



International Society of Biomechanics Newsletter

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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 Formosan 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, Sandra J. Olney

Why Won't Jeff do a Doctorate?

Jeff is a young man who is familiar to many around the university. Bright and energetic with a pleasant personality, he is graduating with a master's degree and a CV that will get him external funding for the duration of his doctorate. However, he has decided not to pursue a doctorate and candidly told his supervisor that he didn't really want his (supervisor's) life. In fact companies are vying for him but he is taking his time choosing. Why has the doctorate lost out?

A recent Ipsos-Reid poll in Canada asked 1,000 Canadians to list their top indicators of personal career success from a list of eight options, including salary level and job title (Globe and Mail, May 7, 2003). Work-life balance was overwhelmingly the top selection at 30%. The next closest was job challenge at 14%, then level of responsibility at 12%, and advancement opportunities, 10%. Salary level and loyalty of employees were each chosen by 9% as the top indicator of personal success, while 2% cited job title and 2% cited vacation time. The remaining 12% didn't have jobs or didn't know.

This poll points to some fundamental attitude changes among workers, perhaps somewhat troubling, that businesses and universities would do well to notice. This is not the first study to notice these changes. A number of experts in business have warned that in these times of downsizing, there is growing tension between work and home and its toll is felt in higher levels of stress among workers, more absences caused by work-home conflicts, reduced productivity and lower morale. The University shows both similarities to and differences from the corporate picture. Worldwide it seems that class sizes are increasing, support staff numbers are seriously reduced, faculty are teaching more and the expectations for research productivity is continually escalating. I regularly see high levels of stress and breakdowns in health. We all know departments that suffer from continuing low morale. I believe these are the pictures that

prompted Jeff's comment that he did not want his supervisor's life.

Some experts, like Linda Duxbury of Carlton's School of Business, have noted that the new norm of seeking life "balance" is adopted by women, younger workers and thirtysomethings. In this survey in fact, work-life balance is the top selection for the middle working years: nearly 40% of respondents in the 35-54 year old age group but only 31% in 18-34 year olds and 18% for the over 55s. She also says that corporations are tending to ignore the problem and hope it will go away. I have noted this attitude shift in some members of faculty, and as an administrator I find it troubling as such a person tends to perform at a level just a high enough to obtain tenure but not high enough to match the average productivity level of older faculty members of the department. Such a person may be an albatross around the department's neck for another 30 years.

Selection of work-life balance varied with level of education and rural-urban location. There were some interesting trends. The selection of work-life balance was highest among those with the highest levels of education, being the choice of only 10% of those who had not finished high school compared to 35% and 37% respectively for post-secondary and university-educated responders. Urbanites had the edge over rural responders, with 31% choosing work-life balance over their rural counterparts at 26%.

There were also some gender differences. Males identified salary level as top indicator (10%) more often than females (8%). More males (14%) chose "level of responsibility over your work" as the most important indicator against 11% of females, while the reverse was true of selection of "loyalty of employees or those who report to you" (males 7%, females 10%). "Opportunities to advance in company or industry" were selected as the most important indicator by 12% of males but only 8% of females. Although the differences are fairly small and may be due to sampling error, they support the traditional stereotypes of gender differences. Because I would like to think that work priorities are not different for men


and women, I'm not particularly happy about this observation.

Differences in the items that were selected by the lowest educational group (not finished high school) and highest group (University) were also interesting. Salary was selected by 11% of the lowest group but only 8% of the highest group. Job challenge was chosen by 17% of the highest educated but only 11% of the lowest. Title was chosen more often by the lowest educated group. Loyalty was chosen much more often by the lowest group (16% vs. 7%) which I find interesting. Perhaps the highest educated are more mobile and perceive loyalty as less important to job security.

If these are trends in the workforce, how can research laboratories and universities attract the best and brightest into their highly competitive worlds? How can we maintain high levels of creativity and productivity in ways that also promote work satisfaction? First, it is clear that attention primarily to providing a fair salary is not sufficient. Of course we have always known that researchers are attracted to situations in which their "level of responsibility over their work" (and the research culture and infrastructure) is high but have we realized that life-balance factors may be the most important in developing new faculty and keeping them satisfied with their work? I believe that the worktime flexibility offered in most research laboratory and university settings is an asset that can be encouraged and used to great profit in attaining work-life balance. I encourage members of faculty to identify what is important in terms of their non-work life activities and try to help them achieve it while meeting their scholarly aims and the needs of the department. I also believe in trying to provide optimal services in terms of highly capable staff and excellent technology for faculty and laboratory workers in order that they do not spend their time working inefficiently. I am sure you are aware of many more. If these attitude changes to work are real, we will all have to become more attentive and innovative in assessing the factors involved in attaining satisfactory work-life balances - and maybe Jeff will do a doctorate.

Although this is my last column to you as President, I hope to see many of you at the ISB XIX Congress in Dunedin, which has an outstanding scientific program and promises an excellent experience.

Solution to puzzle in previous newsletter

Country	Sport	Joint	Tissue	Treatment
Germany	Soccer	Ankle	Bone	Rest
Canada	Ski	Knee	Cartilage	Surgery
Australia	Baseball	Shoulder	Tendon	Painkiller
Japan		Elbow	Ligament	Immobilization
Brazil	Decathlon	Hip	Muscle	Anti-inflammatory

Thanks to Akinori Nagano for providing the answer shown above, and for being the first to solve the problem.

Others to answer correctly were:

William Ledoux Dimitris Katsavelis
 Peter M. McGinnis W. Lutz Bauer
 Glenn Street Li Li
 Tom Hedman

...ooo0000O000ooo...

COUNCIL ELECTIONS

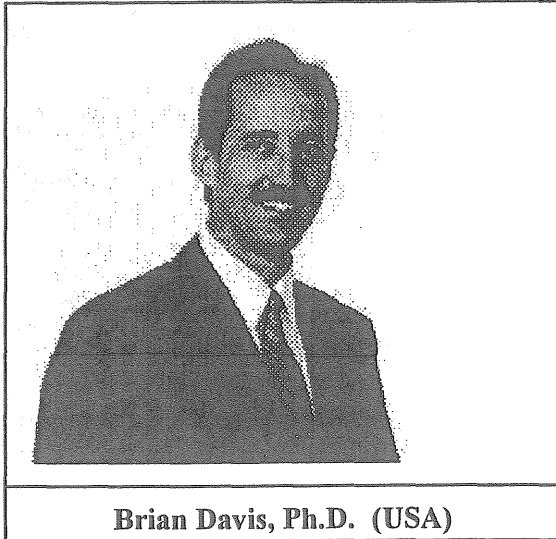
by Kit Vaughan, Past President

It is that time in the cycle when we elect the members of the ISB Council. As you know, the Council works on your behalf to see that the ISB functions as a vibrant and healthy organisation. This year we have two candidates for President Elect (Brian Davis and Alex Stacoff) and sixteen candidates for Council positions. Please note that Alex Stacoff is running both for the Council and the President Elect position. ISB members could thus vote for him for both, for one or the other (or neither!).

Please send the completed ballots to the address below. I need to received the ballots before I leave for the ISB meeting in New Zealand (i.e., deadline is July 1, 2003).

Christopher L (Kit) Vaughan, PhD
 Ernest Walton Fellow (1 Jan to 31 Dec 2003)
 Electronic and Electrical Engineering
 University College Dublin
 Belfield, Dublin 4
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Candidates for ISB President-Elect



Brian Davis, Ph.D. (USA)

Brian Davis is a Staff Scientist in the Department of Biomedical Engineering, Cleveland Clinic Foundation, USA. He obtained a BSc in Mechanical Engineering in 1981, and a Master of Science in Biomedical Engineering in 1984, both at the University of Cape Town, South Africa. He obtained his PhD from Penn State University in the USA in 1991 and joined the Cleveland Clinic in 1992. His research interests are focused on the biomechanics of the lower extremity, specifically diabetic foot ulceration and musculoskeletal adaptations to spaceflight. In terms of education, he directs a year-round program (funded by the Howard Hughes Medical Institute) for minority high school students who are considering careers in engineering or medicine. He is also the director of a National Institutes of Health (NIH) funded education program aimed at getting graduate engineering students involved with research related to the complications faced by diabetic patients. In terms of his contributions to the ISB, he has lectured in tutorials on clinical gait analysis (1993 ISB congress) and data manipulation methods in biomechanics (1997 meetings of ASB and ISB). He has been active at all ISB meetings since 1987, served six years on council, with the last four of those as Secretary-General. He is currently the Newsletter Editor for ISB. Finally, he coordinated the successful bid for Cleveland to be the host city for the ISB meeting in 2005.

