



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 Biomecanica Inginerie si Informatica (Romania); Czech Society of Biomechanics; 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: Guenter Rau

The ISB Congress '99 is close ahead now, and it is not only the organizers deeply engaged in the final phase of preparations. Also the participants are working hard in preparing their presentations. As far as I can see, posters will play a valuable role, and whenever the participants walk in the direction of the cafeteria they will pass through the exhibition and poster area. By this arrangement, both activities receive the recognition which they deserve.

A careful look into the congress program indicates a gradual shift in the topics of biomechanics as compared to the programs of earlier meeting. Meanwhile, excellent tools and procedures have been established to measure, interpret and model human movements: the progress is efficient and tremendous. By means of measurement technologies and of computers, the accuracy and speed of analysis have increased dramatically.

A continuous development from muscle and joint properties to macromolecular structures has been initiated, and in these dimensions, biomechanics of human movement started to be extended to even more basic understanding. Now, we reach the threshold where questions to the roots can be addressed on the DNA level, e.g. the interrelation of biomechanical dynamic load to cells and gene expressions. Such nature of mechanisms may be one of the reasons for the high degree of adaptability of living systems to the specific environmental situations.

From an engineers' point of view, one of the basic questions may be: Is the accuracy of my measurement of movements, forces, metabolisms etc. sufficient? This question is incomplete, since the aim and boundary conditions have to be defined as well. But for many purposes the accuracy that is achieved today is sufficiently high e.g. for assessing movements in sports. However, in pathologically disturbed movements it may turn out that the accuracy may be even reduced for various reasons: in a clinically routine situation the preparations, experimental measurements and bulk of signals is not applicable. And this is due to the surplus of data that can be reduced by decrease of accuracy demands. In this sense I see a big potential for extension of biomechanical movement analysis in the patient care for the future. Not only the assessment of the movement for diagnosis or the quantification

of the improvements in therapy planning and therapy outcome is a big issue. Here, principal experience has been already collected for human gait specifically. But facing other movement components there are big challenges before acceptable procedures can be introduced in the clinical environment. Some are: standards in procedures, data reduction, and proper condensed visualisation of complex data. The procedures must be easy to use, less time consuming and just clear enough for interpretation as a basis of diagnosis. In essence, within the coming year I expect that the ISB will contribute essentially to new clinically usable solutions. And in this context, the physiotherapy will be discussed on the basis of objective data in a similar way as improvements of movement components achieved by cellular engineered tissue implanted in mechanical structures of the human body.

Looking at these developments, biology will presumably play a key role within the next decades. Mobility of the human being in all ages, specifically of the elderly, is one of the most important criteria concerning quality of life. In this context, biomechanics will become an even more important area of biology. Therefore, improvements at all levels of therapy – from gene repair to exoprostheses – will need further development which is finally documented in the movement performance. And ISB will face such challenges with competence.

I am looking forward to seeing you in Calgary,

From the Editor: Mark D. Grabner

It has been but a short time since we were shocked by the news of the death of Tom McMahon. Since then, worldwide media have given recognition to his many achievements. In the last newsletter, Amy Courtney, a former student of his wrote a brief and poignant eulogy. The next ASB meeting will have a special symposium in his honor. But still, for more of us than not, we will not know the man, only a reflection of him in his accomplishments. Generally, we know of many great people, people who have shaped our world, our profession, and in doing so, have shaped us. Yet for all that influence, these people most often remain mostly unknown to us.

I consider it fortuitous that the membership of ISB should acquire an item that reveals insight into

another man whose life's work has had a substantial impact on us. Through a posthumous and personal letter to his close friend and colleague, Toby Hayes, shares with us an aspect the rich professional and personal relationship that he and Tom McMahon shared. Through it, we gain an insight that otherwise would not have been possible.

May 13, 1999

Dear Tom,

One day you brought me a gift. You had promised it to me for several weeks, first rather vaguely and then with an increasing insistence that it was almost ready. That day, you were waiting for me in the library, sitting quietly, Tess at your feet. You sat there across the table, and at that distance I could see not only the twinkle in your eyes, but a hint of shyness, as if uncertain of your lines, and a little afraid to be on stage. When you lifted what you had brought out of its bag, you pinched it gently at both ends, carefully holding it horizontally, like a small level whose bubble would go unstable with the slightest tilt. It was ungainly, even ugly, all paperclips and rubber bands and scotch tape and strips of cotton fabric.

You said it was a tug-lock strap. "Watch", you said, as you gently and slowly pulled the ends apart. It was quite unremarkable. The thing just stretched, and as it did I worried that its paperclips and tape and rubber bands would break and you would be terribly disappointed. I worried for you sometimes. I worried mostly that you were lonely and that you couldn't, or wouldn't, ask for help. And so, as I sat there, worrying for your fragile contraption and your disappointment, I missed your achievement the first time around. I did see you give this thing a mighty tug and saw the look of triumph and relief that crossed your face. But I hadn't seen what happened. And so you patiently did it again. This time I saw that when you pulled it forcefully, it locked; it wouldn't stretch. And then you told me how it worked, the words just tumbling out. It was not such an easy concept, especially at the levels you found so intriguing: dilatancy, critical shear rates, step changes in viscosity. But it was easy enough to see if you thought of it as a new kind of seat belt, one that locked when you pulled it quickly and stretched when you pulled it slowly. We did a duet then. Point and counterpoint and two part harmonies of

applications: chin straps, protective garments and knee braces and special shoes for resisting ankle sprains. And then we soared together, from one dimension to two, to rate sensitive clutches, from two dimensions to three, to joy sticks and spherical connectors. We wrote the whole patent there, that day.

You were like a catalyst; you fit to me, enhanced us, made our reaction go to completion. I came to think of us as the perfect pair, a Mutt and Jeff of invention and discovery, playing a Ping-Pong game of ideation and completion. You, with your flair for modeling and mathematics and your single-minded focus on the problem at hand; me, with a certain strength at making complex ideas accessible. You, who found such upset and discomfort in negotiations and self-promotion and me who found such challenge there. For most of the time that I knew you I assumed and found comfort in the thought that we were unique together, a special pair of travelers, walking down a road that only we walked. I now find greater comfort in the sense that you walked those special roads with so many others, catalyzing, finding fits.

