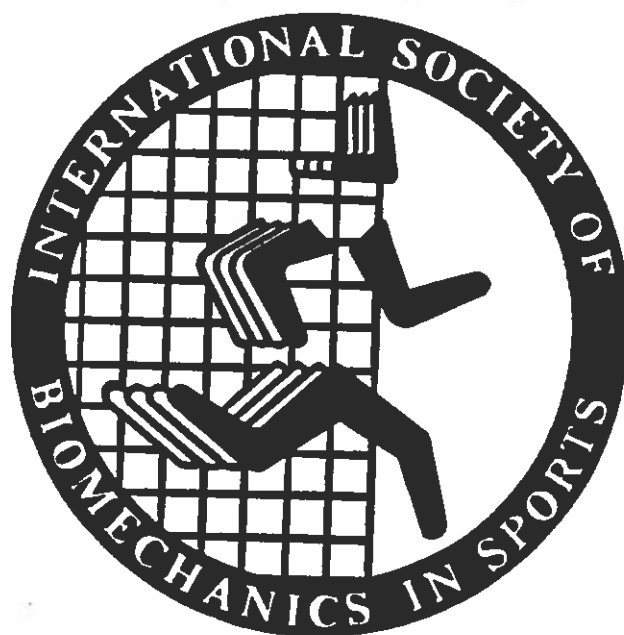


VOL 8 NO. 1

SEPTEMBER 1991

SPORTS BIOMECHANICS
NEWSLETTER





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President's Message

President 1990-91 Report

President: Dr. Bill Morrison, Victoria University of Technology, Footscray, Victoria, Australia 3011

The coming years are truly the heart of ISBS. Up until now the society has relied on a few good people dedicated to the pursuit of "applied biomechanics in sport". These people are respected scientists like Terauds, Gowitzke, Bober, Nazarov, Adrian, Kelly and the like and they have established the foundation of ISBS.

However, on this foundation it is now our responsibility, as members of an established soc-

iety, to provide quality and consistency to the "coach, teacher and performer". As members we have an obligation to the society and to the pursuit of excellence. Every opportunity is being provided whereby the membership can contribute, in arenas such as conferences, proceedings, newsletter submissions, direct communications and now the Human Kinetics Publication of the "International Journal of Sport Biomechanics". Our predecessors have established the foundation of quality and now it is our responsibility to build through these vehicles.

I also call on the Executive to

gain pride in the vision they have established. Support to our members in perhaps a mentor role or via the nexus of collaboration may assist in these dynamic times. The gratification of success will be ours as the executive answers to the challenges it has before it at this time.

Congratulations to the organizers of the Iowa symposium and conference. Success is always sweet, a job well done by all. Your efforts lead us into a very positive year. Thank you and best regards to all,

BILL MORRISON

Editor's Notes

Where has the Newsletter been? Unfortunately, Dr. Lela June Stoner was unable to produce the newsletter as planned due to unforeseen personal problems. As a result, there is a great deal of news to get out and we have decided to produce a newsletter this fall - the present one and one to be released before Christmas. If you have anything to submit, send it to me at Dept. of Physical Education, McGill University, 475 Pine Ave. West, Montreal, Quebec, Canada, H2W 1S4. If there is a Canadian postal strike send it to Dr. Danny Too, Dept. of Physical Education, California State University, Fullerton, CA, USA

92634. The next deadline will be November 10, 1991.

• Ames, Iowa: Conference
Dr. Cynthia Tant must be congratulated as host of the ISBS and National Symposium on Teaching Kinesiology and Biomechanics in Sports. The symposium motto "Momentum for the Future" certainly reflected the mood of the participants. The opportunity for our members to get together and exchange both practical and academic knowledge in a collegial setting was outstanding. Dr. Elizabeth M. Roberts was honoured as the Geoffrey

Dyson lecturer and in return provided her audience with an impressive display of knowledge and history.

