ISB

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From the President, Sandra J. Olney

Where have Impairment, Disability and Handicap Gone?

Research on human performance in rehabilitation or disability frequently involves framing the questions within an appropriate model. From the point of view of funding agencies it is increasingly important to show the relevance of the questions to "higher level" outcomes such as health outcome, quality of life, or community integration rather than the measures we are most closely involved with such as joint range of motion, joint forces, or strength. This is particularly true of funding agencies invested in particular diseases, disabilities or conditions. I cannot disagree with this approach, especially as it has become more and more evident that poor relationships frequently exist between "lower level" measures (such as spasticity or range of motion) and a person's function or satisfaction with their quality of life. All of this, of course, could be said to have arisen from the crumbling of the medical model of health, which tries to "fix" what is wrong and "cure' diseases, sometimes without considering what is most important to the person. In most cases of disablement neither cure nor "fixing" is possible, and we focus rather on optimizing function from the point of view of the individual, the family, the community and the society. In exploring or solving problems in biomechanics we are usually at least two steps away from these "higher level" considerations.

Between 1980 and the present, we usually turned first to the World Health Organization (WHO) International Classification of Impairments, Disabilities and Handicaps (ICIDH) that, in 1980, represented the first attempt to use a disablement model for classification. The WHO model used the concepts of Impairment (at the organ or organ system level such as joint range of motion, strength, spasticity), Disability (at the person level such as inability to walk) and Handicap (at the society level, such as not being able to work due to inaccessibility of workplace). Using this framework, then, in looking for variables of interest and those that would indicate change, we made sure we considered the effects at several levels. For example, if we were examining the biomechanical differences in performance following knee replacement surgery, we would measure at the impairment level (e.g., range of motion, gait variables such as knee joint forces, peak adduction moments), the disability level (e.g functional measures such as gait speed) and at the handicap level (e.g., quality of life, living status). We could speak with confidence about relationships, or lack thereof, between impairments and disability, and granting agencies and policy makers seemed satisfied with our perspective.

Our assurance was to be short-lived. In 1992 the WHO began an extensive process of international consultation leading ultimately to revision of the ICIDH. In recent years we began to hear rumours that the impairment, disability and handicap classification was no longer used, that the WHO had revised it into something that was quite different, more difficult to understand, and perhaps less useful for our needs. The question for many of us now is, "Should we continue to use the old model, or is the new one amenable to our uses?"

I will summarize the major facets of the new model adopted for international use in May, 2001, which is called the International Classification of Functioning, Disability and Health, known as ICF. Impairment is now related to Body Structure and Function, and represents problems as a significant deviation from a generally accepted population standard. Although a great deal of explanation and qualification is given, there is no real difference from the 1980 use of Impairment. Disability is not included in the new classification, instead Activities and Participation / Activity Limitation and Participation Restrictions are used. Domains are given in a single list that covers the full range of life areas from

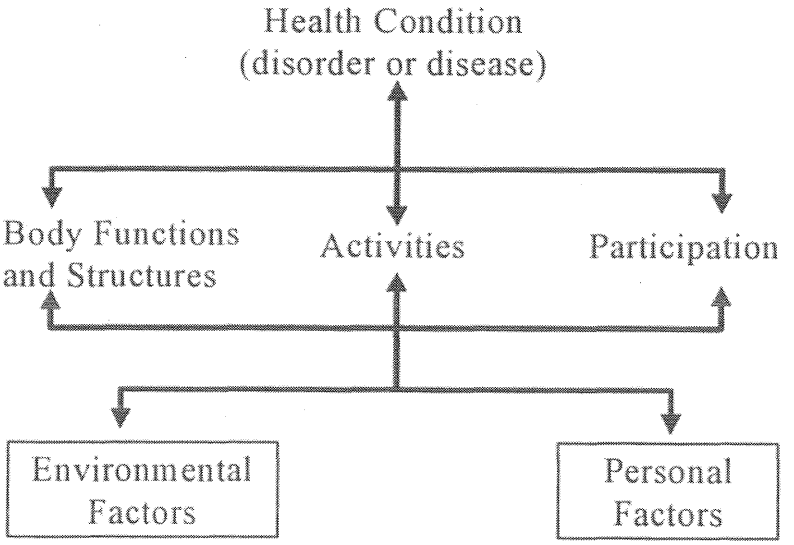
"learning and applying knowledge" to "community, social and civic life." Environmental Factors, which replaces Handicap in the old terminology, make up the physical, social and attitudinal environment in which people live and conduct their lives. External to the individual, they can have a positive or negative influence on the individual's performance in society and on the individual's capacity to execute actions or tasks, and even on the individual's body function or structure. Environmental factors, in turn, may be Individual factors, which are in the immediate environment of the individual and include settings such as home, workplace and school, or Societal factors, which are formal and informal social structures, services and overarching approaches in the community or society. The background of an individual's life and living are included in Personal Factors, which, with Environmental Factors, makes up the category Contextual Factors.