You completed so many of us. We are all at a loss without you. Goodbye, dear friend. Travel well; we think of you often, with love.

Toby

Dr. Ron Zernicke receives \$10,000 grant from the Whitaker Foundation.

Earlier this year Dr. Zernicke submitted an application to the Whitaker Foundation and in April he learned that the Calgary organizers of the upcoming ISB Congress had been awarded \$10,000. This award will benefit students who attend the ISB Congress in three ways: \$5,000 will be used for travel grants awarded to North American students (see <http://isb.ri.ccf.org/student/grants.html>), and the remainder will be used to offset the reduced registration fees for all students, and to contribute to expenses related to the outstanding keynote speakers.

General Assembly of the ISB

Please mark your calendars and plan to attend the General Assembly of the International Society of Biomechanics, due to be held on Wednesday

August 11th at 12:15 hours, at the Congress Center in Calgary, Alberta (Canada).

AGENDA

1. Welcome – President's address
2. Review of the Agenda
3. Approval of the minutes of the General Assembly Meeting in Tokyo 1997
4. Treasurer's Report
5. Newsletter Editor's Report
6. Sponsorship Report
7. Membership Report
8. Working and Technical Groups Report
9. Education Report
10. Affiliated Societies Report
11. Award Committee Report
12. Standardization and Terminology Report
13. Publications Report
14. XVII ISB Congress 1999
15. XVIII ISB Congress 2001
16. XIX ISB Congress 2003
17. New Council Elections Report
18. Transfer of Presidency
19. Future Initiatives
20. Other Business

<p style="text-align: center;">Star Wars meets ISB. Brian L. Davis, Ph.D.*</p>

Ever thought, "What if?" What if we morphed the next meeting of the General Assembly of the International Society of Biomechanics with the Senate meeting of the Star Wars Galaxy?

The minutes might look as follows:

1. Welcome – President's address and review of the Agenda.

The ISB president announced to the general assembly that the slate of president elects had been modified. The candidates were now: Sandra Olney, Mary Rodgers and Queen Amidala.

2. Affiliated Societies Report.

Both the Naboo Biomechanics Society, and the Tatooine Association of Sport and Podracing Science (represented by seven Hutts) had submitted applications for affiliate membership. Despite protests from the President of the Otto Gunga Biomechanics Commission ("Gungans no liken outsiders"), the ISB council felt these groups should be admitted.

3. Standardization and Terminology Report. There was a heated debate between the Chair of the standards committee (I. Amright M.D.) and Jar Jar Binks concerning anthropometric scaling procedures. Dr. Amright then proposed a second tier of standards that related to definitions for articulated vertebrates. Jar Jar Binks retorted, "Well, youssa Emdee not so special as youssa cracked to be." Binks did acknowledge some dubious work he had done previously "Mesa writed mabee one or duey lettal bitty problem papers", but he thought that Amright was wrong.

Obiwan Kenobi proposed a motion that joint loads be categorized as "dark or light" for ease of clinical use. He felt that the "dark side of the force" was a simple way for evaluating candidates for high tibial osteotomy. When asked for his opinion on this, Hutt Zee responded that ever since the "Z-axis direction controversy", he was against publishing standards.

4. Treasurer's Report.

Graeme Wood indicated that the Society's bank balance was healthy, partly because of a large number of Republican credits that had been sent in from members in Coruscant. Some members inquired as to what the exchange rate was, and after some hand waving, an ISB member from Ireland said he would try and ascertain what a Republic was worth.

5. Membership Report.

10000 Droids had joined the society. A Gungan queried whether the Society had too much emphasis on mechanical members. C 3PO responded by pointing out that droids had been staunch advocates for standardized protocols and had offered key support to the ISB on this issue.

6. Sponsorship Report.

New additions to the list of companies supporting the ISB were; Holoprojector Inc., Electrobinocular International., and Watto Junk Shop.

7. Education Report.

The Juvenile education delivery initiative (JEDI) had succeeded in recruiting their first student-- Anakin Skywalker. This student had an off-the-scale IQ, and had demonstrated strong practical robotics skills. Furthermore, Anakin had not been intimidated by the JEDI training requirements.

8. Future Initiatives.

George Lucas said that he would be working on two more projects with the "3-D Analysis of

Human Movement" as well as the "Computer simulation" technical groups. The projects would involve Skywalker, Obiwan Kenobi, and other key JEDI members.

9. Other Business.

Curtailed because of Jar Jar's claim "Wesa dyin' of boredom here!"

10. Next meeting.

Wednesday August 11th at 12:15 hours, at the Congress Center in Calgary, Alberta (Canada).

* The author's contribution to the previous ISB newsletter resulted in "less than successful" efforts at embedding images in the text. However, after extensive discussions with Dr. Grabiner he agreed to try one more time.



Figure 1: —Dr. Davis' mental image when he read Newsletter Issue 73. Any similarity of this picture with the Newsletter editor is purely coincidental. [Editor's Note: Some graphics elements of an article submitted by Dr. Davis in Newsletter 73 were altered by the electronic trip from Cleveland to Perth. Said components included two square wagon wheels, an engineering feat that fortunately never enjoyed popularity. Unfortunately, the posterior ends of two horses were also altered. I attempted to determine the cause for this unprecedented difficulty with graphics in the newsletter but was unsuccessful.

**A Final Word About the Upcoming
ISB XVIIth Congress
Calgary, Alberta, Canada
August 8-13, 1999**

ISB-99 will concentrate on muscle, locomotion, sport, clinical/rehabilitation and orthopaedic biomechanics. The program includes many scientific

highlights, excellent keynote and invited speakers, symposia and free communication.