The next issue of the Newsletter will provide addresses and prices to order the Proceedings from both the 8th and 9th ISBS symposiums. Even though I haven't had the opportunity to see the Prague proceedings, I have been told they are published and are ready for distribution

• ISBS Journal

An agreement has been reached

(cont'd)

between Human Kinetic Publishers and ISBS to join ISB as joint sponsors of the International Journal of Sport Biomechanics. Part of the agreement involves the creation of two new editor positions on the IJSB editorial board, Digest Editor and Applied Research Editor. Nominations for these two positions should be forwarded to Dr. Ellen Kreighbourn, Dept. of Health & Physical Education, Montana State University, Bozeman, MT, USA, 59717.

All members will, as part of their membership, receive (at a reduced rate) a subscription to the International Journal of Sport Biomechanics.

This agreement received the full support of the ISBS executive with the confidence that it will provide our members with another unique venue in addition to the Newsletter and Conference Proceedings for the dissemination of Knowledge in sport biomechanics. We encourage all ISBS members to submit papers to IJSB for publication.

• Upcoming ISBS Conferences

Where will we be in 93? After what looks like a great conference to be held in Milano, Italy in 1992, prepare to see the North-East United States. A proposal from Dr. Joe Hamil to hold the conference at the University of Massachusetts is now in the hands of the President.

Treasurer's Report:

The Board of Directors voted for a dues increase at the meeting held at Iowa State Uni-

versity in July 1991. The increase was necessary to cover the cost of providing a subscription to the International Journal of Sport Biomechanics. The new schedule is effective Jan. 1 1992. The new rates are:

Regular members \$ 55.00
Student members \$ 10.00
Group members \$100.00

Regular members will receive the Journal and Newsletters. Student members will only receive the Newsletters.

Regular members who have prepaid their dues will be notified and assessed the amount required to meet the new rate schedule.

All members who are presently receiving IJSB must provide a confirmation of purchase (invoice) with their dues and they will not have to pay the \$35.00 journal fee, only the \$20.00.

REMINDER TO MEMBERS OUTSIDE THE U.S.A.

Please remit your dues in U.S. dollars using an International Money Order. Other forms of payment cannot be accepted. Unfortunately, and unbelievably, foreign checks written in U.S. dollars and drawn on U.S. banks are assessed processing charges in excess of forty dollars.

Membership information:

Dr. John Ostarello
Department of Kinesiology &
Physical Education
California State University,
Hayward, CA 94542, USA

Introducing the ISBS Executive 1991

Bill Morrison FAX
President 61-3-687-2089

Ellen Kreighbaum
Past Pres 406-994-2893

Barbara Gowitzke
VP Awards 416-527-0100

John Ostarello
Treasurer 415-886-4674

Hans Gross
VPPR 49-711-685-3500

Ronato Rodano
VP Conf 39-22-686-1144

Bruce Mason
VP Research 61-6-252-1603

Eugene Brown
Sen. Gen No number

Blaine Hoshizaki
VP Publications 514-398-4901

Board of Directors

Members 1990-92

Moreno D'Amico (Italy), Lela June Stoner (USA), Danny Too (USA), Pekka Luhtanen (Finland), Roger Bartlett (England), Julie Draper (Australia), David Waddell (Canada), Tadeus Bober (Poland), Tony Bauer (Canada).

Members 1991-93

Joas Abrantes (Portugal), Wod Erdmann (Poland), Yuschi Hinano (Japan), Isung Hwang (Korea), Wayne Marino (Canada), Deiter Klause (Germany), Larry Holt (Canada), Cynthia Taut (USA), Vladimir Nazarov (USSR), Juris Terauds (USA), Anika Barabas (Hungary).

Laboratory Feature

Brief Report on the Activities of the Bioengineering Center Milan, Italy

The Bioengineering Center was established in Milan (Italy) in 1976 by official agreement between the Pro Juventute Foundation of the Polytechnic of Milan, Department of Electronics. The aim of this initiative was to create a suitable interdisciplinary environment in which research in informatics, electronics, advanced technology and mathematical modelling could have been integrated with the most updated acquisitions of physiopathological studies and the needs of clinical applications. Antonio Pedotti, Professor of Biomedical Technology at the Polytechnic was designated as director of the center; Prof. Silvano Boccardi, Chairman of the Motor Rehabilitation Department of the San Carlo Hospital, as Medical Director.

Three Areas of research are presently active:

- Movement Analysis
- Cardiovascular Physiopathology
- Technical Aids for the Disabled.