Although I will not go into the detail here, the classification system uses an alphanumeric system with subcategories included within parent categories. For example, separate categories for walking, sitting etc., are nested within the Activity and Participation component of Mobility.

The whole system thus provides a unified and standard language, a framework and a systematic coding scheme for health information systems, and a means of making comparisons across many fronts: across countries, health care disciplines, services and time.

So where does this leave us when we wish to present our questions about human performance within an appropriate model? Using the above description as a model rather than a classification gives the picture presented in Fig. 1. I believe most variables we use in biomechanical research fit nicely within the components of the ICF model as shown, and the framework, with its interactions between functioning and activity and participation (or disability) presents a considerably more sophisticated model of performance than the older, rather linear ICIDH classification. Though it is doubtless complex in structure, I believe it can be very successfully used as a framework for biomechanical research in human performance.

For more information see: International classification of Functioning, Disability and health. Fifty-fourth World Health Assembly, May 22, 2001. http://www3.who.int/icf/icftemplate.cfm



Retirement of a former President: Bob Norman

The world of Biomechanics will be much poorer without his contribution. I sincerely hope that retirement will give him greater opportunities to travel because we would love to see him in Australia!
Mark Pearcy, Australia

Sorry I can't be there for what will be a fun party I'm sure. Herewith, my fond best wishes for your retirement - will it really be retirement I wonder! Kim Burton, England

I felt that Bob was a terrific teacher and I really enjoyed taking biomechanics classes with him. I also appreciated the way Bob took a strong interest in graduate students and their research. Warren G. Darling, USA

To me, Prof. Norman epitomized the Kinesiology department by caring about his students and challenging them to be the best they can be. David M. Brodie, USA

In my experience Bob Norman exemplified the meaning of leadership and 'teaching by example', and displayed tremendous dedication to the faculty of Applied Health Science and its students. In the classroom, his sense of humour and obvious passion for the subject matter always kept things interesting. Robert Whiteside, Canada

I would like to express my best wishes to my friend and colleague Bob Norman for good health and a continuation of fruitful scientific work during his retirement.
Herbert Hatze, Austria

In Russia the day of retirement is called The Day of Independence. I wish you a happy independent life. Vladimir Zatsiorsky, Russia and (more recently) USA

You have done much to further Kinesiology and Ergonomics in this country, as I'm sure others will attest to. Your equipment design course showed me that Kinesiology went beyond sport and rehabilitation.
Peg Scherzinger, Canada

I was probably the only "dancer" he ever took on as a graduate student - very courageous of him I thought!!! He did a good job of launching me on my academic career and for that I will be forever grateful.
Vickie Galea, Canada

I do hope that you will continue to attend some of the CSB and ISB meetings so that we might have a chance to see you again.
Micheline Gagnon, Canada

Congratulations on your retirement! We hope that every day will bring a new adventure! Alf Thorstensson, Johnny Nilsson, Eva Andersson Andrew Cresswell, Sweden

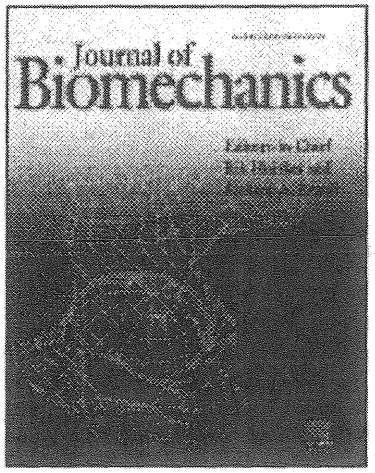
Few in our field could match your accomplishments. Few could claim to have been president of a world wide society, the dean of one of the outstanding Faculties in our field, the author of so many scholarly articles, and the principal advisor to so many truly outstanding PhD students. To many in the field, you stand alone as the consummate biomechanist.
G. Wayne Marino, Canada

Free ISB abstracts!

There are still over 150 copies of the ISB 1999 printed abstracts available from the Human Performance Lab at the University of Calgary. Dr Benno Nigg is kindly offering these abstract books for free. The requestor only needs to pay the cost of shipping.

Contact: Glenda McNeil at: glenda@amaretto.kin.ucalgary.ca

Journal of Biomechanics



The **Journal of Biomechanics** is the leading forum for the publication of articles describing the principles of mechanics to explore biological problems. Papers published in the journal cover a wide range of topics in biomechanics including, but not limited to:

- **Fundamental Topics**
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- **Injury Biomechanics**
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- If you would like to discuss informally a submission to the journal, or have an idea for a focused journal issue, please feel free to talk to one of the journal Editors-in-Chief: Professor R. Huiskes (E-mail: Biomechanics.BMT@tue.nl) or Professor R. Brand (E-mail: dick-brand@uiowa.edu).

