International Society of Biomechanics Newsletter

Summer 1983, n°11.

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Editorial

Summer of 1983 is very important to the development of biomechanics on an international level. First, the elections of the ISB council will take place and all of you as members of ISB have received the necessary documents for voting. This is the first time when all the Members to the Council except those of President and Past President will be chosen at the same time in general elections. This procedure follows the new constitution of ISB which was accepted in 1981. Each Council Member will be elected for a term of two years and he or she may be re-elected twice. The Past President and Council Members who have served three terms are ineligible for Officer or Council Member positions for a period of four years. This new election rule makes it possible to utilize services and ideas of many more ISB members than was often the situation in the past. However, to ensure continuity in the Council the President will serve another two year term as Past President, and the new President Elect will be chosen together with the regular Council Members.

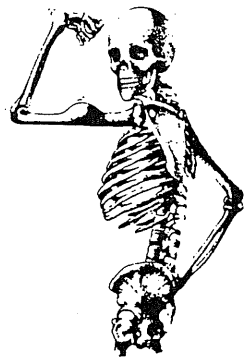
The future of ISB depends on how competent the Officers and Council Members are. I therefore plea that you all fill your duty and elect those members whom you feel can develop biomechanics best on an international level. I want to emphasize that this society of ours is international and therefore contributions from members representing different countries are necessary also in the Council.

The second important event of this summer is naturally the IX International Congress of Biomechanics which takes place on August 7-12 in Waterloo (Ontario), Canada. As Congress Chairman David Winter has written a special article on the Congress in this Newsletter issue. During the third week of May I spent three weeks in Waterloo inspecting the current state of the Congress organization. The preparations have progressed well and I was pleased to see that David Winter and his team had completed most of the organizational details so well in advance. Therefore I am more than confident that our Waterloo Congress will be very successful both professionally and socially. Because the Biannual Congress is the major event in the function of ISB it is important that the Congress is organized well and that it will serve as a unique forum for advancement of Biomechanics.

The Waterloo Congress will end my term of office as President of ISB. During these two years I have tried my best to reorganize the work among the Officers and Council Members with a primary objective that every member in the Executive Council does not only need to feel that he/she is important but that he/she is expected to make contributions with emphasis in a specified task area. I have been very happy to be able to work with such devoted Officers and Council Members. Much of the organizational work will still be discussed in Waterloo when the present Executive Council has its final meeting. However, I feel satisfied and hope that Benno Nigg will also have favorable winds when he takes over the command during the Banquet of the Waterloo Congress.

I want to express my sincere thanks to the entire Council and to all of you ISB members for the inspiring support which I have received during my two years as President of ISB. Our society has a good course ahead and let us all make sure that Biomechanics maintains and improves its position among other sciences.

Paavo V. Komi.



THE VOLVO AWARDS FOR LOW BACK PAIN RESEARCH

In order to encourage research in low back pain, the Volvo Company of Goteborg, Sweden, also this year has sponsored three prizes of US $ 5000.00 each. Awards will be made competitively on the basis of scientific merit in the following three areas :

1. Clinical studies
2. Bioengineering studies
3. Studies in other basic science areas

Papers submitted for the contest must contain original material, not previously published. A multiple authorship is acceptable. The manuscripts should be in the form of a complete report, not exceeding 30 pages and in a form suitable for submission to a scientific journal. Five copies of each paper submitted in full should reach the address given below not later than January 2, 1984.

One of the authors should be prepared to come to Montreal, Canada, at the time of the meeting of the International Society for the Study of the Lumbar Spine, June 3-7, 1984, to present the paper and to receive the award.

A board of referees will be chaired by the undersigned and will contain members from the fields of clinical medicine, bioengineering and biochemistry.

Please direct all correspondance to :

Professor Alf L. NACHEMSON
Dept. Orthopaedic Surgery 1
Sahlgren Hospital
S-413 45 GOTEBORG
Sweden.

IX International Congress of Biomechanics

August 7-12th, 1983
Waterloo, Ontario, Canada

The Official Congress of The International Society of Biomechanics

Conference Chairman
D.A. Winter

Vice-Chairman
K.C. Hayes
R.W. Norman
R.P. Wells

Conference Secretary
Ms. J. Karger
Department of Kinesiology
University of Waterloo
Waterloo, Ontario, Canada
N2L 3G1
(519) 885-1211, Ext. 2040

TO ALL ISB MEMBERS

Your Waterloo organizing committee has been working hard in the preparation of a balanced program. The response to our Call-for-Papers was excellent and 230 papers have been selected for presentation as keynote addresses, free communications and poster presentations. An interesting social program and tour schedule has been arranged.