Symposia topics include:

- movement control
- biophysics of muscle
- muscle mechanics/energetics
- in-vivo muscle function
- posture and locomotion
- energetics of locomotion
- ergonomics and occupational biomechanics
- winter sports
- sport simulation
- joint mechanics and modeling
- cartilage biomechanics
- biomechanics of bone
- tendon and ligament biomechanics
- ACL deficiency mechanisms and adaptations
- foot and ankle mechanics
- clinical gait analysis
- scoliosis
- spine mechanics and modeling

This year at the 23rd Meeting of the American Society of Biomechanics

"Human engineering. . . on the horizon of the new millennium" is the theme for the Twenty-third Annual Meeting of the American Society of Biomechanics. The meeting will be held at the University of Pittsburgh in Pittsburgh, Pennsylvania on October 20 - 23, 1999. The Musculoskeletal Research Center (MSRC), the Department of Orthopaedic Surgery and the School of Engineering are pleased to host this conference.

This exciting, educational and exciting program will begin on Wednesday, October 20th with lab tours to modern bioengineering/orthopaedics research facilities, followed by featured tutorials on "writing a successful grant proposal" and "calculating joint moments for clinical and research applications." Be sure to check out the ASB web site for more details!

The scientific program will consist of three symposia: Sports Biomechanics, Neural Biomechanics and introducing for the first time at an ASB meeting, Cardiovascular Biomechanics! The sports biomechanics symposium will feature special presentations by Dr. Savio L-Y. Woo, Vice Chairman for Research and Director of the Musculoskeletal Research Center, Dr. Freddie Fu,

Chairman, Department of Orthopaedic Surgery, Dr. Chris Harner, Director, Center for Sports Medicine and Dr. Richard Debski, Director, Shoulder Biomechanics Laboratory- strong advocates of merging the disciplines of engineering and medicine. The neural biomechanics symposium, hosted by Dr. Peter Grigg, Dr. Art English, Dr. Zev Rymer and Dr. Art Kuo, will center it's discussions around the question "What does the nervous system know about mechanics? ". The addition of the cardiovascular symposium is part of ASB's ongoing effort to diversify and encompass the different disciplines in biomechanics. These symposiums will offer a refreshing look at what's happening and what's new in bioengineering. Throughout the three-day conference, eleven Podium Sessions, two Poster Sessions, (including the Clinical Biomechanics Award), two stimulating debates and the Borelli Award Lecture will give insight into the present and future goals of bioengineering. In support of these goals, Asian American Institute for Research and Education (ASIAM) will pay the registration for any student attending the meeting who is an author or co-author on an accepted paper.

In addition to the scientific program, the local planning committee will offer a variety of special events to join you to visit us in October. Thursday evening will be "an evening to remember" at the Carnegie Museum Music Hall with an opening reception unlike any other. Come journey with us through the history of bioengineering and hear the "father of biomechanics", Prof. Y.C. Fung, take us into the new millennium. After the program, stay and enjoy a scrumptious buffet and music in the breath-taking Carnegie Museum Music Hall Foyer.

Friday evening is sure to be the "best night you've spent in Pittsburgh." We will begin with trolley service from Oakland to downtown (the scenic route) and drop you off on the "gang plank" of the Gateway Clipper Fleet's, Partyliner Steamship. As we cruise the three rivers, we will hold our Awards Banquet and feast on a delectable buffet dinner, have live entertainment for dancing, a strolling magician and Monte Carlo night for those who feel lucky! There is no better way to view the 'night lights' of our city.

On Saturday, there will be a student luncheon and job fair to motivate and challenge each student and give them incentive towards their future. There is so

much more, so please visit us at our web site, msrc.ortho.pitt.edu. Come and join us for this remarkable meeting.

For more information about the society and meeting, please contact Savio L-Y. Woo, Ph.D., D.Sc. at cphillips@uoi.upmc.edu. We hope to welcome you to Pittsburgh in October

Forward Dynamic Simulator of the Lower Leg and Foot: William Ledoux, an ISB Grant Awardee

A biomechanical model of the human foot was developed and preliminary tests were conducted. An existing lower extremity model was modified to better simulate the interaction between the foot and ground. The main focus of this endeavor was the incorporation of the plantar soft tissue properties. The model was generated with three software packages, including the Software for Interactive Musculoskeletal Modeling (SIMM), the Dynamics Pipeline and SD/FAST. When employed together, these software packages were capable of developing graphics-based, anatomically detailed, forward dynamic simulations of either the stance or swing phase of gait.

The lower extremity model consisted of seven rigid bodies representing the pelvis, femur, patella, tibia/fibula, talus, calcaneus (i.e., the remaining foot bones lumped together) and the toes (i.e., the bones of the toes lumped together). Eight degrees of freedom (DoF) were present (pelvic tilt, pelvic vertical and horizontal position, as well as one rotation at the hip, knee, ankle, subtalar and metatarsophalangeal joints). Twelve Hill-type muscle models (i.e., all the major extrinsic muscles that cross the ankle and subtalar joint) were also included. Architectural data and EMG signals were obtained from the literature. Additionally, quasi-linear viscoelastic models were incorporated for seven areas of the plantar soft tissue (five submetatarsal, subhallucal, and subcalcaneal).

Simulations with eight prescribed DoF demonstrated ground reaction forces (GRFs) that were lower than normal but the relative magnitude and temporal sequence of loading were correct. This underestimation of the GRFs was due to assumptions made during the constitutive modeling of the plantar soft tissue. When this error was accounted for, correct GRFs were obtained.

Preliminary forward dynamic simulations of the ankle, subtalar, and metatarsophalangeal joints (with the remaining five DoF prescribed) were also conducted. A comparison of normal and spastic equinus ankle torques compared favorably to the literature, indicating the potential usefulness of the model as a treatment simulator.

Job Market

The Job Market may be accessed via:

<http://www.lri.ccf.org/isb/jobs/>

Upcoming Meetings, Workshops, Etc.

17th International Symposium of Biomechanics in Sports, 30 Jun - 6 July, Perth Western Australia.