International Conference on Biomechanics combined with the Annual Scientific Meeting of Taiwanese Society of Biomechanics

Cheng-Kung Cheng, PhD

On behalf of Taiwanese Society of Biomechanics and the local organizing committee, I have great pleasure to report that the "International Conference on Biomechanics combined with the Annual Scientific Meeting of Taiwanese Society of Biomechanics", held at the National Yang Ming University, Taipei, Taiwan from 9 to 11 November 2001was a great success. This conference was fully supported and endorsed by the ISB and the Taiwanese Society of Biomechanics. A total of 149 papers were presented in this conference, including 85 oral presentations and 64 poster presentations. The main topics included Orthopaedic, Rehabilitation, Sports, Dental and Cellular Biomechanics plus Ergonomics. Some world-renowned experts were also invited to give special lectures. They included Professors Robert Allen (UK), Richard Brand (USA), Jia Hua (UK), Kit Vaughan (South Africa), and Ronald Zernicke (Canada). We also invited some outstanding researchers and representatives from the Asian countries. A total of 302 participants, representing 14 countries, attended this conference which brought together multidisciplinary researchers. It was also a significant event for the Asian region. Some 25 papers that were presented at this conference have also been submitted to the journals of Clinical Biomechanics, Medical Engineering and Physics and the Journal of Musculoskeletal Research. Based on this successful conference, the Taiwanese Society of Biomechanics will continue to promote cooperation with the International Society of Biomechanics. We also hope that we may be able to host the bi-annual congress of the ISB in the near future.

Cheng-Kung Cheng, PhD, Chairman of the Organizing Committee, Past-President of Taiwanese Society of Biomechanics.

NSF-NATO Research Fellowship

Peter A. Torzilli, Ph.D.

The following announcement was posted by Dr Torzilli (TorzilliP@HSS.EDU) on Biomch-L.

The U.S. National Science Foundation has available support for a 12-month Post-Doctoral Research Fellowship for individuals from an affiliated NATO country for the 2002-2003 academic year. Fellowships are for postdoctoral research from beginning scientists, mathematicians, and engineers from NATO Partner Countries (Albania, Armenia, Azerbaijan, Belarus, Bulgaria, Estonia, Georgia, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Moldova, Romania, Russian Federation, Slovak Republic, Slovenia, Tajikistan, Turkmenistan, the former Yugoslav Republic of Macedonia, Ukraine, and Uzbekistan). Citizens from the Czech Republic, Hungary and Poland will have Partner Country status for the 2002 competition. Eligible fields of research include: mathematics, engineering, computer and information science, the physical,biological, and economic sciences, the history and philosophy of science, and interdisciplinary areas comprised of two or more of these fields. Full details are availiable at: http://content.sciencewise.com/content/index_pfp.cfin

Grants to Support Junior Scientist Development Visits by U.S. and Egyptian Scientists

Sponsor:United States Department of State and Egypt Joint Board on Scientific and Technological Cooperation
Deadline:December 13, 2002
Applicants must be scientists who have received their PhD within the past 10 years.
Citizenship or Residency: Egypt or USA
Requirements:Ph.D./M.D./Other Professional
This program will provide modest grants for visits by Junior American Scientists to Egypt; and Junior Egyptian Scientists to the United States. All proposals that fully meet the submission requirements will be considered; however, special consideration will be given to proposals in the areas of biotechnology, standards and metrology, environmental technologies, energy, manufacturing technologies, and information technology.

Contact Name:Vickie Alexander, U.S.-Egypt Science and Technology Grants Program
U.S. Embassy, Cairo/ECPO, Egypt
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Contact Email:alexanderva@state.gov

ISB Student Travel Grant Report

Sonja de Groot
Faculty of Human Movement Sciences
Vrije Universiteit, Amsterdam

In March 2001 I received the good news that my proposal for the ISB Student International Travel Award was approved. I could then plan to visit the Department of Physical Therapy at the University of Maryland in Baltimore, USA under the guidance of Professor Mary Rodgers.

After visiting the ISB conference in Zürich, I started my visit in the USA in August by attending the ASB conference in San Diego. It was a good experience to present my research project and to discuss it with other researchers.

The study I performed in Baltimore is part of my Ph.D. entitled "Manual wheelchair propulsion: biophysical aspects of learning". A previous project showed that during a 3-week wheelchair learning program the mechanical efficiency and the timing variables (i.e. push frequency, push time, cycle time) changed over time. No remarkable changes were seen in 3Dforce production. Besides the possible influence of timing variables on the mechanical efficiency, other aspects of changing coordination in the learning process could be alterations in muscle activation and segment characteristics. The latter were not included in the initial experiment. Several studies were conducted to examine EMG patterns during wheelchair propulsion (Mulroy, 1996; Rodgers, 1994; Veeger, 1991) but, as far as known, alterations in muscle activity patterns over time due to learning has not been studied before. The shoulder-muscle complex offers a wide range of movements which might result in a great variability in repetitive movements. One way to constrain this redundancy is to link muscles together into a muscle synergy. Bernstein (1967) proposed that, early in learning, redundancy might be constrained by limiting degrees of freedom via muscle coactivity, whereas later these restrictions could be relaxed. One hypothesis that emerges from this idea is that muscle coactivity should decrease with skill learning as degrees of freedom are freed up and limb stiffness is reduced. The purpose of my study in Baltimore, was to examine adaptations in force application, kinematics and EMG patterns during a wheelchair-learning process.