A. What do you believe are the ISB's greatest strengths and what is its unique role within the international biomechanics community?
The primary strength of our society is its membership. As a group we make the ISB congresses a viable financial undertaking; we

undertake initiatives such as the "student awards program" to encourage those entering our field; we create new "Technical and Working Groups" in different areas related to biomechanics; and we communicate with each other either through Biomch-L or in the newsletter.

Another strength of ISB is that we connect to more biomechanists through the network of Affiliate Societies. This allows the ISB to even reach out to individuals who are in areas that have limited access to the Internet. I see the ISB as a catalyst, bringing people with different skills, training and philosophies together, in order to better define and resolve problems in the fields of sports biomechanics, orthopedics, and ergonomics. In my department in Cleveland, at least twenty countries are represented. In many cases, skills that have been developed around the world are brought together to tackle a complex research question. I see the same spirit of international cooperation every two years when the ISB hosts one of its congresses. Although meetings last only 5 days, communicating via the Internet allows us to continue our discussions and contact long after the closing ceremony.

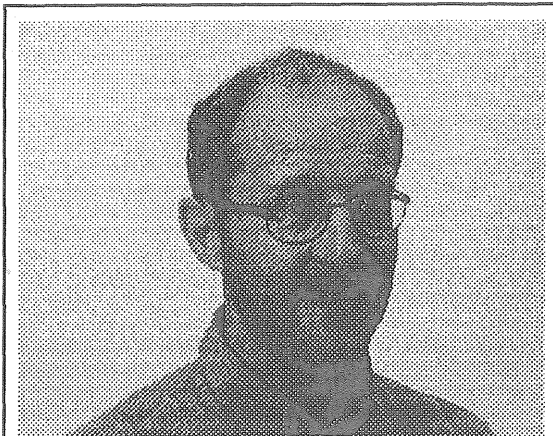
B. What are the issues that concern you the most about the ISB and what suggestions do you have for addressing these issues?

The President's first objective should be to address issues related to the ISB's finances. Hopefully by the time this outline is printed, the problem of ISB having to "carry" non-financial members for 3 years will no longer be a drain on our resources. My overall objective, however, would be to focus more on increasing our income through both corporate sponsorship and increased membership. When the ISB embarked on its student education plan, it was with the understanding that the ISB Council would have to seek corporate support. Mary Rodgers and I have each written proposals to get such funding, but up until now we are still operating without corporate support for our education program.

C. Do you anticipate creating any new initiatives if you become the President Elect of the ISB?

Once issues related to finances and membership have been addressed, I would like to see our society become actively involved in the "Decade of the Musculoskeletal System." This is an undertaking that had its origins in Sweden and has been endorsed by the World Health Organization. The purpose is to make the public aware of the enormous burden of diseases such as arthritis and osteoporosis and to conduct research efforts that

lead to significant medical breakthroughs in the musculoskeletal area. I think the ISB, because of our international membership and expertise in biomechanics, could play a key role in this initiative.



Alex Stacoff, Ph.D. (Switzerland)

Alex Stacoff is Senior Lecturer, Research Associate and Head of the Movement Analysis Group at the Laboratory for Biomechanics of the ETH Zürich, Switzerland. He received his Masters degree in biomechanics at the University of Iowa, Iowa City, USA (Jim Hay) and his PhD at the University of Calgary, Canada (Benno Nigg). His dissertation was on "Skeletal lower extremity motions" using bone pins during gait. His major areas of teaching and research include the biomechanics of the human foot in barefoot and shod running, in particular the description of movements of various foot segments (i.e. torsion and movement coupling), and their possible relationship to injuries. His latest contributions focus on the biomechanics of walking on level ground and stairs and the comparison of normative data in relation with patients with different total knee arthroplasties. He organised the 5th Symposium of the Technical Group on Footwear Biomechanics in July 2001 and was Vice-Chairman of the 18th Congress of the ISB hosted by the Laboratory of Biomechanics and the ETH Zürich in 2001. He has contributed and authored over 30 refereed articles and over 10 book chapters, and reviews articles for several journals. Alex has been a member of the ISB since 1979 and has served on the ISB Executive Council since 2001. He is currently the Education Officer of the ISB with the main focus on the Student Grant Program.

Question A: What do you believe are the ISB's greatest strengths and what is its unique role within the international biomechanics community ?

The greatest strength of the ISB is its internationality, which is well demonstrated during ISB congresses. At the 2001 congress in Zurich, Switzerland, 865 participants of 44 countries took place and had the opportunity to communicate and discuss. It is ISB policy to alternate the host city for congresses between the main continents and change countries as often as possible. As a consequence, the council members are also from different countries and connections are held to over a dozen different national biomechanics organizations. Internationality is also reflected on the ISB homepage (www.ISBweb.org), where jobs are being offered from all around the world.

One important issue and strength of the ISB is the student grant program. As these lines are being written, the checks are on their way to a total of 30 students who will be financially supported to travel to the next ISB congress in Dunedin, New Zealand or to receive support to back up their financial burden during the time they work on their dissertations. Thus, over the past four years, 70 students from 8 countries have received an ISB grant during the critical years of their young career. ISB grant applicants have to formally apply for their grants and present an application which undergoes a review process (this year the reviewers were from South Africa, Japan, the Netherlands, Switzerland, Germany and the USA). By going through this review process the students learned how to write a grant, an experience which will be very valuable for them in years to come.

One further strength of the ISB is the breadth of biomechanics areas on one side and the specialization in certain areas (i.e. by their technical groups) on the other. The ISB website, the archives and BIOMCH-L are further important sources of information for anyone interested in activities in biomechanics in general and in those of the Society in particular.

Question B: What are the issues that concern you the most about the ISB and what suggestions do you have for addressing these issues ?

Question C: Do you anticipate creating any new initiatives if you become the President Elect of the ISB ?

I would like to address both questions in one answer: My first initiative would be to create a

situation in which it becomes more attractive to be willing to organize an ISB congress. Let me explain the reasons in more detail:

The ISB congress is by far the most important event of our society. Thus, the past and future of the ISB has depended and will depend on those who organize the biannual congresses and thereby help to support the ISB. As a consequence it is vital for the ISB to find competent ISB congress organizers. In the past the ISB council was mostly lucky to find those, but many members of the Society may not know that the ISB council has faced situations where the "choice" was between two competitors only, and sometimes there was no choice at all. I would like to create a situation in which it will be interesting to become an ISB congress candidate.

As vice-president of the organizing committee of the ISB 2001 congress I learned how difficult it is to organize a congress. The financial burden is heavy, and the dependence on the infrastructure of the home university is quite large. Professional help would be welcome, but the tight budget may not allow this. In 2001 only 33% of the congress participants were ISB members. As it is at the moment, congress organizer cannot rely on a large enough ISB membership that would financially guarantee them to break even.

Thus, amongst the improvements that need to be made, the financial burden on the congress organizers should be decreased. This could be done by improving the sponsorship situation for ISB congress organizers, by increasing the start up loan and/or by encouraging a financial participation on the ISB tutorials. It would be a pleasure to see the day where several potential ISB organizers would compete with each other to become the host of the next ISB congress.

Next to this main initiative I would like to encourage the following activities: Support of the ISB homepage (www.ISBweb.org), BIOMCH-L, relationships to affiliated societies within the area of biomechanics, and the development of new working groups and satellite symposia. And lastly, I would like to find a format in which each new president of the ISB has to reconsider the role of the ISB in relation to all other affiliated societies.

Candidates for ISB Council.

Michiyoshi Ae (Japan)

Michi Ae is a Professor in the Institute of Health and Sport Sciences, University of Tsukuba, Japan. He completed Bachelor of Physical Education and Master of Science in Sport Science degrees at Tokyo University of Education, and his PhD from the University of Tsukuba in 1982. He spent a very fruitful year as an exchange graduate student in Pennsylvania State University under Dr Nelson and Dr Cavanagh. Michi is a member of the board of directors of The Japanese Society of Biomechanics and serves as a member of the scientific committee of the Japanese Olympic Committee. He managed a biomechanics research project team at the 3rd IAAF World Championships in Athletics, held in Tokyo 1991, and co-organized the VIth International Symposium on Computer Simulation in Biomechanics, in Tokyo, in 1997. His major research interests are biomechanical analysis of sports techniques, contribution of the body segments in sports techniques, and the method for feedback of biomechanical data to the practice. He has written more than 150 scientific papers, most of them having been written in Japanese.