Contact: R. Sanders, PhD, School of Biomedical and Sport Sciences, Edith Cowan University, Joondalup, Western Australia, 6027. Tel: 61 8 9400 5860, Fax: 61 8 9400 5717, Email: r.sanders@cowan.edu.au

VI International Conference on Rehabilitation Robotics, 1-2 Jul, 1999, Stanford University, Stanford, California, U.S.A. Contact: M. Van der Loos, Ph.D., Rehabilitation R&D Center, VA Palo Alto Health Care System, 3801 Miranda Ave. #153, Palo Alto, CA, 94304, U.S.A. Tel: 650-493-5000 #65971.

vdl@roses.stanford.edu

3rd IMACS/IEEE International Multiconference on Circuits, Systems, Communications and Computers, 4-8 Jul 4 1999, Athens, Greece,

<http://www.softlab.ntua.gr/~mastor/CSCC99.htm>

14th Symposium of the International Society for Posture and Gait Research, 10-15 July, 1999, University of Waterloo, Waterloo Ontario, Canada,

[Http://www.ahs.uwaterloo.ca/ispg](http://www.ahs.uwaterloo.ca/ispg)

Bone and Tissue Mechanics Course, 19-23 Jul, 1999, Centro Internazionale di Scienze Meccaniche, Palazzo del Torso- Piazza Garibaldi, 18, 33100 UDINE

(ITALY) Contact: Tel: +39.432.248511, Fax: 248.550, www.uniud.it/cism/homepage.htm

August

ISB Technical Group on Footwear Biomechanics Fourth Symposium, 5-7 Aug 1999, Greenwood Inn, Canmore, Canada, Contact: www.uni-essen.de/~qpd800/FWISB/Canmore99.html

VIIth International Symposium on Computer Simulation in Biomechanics, 5-7 Aug 1999, Calgary, Canada. The symposium is organized by the Technical Group Computer Simulation (TGCS) of the International Society of Biomechanics. Contact Email: iscsb@bme.ri.ccf.org, <http://isb.ri.ccf.org/tgcs>

ISB99 The University of Calgary, 8-13 Aug, 1999, Contact: M. Stroh, Conference Mgmt. Services, 1833 Crowchild Trail N.W., Calgary, AB, CANADA T2M 4S7, Tel: (403) 220-6229, Fax: (403) 284-4184, Email: mastroh@acs.ucalgary.ca

Second conference of the International Shoulder Group, 15 -16 August 1999, Calgary, Canada, (ISG is an official working group under the ISB) Contact: www-mr.wbmt.tudelft.nl/shoulder/isg/isg.html

Progress in Motor Control - II: Structure-Function Relations in Voluntary Movements, 19-22 Aug 1999, Penn State University. Contact: M.L. Latash, PhD, Rec. Hall 267-L, Department of Kinesiology, Penn State University, University Park, PA 16802,

Tel: 814.863.5374, Fax: 814.865.2440, Email:

mll11@psu.edu

12th Conference of the European Society of Biomechanics, 27-30 Aug, 2000, Trinity College, Dublin, Ireland, Contact: P.J. Prendergast, Chairman ESB2000, Dept. Mechanical Engineering, Trinity College, Dublin 2, IRELAND, Tel: +353-1-6081383, Fax: +353-1-6795554, Email: pprender@tcd.ie

III International Scientific Congress on Modern Olympic Sport, 29 Aug -1 Sep, 1999, Warsaw, Poland. Contact: Akademia Wychowania Fizycznego, Jozefa Pitsudskiego, 00-968 WARSZAWA 45, skr. poczt. 55, ul. Marymoncka 34, Poland, Tel: (48-22) 864 21 00, Email: congress@awf.edu.pl

September

IV Polish Conference of Biomechanics, 9-11 September 1999, Polanica Zdroj, Poland. : Contact: Prof. R. Bedzinski, Wroclaw University of Technology, ul. Lukaszewicza7/9, 50-371 Wroclaw, Poland, Tel. ++48 71 3202713, Fax: ++48 71 227645, Email:

bedzin@exbio.ikem.pwr.wroc.pl

XII International Biomechanics Seminar, 10-11 Sep, 1999, Chalmers University of Technology, Göteborg, Sweden, Contact: K. Thörneby, Biomechanics, Chalmers University, S-412 96 Göteborg, Sweden, Tel: +46-31-772 1311, Fax: +46-31-772 1303 - 1313, Email:

krisby@polymm.chalmers.se

11th Hungarian Medical Engineering Conference and the 2nd Hungarian Clinical Engineering Conference, BUDAMED '99, Budapest, 12-14 Sep, 1999. Contact: varady@fsz.bme.hu

2nd International Cyberspace Conference on Ergonomics, 15 Sep - 15 Oct, 1999,

<http://www.curtin.edu.au/conference/cyberg/>

4th World Congress of the OsteoArthritis Research Society International Vienna, Austria, 16-19 Sep 1999. Contact: OARSI Headquarters, Tel: 202.857.5323, Fax: 202.857.1115, Email: OARSI@dc.sba.com

From basic motor control to function recovery- concepts, theories and models- present state and

perspectives, 22 to 26 Sep 1999, Organised at the Black Sea, near Varna (Albena or Golden sands) in Bulgaria. Contact: N Gantchev, UPR Neurobiologie et Movements, CNRS, 31 Chemin Joseph-Aiguier, 3402 Marseille cedex 20 FRANCE, Phone 33 4 91 16 41 00, Fax 33 4 91 77 50 84, gantchev@lnf.cnrs-mrs.fr

October

IV International Symposium on Computer Methods in Biomechanics & Biomedical Engineering, 13-16 Oct, 1999, Lisbon, Portugal. Contact: John Middleton, Biomechanics Research Unit, Cardiff Medicentre, Heath Park, Cardiff CF4 4UJ, Wales, UK. Tel/Fax: + 44 (0) 1222 682161, Email: MiddletonJ2@Cardiff.ac.uk

23rd Annual Meeting of the American Society of Biomechanics, 21-23 Oct 1999, University of Pittsburgh, Pittsburgh, PA, USA. Contact: Savio Woo, PhD. Musculoskeletal Research Center, Department of Orthopaedic Surgery, University of Pittsburgh, E1641 Bioscience Tower, Pittsburgh, PA, USA, Tel: 412.605.3219, Fax: 412.648.2001, Email: cphil@pitt.edu