To study the changes of these variables over time a cross-sectional study was conducted in which 10 totally inexperienced non-wheelchair-dependent subjects were compared with 10 experienced wheelchair-dependent subjects. Subjects of both groups had to propel a wheelchair simulator during three four-minute exercise blocks at a certain velocity and intensity. During those exercise blocks the forces and torques applied on the hand rim were measured as well as the kinematics and EMG patterns of the upper extremity and trunk. At the moment I am analyzing all the data. I am planning to submit an article about this research project in the summer of 2002.

Next to making use of the Baltimore expertise and experience as well as other measurement devices to answer our research question, it was also very nice to have the possibility to exchange ideas and to learn about different approaches to wheelchair experiments and research in general. Besides the experience in the lab, I also had a good time experiencing the American culture and participating in the American way of life, e.g. playing football for the first time in my life.

I would like to thank the ISB for giving me the opportunity to perform a research project in another lab and especially to meeting more researchers involved in the same research area. I am grateful to Dr. Mary Rodgers for giving me the possibility to work in her lab; and Dr. Kevin McQuade and Margaret Finley for their assistance in the lab and the enjoyable conversations about our research projects. I also owe many thanks to my advisors Dr. Luc van der Woude and Dr. DirkJan Veeger, both of whom encouraged me to go to the University of Maryland.

Dissertation Award Report

Michael Madigan
Virginia Technical University, USA

I would like to thank the ISB for a 2001 Student Dissertation Award. I feel honored to have received the award, and privileged to have the respect of my peers. Funds from the award were used to purchase needed equipment and supplies for my doctoral research.

Foot impact with the ground can impose extreme loads in the musculoskeletal system during athletic and rehabilitative activities. The high magnitude and repetitive nature of these loads may contribute to musculoskeletal injury development. Past lower extremity (LE) landing studies have investigated the effect of several biomechanical performance factors on lower extremity loads in an effort to characterize their roles in injury development. Neuromuscular fatigue is another performance factor that may contribute to injury development, but its effect on lower extremity loads has received limited attention in the literature. The purpose of my research project was to quantify changes in LE kinematics and kinetics during landing as the quadriceps muscles were progressively fatigued.

Twelve physically-active male subjects volunteered to participate. Subjects were asked to perform a fatiguing landing activity consisting of repetitive single-leg landings (25 cm height) and single-leg squats until exhaustion of the right knee extensor muscles. Kinetic, kinematic, and EMG data were collected throughout the activity. Variables of interest included: LE joint ROM, impulse, and work upon landing, EMG-based fatigue measures, and muscle activation patterns. Quadriceps muscle temperature was measured immediately before and after the activity using an intramuscular temperature probe to compensate for the confounding influence of temperature changes on EMG fatigue measures.

EMG mean frequency analysis indicated that subjects, as a whole, experienced fatigue of the quadriceps muscles. Salient findings included a redistribution of sagittal plane extensor impulse and energy absorption (negative work) in the LE from distal to proximal with quadriceps fatigue. This redistribution may allow larger proximal muscles to assist the smaller distal muscle in extensor moment production and energy absorption. This may also have the negative effect of increasing the mechanical energy exposure at the knee and ankle, thereby increasing the injury potential at these joints. Data also suggested a change in landing strategy, based on a reversal in load redistribution patterns, as fatigue progressed. For example, hip extensor impulse increased during the first 60% of the landing activity, and decreased for the final 40%. Concurrently, ankle plantarflexion impulse decreased for the first 60% of the activity, and increased for the final 40%. The analysis of muscle activation patterns is on-going.

Again, I would like to thank the ISB for their support of my research, and I look forward to presenting these findings at the 2003 ISB Congress.

ISB Student Travel Report
Rachel Schachar, M.Sc. Candidate,
University of Calgary, Canada

I would like to begin by thanking the International Society of Biomechanics Council for affording me this wonderful opportunity. I felt very privileged to have the chance to travel across the world to Zurich, Switzerland to participate in the 18th ISB congress.

The conference was an excellent opportunity and I gained a lot of insight and confidence from participating in this event. I learned a great deal from this experience.

I was presented with so many different ideas surrounding the area of muscle mechanics. I managed to arrange my week so that I could attend all sessions that were not only

relevant to my specific area of research but that were also of personal interest to me. The sessions on muscle included a variety of presentations, such as tension measurements (i.e. MRE technique), muscle stiffness, modeling for stretch-induced injury of skeletal muscle, the complexity of sarcomere behavior, and muscle activity. These sessions were the most relevant to my own thesis work. I found that they gave me a lot of new information and knowledge, which I know will help me to better understand my work and the area of skeletal muscle as a whole.