Maarten Bobbert (The Netherlands)

Maarten F Bobbert obtained in 1983 an MSc degree in Functional Anatomy as well as an MSc degree in Exercise Physiology from the Faculty of Human Movement Sciences at the Vrije Universiteit in Amsterdam, The Netherlands. At this faculty, he also conducted his PhD work on muscle functioning and coordination in vertical jumping, which was finalized in 1988. After a two-year post-doctoral appointment at the Human Performance Laboratory of the University of Calgary, Canada, Maarten returned to Amsterdam where he now works as associate professor. His current teaching includes courses on neurosciences and neuro-musculo-skeletal modelling. Among his research interests are the design of the musculoskeletal system and the organization of control in the central nervous system. He has authored over 25 SCI papers and co-authored another 30 SCI papers, is

editorial consultant to the Journal of Biomechanics and editorial board member of Human Movement Science, and Isokinetics and Exercise Science. He has been Board member of the Faculty of Human Movement Sciences and is currently Board member of the Institute for Fundamental and Clinical Human Movement Sciences. Two years ago he was elected as a member of the Executive Council of the ISB, responsible for the awards portfolio.

Senshi Fukashiro (Japan)

Senshi Fukashiro is currently an Associate Professor of Biomechanics in the Department of Life Sciences at the University of Tokyo, Japan. He received both his MSc and his PhD degrees in Biomechanics (Sport Science) from the University of Tokyo in 1981 and 1993, respectively. His major areas of teaching and research include sport biomechanics, specifically in the behavior of muscle-tendon complex during human movements. He has contributed over 30 refereed articles on sport biomechanics with application in the three-dimensional film/video analyses, in vivo ultrasound studies of human muscle architecture and function, new approaches to estimate mechanical output of individual joints, and so on. He is on the editorial board for three professional journals in Japan. He is a member of five professional societies, including membership on the Executive Council of the Japanese Society of Biomechanics. Senshi has also served on the Executive Council of the ISB since 1999.

Mark Grabiner (USA)

Mark D. Grabiner is Professor and Director of the School of Kinesiology at the University of Illinois at Chicago. The primary focus of Dr. Grabiner's research is on the biomechanics of fracture prediction, prevention and healing. He has served the biomechanics community as a member of numerous Editorial Boards including that of Clinical Biomechanics, The American Journal of Sports Medicine, the Journal of Biomechanics and, until recently, as the Editor-in-Chief of the Journal of Applied Biomechanics. He has held the offices of Secretary-Treasurer and President of the American Society of Biomechanics.

Dr. Grabiner was the ISB Newsletter Editor for six years and has been a member of the ISB Executive Council for four years.

Bob Gregor (USA)

Robert J (Bob) Gregor has been a member of the ISB since 1973 and attended eleven biennial Congresses since that time. He served as Chairman of the 1989 Congress in Los Angeles and has made over twenty presentations at ISB Congresses since the first meeting at Penn State. He has served as abstract reviewer, session organizer and session chair and currently serves on the ISB Council. In service to the biomechanics community he has also served as President of the ASB and was a founding member of the Sub-Commission on Biomechanics and Physiology, IOC Medical Commission. Bob is a Fellow in the ACSM and currently serves on the Reparative Medicine Study Section at the NIH. Administratively, he is currently the Chair of the School of Applied Physiology and Director of the Center for Human Movement Studies at the Georgia Institute of Technology. Bob has two current grants from the NIH to fund work in the neural control of movement in both animal and human models. Research applications in human subjects include movement analysis in various clinical and industrial populations, while his animal models include the study of load-sharing in muscle synergists, muscle compartmentalization, the effects of re-innervation on skeletal muscle function and the integration of central commands and sensory input.

Joe Hamill (USA)

Joseph Hamill is a Professor and Director of the Biomechanics Laboratory in the Department of Exercise Science at the University of Massachusetts, Amherst. He received a BA from York University (Toronto), a BS from Concordia University (Montreal) and his MS and PhD degrees in Biomechanics from the University of Oregon. He has been at the University of Massachusetts Amherst for 18 years serving as Department Chair for the last eight years. Joe is a Fellow in the American College of Sports Medicine and the American Academy

of Kinesiology and Physical Education. Currently, he serves on the Executive Board of the Canadian Society of Biomechanics. He serves on the editorial review boards of several journals and acts as an ad hoc reviewer for many professional journals. Previously, he served on the Editorial Board of Research Quarterly for Exercise and Sport and the editorial review boards of Journal of Applied Biomechanics and Medicine and Science in Sports and Exercise. Joe has published 60 peer-reviewed papers and 120 abstracts and proceedings, 3 books and 9 book chapters. He has been a member of ISB since 1983 and has presented regularly at the ISB meetings. He has been an invited lecturer in such countries as China, Korea, Switzerland, Germany, France, Portugal, Hungary, Canada and Spain.

Ewald Hennig (Germany)

Ewald M Hennig obtained in 1975 a diploma (MSc degree) in Physics at the University of Frankfurt, Germany. From 1975 to 1980, he was a faculty member in the Biomechanics Department of the Exercise Science Department at the University of Frankfurt. In 1980, he was a visiting scholar at Penn State University and returned in 1981 to stay for 3 years and complete his doctoral studies in the Biomechanics Department (now the CELOS = Center for Locomotion Studies) under the supervision of Peter Cavanagh. He graduated and received his PhD in 1984. Ewald returned to Germany to become a faculty member in the Department of Physical Education at the University of Konstanz, Germany from 1984 to 1987. Since 1987 he has been a full professor (tenured) in Biomechanics at the University of Essen, Germany. He teaches undergraduate and graduate courses in biomechanics for PE students. His research interests are focused on foot and footwear biomechanics, sports related research (running, tennis and soccer), and transducer technology and measurement procedures in pressure distribution measurements. He has been responsible for the scientific program of the recent symposia of the Technical Group on Footwear Biomechanics of the ISB. He has authored and co-authored over 40 SCI papers and has been invited around the world

to give keynote lectures at international institution and conferences.

Walter Herzog (Canada)

Walter Herzog is Professor of Biomechanics with Joint Appointments in Kinesiology, Engineering and Medicine at the University of Calgary. He serves as the Associate Dean for Research in Kinesiology and holds a Canadian Research Chair in Cellular and Molecular Biomechanics. He received his Bachelor's degree from the Federal Technical Institute in Zurich, Switzerland, his Master's/PhD degree from the University of Iowa, USA, and pursued postdoctoral training at the University of Calgary, Canada. In 1987, he accepted his current position in Calgary. His research interests are in musculoskeletal biomechanics, in general, and in the areas of mechanisms of muscle contraction and joint injuries and diseases, specifically. Walter was a co-host of the ISB meeting held in Calgary in 1999, and he has served on the ISB Council for the past four years with the responsibility for organizing the tutorials.

Richard N. (Rick) Hinrichs (USA)

Rick Hinrichs received a B.A. in Physics from Oberlin College in 1975, an M.A. in Biomechanics from the University of Iowa in 1978 (mentors: Jim Hay and Jim Andrews), and a Ph.D. in Biomechanics from Penn State in 1982 (mentor: Peter Cavanagh). Rick was on the faculty at the University of South Carolina and North Texas State University before coming to Arizona State University in 1987. His research interests are primarily in sport biomechanics and focus on the biomechanics of swimming, jumping, and running. Rick also has a side interest in ergonomics and Carpal Tunnel Syndrome. He has published more than 30 articles and book chapters and received more than \$250,000 in external funding. Rick is an expert in the Hay method of Qualitative Analysis and is promoting Jim Hay's legacy for improving the quality of human movement through systematic qualitative analysis. Rick was named Scholar of the Year in 2001 from the Southwest District of the American Alliance of Health, Physical Education, Recreation, and Dance. Rick has been a

member of ISB since 1981 and has presented papers at six ISB conferences. He served on the review panel for ISB dissertation and travel grants for 2003.

Yasuo Kawakami (Japan)

Yasuo Kawakami completed the Bachelor of Physical Education and Master of Science (Exercise Physiology) degrees at the University of Tokyo between 1983-90, and earned his PhD from the University of Tokyo in 1995. He worked at the University of Tokyo from 1991-2003, and has just moved to the School of Sport Sciences at Waseda University as an Associate Professor, lecturing in biomechanics and biodynamics. His main research interest is in the area of muscle mechanics, particularly on muscle behavior in vivo and during human movements. Effects of training, growth, aging, and fatigue on human muscles are also in the scope of his research. Research techniques include real-time ultrasonography, magnetic resonance imaging, electromyography, and joint kinetics during voluntary and electrically evoked muscle contraction. With colleagues he has written over 90 peer-reviewed journal articles and over 20 book chapters. Yasuo has attended ISB congresses since 1989, and was on the Organizing Committee in the 1997 ISB Congress in Tokyo. He was one of the invited speakers at the 1999 and 2001 ISB congresses in Calgary and Zürich, and also at the 1998 and 2002 World Congress of Biomechanics in Sapporo and Calgary. Currently he is a member of the Board of Directors of the Japanese Society of Biomechanics, and a chief editor of the Japanese Journal of Training Science.