VIIIth Association des Chercheurs en Activités Physiques et Sportives (roughly Association of Researchers on Physical Activity and Sports), 31 Oct – 3 Nov, 1999, Macolin, Switzerland. Contact: Claude-Alain Hauert, FPSE - Université de Genève, 9, route de Drize, CH-1227 CAROUGE, Tel: +41 22 705 97 70, Email: Claude-Alain.Hauert@pse.unige.ch, <http://www.bham.ac.uk/sportex/ACAPS>

November

European Medical & Biological Engineering Conference, EMBEC'99, Vienna, Austria, 4-8 November 1999, <http://www.univie.ac.at/EMBEC99/>

2000

2nd International Congress on Skiing and Science in St. Christoph/Arlberg, Austria, 9-15 Jan 2000. Contact: Hermann Schwameder, Secretary General, Email: hermann.schwameder@sbg.ac.at

XVIIIth Conference of International Society of Biomechanics in Sports (ISBS2000), 25-30 June, 2000 in Hong Kong. Contact: Email: isbs2000@cuhk.edu.hk, <http://www.cuhk.edu.hk/spe/isbs2000/index.htm>

12th Conference of the European Society of Biomechanics, 27-30 August, 2000, Dublin, Ireland. <http://www.mme.tcd.ie/esb2000>

2001

XVIIIth Congress of the International Society of Biomechanics, 8-13 July, 2001 in Zurich, Switzerland. Email: isb2001@biomech.mat.ethz.ch, <http://www.isb2001.ethz.ch>

2002

3rd World Congress of Biomechanics, University of Calgary, Calgary, Alberta, Canada.

Revisionist History

This is a compilation of actual student GCSE (16 years old) exam answers...

- Ancient Egypt was inhabited by mummies and they all wrote in hydraulics. They lived in the Sarah Dessert and traveled by Camelot. The climate of the Sarah is such that the inhabitants have to Live elsewhere.
- The Bible is full of interesting caricatures. In the first book of the
- Bible, Guinnessis, Adam and Eve were created from an apple tree.
- One of their children, Cain, asked, "Am I my brother's son?"
- Moses led the Hebrew slaves to the Red Sea, where they made unleavened bread which is bread made without any ingredients.
- Moses went up on Mount Cyanide to get the ten commandments. He died before he ever reached Canada.
- Solomom had three hundred wives and seven hundred porcupines.
- The Greeks were a highly sculptured people, and without them we wouldn't have history. The Greeks also had myths. A myth is a female moth.
- Actually, Homer was not written by Homer but by another man of that name.
- Socrates was a famous Greek teacher who went around giving people advice. They killed him. Socrates died from an overdose of wedlock. After his death, his career suffered a dramatic decline.
- In the Olympic games, Greeks ran races, jumped, hurled the biscuits, and threw the java.
- Eventually, the Romans conquered the Greeks. History calls people Romans because they never stayed in one place for very long.
- Julius Caesar extinguished himself on the battle fields of Gaul. The Ides of March murdered him because they thought he was going to be made king. Dying, he gasped out: "Tee hee, Brutus."
- Nero was a cruel tyranny who would torture his subjects by playing the fiddle to them.
- Joan of Arc was burnt to a steak and was cannonized by Bernard Shaw. Finally Magna Carta provided that no man should be hanged twice for the same offense.
- In midevil times most people were alliterate. The greatest writer of the futile ages was Chaucer, who wrote many poems and verses and also wrote literature.
- Another story was William Tell, who shot an arrow through an apple while standing on his son's head.
- Queen Elizabeth was the "Virgin Queen." As a queen she was a success. When she exposed herself before her troops they all shouted "hurrah."
- It was an age of great inventions and discoveries. Gutenberg invented removable type and the Bible. Another important invention was the circulation of blood. Sir Walter Raleigh is a historical figure because he invented

cigarettes and started smoking. And Sir Francis Drake circumcised the world with a 100 foot clipper.

- The greatest writer of the Renaissance was William Shakespeare. He was born in the year 1564, supposedly on his birthday. He never made much money and is famous only because of his plays. He wrote tragedies, comedies, and hysterectomies, all in Islamic pentameter.
- Romeo and Juliet are an example of a heroic couplet. Romeo's last wish was to be laid by Juliet.
- Writing at the same time as Shakespeare was Miguel Cervantes. He wrote Donkey Hote. The next great author was John Milton. Milton wrote Paradise Lost. Then his wife died and he wrote Paradise Regained.
- During the Renaissance America began. Christopher Columbus was a great navigator who discovered America while cursing about the Atlantic. His ships were called the Nina, the Pinta, and the Santa Fe.
- Later, the Pilgrims crossed the ocean, and this was called Pilgrim's Progress. The winter of 1620 was a hard one for the settlers. Many people died and many babies were born. Captain John Smith was responsible for all his.
- One of the causes of the Revolutionary War was the English put tacks in heir tea. Also, the colonists would send their parcels through the post without stamps. Finally the colonists won the War and no longer had to pay for taxis. Delegates from the original 13 states formed the Contented Congress. Thomas Jefferson, a Virgin, and Benjamin Franklin were two singers of the Declaration of Independence. Franklin discovered electricity by rubbing two cats backwards and declared, "A horse divided against itself cannot stand.". Franklin died in 1790 and is still dead.
- Soon the Constitution of the United States was adopted to secure domestic hostility. Under the constitution the people enjoyed the right to keep bare arms.
- Abraham Lincoln became America's greatest Precedent. Lincoln's mother died in infancy, and he was born in a log cabin which he built with his own hands. Abraham Lincoln freed the slaves by signing the Emasculation Proclamation. On the night of April 14, 1865, Lincoln went to the theater and got shot in his seat by one of the actors in a moving picture show. The believed assinator was John Wilkes Booth, a supposedly insane actor. This ruined Booth's career.
- Meanwhile in Europe, the enlightenment was a reasonable time. Voltaire invented electricity and also wrote a book called Candy.
- Gravity was invented by Issac Walton. It is chiefly noticeable in the autumn when the apples are falling off the trees.
- Johann Bach wrote a great many musical compositions and had a large number of children. In between he practiced on an old spinster which he kept up in his attic. Bach died from 1750 to the present. Bach was he most famous composer in the world and so was Handel. Handel was half German half Italian and half English. He was very large.
- Beethoven wrote music even though he was deaf. He was so deaf he wrote loud music. He took long walks in the forest even when everyone was calling for him. Beethoven expired in 1827 and later died for this.