The work I presented was a portion of my thesis work in the area of skeletal muscle. The title of my presentation was "Stability of skeletal muscle on the descending limb of the force-length relationship." It focused on the argument that skeletal muscle is stable at lengths corresponding to the descending limb of the force-length relationship. It was exciting to present this work at such a prestigious venue and even more so when I saw how many people are interested in the same topic. Following my presentation suggestions were made which may further expand my own research. It was inspirational to see other students, professors and researchers from around the world presenting and discussing work and issues that they are so passionate about. I truly enjoyed speaking with new people and making contacts from around the world. My experience brought many of the famous authors in academia to life and opened my eyes to the expansive world of research and knowledge.

In summary, my travel to Europe for the ISB meeting was both exciting and motivating. I have been provided with wonderful exposure to different cultures, invaluable educational and research experiences, new friends, and great memories. I again extend my sincere appreciation and thanks to the International Society of Biomechanics for assisting me in this opportunity.

Dissertation Award Report
Brandi Row
Penn State University, USA

The Effect of Exercise on Weight-Bearing Speed of Movement in Older Adults

Accidental falls, the fifth leading cause of death in older adults, are an important health problem for the older adult population (1). Falls due to trips, slips or stumbles while walking overground account for the largest proportion of injurious falls that require hospitalization (2). Of the most commonly identified risk factors for geriatric falls, muscle weakness has the highest risk factor for falling, however, strength training has a positive influence on muscle strength and mobility in older adults (3), and has been shown to reduce fall rates and injuries (1).

In spite of the recognized benefits of strength training in fall prevention for older adults, it has been recently revealed in studies of tripping that adequate strength alone is not enough to enable older adults to recover from a trip or a stumble - the speed of the stepping reaction is also an important component of successful recovery (4),(5),(6)).

For my dissertation, I am focusing on understanding if the speed of stepping movements is modifiable in older adults. In order to improve our understanding of the effectiveness of exercise on improving the ability of older adults to resist falls due to trips, slips and stumbles, we plan to determine the effect of exercise on the speed of weight-bearing stepping movements of older adults.

My current study, supported by the ISB Matching Dissertation Grant examines the effect of exercise on speed of movement measures that simulate involuntary and voluntary weight-bearing recovery stepping movements. The primary outcome measures will be the rate of force development, reaction time and the velocity of the recovery steps.

Clinical Relevance

If weight-bearing speed of movement is shown to be modifiable, it is important that functional tests for the assessment of weight-bearing speed of movement become available. Currently there exist functional stepping tests that have been used in the literature to evaluate general aspects of mobility. As an additional component of the proposed research study, these stepping tests will be modified to target the evaluation of speed of movement. The laboratory-based measures of speed of movement will be compared with clinically feasible tests of speed of movement. If the laboratory and clinical tests of speed of movement are well related, the identification of suitable clinical tests of speed of movement may provide valuable information to clinicians who desire to evaluate the functional capacity of their patients without the use of expensive equipment.

Specific Goals

1. To determine the effect of an exercise program on weight-bearing speed of movement in older adults in both voluntary and involuntary stepping conditions.
2. To identify acceptable clinical tests of weight-bearing speed of movement in order to allow screening to identify speed of movement deficits and potential fall risk.

My special thanks goes to the ISB Matching Dissertation Grant Committee for their generous support of this ongoing project.

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IOC MEDICAL COMMISSION OLYMPIC PRIZE & SPORT SCIENCES

IOC-OLYMPIC PRIZE 2002
Professor Bengt Saltin M.D., Drs.h.c.

December 12th, the president of the International Olympic Committee, Dr. Jacques Rogge, announced that Professor Bengt Saltin, M.D., will receive the 2002 IOC Olympic Prize on Sport Sciences, the highest honor in the field of movement, exercise and sport sciences (MES). Endowed by Pfizer, the $500,000 prize is officially presented to Dr. Saltin at the 2002 Olympic Winter Games in Salt Lake City - along with an Olympic medal. The announcement notes Dr. Saltin's outstanding contributions in exercise physiology, including his path-breaking research that proved the benefits of physical activity in health recovery. His research explores the valuable question of "to exercise or not" in prevention of and recovery from diseases.

"Dr. Saltin's work epitomizes what this award is all about - helping people live active lives," said Prince Alexandre de Merode, Chairman, IOC Medical Commission. "The IOC Olympic Prize is a catalyst for scientific discoveries that will benefit athletes and recreational enthusiasts of all ages and abilities. Together, the IOC and Pfizer are committed to improving research and sharing scientific knowledge in this field."

The impact of Dr. Saltin's research can be felt throughout society - in the medical field and in the everyday lives of people, from the promotion of basic physical health to the enhancement of elite performance.
Through research studying the effects that inactivity has on the body, which was commissioned in part by NASA, Saltin confirmed that exercise, not bed rest, should be a part of recovery after experiencing illness/injury. This marked a major shift in how patients were treated following injury or illness.

"Years ago, it was thought that rest and relaxation were the best ways to recuperate from an injury or illness, but my research proved that, in fact, it's the opposite," said Saltin. "People should work with their doctor to create an active recuperation plan following any injury or illness, cardiovascular or athletic."