Several new features have been arranged for this 9th Congress. For the first time, each author was asked to submit a two page summary along with an abstract, and this summary proved invaluable to our external review committee who completed their assessments early in April. The program has now been finalized and the schedule of sessions and social events is shown below.

NEW INVESTIGATOR'S AWARD

A second new feature of the Congress is the New Investigator's Award. About thirty papers have been entered in this competition and two awards will be made. An international committee of experts will judge these papers and presentations. The organization of this competition is being done by Arthur Chapman of Simon Fraser University and Micheline Gagnon of the University of Montreal. Each award will be $500.00 and the two donors this year are the Canadian Society for Biomechanics and Mrs. Ursula Wartenweiler, widow of Dr. Jurg Wartenweiler, our founding president. These two awards will be made during the closing banquet.

KEYNOTE LECTURES

The Wartenweiler Memorial Lecture will be given by Dr. Uros Stanic of the Jozef Stefen Institute in Ljubljana, Yugoslavia. Dr. Stanic has exploited the use of functional electrical stimulation in the rehabilitation of the handicapped and will address the opening session of the Congress on this subject.

To close off the Congress, just prior to the Closing Ceremonies, Dr. Louis Nashner will present a keynote address on the subject of motor control in posture.

SPECIAL CONGRESS SESSIONS

Several special sessions have been organized and sponsored by Canadian Research agencies. They have been integrated into the program and are a blend of keynote talks and workshop panels along with oral and poster presentations. The special sessions include: Ergonomics and Occupational Biomechanics; Orthopaedic Biomechanics: Joints, Ligaments and Prostheses; Evaluation of Sports Equipment; Assessment of Pathological Gait; and Spinal Biomechanics.

SOCIAL EVENTS AND TOURS

Social events included with the registration fee include an opening reception on Sunday, 7th August, the outdoor barbeque on Tuesday evening and the closing banquet on Friday, 12th August.

Tours during the week are planned for accompanying persons and also major tours are planned for Wednesday afternoon and evening to Niagara Falls and Toronto. The details and costs of these tours are given below and those interested should indicate their preference as soon as possible by sending their Tour Registration Form and funds to Meissner Travel Agency at the address shown.

REGISTRATION and ACCOMMODATION

Registration and accommodation fees are shown on Forms B and C. Please return them as soon as possible to the Conference Secretariat. If you wish further details regarding any aspect of the Congress, please write the Conference Secretary for a full information brochure.

Ms. J. Karger
ISB Conference Secretariat
Department of Kinesiology
University of Waterloo
Waterloo, Ontario, Canada
N2L 3G1

IX ISB CONGRESS - PROGRAM OF EVENTS

	MORNING		AFTERNOON	EVENING
SUNDAY 7 AUG			ISB COUNCIL MEETING REGISTRATION	OPENING RECEPTION
MONDAY 8 AUG	OPENING CEREMONIES	WARTENWEILER MEMORIAL LECTURE U. Stanic Ljubljana	Sports Equipment Evaluation Prosthetics & Orthotics EMG and Kinesiology	Testing & Standards for Sports Equipment LAB TOURS
TUESDAY 9 AUG	Muscle Mechanics I Biomechanics of Running Orthopaedic Biomechanics: Joints, Ligaments, Protheses Ergonomics and Occupational Biomechanics			BARBEQUE
WEDNESDAY 10 AUG	Biomechanics of the spine Biomechanics of Jumping Measurement & Processing		TOURS: Niagara Falls Toronto: CN Tower Ontario Science Centre	
THURSDAY 11 AUG	Assessment of Pathological Gait Sport Biomechanics: Throwing, Kicking, Hitting Muscle Mechanics II Cycle Ergonometry		ISB GENERAL MEETING	FREE EVENING LAB TOURS
FRIDAY 12 AUG	Biomechanics of Normal Gait Sport Biomechanics: Swimming, Gymnastics Neural Control Measurements		CLOSING ADDRESS L.Nashner Portland	CLOSING CEREMONIES BANQUET and AWARDS

FORM B – Registration

Name _____

Affiliation _____

(for name badge)

Mailing Address _____

_____

_____

Regular

Full ($230. CDN. or $195. U.S.) _____

Student ($125. CDN. or $105 U.S.) _____

Accompanying Person
($70. CDN. or $60 U.S.) _____

Name of accompanying person

_____

Total $_____

If an ISB Member insert your 1983 membership number _____ and subtract $10. (CDN. or U.S.)