- The French Revolution was accomplished before it happened and catapulted into Napoleon. Napoleon wanted an heir to inherit his power, but since Josephine was baroness, she couldn't have any children.
- The sun never set on the British Empire because the British Empire is in the East and the sun sets in the West.
- Queen Victoria was the longest queen. She sat on a thorn for 63 years. She was a moral woman who practiced virtue. Her death was the final event which ended her reign.
- The nineteenth century was a time of a great many thoughts and inventions. People stopped reproducing by hand and started reproducing by machine. The invention of the steamboat caused a network of rivers to spring up. Cyrus McCormick invented the McCormick raper, which did the work of a hundred men.
- Louis Pasteur discovered a cure for rabbis. Charles Darwin was a naturalist who wrote the Organ of the Species. Madman Curie discovered radio. And Karl Marx became one of the Marx brothers.
- The First World War, caused by the assignation of the Arch-Duck by an anahist, ushered in a new error in the anals of human history.

Thanks to Kim Burton, Huddersfield, for this submission

How To Bathe A Cat Jeffery LaCroix

Mr. LaCroix is a veterinarian in Wilmington, Somewhere who writes a column for the Morning Star called "From Paws to Tails."

Dear Dr. LaCroix: I've heard that cats never have to be bathed, and that they have some sort of special enzyme in their saliva that keeps them clean. This doesn't sound believable to me because there are definite "kitty" odors on my couch and dirty cat paw prints on our white hearth. Is this true about the saliva? If we do decide to give "Nice Kitty" a bath, how do we do that? - NSP, Wilmington

Dear NSP: Fortunately for you, several years ago a client gave me a written set of instructions about cat bathing which I am privileged to share with you:

Cat Bathing As A Martial Art

Know that although the cat has the advantage of quickness and lack of concern for human life, you have the advantage of strength. Capitalize on that advantage by selecting the battlefield. Don't try to bathe him in an open area where he can force you to chase him. Pick a very small bathroom.

If your bathroom is more than four feet square, I recommend that you get in the tub with the cat and close the sliding-glass doors as if you were about to take a shower. (A simple shower curtain will not do. A berserk cat can shred a three-ply rubber shower curtain quicker than a politician can shift positions.)

Know that a cat has claws and will not hesitate to remove all the skin from your body. Your advantage here is that you are smart and know how to dress to protect yourself. I recommend canvas overalls tucked into high-top construction boots, a pair of steel-mesh gloves, an army helmet, a hockey face-mask, and a long-sleeved flak jacket.

Use the element of surprise. Pick up your cat nonchalantly, as if to simply carry him to his supper dish. (Cats will not usually notice your strange attire. They have little or no interest in fashion as a rule.)

Once you are inside the bathroom, speed is essential to survival. In a single liquid motion, shut the bathroom door, step into the tub enclosure, slide the glass door shut, dip the cat in the water and squirt him with shampoo. You have begun one of the wildest 45 seconds of your life.

Cats have no handles. Add the fact that he now has soapy fur, and the problem is radically compounded. Do not expect to hold on to him for more than two or three seconds at a time. When you have him, however, you must remember to give him another squirt of shampoo and rub like crazy. He'll then spring free and fall back into the water, thereby rinsing himself off. (The national record for cats is three latherings, so don't expect too much.)

Next, the cat must be dried. Novice cat bathers always assume this part will be the most difficult, for humans generally are worn out at this point and the cat is just getting really determined. In fact, the drying is simple compared with what you have just been through. That's because by now the cat is semi-permanently affixed to your right leg. You simply pop the drain plug with your foot, reach for your towel and wait. (Occasionally, however, the cat will end up clinging to the top of your army helmet. If this happens, the best thing you can do is to shake him loose and to encourage him toward your leg.) After all the water is drained from the tub, it is a simple matter to just reach down and dry the cat. In a few days the cat will relax enough to be removed from your leg. He will usually have nothing to say for about three weeks and will spend a lot of time sitting with his back to you. He might even become psychoceramic and develop the fixed stare of a plaster figurine. You will be tempted to assume he is angry. This isn't usually the case. As a rule he is simply plotting ways to get through your defenses and injure you for life the next time you decide to give him a bath. But at least now he smells a lot better.

Thanks to Chris Phillips, University of Pittsburgh for this submission.

Texts for the Movement Sciences From Waterloo Biomechanics

The Biomechanics and Motor Control of Human Gait; Normal, Elderly and Pathological, 2nd Edition. 1991
David A. Winter
143 pages, 125 figures, 50 tables, 500 references
\$45.00 CAN, \$35.00 US

A.B.C.(Anatomy, Biomechanics and Control) of Balance during Standing and Walking. 1995. David A. Winter
56 pages, 54 figures, 2 tables, 104 references
\$24.00 CAN, \$18.00 US

Signal Processing and Linear Systems for the Movement Sciences. 1997. David A Winter, Aftab E. Patla
110 pages, 94 figures, 3 tables
\$35.00 CAN, \$27.00 US

Introduction to Biomechanics for Human Motion Analysis 1998. D. Gordon E. Robertson
230 pages, 131 figures, 13 tables, 120 example problems
\$65.00 CAN, \$48.00 US