Bob Marshall (New Zealand)

Robert N (Bob) Marshall completed Bachelor of Physical Education and Master of Science (Biomechanics) degrees at the University of Alberta between 1967-72, and his PhD from the University of Western Australia in 1986. With colleagues he has written or edited ten books or book chapters, 75 articles in peer-reviewed journals and over 65 articles in professional journals or international

conference proceedings. He lectured in biomechanics at the University of Otago from 1974-88, and at the University of Western Australia from 1989-93. In 1994 he became the founding Head of the Department of Sport and Exercise Science at The University of Auckland, where he developed and was the Director of the Auckland Gait Analysis Laboratory, the only clinical gait analysis facility in New Zealand. Bob is currently Research Professor at the Eastern Institute of Technology in Hawkes Bay, New Zealand, where he is involved in sport and posture research, as well as mentoring staff and student research in the Faculty of Health and Sport Studies. Bob has attended all but three ISB conferences since 1983, and was on the Organising Committee and chaired the Scientific Committee for the 1991 ISB Congress in Perth, Western Australia. He has also been active in the ISB Technical Group on Computer Simulation, as Secretary General, as Chairman, and as Chair of the Organising and Scientific Committees for the 1991 Symposium in Perth.

Jill McNitt-Gray (USA)

Jill McNitt-Gray is an Associate Professor with tenure at the University of Southern California. She is Director of the Biomechanics Research Laboratory and holds joint appointments in the Departments of Kinesiology, Biomedical Engineering, and Biological Sciences. Jill received her PhD from The Pennsylvania State University, her Masters degree from The University of North Carolina in biomechanics, and her undergraduate degree in Mathematics and Statistics from Miami University. Her research focuses on the dynamics and control of multijoint movements involving impact and aims to identify and implement effective methods for improving performance and preventing musculoskeletal injury. She has been the Principal Investigator on more than thirty external grants including those from the National Science Foundation, International Olympic Committee, and US Olympic Committee. She is also a recipient of the Zumberge Interdisciplinary Research Award. She has served as on review panels for the National Science Foundation, the Editorial

Review Board for the Journal of Applied Biomechanics, and a guest reviewer for numerous journals in the field of biomechanics. Jill is a recipient of the Innovative Teaching Award from the USC Center for Excellence in Teaching. She has participated in the ASB as a member of its Executive Board (93-95,00-present), Chair of the Education Committee (93-95), Program Chair (2002), and as a member of Program, Education, Membership, and Awards Committees. She has presented her research at ISB meetings and has served on the ISB Program and Award Committees and currently serves on the ISB Council.

Toshio Moritani (Japan)

Toshio Moritani was born in Japan in 1950. He received his PhD degree in Exercise Physiology from the University of Southern California in 1980 under the direction of Dr Herbert A deVries. In 1985, following faculty appointments at the University of Texas at Arlington and Texas A&M University, he returned to Japan and joined the Department of Integrated Human Studies at Kyoto University. In 1992, he was appointed Associate Professor of Applied Physiology at the Graduate School of Human and Environmental Studies at Kyoto University and became Professor in 2000. He is currently Director of the Applied Physiology Laboratory. Toshio has been elected a Fellow of the American College of Sports Medicine and currently serves the Editor of the Journal of Electromyography and Kinesiology. He is also serving as a member of the Editorial Board for the European Journal of Applied Physiology and Editorial Consultant for the Journal of Biomechanics. He is also one of the Council Members of the International Society and the Japanese Society of Electrophysiology and Kinesiology.

Martyn Shorten (USA)

Martyn Shorten received his PhD from Loughborough University, UK, in 1984. He has been employed as Director of the NIKE Sport Research Laboratory in the USA, and as Director of Research Design and Product Development for PUMA AG in Germany. He is currently Managing Partner of

BioMechanica, LLC, a company based in Portland, Oregon, USA. BioMechanica performs contract research in the areas of athletic footwear, surfaces, protective equipment and seating. Martyn has been an active member of ISB since 1983. He has participated in most ISB Congresses since then, presenting a keynote lecture in 1991, an ISB tutorial on footwear biomechanics in 1995 and numerous other presentations. In 1993, he founded the ISB Working Group (now Technical Section) on Functional Footwear and was an organizer of the group's first three international Symposia. Martyn is the author of several papers and book chapters and holds eight US patents. He is a frequent presenter on topics including sports biomechanics, impact mechanics and finite element modeling. He is a member the International Sports-Engineering Association (ISEA), a fellow of the Institution of Analysts and Programmers, and Vice-Chairman of the ASTM Committee on Sports Equipment and Facilities. Martyn has used his term on ISB Council as its "Informatics Officer" to rebuild the ISB web-site and to develop membership services infrastructure.

Guy Simoneau (USA)

Guy is an Associate Professor in the Department of Physical Therapy at Marquette University, where he uses his diverse background in biomechanics (PhD), sports medicine (MS), and physical therapy (BS) to teach the orthopaedics and advanced therapeutic exercise components of the curriculum. He is also an Adjunct Professor in the Department of Biomedical Engineering at Marquette University, serving on several engineering graduate students' research committees. His research efforts reside in the areas of biomechanics and orthopaedics, where he studies the ergonomics of alternative computer keyboard designs, and ambulation with the use of walkers in both the elderly and pediatric population. Guy has been an ISB member since 1992 and, during that time, has attended the majority of the Congresses organized by the Society. He has also participated in several meetings of the American Society of Biomechanics and the Canadian Society for Biomechanics. His

contributions have included the regular presentation of his research work as well as serving as session chair on several occasions. In addition to having published more than 20 manuscripts and 5 book chapters in the areas of biomechanics and orthopedics, Guy has presented more than 60 papers at various national and international conferences. Among other scholarly activities, he is a manuscript reviewer for several biomechanics and physical therapy journals, and currently serves as the Editor-in-Chief of the Journal of Orthopaedic & Sports Physical Therapy.

Karen Søgaard (Denmark)

Karen Søgaard is currently a Senior Researcher in the Department of Physiology at the National Institute of Occupational Health, Denmark. She received her MS in Physical Education and in 1994 her PhD in Human Physiology at the University of Copenhagen. She was a research fellow in 1995 at the Department of Kinesiology, Simon Fraser University, Vancouver, Canada and in 2001 at the Prince of Wales Medical Research Institute, Sydney, Australia. She has been teaching in Biomechanics at the University of Copenhagen and University of Trondheim and has been lecturing at a number of Danish and International PhD courses and at educational institutions. Karen serves on the editorial board of the Journal of Electromyography and Kinesiology and serves as a referee for more than 10 scientific journals. She has contributed over 30 refereed papers and book chapters and about 80 conference abstracts or proceedings. Her main field of competence is neuromuscular control and biomechanics, including single motor unit recording and her research has mainly focused on the upper extremities, especially the load on the shoulders during occupational work tasks such as floor cleaning or pushing and pulling. She has been a member of the ISB since 1993 and helped to formalize the International Shoulder Group (ISG), which since 1999 has held the status as a Technical Group. She is now keen to further her contribution to the society as an executive council member.

Alex Stacoff (Switzerland)

Alex Stacoff is Senior Lecturer, Research Associate and Head of the Movement Analysis Group at the Laboratory for Biomechanics of the ETH Zürich, Switzerland. He received his Masters degree in biomechanics at the University of Iowa, Iowa City, USA (Jim Hay) and his PhD at the University of Calgary, Canada (Benno Nigg). His dissertation was on "Skeletal lower extremity motions" using bone pins during gait. His major areas of teaching and research include the biomechanics of the human foot in barefoot and shod running, in particular the description of movements of various foot segments (i.e. torsion and movement coupling), and their possible relationship to injuries. His latest contributions focus on the biomechanics of walking on level ground and stairs and the comparison of normative data in relation with patients with different total knee arthroplasties. He organised the 5th Symposium of the Technical Group on Footwear Biomechanics in July 2001 and was Vice-Chairman of the 18th Congress of the ISB hosted by the Laboratory of Biomechanics and the ETH Zürich in 2001. He has contributed and authored over 30 refereed articles and over 10 book chapters, and reviews articles for several journals. Alex has been a member of the ISB since 1979 and has served on the ISB Executive Council since 2001. He is currently the Education Officer of the ISB with the main focus on the Student Grant Program.