Registration Total $_____

Make cheque or Bank Draft payable to:
IX Congress ISB.

If registering as a student include:
University and Department _____

_____

Signature of Department Head _____

FORM C – On-Campus Accommodation

Name _____

Mailing Address _____

_____

_____

_____ Single Adult Package(s)
($190. CDN. or $160 U.S.) _____

_____ Twin Adult Package(s)
($165. CDN. or $140 U.S. Per Person) _____

_____ Children under 12 but over 4
($85 CDN. or $72 U.S.) _____

_____ Children under 12 but over 4 sleeping on own equipment in parents room ($30 CDN. or $25 U.S.) _____

Make cheque or bank draft payable to:
IX Congress ISB

Date of arrival _____

If you have any special accommodation requirements (e.g. wheelchair) please give details: _____

_____

_____

Fees for accommodation must be received before July 1, 1983 in order for rooms to be guaranteed.

GENERAL TOURS AND ACTIVITIES

All tour buses leave from the main entrance of Village 2 (see map), but will also pick up at several of the major hotels

These tours are designed to accommodate all delegates and accompanying visitors. There are no competing Congress activities at these times.

Wednesday, August 10, 1400-2300h.

1. Toronto, visiting the CN Tower and Ontario Place plus Dinner

The CN Tower opened in June, 1976. This communications, restaurant and observation tower rises more than a third of a mile above ground to become the tallest self-supporting structure in the world. Four elevators in glass-faced shafts take sightseers to the observation deck more than 1100 feet above. Also included is a 500-seat revolving dining room, lounge, and discotheque. Shops, restaurants, boutiques and other attractions are featured. There is an upper observation platform at the 1500 foot level.

Rising out of Lake Ontario on three man-made islands, Ontario Place, this magnificent 96-acre park is a highlight of any visit to Toronto. Award winning pavilions offer exceptional film and multi-media presentations. The Forum, a superb outdoor amphitheatre has room for people to enjoy a summer of symphony, jazz, ballet and variety entertainment. Cinesphere theatre has breath-taking IMAX films on a giant screen six stories high. Ontario Place is beautifully landscaped with lakeside picnic spots, lake lagoons, canals, look-out points, and a marina for 350 boats. There is, in addition, a large children's area.

2. Toronto, visiting the CN Tower and the Ontario Science Centre plus Dinner

The Ontario Science Centre, a split level complex of three interconnected buildings situated on a valley and knoll setting was opened in 1969 as Ontario's gift to Canada on its 100th birthday. Today the Centre is known internationally as one of the foremost institutions of its kind in the world. It is a place that deals with perception, communication and in fact all of life's learning experiences in an entertaining, engrossing fashion for young and old alike. Visitors get involved with more than 1,000 exhibits, most of them workable by the visitor, in an environment of discovery and fun.

3. Tour of Niagara Falls, visiting the Falls and attractions, plus Dinner

Niagara's cataracts plunge over a nearly two hundred foot drop. A constant rainbow paints the sky above and the thundering roar of one of the great natural wonders of the world is ever present. Niagara Falls draws tourists and honeymooners by the thousands. It abounds with a tremendous range of man-made attractions including a beautiful 25 mile/40 km park system that stretches from above the Falls, downriver to scenic Niagara-on-the-Lake. Niagara Falls is equally as beautiful to view in the winter as it is in summer-time and a system of illuminations makes it a spectacular attraction every night of the year.

Thursday, August 11, 1830 - 2400h.

Stratford Festival Performance (including transportation)

Overlooking the scenic Avon River is Canada's internationally acclaimed Stratford Festival, which this year celebrates its 31st Anniversary Season. This year Shakespeare's 'Richard II' is playing on the dynamic thrust stage of the Festival Theatre and the very popular Gilbert and Sullivan 'The Mikado' is staged on the proscenium stage of the beautifully restored Avon Theatre. This package includes coach transportation and an excellent theatre seat.