MOVEMENT ANALYSIS

This is the main area of research and the first which has been the basis of the establishment of the Bioengineering Center itself. The complex problems of movement analysis and its applications are approached at the following levels:

• BASIC METHODOLOGIES AND TECHNOLOGIES

Starting from the use of piezoelectric forceplate for gait analysis (the vector-diagrams of gait were first proposed by our group since 1974 and they have constituted the symbol of our Center) the research has concerned:

- Signal processing techniques (statistics, filtering and data extraction) particularly on EMG, ECG, pressure, kinematics, forces).
- Mathematical modelling for gait analysis, posture, upper limb, lip and jaw movement.
- Polymer sensors, electrodes, optoelectronics and dedicated hardware for data acquisition, measurements and monitoring.
- Image processing techniques, including pattern recognition, bidimensional cross correlation and special architecture for parallel computation.

The most interesting result in this area has been the project ELITE (ELaboratore di Immagini TELEvisive) which led to the development of a unique system for movement analysis. The system allows for highly accurate and reliable analysis, easily feasible in every environment, opening new perspectives in physiopathological studies as well as in industrial applications.

• NEUROMOTOR CONTROL

Research was performed on human free moving subjects with the aim of investigating the basic mechanisms involved in movement control. The studies have concerned mainly gait and more recently posture, axial movement, weight lifting, upper limb coordination, reaching, lip and jaw movement. Attention has been particularly focused upon optimization criteria, the coordination of muscle contraction, the role of proprioceptive reflexes, and the individual motor strategies with particular reference to the aspects of adaptation and learning.

• MOTOR REHABILITATION AND PROSTHESIS

Gait in patients with neural lesion at central and peripheral levels (hemiplegia, spina bifida, Parkinson disease, muscular dystrophy) has been investigated in quantitative way with the aim of defining criteria for differential diagnosis, therapeutic and rehabilitative decisions, patient assessment.

The present studies are particularly focused on the identification of those pathogenetic factors which are the most suitable for clinical purposes.

Optimal adaptations of orthoses in neuromuscular disorders and

ISBS '92 Symposium Update 1st Announcement

X International Symposium of
Biomechanics in Sports
Milano, Italy 15-19 June 1992

Organized by:

Centro di Bioingegneria
Fondazione Pro Juventute
I.R.C.C.S.-Politecnico di Milano
With the support of:
Civica Scuola per Animatori Sportivi
(Comune di Milano, settori Educazione,
Sport e Tempo Libero)

On behalf of the International Society of Biomechanics in Sports, we have the pleasure in inviting you to attend the International Symposium of the Society "ISBS '92", which will be held in Milano - ITALY.

The ISBS was organized in 1982 with the express purpose of "bridging the gap between biomechanics researchers, teachers and coaches". The annual symposium, with its published proceedings, provides the vehicle through which biomechanics applications may be transmitted to practitioners.

MOTTO: When you can measure what you are speaking about, and express it in numbers, you know something about it.

Lord Kelvin, 1891

TOPICS

- Biomechanical Methodology in Sports
- Basic and Applied Sport Biomechanics
- Biomechanics in Coaching and teaching
- Biomechanical Assessment of Sport Equipments
- Biomechanical Rehabilitation in Sports

- Biomechanic-Bioenergetic Relationships in Sports
- Sport Biomechanics for People with Special Needs
- Free Topics in Sport Biomechanics

CHAIRMAN
R. Rodano

SCIENTIFIC COMMITTEE

R. Andrich
M. D'Amico
G. Ferrigno
C. Frigo
G. Lanzetti
G.C. Santambrogio
A. Veicsteinas

ISBS'92 SYMPOSIUM SECRETARIAT

Centro di Bioingegneria
Fondazione Pro Juventute, I.R.C.C.S.
Politecnico di Milano
Via Capocciaturo 66
I-20148 Milano, Italy
Phone 39 2 40308305
Fax 39 2 26861144

THE SYMPOSIUM WILL INCLUDE

key lectures, oral and poster presentations, workshop on "Biomechanics in Italy: Present State of the Art and Future Developments," trade exhibition.

AWARDS

A special award will be taken into account for the most promising work presented by young researchers.

Official Language: English



a proper information system.