Julie Steele (Australia)

Julie Steele is an Associate Professor in Biomechanics in the Department of Biomedical Sciences at the University of Wollongong, Australia where she is Head of the small but dynamic Biomechanics Research Laboratory and Coordinator of the Metabolic Research Centre. Her research over the past 20 years has focused on the biomechanics of injury prevention with a specific interest in mechanisms of lower extremity dysfunction, particularly anterior cruciate ligament and patellar tendon injury during abrupt landings. Her current research also includes novel applications of intelligent fabrics in

biomonitoring, the biomechanics of breast movement and brassiere design, footwear-surface interactions and falls in the elderly, and the effects of childhood obesity on functional performance. Julie has produced more than 40 scientific publications in refereed journals and has presented in excess of 100 papers at national and international conferences, predominantly on lower limb biomechanics. She has been an active member of the Executive Council of ISB since 1999, and currently serves as the ISB Secretary-General. Julie's other professional roles include serving as a Board Member of the International Society of Biomechanics in Sports, Censor for the Fellows of Sports Medicine Australia, and as an editorial board member for several biomechanics and sport science journals.

Fong-Chin Su (Taiwan)

Su, Fong-Chin, is Professor and Director of the Institute of Biomedical Engineering at National Cheng Kung University (NCKU) in Taiwan. He received his PhD degree from the Department of Mechanical Engineering, University of Rochester, USA in 1989 with majors in solid mechanics and biomechanics and became a faculty member at NCKU later that year. Meanwhile, he visited the Orthopedic Biomechanics Laboratory, Mayo Clinic, MN, USA as a visiting scientist between 1993-94 and was a visiting professor at Muscle Physiology Laboratory, Department of Bioengineering, University of California in 1999. He has written 7 book chapters, published 86 articles in peer-reviewed journals, 228 articles in professional journals or international conference proceedings and 46 other publications. In addition, he is Deputy Editor-in-Chief, Journal of Medical and Biological Engineering and Associate Editor of Journal of Mechanics in Medicine and Biology and serves as scientific reviewer for several international biomechanics journals. He has served as Secretary General, Executive Council Member, and as President of the Taiwanese Society of Biomechanics (2001-2003), and as Executive Council Member for the Orthopaedic Research Society, ROC (1996-2004). He is the

Congress Chairman of the 13th International Conference on Mechanics in Medicine and Biology in Tainan, Taiwan (2003), and was a Scientific Program Committee Member for the 2nd conference of the International Shoulder Group in Calgary (1999). At present, Fong-Chin serves on the Scientific Peer Review Panel for Biomedical Engineering grant applications, National Science Council, Taiwan.

Interview with Musa L. Audu, Ph.D. Cleveland F.E.S. Center, Cleveland, VA Medical Center, USA

BD: Could you describe your background and your research interests?

MA: I was born on June, 17th, 1953 in a small village called Anglo-Jos in Nigeria. I went to Primary School at the age of 7 in 1961. I was the first to go to school in my family. After seven years in Primary School I attended a five-year Secondary school from 1968 to 1972. At the end I took the West African School Certificate Examination which was a successor to the Cambridge examination. I got a Division 1 (Distinction) in the exam which earned me an admission into a Science Course at Ahmadu Bello University (A.B.U.) in Zaria - Nigeria where I specialized in Physics, Chemistry and Mathematics. This was preparatory to Engineering School. I started a three-year engineering course in October of 1974. In June of 1977 I graduated with a Bachelors of Engineering (Mechanical) degree from that University with a First Class Honors. My main interest was Machine Design. I then served a one-year mandatory National Service as a mechanic for road-building equipment in Lagos - Nigeria. Immediately after the one year service, I was employed by A.B.U. as a Graduate Assistant. I also registered for the Masters degree in Mechanical Engineering which I completed in August, 1980. In January, 1981 I got a fellowship from A.B.U. to do a Ph.D. degree in Mechanical Engineering at C.W.R.U. I completed that degree in 1985, majoring in Biomechanics.

BD: After completing your PhD at Case Western Reserve University, you returned to Nigeria. Could you describe the path from that point until you became Rector of your University?

MA: I returned to A.B.U. as Senior Lecturer and continued to teach up to 1988 when I transferred to a newer University - Abuabakar Tafawa Balewa University, in Bauchi in Nigeria as a Reader in Mechanical Engineering and Director of the Center for Industrial Studies at that University. My main assignments in the University included administration of the Center and teaching Mechanical Engineering courses. I held some other positions such as Director of a fertilizer company in Nigeria, External Moderator for Engineering courses in several neighboring Universities and Membership of the Governing Boards for two tertiary Institutions. In 1992, I was appointed Rector of one of the tertiary institutions - The Federal Polytechnic in Bauchi. The appointment was a 4-year one; renewable for another 4 years and no more. I served the full eight years to the year 2000. At the end of that tenure I got a one year sabbatical leave. I took up appointment with the Cleveland FES Center where I resumed my research effort in Biomechanics.

BD: Now that you are back at CWRU, are you still working on musculoskeletal simulations?

AM: Yes. I have resumed work on muscle modeling. Since I went back to my country in 1985 I never had a chance to do that because the priorities of the educational system in my country placed very little emphasis on research.

BD: Going back to the work you published with Dwight Davy in *J. Biomechanics*, I was wondering why your muscle predictions never showed maximal activation. Can you explain this?

AM: Firstly, not all movements require maximal activation. Unless the movement was one that required fastest speed or maximal effort, the results need not be maximal. Secondly, for those simulations we did that required maximal effort (such as the minimum time kicking problem proposed by

Hatze), we used computation routines that rely on what mathematicians call smoothness conditions. A priori, the results were assumed to be smooth. Solving constrained problems using these methods give results that may come very close to the constraints but would require computation times that would be too expensive in those days to match the constraints. With the benefit of hindsight I see a number of other factors that made our computations less accurate; such as computing gradients using finite differences.

BD: You mentioned the name of Hatze---you are obviously very familiar with his work. I was wondering if you could help put it in perspective? On the one hand he seemed to strive to pay attention to every detail, but on the other hand, his models seemed to get so complex that few (if any) biomechanics researchers could understand or use them.

AM: I have never met Hatze in person but I have a lot of respect for his works in muscle modeling. He was trained not only as a Biomechanician but also as an applied mathematician. He brought his knowledge of applied mathematics to bear on the modeling of muscles with an unprecedented vigor and passion.

However, it is sometimes possible to get carried away by such a passion to propose ideas that would be intractable by other researchers. This does not mean that Hatze's models are bad; but understanding them was hard owing to the prolific use of fairly advanced mathematical concepts. To understand his models I had to constantly revise my mathematics and often had to learn entirely new mathematical concepts. It is possible though that with increase in the speed and power of computational facilities, Hatze's models will attract attention in the future because of the relative thoroughness with which they were derived.

I venture to mention that Hatze was not the only one who proposed highly advanced mathematical muscle models. Names such as those of Huxley and T.H. Hill come to mind. The later cast the problem of muscle

mechanics within the realm of statistical mechanics which I honestly found harder to understand than Hatze's models.

BD: Is there anything you would like to touch on that I have not covered? Hopes, wishes, regrets, other achievements you wish to share with ISB readers?

AM: There is not much more from me. I am now just trying to 'catch up' with the new developments in biomechanics. I am happy that the availability of the internet will not lock scientists and engineers in the developing countries, as I was for more than 15 years; not knowing in any way what was going on out here. In addition to that, I will make a plea on behalf of my colleagues in the developing countries that if any one had old equipment, software and books, these could be donated for a good cause in the developing countries. Scientists and engineers there could still use these 'old stuff' to do whatever science they need to do to serve their environment.

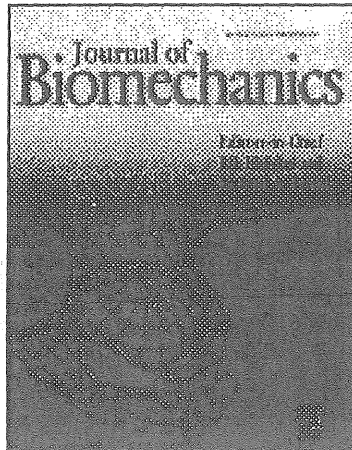
Editor's Notes and Requests:

1. Thus far I have tried to interview scientists from different continents; Vladimir Zatsiorsky was originally from Russia, Clint Rubin is from the USA, Tony Guimaraes works in Brazil and in this newsletter, Musa Audu is from Nigeria. To create a "balance" I would like to interview some females in our field, preferably from yet another region of the world. Suggestions are welcomed!
 2. Usually the Newsletter is published in the spring, summer, fall and winter. There are no deadlines for newsletter material. The content of the Newsletter does not necessarily reflect the philosophy and opinions of the ISB membership.
 4. Newsletter items such as Opinions, Affiliate Society News, Thesis Abstracts, Reviews of Biomechanics Meetings are desirable and may be considered for publication. Material may be submitted electronically or on a computer disk as a text-only file, and must be in some form of English. Submission is not a guarantee of a timely or accurate appearance in the Newsletter.
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Obituary: Andrew "Andy" Gitter MD Susan Stacpoole-Shea Podiatrist and PhD candidate

Today (May 1st, 2003) we mourn the loss of Associate Professor Andrew "Andy" Gitter MD. Andy passed away yesterday as a result of a motor cycle accident. Andy was known to many of us through his relaxed and practical presentation style and will continue to be an inspiration to us through his dedication to blending clinical practice and the research gait analysis laboratory. He will especially be remembered for his dedication to defining real change in amputee gait for optimal prosthetic limb design. Andy's career was short ending at only 45 years of age, but his brilliance was recognized in the significant research grants that he and his team had been awarded in the past year, and his natural leadership placed him as Chief of the Physical and Rehabilitation Medical Service at the Audie Murphy VA hospital and Director of the South Texas Veterans Health Care System/University of Texas Health Center at San Antonio Motion Analysis Laboratory, San Antonio Texas USA. Our sympathy goes out to his wife Brenda and their three daughters; Anna (11 years old), Sophia (8) and Julia (5). Our thoughts are also will his team; Gayle, Bill, Gordon, Geoff and Ann.