TOUR REGISTRATION FORM

Name _____

Address _____

_____

_____

General Tours:

1. Toronto Visiting the CN Tower and Ontario Place Including Dinner .... Adults ____ @ $45 = $ ____ Children ____ @ $25 = $ ____ (under 12)

2. Toronto Visiting the CN Tower and the Ontario Science Centre Including Dinner ..... Adults ____ @ $45 = $ ____ Children ____ @ $25 = $ ____ (under 12)

3. Niagara Falls Including Dinner .... Adults ____ @ $30 = $ ____ Children ____ @ $18 = $ ____ (under 12)

4. Stratford Festival Performance Plus Transportation

RICHARD II ..... Adults ____ @ $30 = $ ____ Children ____ @ $15 = $ ____ (under 12)

MIKADO ..... Adults ____ @ $30 = $ ____ Children ____ @ $15 = $ ____ (Under 12)

Total $ ____
General Tours

All above prices are in Canadian Funds. Checks, etc. should be made payable to Meissner Travel.

Please Return Form to:
Meissner Travel Agency
ISB Congress
Fairview Park Mall
Kitchener, Ontario
Canada N2C 1X1

As many of the activities above involve very popular tourist attractions, they must be booked well in advance of the Congress to assure a place on the tours. Extra tickets may be available at the time of Congress Registration.

CALL FOR PAPERS

We would appreciate if I.S.B. members could participate more active in this Newsletter. Please send us material : short papers, letters to the editor, laboratory features,... etc.

SPECIAL ARTICLE

LES OBJECTIFS DE LA BIOMECANIQUE DU DU GESTE SPORTIF

MORAWSKI Janusz° et LOFI Alain°°

La biomécanique est une branche scientifique jeune dont l'objet demeure encore mal délimité. Plus qu'une science en elle-même, elle est un carrefour où se rencontrent l'anatomie, la physiologie, la physique, la métrologie, la cybernétique et l'informatique. Aussi ses définitions apparaissent elles multiples suivant l'appui fondamental qui est privilégié.

Toute définition de la biomécanique du geste sportif ne peut que paraître limitatrice. Préciser les tâches et objectifs permet de circonscrire le champ d'action nécessaire au développement d'une approche scientifique de l'activité physique et sportive.

Le mouvement du corps humain se caractérise par son opportunité, sa synchronisation, sa simplicité et son esthétique aussi bien das ses aspects "naturels" que spécifiques.

Cinq tâches majeures peuvent être dévolues à la biomécanique :
1 - la mesure du mouvement
2 - la mesure des forces
3 - l'analyse du mouvement
4 - l'évaluation de l'efficacité du mouvement
5 - la détermination des modalités de l'ajustement moteur.

La première tâche de la biomécanique consiste à mesurer le mouvement, à évaluer les déplacements, les vitesses et les accélérations. Le choix du nombre de points à analyser est déterminant : faible il engendre une représentation incomplète, important, il pose des problèmes de traitements complexes. Le choix de l'objet de la mesure demeure le problème clef de la biomécanique. Les méthodes de mesures telles que cinéma, vidéo, stroboscopie, goniométrie, cellules et barrières à infrarouges, permettent une analyse pas à pas ou par couplage avec ordinateur.

La deuxième tâche de la biomécanique est la mesure des forces internes ou externes au système étudié. L'évaluation des forces externes se fait par étude des réactions du support, soit par les plates-formes dynamométriques dites "de forces" à capteurs piezo ou tensométriques, soit par des jauges de contraintes.

La mesure des forces internes apparaît délicate. Parmi celles-ci, les forces musculaires doivent être connues pour analyser un geste.

La physiologie du muscle est un point fondamental, car le muscle "moteur" complexe n'a pas de correspondant fidèle parmi les générateurs techniques de force.

Si l'E.M.G. permet de mesurer l'activité du muscle à partir des myopotentiels, il faut tenir compte des couples antagonistes, des muscles bi ou trifonctionnels, des vitesses de contraction, et des sources bioénergétique dans son interprétation.

Pour sa troisième tâche, la biomécanique analyse le mouvement, c'est à-dire les mesures du mouvement et des forces. Celle-ci repose sur des lois physiques. L'application du deuxième principe de la dynamique $F = m\gamma$ permet par la connaissance des forces, le calcul du mouvement et inversement par la connaissance du mouvement, la représentation des forces qui créent ce mouvement. Le choix des mesures les plus accessibles, leur simplification et la planification de l'expérimentation conditionnent l'analyse biomécanique.