**c) EDUCATION AND RE-
SEARCH**

Different courses conceived for medical and paramedical personnel have been held with the aim of improving the efficiency of the Health Service in the provision of the most suitable technical aids, facilitating the conjunction of medical rehabilitation and social integration. Specific research was focused on: speech recognition for environmental control and specially controlled wheelchairs for severely disabled.

**d) SEVERELY DISABLED
AT HOME**

In the frame of a special project promoted by the Lombardy Region, the S.I.V.A. has designed and implemented interventions in 18 cases of severely disabled living at home. The aim was the improvement of their independence and quality of life by using proper aids an adaptation of the house.

**ISBS Executive
Nominations**

Position: Vice President of
Publications

Term: Two years (even years)
Beginning June 1992

Responsibilities:

- 1) Keep the President informed as to the progress and activities of the Chair.
- 2) Construct a publication committee to assist with the various publications.
- 3) Provide two newsletters per year to members and affiliates.
- 4) Collaborate with the Past President (or President Elect) in constructing a list of editors for IJSB.
- 5) Collaborate with the conference and meetings V.P. to provide guidance to the organizers.

Please submit your nomination to: Dr. Bill Morrison
Ballarat Road
Footscray
P.O. Box 64
Footscray, Victoria
3011 Australia

**Position
Vacancy**

BIOMECHANIST

Victoria University of
Technology, Melbourne,
Victoria, Australia

If you are interested please contact Dr. Bill Morrison, Executive Officer, Centre for Research and Development, PO Box 64, Footscray Victoria, Australia 3011
FAX -61-3-687-2089

BIOMECHANIST

School of Kinesiology, Simon
Fraser University, Burnaby, BC
Canada

Open to any sub-area of Biomechanics including Ergonomics, Human Factors, Rehabilitation, Orthopaedic and Sports.

Send CV and names of three references to A.E. Chapman, School of Kinesiology, Simon Fraser University, Burnaby, BC V5A 1S6, or by fax to (604) 291-3040 along with covering letter indicating the special interests and some views on potential contribution to research and teaching.

lower limb and prosthesis in amputees have also been approached.

The definition of the optimal control strategies adaptable to the single paraplegic patient in multichannel functional electrical stimulation constitutes our main contribution to the CALIES European project.

• ORTHOPAEDICS

Quantitative analysis of gait has been widely used for assessment of patient with joint disorders and after surgical treatment including artificial joint implantations. Studies have also been performed on foot disorders. Recent efforts are devoted to develop and to validate in clinical environment a non invasive and non ionizing technique for scoliosis assessment (AUSCAN - AUtomatic SColiosis ANAlyser) and for biofeedback procedures for spinal deformity corrections.

• ERGONOMICS

The evaluation of risk factors for low back pain has been investigated by determining the load at different levels of the spine through external automatic measurements (kinematics, forces, EMG) and proper mathematical modelling. Such computations were performed during weight lifting and other work activities. The same procedures have been used to design proper workplaces to decrease the risk of osteopathologies.

• SPORT

Quantitative analysis of kinematics, forces EMG and subse-

quent processing of data have been performed on motor tasks typical of various sport disciplines (long and high jumping, running, rugby, soccer, gymnastics, fencing, etc.). The purposes of these studies have been: a better understanding of the motor strategies leading to the best performance, the criteria for evaluating the long term effect of musculoskeletal lesions, the definition of optimal training procedures and specialized shoes.

CARDIOVASCULAR SYSTEM

24 hours continuous blood pressure monitoring has been performed on several hundred of normotensive, hypertensive and border-line subjects. Special hardware, algorithms and software have been developed for this purpose. Attention was given to the variability, the statistical distribution, the correlation with heart rate and other physiopathological quantities. The main aims of this research are:

a) BASIC MECHANISMS CONTROLLING BLOOD PRESSURE

Interesting findings concerning the role of baroreflex activity and the centrally programmed control come from the analysis of rapid changes in blood pressure and heart rate in humans and from experiments in animals before and after selected neural lesions.

b) CRITERIA FOR DIFFERENTIAL DIAGNOSIS have been subjects of research considering the interindividual

variability of blood pressure and the identification of specific pathogenetic factors.

c) THERAPY ASSESSMENT

24 hour monitoring in hypertensive patient before and after drug intake allowed for the rigorous control of blood pressure through the choice of proper dosing.