Journal of Biomechanics



Editors-in-Chief
R. Huiskes and F. Guilak
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ISB Student Grant Update

Alex Stacoff

The 2003 ISB student grants have been awarded to a total of 30 ISB student members. Grant categories and recipients are listed below. Congratulations to the awardees, and good luck with your research work !

ISB Congress Travel Grants (1000 US \$)

Applicant	Institution
Butler Robert	University of Delaware, USA
Craig Sean	University of Calgary, Canada
Domire Zachary	The Pennsylvania State University, USA
Doyle Tim	Ball State University, Indiana, USA
Geyer Hartmut	Balgrist University Hospital, Zurich, Switzerland
Gordon Keith	University of Michigan, USA
Gottschall Jinger	University of Colorado, USA
Hasson Christopher	Ball State University, Indiana, USA
Huang Helen	University of Michigan, USA
LaMothe Jeremy	University of Calgary, Canada
Lichtwark Glen	University College London, UK
Maas Huub	Vrije Universiteit, Amsterdam, Netherlands
MacLean Christopher	University of Massachusetts-Amherst, USA
Mills Peter	Griffith University, Australia
Nicholls Rochelle	University of Western Australia
Pataky Todd	The Pennsylvania State University, USA
Sawicky Gregory	University of Michigan, USA
Schneider Prism	University of Calgary, Canada
Scovil Carol	University of Calgary, Canada
Shim Jae	The Pennsylvania State University, USA
Smeulders Mark	Academic Medical Center, Amsterdam, Netherlands
Stebbins Julie	University of Oxford, UK
Van Horne Scott	University of Calgary, Canada
Wu Jianping	University of Western Australia

ISB Dissertation Grants (2000 US\$)

Applicant	Institution
Bohne Michael	University of Northern Colorado, USA
Chen Shing-Jye	University of Oregon, USA
Dettwyler Markus	ETH Zurich, Switzerland
Jones Steven	University of Bradford, UK
Kong Pui	Loughborough University, UK
Miller Kristin	University of Alberta, Canada

Recipients' reports will be published in upcoming ISB Newsletters.

**ISB Student Dissertation Award Report
Saryn Goldberg**

The goal of my doctoral research is to evaluate the biomechanical causes of stiff-knee gait, a movement abnormality commonly observed in children with cerebral palsy, in which swing-phase knee flexion is diminished. Stiff-knee gait is commonly thought to be caused by excessive swing-phase knee extension resulting from inappropriate quadriceps muscle activity. However, the treatments aimed at altering the function of this muscle do not consistently result in improved knee flexion. We believe that multiple factors contribute to diminished knee flexion in stiff-knee gait, and that this may account for the unsatisfactory outcomes of current procedures.

My preliminary work has identified that kinematic conditions at toe-off are an important factor in generating peak swing-phase knee flexion in stiff-knee gait. Thus, my recent work has been aimed at identifying the stance-phase factors that give rise to the kinematic conditions at toe-off and the relationship between these kinematic conditions and swing-phase muscle forces in generating peak knee flexion in swing.

We have developed an induced position analysis that enables calculation of the contribution that a muscle force or kinematic condition makes to a change in joint position during a specified time period. I used this technique to analyze the contributions made by the knee flexion velocity at toe-off and swing-phase muscle forces to peak knee flexion angle for a simulation of normal gait. I presented the results of this work at the 2002 IVth World Congress of Biomechanics held in Calgary. The results indicated that the knee flexion velocity at toe-off contributes more than any individual muscle force to the peak knee flexion angle in swing during normal gait.

To assess the stance-phase factors that give rise to kinematic conditions at toe-off, I have been perturbing the muscle forces during double support in a muscle-driven simulation of normal gait. By performing a series of different sized perturbations in muscle force, I can quantify the change in knee flexion velocity as a function of the change in muscle force for individual muscles. With this information, I have identified which muscles are most influential in contributing to the kinematic conditions of the limb at toe-off. I plan to present

the results of this work at the 2003 XIXth ISB Congress.

The next phase of my research is to use these techniques to evaluate experimental data from stiff-knee subjects so that I can identify those factors that contribute to the stiff-knee gait of individuals. We are currently developing tracking methodologies that will enable us to efficiently generate forward dynamic simulations of an individual's gait pattern. Using these simulations in conjunction with the techniques we have developed, I will generate guidelines that will help clinicians diagnose and treat the biomechanical cause of an individual's stiff-knee gait.

I am very grateful to the International Society of Biomechanics for providing me a Student Dissertation Award. The funds have enabled me to acquire the experimental data needed for my research.

**ISB Student Dissertation Award Report
University of Oregon, USA
Susan Dawson Verscheure**

Epidemiological studies have reported that women have an increased risk of non-contact anterior cruciate ligament (ACL) injury compared to their male counterparts (Ireland, 1999). The female hormone estrogen has been linked to the ACL via localization of estrogen receptors on the ACL, and reports of decreased pro-collagen synthesis and fibroblast proliferation when estrogen concentration is increased in vitro (Liu et al., 1996; 1997). Instrumented anterior tibial displacement is often used to assess the integrity of the ACL following injury, or surgical repair. If estrogen has an effect on the ACL in vitro what, if any, is the effect of changing estrogen levels on the female ACL in vivo, when anterior tibial displacement is used to monitor changes in ligament extensibility?

The information above was the fuel that fired my investigation into the effect of estrogen on anterior tibial displacement and anterior tibial shear. Two groups were studied, including normally ovulating women and oral contraceptive users. Anterior tibial displacement was measured using the KT-2000 knee arthrometer (MEDmetric Corporation, San Diego, CA), while anterior tibial shear was calculated during a semi-recumbent, closed chain activity on an omnikinetic dynamometer (Interactive Performance Monitoring Inc., Pullman, WA). Data were

collected 3 times during one complete menstrual cycle. The first and third test times were conducted during menses, when estrogen levels are normally low. In the normally ovulating group, the second test time occurred during ovulation, as determined by an ovulation predictor kit, when estrogen levels are expected to be high. The oral contraceptive users do not ovulate, but instead ingest synthetic estrogen. Therefore, the second test time for this group took place following 7 days of ingesting synthetic estrogen.

Estrogen and progesterone levels were measured from a blood sample taken during each of the 3 test times for the normally ovulating group. Since current research facilities in the Exercise and Movement Science Department at the University of Oregon can not support radioimmunoassay procedures, it was necessary to send the blood samples to Oregon Medical Laboratories to determine the quantity of estrogen and progesterone in the blood at the time of testing. The funding associated with the ISB student dissertation award was used primarily to cover the costs of the estrogen and progesterone measurements, as well as ovulation predictor kits, and subject reimbursement.

The research questions that have been addressed, and will be presented at the 2003 ISB Congress in New Zealand, include the following:

- ▶ What is the effect of test time on anterior tibial displacement for normal ovulating women and oral contraceptive users?
- ▶ What is the effect of test time on anterior tibial shear for normal ovulating women and oral contraceptive users?
- ▶ What is the relationship between blood estrogen levels and anterior tibial displacement, and between blood estrogen levels and anterior tibial shear, in normal ovulating women?

References:

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- Liu, S., et al. (1996). Primary Immunolocalization of Estrogen and Progesterone Target Cells in the Human Anterior Cruciate Ligament. *Journal of Orthopaedic Research*, 14, 526-533.
- Liu, S., et al. (1997). Estrogen Affects the Cellular Metabolism of the Anterior Cruciate Ligament. *The American Journal of Sports Medicine*, 25(5), 704-709.

