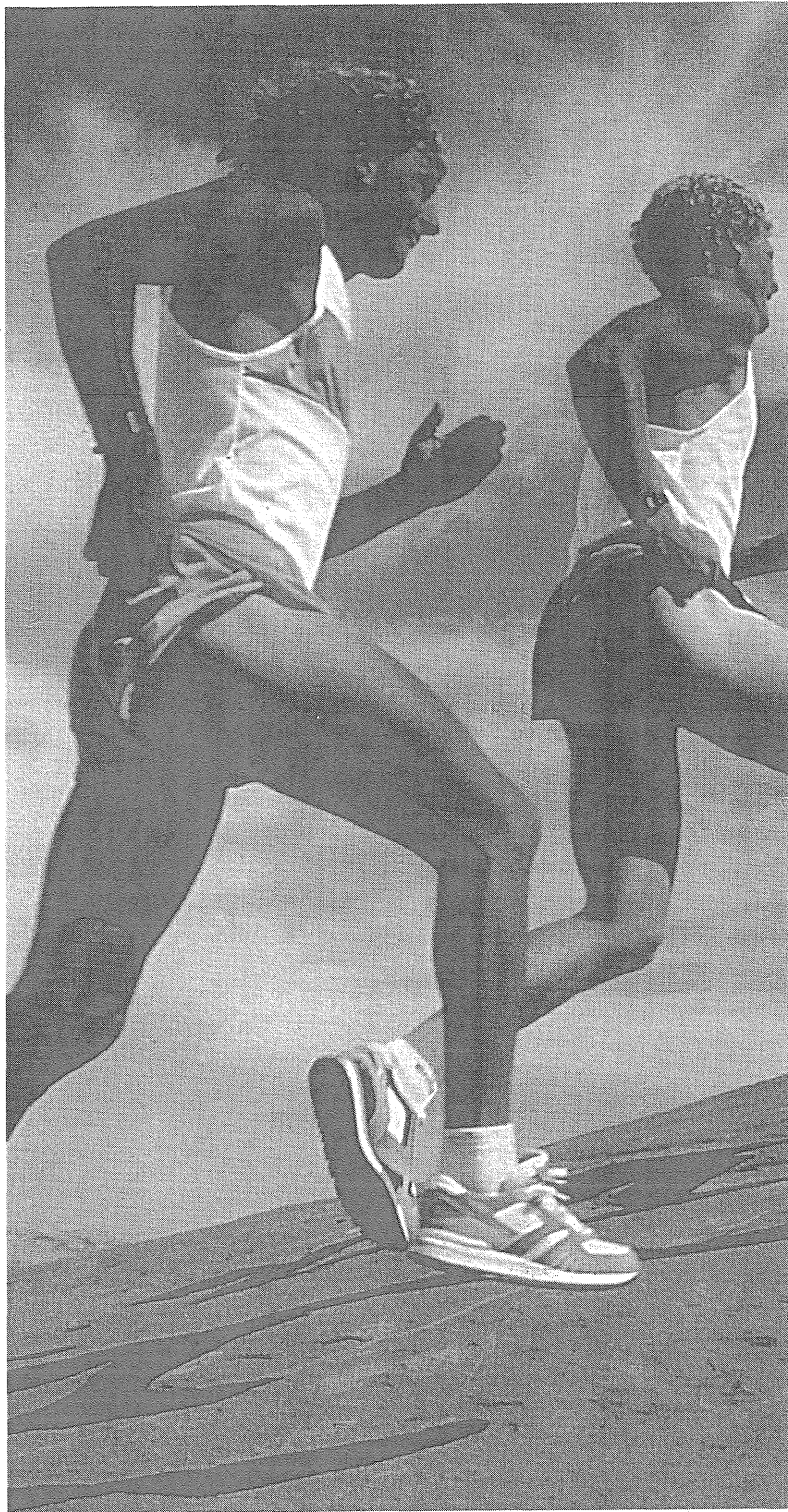
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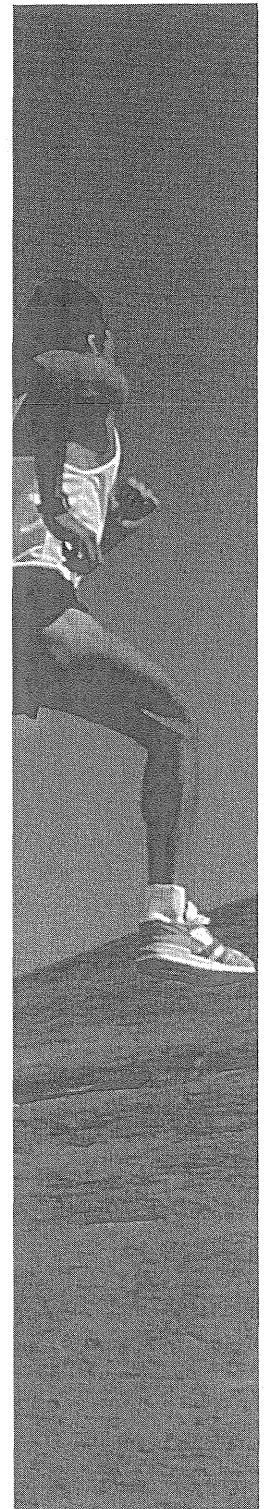
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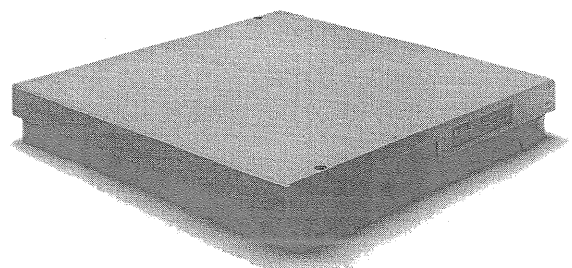
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