Pour la quatrième tâche, la biomécanique procède à l'évaluation de l'efficacité du mouvement. Les exigences des activités sportives peuvent être diverses. Elles peuvent privilégier la précision, la vitesse ou le rendement énergétique, c'est-à dire la recherche du plus grand travail extérieur au regard de la plus petite consommation d'énergie. Si l'escrime privilégie la vitesse segmentaire et la précision du geste, des disciplines comme la course de demi-fond, la natation ou l'aviron exigeront une analyse biomécanique de type énergétique.

La cinquième et dernière tâche de la biomécanique, consiste à déterminer les modalités de l'ajustement moteur. Quels sont les causes du déroulement particulier d'un mouvement et non d'un autre? Comment se réalise le dosage des forces musculaires en vue de l'exécution d'un geste? L'organisme réalise sa propre mesure du mouvement, ses capteurs intègrent son déroulement dans le temps, les positions des différents segments et les variations de tensions musculaires. Cependant, la connaissance des algorythmes de la conduite naturelle des mouvements reste succinte.

L'exemple du saut à ski est révélateur : l'extension au seuil du tremplin requiert une précision de plus ou moins 25 centimètres. La vitesse du skieur étant de 100 km/h,

ceci nécessite une précision 1/100° de seconde qui reste inférieur au temps de réaction les plus bas.

La collaboration avec le psychophysiologiste apparaît nécessaire à la connaissance des modalités de cet ajustement moteur.

L'anthropologue par la connaissance, des dimensions, des masses et des moments d'inertie du corps et des segments conditionne l'efficacité de l'équipe de recherche en biomécanique des activités physiques et sportives. Des problèmes comme l'évolution de la position du centre de gravité au cours du déroulement du mouvement ne peuvent être résolis que par approche pluri-disciplinaire.

Le stade actuel de développement de la biomécanique du geste sportif demeure celui de la recherche des principes du mouvement. La formulation des lois les plus simples, en particulier dans les situations de charge extrême de l'organisme doit requérir toute l'attention du biomécanicien. Les mesures objectives de la capacité de travail, de la vitesse, de la force, de l'endurance sont nécessaires.

L'activité sportive renferme les éléments de base d'une activité scientifique qui permettra le passage de l'analyse subjective à l'analyse objective.

Cependant grâce à l'autoévaluation le sportif est lui-même un chercheur. Son organisme représente le laboratoire le plus sophistiqué, avec des capteurs et des analyseurs d'une précision remarquable. Sa présence enrichit l'équipe de recherche en biomécanique, à laquelle il doit fondamentalement appartenir.

La biomécanique du geste sportif participera à l'objectivation et, à la généralisation des connaissances nécessaires au développement du sport, à l'optimisation de la performance tout en limitant et éliminant les dangers de la pratique.

° Institut des Sports - Varsovie.
°° Institut National des Sports et de l'Education Physique - Paris.

INSTRUCTIONS TO AUTHORS

In order to facilitate the editing of the ISB Newsletter, we would appreciate receiving any material according to the following criteria:

1° All material should be typewritten single spaced.

2° Typewrite precisely within the indicated frame.

3° The title should be written in CAPITAL LETTERS.

4° Subtitles should be written in Lowercase letters and underlined.

5° Different paragraphs should be separated by double spacing.

The enclosed frame may be used when you write your manuscript. Place the sheet with the frame behind the sheet you are writing on and make sure that you do not exceed the frame. Try to use the whole text-face. There should not be any margines inside the frame.

Thank you in advance for your cooperation.

Jan P. CLARYS
Nicole ARRAS
Fakulteit Geneeskunde & Farmacie
Experimentale Anatomie
Laarbeeklaan 103
B-1090 BRUSSELS
Belgium

P.S. The ISB Newsletter is published quarterly. Material and articles should reach us prior to February 10 for the Spring issue, May 10 for the Summer issue, August 10 for the Autumn issue and November 10 for the Winter issue.

When individual members have a change in a mailing address, it is important to send the new address to the Treasurer so that you are certain to receive copies of the Newsletter and dues notices.

ISB Treasurer :
C.A. Morehouse
109 Sports Research Bldg.
Penn State University
University Park, PA 16802
U.S.A.

Important Notice

Biomechanics of sport -
- exploring or explaining?

by James G. HAY

published in Newsletter 9 & 10 :

Footnote :

"This paper is one of several on topics relating to sports biomechanics in 'Collected papers on Sports Biomechanics' edited by Greame A. WOOD, and has been re-printed here with the author's and publisher's permission."