ISB Student Travel Award Report Hae-Dong Lee

I would like to thank the Student Grant Committee of the International Society of Biomechanics for awarding me an International Travel Grant in 2002. This grant allowed me to have a one-month-visit to the Department of Life Science (Sports Science), the Graduate School of Arts and Sciences at the University of Tokyo, Tokyo, Japan to obtain new experience in the area of muscle mechanics.

The research I have focused on was the history-dependent properties of force production in human skeletal muscle. The primary purpose of my visit to Tokyo was to perform research on the architectural changes in *in-vivo* human skeletal muscle during dynamic and static contractions. In co-operation of Dr. Kawakami, I performed two small experiments: one experiment was performed for human adductor pollicis and the other experiment for human tibialis anterior. I investigated how muscle fibre and tendinous structures behave when a muscle performs isometric, concentric and eccentric contractions or combinations. With the constructive advice from Dr. Kawakami and unselfish support from his graduate students (I owe many thanks to Kurihara, Oda, Chino, Nagayoshi, Shimoda, Nakayi), I was able to learn how to quantify architectural changes of the muscles during voluntary contractions using a combination of dynamometry and ultrasonography and what architectural changes occur during the contractions, providing knowledge of what should be taken into consideration in studies on *in-vivo* human skeletal muscle.

Again, the whole journey to Tokyo was a priceless experience for me. In addition to what I learnt from experiments, I could obtain perspectives on how important cooperative research works are, how valuable working with different researchers who have different way of approach to the similar area of research, and what direction academia should go. Moreover, I could build friendship with all the people in the department. Finally, I would like to thank to my supervisor, Dr. Herzog, for encouraging me to have this wonderful experience.

ISB International Travel Grant Report
Rich Lovering
University of Maryland School of Medicine
Department of Physical Therapy

I am currently finishing my Ph.D. at the University of Maryland in Rehabilitation Sciences. My dissertation project involves the determination of biomechanical variables in an animal model of an eccentric contraction-induced injury and the correlation of these variables with alterations in the cytoskeleton of the injured muscle fiber. I am doing this research in a Muscle Biology Lab directed by Dr. Patrick De Deyne.

Last year I was fortunate enough to receive a \$2,000 travel grant from the ISB to perform research in Sweden also involving skeletal muscle. The work was performed in Gothenburg, Sweden, at Sahlgrenska University Hospital in the lab of Jan Fridén M.D., Ph.D.

Although one cannot determine muscle function from architecture alone, it is clear that the length and arrangement of muscle fibers are major determinants of function. In Sweden I completed an architectural study of the main wrist flexors, the flexor carpi ulnaris (FCU) and flexor carpi radialis (FCR), including their 3-D innervation pattern. I employed several techniques such as microdissection to measure fascicle lengths and laser diffraction to measure sarcomere length in twenty fresh cadaver muscles. The data has already been analyzed and, together with biomechanical data collected from the same muscles, will hopefully enhance knowledge of these muscles for tendon transfer surgeries.

Dr. Fridén has published extensively on skeletal muscle biomechanics and injury, so working in his lab was a fantastic opportunity. He was a terrific mentor and the people in the lab were extremely hospitable. It was certainly a privilege to work there and I hope I have made contacts that will last a lifetime.

Although I spent most of my time in the lab, I was able to visit Stockholm as well as Oslo, Norway on two separate weekends. The exposure to Scandinavia was a definitely great experience. The ISB travel grant is a terrific program and I sincerely thank the ISB for the support that made such a wonderful trip possible.

ISB Student Travel Grant Report
Anja Niehoff
Institute for Biomechanics
German Sport University of Cologne

In March 2002 I received an ISB Student International Travel Grant Award. This award enabled me to travel to the IV World Congress of Biomechanics in Calgary followed by a visit to the Human Performance Laboratory at the Faculty of Kinesiology at the University of Calgary for four weeks.

I started my travel in August from Frankfurt to Calgary with a pleasant anticipation about my biomechanics research program. It was my first travel over the "big sea" and it was also the first time that I would spend a longer time at a different research laboratory.

As a Ph.D. student I investigated the ability of the growth plate to adapt its mechanical properties in response to mechanical loading. It was of special interest whether and how the alterations of the mechanical properties are reflected on the morphological and biochemical level in the growth plate. At the World Congress of Biomechanics I got the opportunity to present partial results of my research and to meet people working in my field of interests. I was excited about the amount of feedback regarding my poster presentation. This participation was an opportunity to discuss about research, to exchange knowledge and to establish international contacts with other scientists leading to a more intensive understanding of the current research fields in biomechanics. The scientific program was very extensive and of high quality. My interest in biomechanics of bone and cartilage was attracted by a great number of presentations and I was impressed of increasing interactions between mechanical and biological research also expressed in the opening lecture from Physics Nobel Prize winner Dr. Steven Chu. It was a gratification for me to participate in such an excellent and well organised conference.

Following the conference I visited the Human Performance Laboratory at the Faculty of Kinesiology, especially the group of Dr. Walter Herzog. I was involved in a muscle mechanics study investigating the M. tibialis anterior from rabbits and a study investigating the effect of muscle weakness on osteoarthritis. I am very grateful to Dr. Walter Herzog and Tim Leonard for their guidance and support. It was absorbing for me to see how another lab functions and how they perform their research to get a comprehensive idea of biomechanical science. The laboratory with the different researcher groups provided me

an insight in an variety of different fields of interest (modeling of articular cartilage, deformation of articular chondrocytes, history-dependent properties of isolated single muscle fibers from frog skeletal muscle, bone adaptation). I met a lot of researchers and learned about their work. This stay gives me many thought provoking impulses for my further research career.

I would like to thank the ISB for giving me the opportunity to travel to the IV World Congress of Biomechanics and visit the Human Performance Laboratory at the Faculty of Kinesiology at the University of Calgary in Canada. I think that this is an excellent opportunity for students to enlarge their research experiences. Thank you very much!

Upcoming Meetings, Workshops 2003

European Workshop on Movement Science (EWOMS)

May 22nd - 24th, Münster (Germany)
<http://www.uni-muenster.de/EWOMS>
Email: move.brain@uni-muenster.de

8th Biennial Conference on Human Aspects of Manufacturing, HAMAHA '2003

May 27- 30, Rome, Italy
Email: bagnara@unisi.it
<http://www.media.unisi.it/haamaha2003/>

3rd Annual Meeting of the International Society for Computer Assisted Orthopaedic Surgery

Marbella, Spain
June 18-21, 2003
<http://www.CAOS-International.org/2003/>

WBIR 2003 Second International Workshop on Biomedical Image Registration

June 23--24, 2003
Philadelphia, USA
<http://wbir.cs.uu.nl/>

International Conference on Bioengineering & Biosciences

June 24 - 26, Singapore.
Email: mkmliew@ntu.edu.sg
<http://www.mie.utoronto.ca/announce>

ECM IV: Bone Tissue Engineering

June 30th-July 2nd, 2003, Davos, Switzerland
<http://www.ao-asif.ch/events/ao/ecm/ECMIV/index.shtml>

Summer Bioengineering Conference

June 25 - June 29, Sonesta Beach Resort Key Biscayne, Florida
Email: tskalak@virginia.edu
<http://www.asme.org/divisions/bed/events/summer03.html>

6th ISB Technical Group on Footwear Biomechanics Symposium

Queenstown, New Zealand
3-5 July, 2003
Email: kim@conference.co.nz
<http://www.staffs.ac.uk/isb-fw/newzealand2003.html>

The Symposium is a satellite to the ISB2003 Congress

IX International Symposium on Computer Simulation in Biomechanics

The University of Sydney, Australia
2nd to 4th July 2003.
This Symposium, organized by the ISB Technical Group on Computer Simulation (TGCS), is a satellite event of the XIX Congress of the ISB which takes place at the University of Otago, Dunedin, New Zealand, July 6-12, 2003.

12th International Conference on Perception and Action (ICPA).