TECHNICAL AIDS

A proper and efficient intervention in this area has required the creation of an ad hoc structure: S.I.V.A. (Service for Information and Evaluation of Technical Aids), which includes:

a) COMPUTERIZED DATA BANK OF TECHNICAL AIDS

More than 200,000 bits of information concerning 4,000 technical aids are presently stored in the data bank. Special software for data retrieval was developed particularly oriented to the needs of the disabled persons and medical and paramedical personnel.

The S.I.V.A. Data Bank is the national node of the HANDY-NET European system and is presently used in 52 local Health Units in 13 Italian Regions.

b) TECHNICAL AND FUNCTIONAL EVALUATION OF TECHNICAL AIDS

This activity was performed in cooperation with various European countries to define common standards and procedures for a uniform evaluation and transfer evaluation data into

Related Conferences

OCTOBER 18-20, 1991

15th Annual Meeting of the American Society of Biomechanics, Arizona State University, Tempe, Arizona, USA
Contact: Phillip E. Martin, Ph.D.
1991 Meeting Chair
Department of Exercise Science and P.E.
Arizona State University
Tempe, AZ 85287-0404, U.S.A.
Telephone: (602) 965-1023
Fax: (602) 965-8108

OCTOBER 24-26, 1991

"Bridging the Gap", CASS '91 Conference
Queen's University, Kingston, Ontario, Canada
Contact: Dr. Joan Stevenson
School of P.H.E.
Queen's University
Kingston, Ontario K7L 3N6 CANADA
Telephone: (613) 545-6288
Fax: (613) 545-6478

OCTOBER 26, 1991

"The Scientific Basis of Back Injury Prevention" Symposium, Queen's University, Kingston, Ontario, Canada
Contact: Dr. Joan Stevenson
School of P.H.E.
Queen's University
Kingston, Ontario K7L 3N6 CANADA
Telephone: (613) 545-6288
Fax: (613) 545-6478

DECEMBER 9-13, 1991

XIIIth International Conference on BioMechanics, The Official Biennial Congress of the International Society of Biomechanics, (ISB), Department of Human Movement Studies, University of Western Australia, Perth, Western Australia
Contact: XIIIth ISB Congress Secretariat
Department of Human Movement Studies
The University of Western Australia
Nedlands, C.A., 6009, Australia
Telephone: 61-9-380-2360
Fax: 61-9-380-1039

FEBRUARY 2-8, 1992

International Scientific Congress, Sport and Mountain,
Chamonix - Grenoble, France
Contact: Dr. J.P. Herry
ENSA, BP.24
74 403 Chamonix Cedex, FRANCE
Telephone: (33) 50-53 30 48
Fax: (33) 50 53 30 61

MAY 23-27, 1992

International Society for Posture and Gait Research, Portland, Oregon, U.S.A.
Contact: Posture & Gait Symposium Coordinator
Good Samaritan Hospital & Medical Centre
1015 North West 22 N300
Portland, Oregon, U.S.A., 97201-5198
Fax: (503) 790-1201

JUNE 15-19, 1992

Xth International Symposium of Biomechanics in Sports, Milano, Italy
Contact: R. Rodano
Centros Bioingegneria, Fondazione Pro Juventute I.R.C.C.S.
Politecnico di Milano
Via Capecelatro 66
I-20148 Milano, Italy

JUNE 28-JULY 2, 1992

International Society of Electrophysiological Kinesiology (ISEK)
9th International congress, Florence, Italy
Contact: Secretariat
C.E.S.P.R.I.
Fondazione Pro Juventute
Don Carlo Gnocchi
Via Imprunetana 124 - 50020 Monte Oriolo
Florence, Italy
Telephone: 39-055-208322/208426
Fax: 39-055-208428

AUGUST 24-28, 1992

North American Conference on Biomechanics (NACOB)
Chicago, Illinois, U.S.A.
Contact: Dr. Richard Wells
Department of Kinesiology
Faculty of Applied Health Sciences
University of Waterloo, Waterloo,
Ontario, N2L 3G1
Telephone: (519) 885-1211, ext. 3069



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