Dr. Saltin's findings also contributed to the concept that regular exercise is important for health and well-being. In addition, his study of elite athletes while exercising and training has led to a better understanding of the importance of oxygen flow to the muscles (as well as availability of nutrients) in exercise and overall health. He has used these findings to study other areas such as anemia and the overall positive effects of exercise, focusing on the use of exercise to maintain and regain health.

"Pfizer is committed to furthering scientific research that underscores the importance of exercise and physical activity in cardiovascular and other disease treatment. This research is crucial to improving human movement, providing preventative care, and better managing disease states for people who seek to live a healthy lifestyle," said Randall Kaye, MD, Director of Olympic Affairs for Pfizer, Inc.

In addition to the $500,000 and an Olympic Medal, Saltin will receive a diploma of excellence for his contributions to science. The Olympic Winter Games in Salt Lake City will mark the fourth time this coveted prize has been awarded.

The IOC Medical Commission and Pfizer believe the IOC Olympic Prize heightens the recognition for research of movement and mobility, and thus attracts brilliant scientific minds to study and further human performance.

To ensure that the IOC Olympic Prize reflects scientific work of the highest degree, a Selection Committee composed of worldwide renowned scientists and thought leaders evaluated peer nominations of candidates from multiple fields of science. Rigorous criteria guide the selection of a scientist whose contributions to movement, exercise, and sport sciences have a significant impact on science and/or society.

Although the IOC Olympic Prize on Sports Sciences is the main focus of the Pfizer/IOC Medical Commission partnership, Pfizer also endows three other major IOC Medical Commission initiatives including: IOC Olympic World Congress on Sport Sciences, IOC Olympic Academy on Sports Sciences, and Pfizer/IOC Olympic Research on Sport Sciences. For further information about the IOC Olympic Programs visit www.olympic.org or www.pfizer.com.

Call for Papers
The Banff Symposium on Skeletal Muscle is taking place in Banff, Alberta, Canada on August 2-3, 2002 at the Banff Centre for the Arts. This is a satellite symposium for the IV World Congress of Biomechanics, which is taking place in Calgary, Alberta August 4-9, 2002.

We anticipate this to be the most exciting meeting on Skeletal Muscle in 2002. The spectrum of topics to be discussed will range from the newest findings on the molecular mechanics of contraction, to the in vivo functions of muscles. The format will be sessions in the mornings and evenings, with the afternoons free for scientific interactions while hiking, sightseeing or just relaxing.

Scientific papers are being accepted for either poster or oral presentation. The submission deadline is April 15, 2002. Details regarding the guidelines for abstract preparation and submission can be found at the official website: http://www.wcb2002.com/satellite_muscle/.

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Upcoming Meetings, Workshops

2002

Seventh Annual Meeting of the Gait and Clinical Movement Analysis Society
April 17-20, 2002, Chattanooga, Tennessee, USA.
Contact: Michael W. Whittle, The University of Tennessee at Chattanooga, Tel: +1-423-755-4046, Fax: +1-423-785-2215, Email:gait2002@utc.edu, http://www.utc.edu/gait2002

Biomechanics in the Decade of the Bone and Joint: A European Biomechanics Event.
April 28-29, 2002, Brussels, Belgium.
http://www.mk.dmu.ac.uk/bionet

4th Bone Fluid Flow Meeting
May 6 - 7, Amsterdam, Netherlands.
http://www.med.vu.nl/flow

3rd International Workshop on Musculoskeletal and Neuronal Interactions,
Corfu, Greece, 24-27 May.
http://www.ismni.org
Email:info@ismni.org

Fifth Israeli Symposium on Computer-aided Surgery, Medical Robotics, and Medical Imaging (ISRACAS 2002)
May 23, 2002
Tel-Aviv, ISRAEL
Email: josko@cs.huji.ac.il
http://www.cs.huji.ac.il/~josko/isracas2002.html

2002 Meeting of the International Shoulder Group.
June 16-18, 2002, Cleveland, USA.
Deadline for paper submission is May 1.
http://feswww.fes.cwru.edu/isg/
Email: ISG2002@fesc.org

Mathematical and Computational Modeling of Biological Systems: Advanced school and workshop.
June 17-21, Lisboa, Portugal.
http://www.civil.ist.utl.pt/bio.systems
Email: bio.systems@civil.ist.utl.pt

12th Nordic Baltic Conference on Biomedical Engineering and Medical Physics.
June 18-22, Reykjavik, Iceland
http://www.nervus.is/nbc02

Workshop on Bone Mechanics
June 24-28, 2002, Lisbon, Portugal
http://www.dem.ist.utl.pt/~bonemec/

Xxth International Symposium on Biomechanics in Sports.
July 1-5, 2002, Caceres, Spain.
http://www.unex.es/congresos/isbs2002/

7th Symposium on the 3D Analysis of Human Movement.
10th-12th July. The Meeting will be held at the Centre for Life in Newcastle.
email: g.r.johnson@ncl.ac.uk
http://www.utc.edu/Human-Movement/