ELECTION ISB-COUNCIL 1983

You will receive (or you have received) instructions for the election of the ISB-COUNCIL 1983-1985.

It is important that every ISB-member participates in voting in order to obtain a competent Council that will serve its members during the next term.

As soon as you receive the ballotsheet, please return it immediately to

Dr. R.C. NELSON,
Biomechanics Laboratory
Penn State University
University Park
PA 16802
U.S.A.

Book Review

Collected papers on SPORTS BIOMECHANICS

ISBN 0 909751 80 3

Edited by Graeme A. WOOD,
University of Western Australia.

During July-August of 1981 a group of emminent sports biomechanists was invited to Australia to present a series of lectures, seminars and workshops on the application of mechanics to the study of human movement, with special emphasis on sports technique. This book contains much of the resource material upon which those addresses were based.

Contents

Biomechanics of Sport : An Overview, by James G. HAY.
The Influence of Muscle Fiber Composition on Mechanical Aspects of Muscle Function, by Paavo V. KOMI.
Genetic and Environmental Factors Influencing Physical Performance, by Paavo V. KOMI.
The Load on the Lower Extremity Sports Activities, by Benno M. NIGG.
Biomechanical Considerations in Lower Extremity Amputee Running and Sports Performance, by Doris I. MILLER.
A System for the Qualitative of Motor Skills, by James G. HAY.
An Analysis of Skill Acquisition in Swimming, by Robert E. SCHLEIHAUF, Jr.
The Morphology and Kisesiology of the Swimmer, by Jan P. CLARYS.
Swimming Propulsion : A Hydrodynamic Approach, by Robert E. SCHLEIHAUF, Jr.

Life Saving Releases : Instruction, Research and Application, by Doris I. MILLER.
Biomechanical and Morphological Aspects of Waterpolo, by Jan P. CLARYS.