July 6-9, Kingfisher Bay Resort on Fraser Island in Queensland, Australia
Email: smc2003@hms.uq.edu.au
<http://www.hms.uq.edu.au/smc2003>

Physical Disabilities Through the Lifespan Natcher Conference Center, NIH

Bethesda, MD
July 21-22, 2003
<http://physicaldisabilities.iqsolutions.com>

2nd ITF International Congress on Tennis Science & Technology

28-30 July, London
E-mail: tst@itftennis.com
<http://www.itftennis.com/html/rule/framesettst.html>

Second International Conference on Cardiovascular Medicine and Science

July 23- 25, 2003
Washington, DC, USA
Contact: vossoughi@earthlikn.net
Tel 301 570 9771

First International Conference on Medical Implants

July 25-28, 2003
Washington, DC, USA
Email: vossoughi@earthlikn.net
Tel 301 570 9771

2nd ITF International Congress on Tennis Science & Technology

London
28-30 July 2003
<http://www.itftennis.com/html/rule/framesettst.html>

Progress in Motor Control IV. Motor Control and Learning over the Life Span

Université de Caen Basse-Normandie (France)
August 20-23, 2003 <http://www.pmciv.unicaen.fr>

3rd Calgary Symposium on Sport Surfaces

Calgary, Alberta, Canada
August 20 - 22, 2003
Email: sss2003@shaw.ca
<http://www.sss-2003-calgary.com>

The World Congress on Medical Physics and Biomedical Engineering (WC2003)

Sydney, Australia,
August 24-29, 2003.
<http://www.wc2003.org/ScientificProgram>
<http://www.wc2003.org/viewprog.cfm>

International Ergonomic Society (IEA).
August 24-29, Seoul, Korea.
<http://www.iea2003.org/>

**Biomechanics of the Lower Limb in Health,
Disease and Rehabilitation**
Sept 1-3rd 2003, Manchester, England
<http://www.healthcare.salford.ac.uk/crhpr/biomech2003.htm>
Email: j.fletcher@salford.ac.uk

**12th Annual Meeting of the European Society
for Movement Analysis in Adults and Children
(ESMAC) hosted by the Groupe d'Analyse du
Mouvement chez l'Enfant et l'Adulte (GAMEA)
inMarseille, France, September 11 to 13, 2003.**
<http://www.mcocongres.com/esmac2003>.
E-mail: Robert.Darmana@toulouse.inserm.fr

5th Conference on Engineering of Sport
13-16 September 2004
University of California, Davis
Sponsored by International Sports Engineering
Association and ASME
<http://conferences.ucdavis.edu/sportengr>

5th Bone Fluid Flow Workshop
September 17-18, 2003, Cleveland
Email: Eleanora.Voelkel@ccf.org

**Technical Conference on Mechanics of
Biological and Biologically Inspired Materials**
October 2-3, 2003
Springfield, MA
<http://www.sem.org/CONF-FC-TOP.asp>

**7th IOC Olympic World Congress on Sport
Sciences.**
Hilton Athens Hotel
7 to 11 October 2003 in Athens, Greece
<http://www.iocworldcongress.com>
Contact directly Ms. Angelika Chantzou,
Tel. No.: 003-210-2004053,
Fax No.:003-210-2004099,
E-mail: axantzou@athens2004.com

**International Meeting on Applied Physics
(APHYS-2003)**
Badajoz(Spain)
October 14-18th 2003
<http://www.formatex.org/aphys2003/aphys2003.htm>
Email: secretariat@formatex.org

**1st. Scientific Congress of the Polish Sports
Traumatology Society (auspices of EFOST)**
Warsaw Poland
October 23-25 2003,
<http://www.ptts.org.pl>
E-mail : jacek.laskowski@carolina.pl

**ICMMB-13: XIII International Conference on
Mechanics in Medicine and Biology**
November 12-15, 2003
National Cheng Kung University, Tainan, Taiwan
<http://www.ncku.edu.tw/~ICMMB>

**ASME International Mechanical Engineering
Congress and R&D Expo**
November 16 - 21, 2003
Washington, D.C., USA
<http://www.asmeconferences.org/congress03/CallForPapers.cfm>
and follow the links for "Bioengineering"
Email: msacks@pitt.edu

Motor Control Conference III
September 20 - 24, near Varna, Bulgaria
Email: nick.gantchev@wanadoo.fr
<http://www.laps.univ-mrs.fr/~gantchev/>

2005
ISB 2005 Congress
August 1- 5, 2005
Cleveland, USA

2006

5th World Congress of Biomechanics
Munich, July 29-Aug 4, 2006.
For further information contact Liepsch@fhm.edu

ISB Membership News

New members to ISB

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NEW ZEALAND

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Nagoya Institute of Technology
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40 Parkman St.
Boston, MA 02114
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The Cleveland Clinic Foundation
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Email: sales@metrics.co.uk

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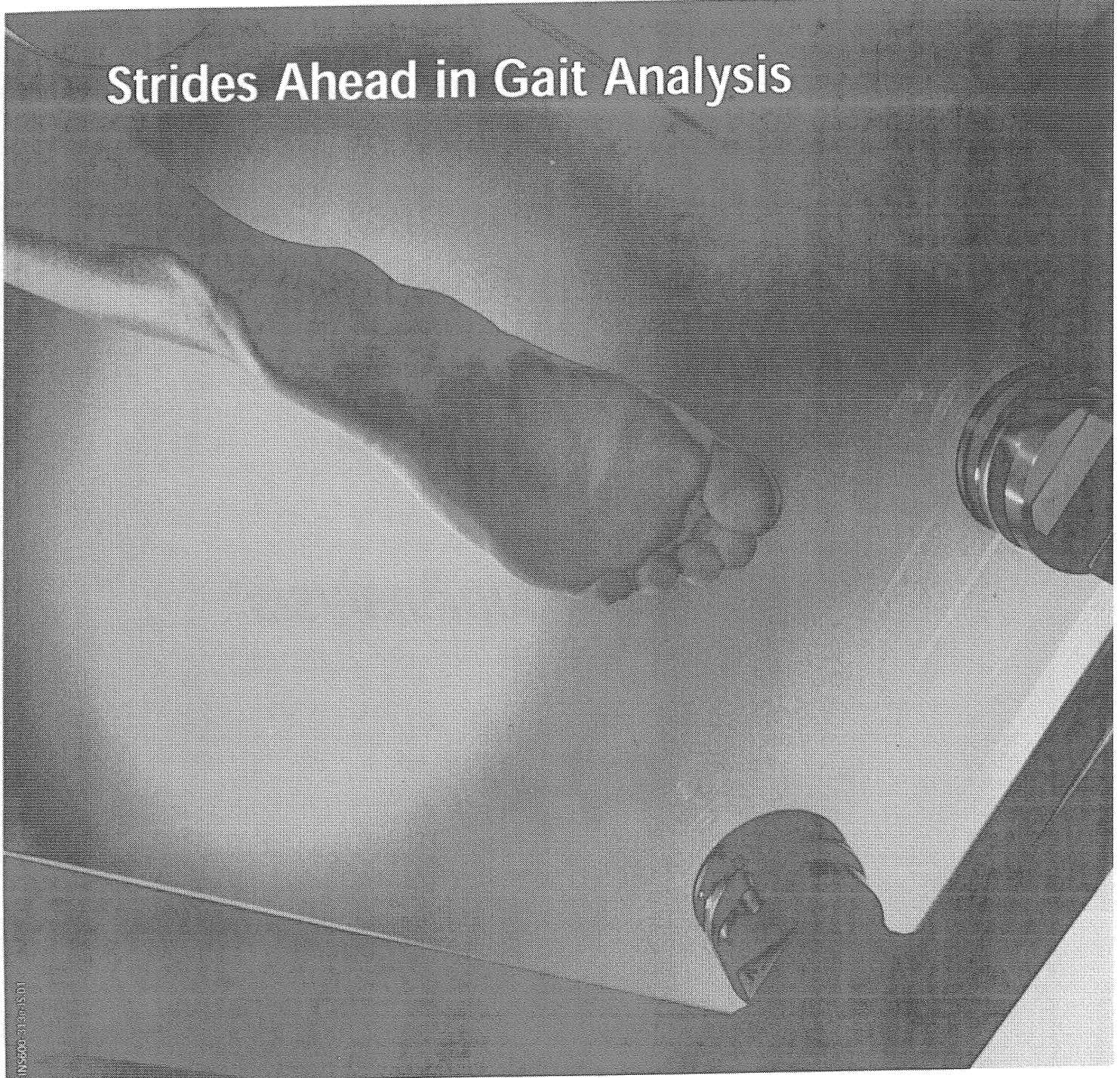
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Tel: +1 (714) 259-1232 Fax: +1 (714) 259-1509 Email: sales@vicon.com Website Address: www.metrics.co.uk

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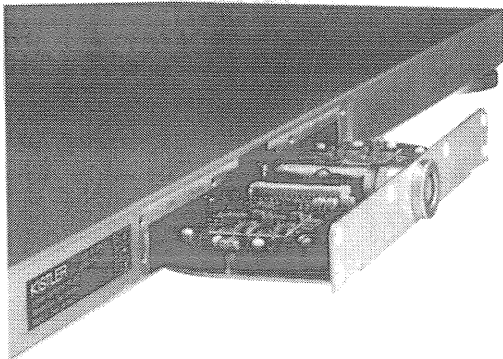
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