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EDITOR'S NOTE

The ISB Newsletter is published quarterly: February-March (Spring); May-June (Summer); August-September (Autumn), and November-December (Winter). There are generally alternative printing schedules that coincide with unbelievable errors. Deadlines for material and articles are the first day of each first named month, except in the alternative schedule in which there are no deadlines or simply nothing will be accepted. The Newsletter is mailed to members whenever we can get to it except, of course on the alternative schedule that is always on time. Members are encouraged to submit anything they would like to relate to the biomechanics community. The content of the Newsletter does not necessarily reflect the philosophy and opinions of the ISB but may reflect the mood of the Editor. We presume the content reflects somebody's philosophy and opinion at some time. Naturally, items such as *Letters*, *Special Articles*, *Affiliate Society News*, *Laboratory Features*, *Reports*, or *Announcements of Meetings*, *Conferences*, and *Reviews* of relevant conferences and other biomechanics-related information are desirable and may be considered. *Thesis Abstracts* can be published if they do, or do not meet any criteria. For example, Thesis abstracts that provide an Introduction that includes the rationale and hypotheses of the study, description of the methods, the key results, and important conclusions are considered desirable. The title of the work student's name, department and institution, the degree earned and the conferring institution and supervisor's name should also be provided. Clearly though, no one actually does this but its important to have guidelines nevertheless. Material may be submitted electronically or on a computer disk as a text-only file, and must be in some form of English. Some forms of English may be transformed to yet another form of English thus changing everything. Go ahead, roll the dice. Hard copy submissions of anything are acknowledged telepathically and subsequently placed in a recycle bin. Submission is not a guarantee of a timely appearance in the Newsletter.

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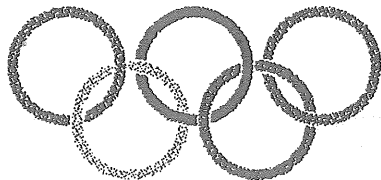
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Membership Dues Reminder

Have you paid your 1999 Dues ?

If the address label on your Newsletter envelope has an 'X' in the top right-hand corner, then we have not received a payment from you this year. Your payment by return mail or fax would be appreciated. If you have misplaced the invoice that was sent to you last December, then please request another from the Treasurer (contact address on front cover).



IOC OLYMPIC PRIZE

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The first IOC Olympic Prize

The IOC Olympic Prize was established by the IOC with the support of Parke-Davis to recognise, support and develop outstanding research related to human movement, exercise and/or sport. The IOC Olympic Prize endowed by Parke-Davis is awarded every two years, in connection with the Olympic Summer and Winter Games to a scientist for contributions that advance the science of movement, exercise and sport and that make a great impact on society. Winners of the IOC Olympic Prize receive an Olympic medal, a US\$ 500,000 cash award, and a diploma of excellence.

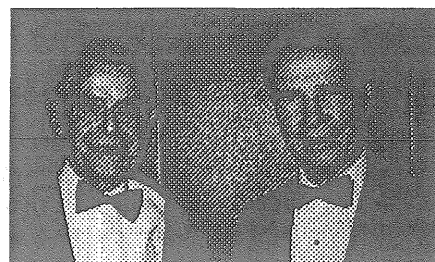
The first IOC Olympic Prize was awarded in 1996 to Drs. Jeremy N. Morris and Ralph S. Paffenbarger, Jr. for their pioneering research findings related to cardiac health and well being. Indeed, their work could be said to be responsible for our awareness of the importance exercise and sport in the second half of the 20th century.

After World War II, the calorie input/output ratio of humans changed dramatically as work and lifestyles became more sedentary and diets changed to include more fat and sugar. Research dealing with the health and well-being of humankind started to address the factors responsible for growing problems such as heart diseases.

The work done by Drs. Morris and Paffenbarger, which demonstrated how exercise could reduce the risk of heart disease, changed the practice of medicine and inspired the fitness revolution.

Dr. Morris, a fit 90 year old, is professor emeritus of public health at the University of London, England, where he has served for 20 years, first as professor of social medicine and later as professor of public health. In the 1950's, by studying the rates of coronary heart disease among London's transit workers, Dr. Morris was the first epidemiologist to offer scientific support for the revolutionary hypothesis that regular physical activity reduces the risk of coronary heart disease

Over the next 40 years, he conducted additional studies demonstrating the relationship of physical activity to the risk of coronary heart disease. Among Dr. Morris's findings was evidence that coronary heart disease was four to five times more common at ages 45 to 50 in individuals who did light physical work than in individuals who did heavy physical work and two to three times more common at ages 60 to 70. His studies also found that men who did regular aerobic exercise had a lower rate of coronary heart disease than men doing lighter physical work around the house or gardening.



Dr. Morris (left) and Dr. Paffenbarger (right)

The youthful Dr. Paffenbarger (age 78) serves as professor emeritus of epidemiology at Stanford School of Medicine, adjunct professor of epidemiology at Harvard University School of Public Health and research epidemiologist at the University of California, Berkeley, School of Public Health. Dr. Paffenbarger is best known for an ongoing study that began in the 1960's studying the risk factors and life habits of male graduates of the University of Pennsylvania and Harvard University. This research was followed in the 1970's with a study on the effect of strenuous occupational physical activity on the risk of coronary heart disease in San Francisco Bay longshoremen. These studies validated Dr. Morris's earlier findings that physical activity is a factor in reducing the risk of hypertension, non-insulin dependent diabetes, some forms of cancer and premature death in general.

Dr. Paffenbarger also demonstrated that physical activity after college provided greater protection against coronary heart disease than superior athletic ability. In other words, the level of post-graduate physical activity was more important than level of athletic ability. This finding helped make athletes aware that they would retain low risk for coronary heart disease only if they remained physically active.

The ground breaking work of these two epidemiologists brought respect within their field for such research and led to additional studies that have contributed enormously to understanding the relationship between regular physical activity and good health. This resulted in a body of information that has become, at the end of the century, common knowledge for the general population.