13th Conference of the European Society of Biomechanics.
Wroclaw University of Technology.
1 -4 September 2002
http://www.esb2002.pwr.wroc.pl

12th International Conference on Mechanics in Medicine and Biology
Sept 9-13, Lemnos, Greece.
Email: tkaral@civil.duth.gr

37th UK Conference on Human Response to Vibration
Sept 18-20, Loughborough University, England.
http://humsci.lboro.ac.uk/vibration

11th Meeting of European Society for Movement Analysis in Adults & Children
Sept 19-21, Leuven, Belgium
Email: ESMAC2002@uz.kuleuven.ac.be

International Congress on Biological and Medical Engineering
4th - 7th December 2002
Raffles City Convention, Singapore
http://www.icbme.org

Pick of the month from Biomch-L
Posted February 1st, 2002

I need guidance for improving my methods for improving a boxer's power
-- the ability to knock another boxer out.

As a Las Vegas boxing coach who has no formal education in this area, please advise with your opinion. Sources for research would be great, too.

Thank you,
John Black

www.ringstars.com

Random sampling of solutions proposed by sources who wish to remain anonymous:

- Hit your opponent hard, then harder and then again.
- Choose a wimp for an opponent.
- I suspect that the force of the hit is very sensitive to the elbow angle at impact: if the elbow is fully extended there will be no force (you were too far away...), if the elbow is fully flexed there will be little force, but if the elbow is nearly extended the force will be highest, for two reasons:
  - Inertia, you will have had time to build up speed
  - Mechanical advantage of the elbow extensors with respect to external force output will go to infinity at full extension. Unfortunately, so will therefore the muscle shortening velocity, so there must be an optimal elbow angle at impact based on musculoskeletal geometry and the muscle's force-velocity relationship.
- Pretend to punch your opponent, but miss and hit him/her with your elbow.
- You just need to punch your opponent once----and then run in a chaotic manner so that your opponent can never hit you.

The 2002 Meeting of the International Shoulder Group Cleveland, Ohio, USA
June 16-18, 2002
The International Shoulder Group (http://www.wbmt.tudelft.nl/mms/dsg/intersg/isg.html) is an official technical Working Group of the International Society of Biomechanics. The ISG is composed of researchers and clinicians who work to understand the biomechanics and control of the shoulder, and to develop techniques to clinically address pathologies of the shoulder. The goal of the 2002 Meeting of the International Shoulder Group is to promote interactions between researchers working on various aspects of the shoulder and with clinicians working to develop treatments for shoulder disabilities. Papers focused on shoulder biomechanics and modeling, ergonomics, orthopaedics, rehabilitation, and neural control are welcomed.
The meeting this year is being sponsored by the Cleveland FES Institute and will be held on the campus of Case Western Reserve University in Cleveland. The CWRU campus and the suggested accommodations for the ISG 2002 meeting are all located in the University Circle area of Cleveland, which also contains numerous museums and other cultural institutions. See http://www.universitycircle.org/
ISG 2002 will feature both oral and poster presentations. The official language of ISG 2002 will be English. Registration will be limited to 100 participants to promote interactions and discussion between attendees. Optional laboratory tours can be arranged for the day following the meeting. The deadline for paper submission is May 1, 2002. The deadline for early registration ($250) is also May 1, 2002. Late registration ($300) will continue through the meeting dates until the maximum limit of 100 is reached. Please visit the conference web site (http://feswww.fes.cwru.edu/isg/) for more information on the conference, accommodations, paper format, and registration.
Any questions? Just e-mail them to ISG2002@fesc.org. We look forward to seeing you in Cleveland in June!

Editor's Notes and Requests:

1. Usually the Newsletter is published in the spring, summer, fall and winter, although if you are in the Southern Hemisphere, this may be different. There are no deadlines for newsletter material since historically they have never been taken seriously. The content of the Newsletter does not necessarily reflect the philosophy and opinions of the ISB membership.

2. 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. In keeping with the tradition set by the former editor, Mark Grabiner: "Hard copy submissions of anything are acknowledged telepathically and placed in a recycling bin. Submission is not a guarantee of a timely or accurate appearance in the Newsletter."

3. In the previous newsletter I mentioned that I had been asked to include a "Laboratory Feature" in this newsletter. **However, nobody volunteered to write a description of their lab!** Thus the invitation is still there for anyone who is willing to send me a description of their lab's unique qualities!

4. Here is another invitation—have you collected data that initially made no sense, but then led to an interesting conclusion after you accounted for an additional variable or an experimental "quirk"? Perhaps you did a study on bone properties and found bone strength to be inversely proportional to bone mineral content — and then found an explanation for this unusual outcome. **If you have any story along these lines, please submit it to me**—we can publish the conundrum and then place the answer towards the back of the newsletter.

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A note from the Treasurer - Graeme Wood

If the address label on your Newsletter envelope contained an "X" after your name, it signifies that you have not yet paid your 2002 membership dues. An invoice was enclosed with your Nov/Dec 2001 Newsletter, but if that's become hopelessly buried on your desk or inadvertently trashed, then please contact me for a replacement copy. My address is on the front cover.