Advertisements

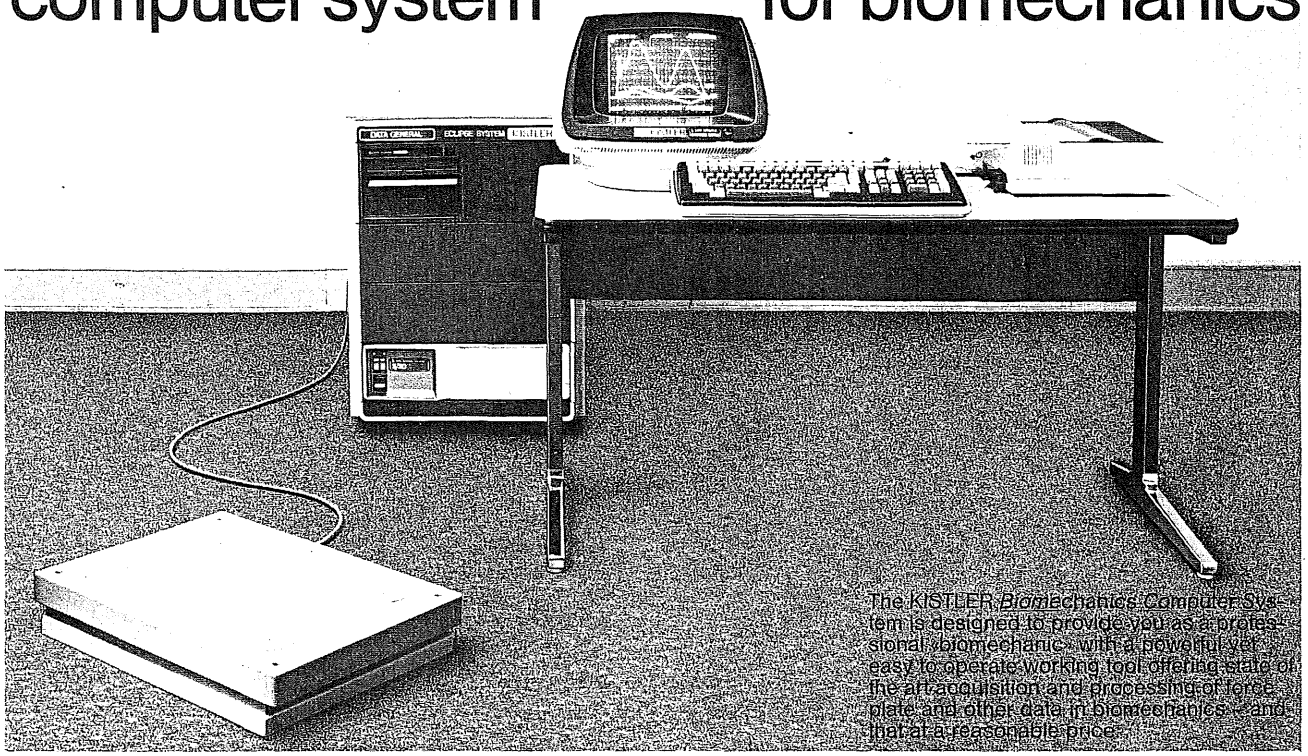
COMMERCIAL ADVERTISEMENTS

The Newsletter is open for commercial publicity at

100 US dollar per full page
50 US dollar per half page
25 US dollar per quarter page

All publicity will be advertised in the 4 issues.

KISTLER-*BiomeCoS* – a professional computer system for biomechanics



The KISTLER *Biome*chanics Computer System is designed to provide you as a professional biomechanic with a powerful yet easy to operate working tool offering state of the art acquisition and processing of force plate and other data in biomechanics – and that at a reasonable price.

Instant video monitoring no waiting for display

An automatic and instant precision video graphics display makes monitoring easy and eliminates the need for compiling unnecessary data. Real time processing and instant display allow efficient work at a speed hitherto unknown in such systems. Hardcopies and display of additional parameters as well as zooming in on details are available through single keystroke commands thus offering a comfort far beyond the capabilities of a digital storage oscilloscope.

Fast data acquisition with automatic trigger

Up to 16 000 measurement data per second can be acquired with less than 0,05% error. With one force plate this corresponds to 2000 force vectors, points of force application and torques per second. Pretriggering works from any of the 3 force components and does not require external triggering devices, a great advantage in applications such as gait analysis and sports. The system therefore offers the features of a sophisticated transient recorder as well.

Easy to operate and user friendly

No specialized computer knowledge is required to learn how to operate BiomeCoS within a few minutes. The charge amplifiers and interface electronics are completely remote controlled by the computer. Most tasks are initiated by a single keystroke. A self-explanatory query guides the user and makes setting the measurement parameters and display functions straightforward. Zero-offset correction, range selection and internal calibration are automatically performed in real time, unnoticed by the user.

Large storage capacity yet fully mobile

A rugged, sealed and field proven Winchester hard disk offers ample capacity to store and retrieve large amounts of data in seconds without annoying waiting times. Measurements can be taken in at a rapid rate by the dozens and are automatically stored in negligible time. Through a high density flexible disk drive data may be quickly transferred to and from the system. The sturdy and compact unit can easily be carried around.

Professional scientific computer system

BiomeCoS is based on the ECLIPSE S/20, the newest generation of scientific 16 bit microcomputers from Data General Corp. It is one of the fastest, most advanced and cost efficient systems available today. The 128 kilobyte memory is expandable to 2 Megabytes, the 5 Megabyte hard disk can be extended to 15 or 50 Megabytes. The floppy disk has 1,2 Megabytes, and a cartridge tape drive is available, too. Professional service for the hardware is assured by Data General's worldwide service organization. The remote controlled charge amplifiers are directly mounted in the computer housing. The KISTLER developed software is optimized in Assembler language and will continuously be upgraded.

BiomeCoS can keep pace with your future needs

The system can normally be fitted with one or two 8-channel charge amplifier units and can be used with one or several force plates. Additional data such as EMG, video data, synchronization signals and so on may be fed into the system which in turn can produce digital and analog outputs for various purposes. BiomeCoS is usually powerful enough to serve as the main computer. If need be it can readily communicate with larger units. An IEEE interface is also available as an option. The user may write his own additional programs in FORTRAN V, PASCAL or BASIC. An optional superfast hardware floating point processor may then be useful.

Over 400 KISTLER force plates are used by leading institutions in 30 countries around the world.

Please ask for detailed information.