***The Olympic Programs
for movement, exercise and sport sciences***

Parke-Davis joined with the IOC Medical Commission in a global effort to spur significant scientific discoveries related to movement, exercise and sport that benefit humankind. This partnership includes a number of programs:

- The IOC Olympic Prize
- The Olympic Academy of Science
- The IOC World Congress on movement, exercise and sport science and
- The research projects during the Olympic Games

The ***Olympic Academy of Science***, a scientific academy related to movement, exercise and sport has been established to support the development of this young field of science.

The purpose of the Olympic Academy of Science is to establish a structure for top scientists in the multidisciplinary field to meet once a year. These meetings will serve to expedite the exchange of ideas on leading research related to movement, exercise and sport and to set critical directions for the field in the coming years.

The Olympic Academy of Science has 22 founding members. Their first meeting will take place November 3, 1999 during the Fifth IOC World Congress on Sport Sciences in Sydney, Australia. It is expected that the establishment of the Olympic Academy will have a positive effect on the field of science related to movement, exercise and sport.

The ***research projects during the Olympic Games*** provide a possibility for scientists to study performance and/or loading of athletes during the Olympic Games. It also provides an opportunity to distribute knowledge about work in the field to a broader audience interested in movement, exercise and sport.

The coordinator for these projects is Prof. Dr. R.C. Nelson. Funding is available for outstanding project proposals. Interested scientists should contact Dr. Nelson (rcn1@email.psu.edu) for further information.

Important dates for the IOC Olympic Prize

Sept 1, 1999

Deadline for submission of nomination packages to the Office of the Medical Commission at the IOC Headquarters in Lausanne, Switzerland.

Nov 1 & 2, 1999

Meeting of the Selection Committee in Sydney during the IOC-World Congress. Selection of finalists for the IOC-Olympic Prize 2000

May 2000

Meeting of the Selection Committee. Selection of the Winner for the IOC Olympic Prize 2000.

July 25, 2000

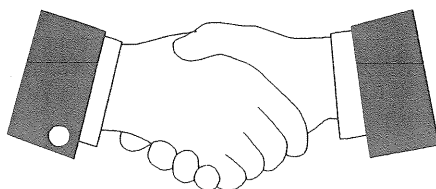
Announcement of the winner of the IOC Olympic Prize 2000 in New York.

Sept 2000

Medal Ceremony in Sydney during the Opening Session of the IOC.

For further information, please contact
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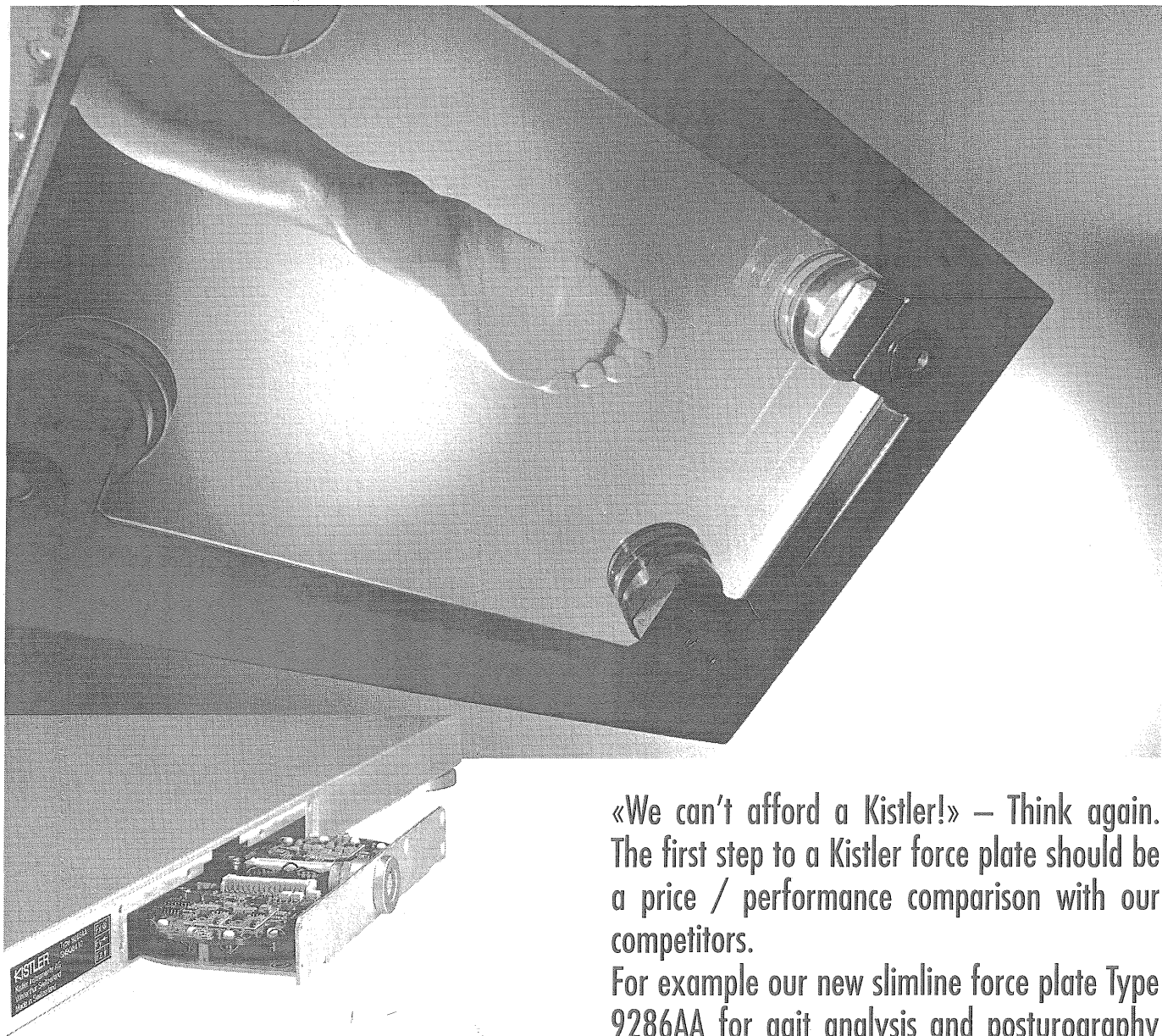
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