International Society of Biomechanics
2002 MEMBERSHIP APPLICATION FORM

Please TYPE or PRINT clearly and SEND TO THE TREASURER, Dr Graeme A. Wood,
PO Box 3156, Broadway, Nedlands, WA 6009, AUSTRALIA

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I enclose a cheque for $AUS _____ drawn on an Australian bank and made payable to the International Society of Biomechanics (no foreign currency cheques please),

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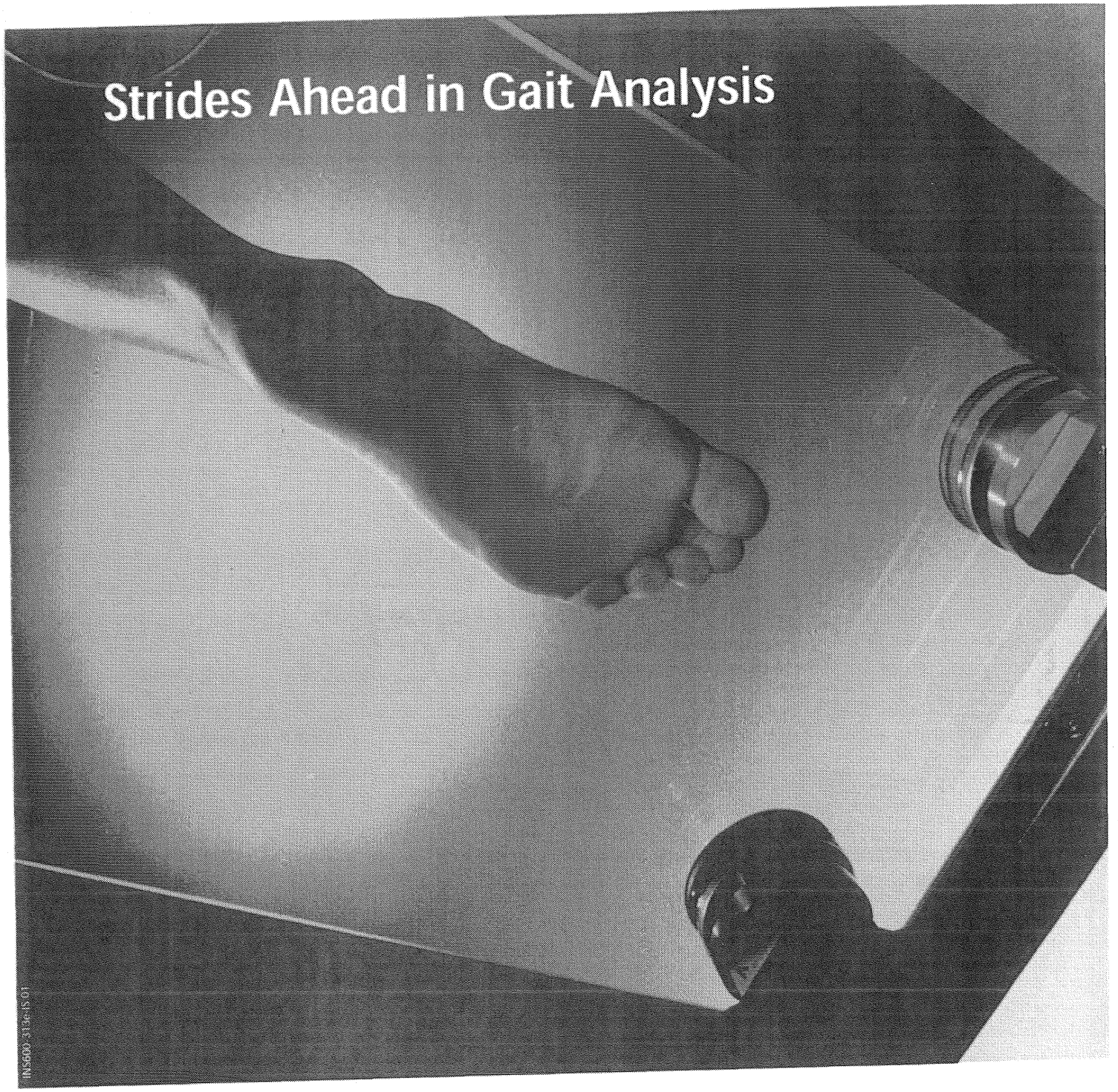

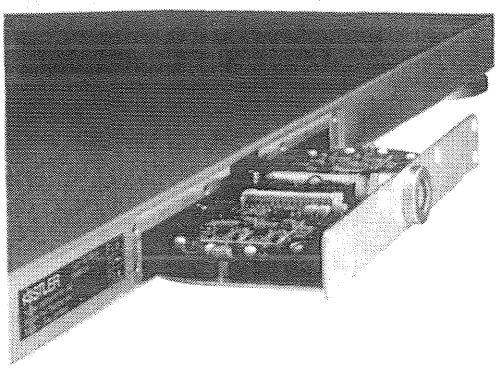

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