Systems will be shown at:
IX ISB Congress Waterloo, August 1983

Piezo-Instrumentation KISTLER

Kistler Instrumente AG
Eulachstrasse 22
CH-8408 Winterthur, Switzerland
Tel (052) 83 11 11, Tx 76458, Fax (052) 25 72 00

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Congress Announcement

IX International Congress of Biomechanics

August 7-12th, 1983
Waterloo, Ontario, Canada

The Official Congress of The International Society of Biomechanics

IX Congress Waterloo
ISB 1983

SEX-ROLES AND CO-EDUCATION IN SPORT

AN INTERNATIONAL SYMPOSIUM
ORGANIZED ON THE OCCASION OF THE
50TH ANNIVERSARY OF THE
INTERNATIONAL KORFBALL FEDERATION

AMSTERDAM — THE NETHERLANDS
16-19 APRIL, 1984

INTERNATIONAL SOCIETY FOR
PROSTHETICS AND ORTHOTICS

IV WORLD CONGRESS

Imperial College, London
5th-9th September 1983

PROVISIONAL PROGRAMME

MESSAGE FROM THE SECRETARY-GENERAL

The 1983 World Congress of the International Society for Prosthetics and Orthotics is the fourth occasion on which the state of the art in prosthetics and orthotics, related surgery, and other aspects of rehabilitation engineering will be reviewed. In the Plenary Sessions a selected list of invited speakers will provide status reports on the technology and procedures associated with our areas of interest. Discussion sessions following the plenary events will permit all participants to offer comment and address themselves to problems displayed in the contributions.

As before we propose to present a series of Instructional Courses covering a wide range of subjects as shown in this provisional programme. These courses can be seen as presenting material which is up-to-date and, more important, proven in practice. Thus, those attending these courses will receive information which may be taken home and applied immediately in the treatment of their patients.

A number of concurrent sessions will take place in the afternoons of the Conference when papers selected from those submitted will be presented. Selection will be made on the basis of original content, presentation and relevance to the objectives of the Congress. To support these sessions there will be opportunities for contributors to present information in poster form. Moreover the film and videotape programme will supplement the proceedings by allowing participants to see for themselves devices, techniques and management procedures offered by a variety of disciplines and organizations. One other format for presentation of the products of research and development will be in the scientific exhibits.

A major part of the Congress will be the commercial exhibition which will provide a valuable educational experience. Again an important feature of this part of the event lies in the fact that products displayed are im-

mediately available for application in patient treatment. Much of what will be presented is already tried and tested in clinics worldwide, or has been newly produced in response to declared clinical need. In support of this commercial exhibition it is planned that all coffees, teas and refreshments as well as light lunches will be taken within the exhibition area.

You will find in this provisional programm the official call for papers, posters, scientific exhibits, films and videotapes. The instructions with regard to abstracts are detailed and intending participants are reminded that abstracts should be submitted as soon as possible and certainly not later than 28th February 1983.

Imperial College is an Institution of world renown with many features of interest to the participants and sited near the major museums of London. It is close to Hyde Park and there is a wide selection of hostels and hotels nearby. London itself is, of course, an ancient city which paradoxically has all the modern amenities. A review of the social programme contained herein will give an insight to the depth and breadth of what London and its environs has to offer the discerning participant.

George Murdoch
Secretary General.

Short Note

The "Collected Papers on SPORTS BIOMECHANICS" (see page 8), edited by Graeme A. Wood, University of Western Australia,

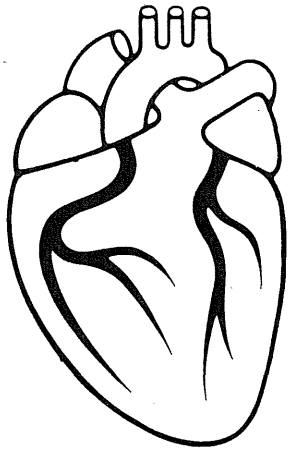
ISBN ≠ 0 909751 80 3

230 pages; 14 tables
83 illustrations

can be ordered at the Department of Human Movement Studies, University of Western Australia, Nedlands, Western Australia, 6009.

A cheque to the value of $A 15 per copy, made payable to the University of Western Australia Sports Biomech. Account ≠ 31.3295 should be enclosed with the order.

5th International Seminar on Ergometry



Announcement and call for abstracts

Main topic: Quality control and test criteria in ergometry

Speakers: U. Thadani, Oklahoma City, USA
T. Graham, Guelph/Ontario
M. Simoons, Rotterdam
J. Stegemann, Köln
H. Mellerowicz, Berlin

Time: September 29 to October 1983

Location: Titisee-Neustadt, Germany
Neues Kurhaus

Inquiries and abstracts should be addressed to
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