



International Society of Biomechanics Newsletter

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Editorial

A new year... a new color. For the new members and those that had not noticed it, both the old and new Newsletter version change color every year. This has minor functional advantages, but it is also symbolising the constant and continuous trend evolution in the Science of Biomechanics. Topics and items come and go but for Newsletter Editors one aspect never seem to change... they have a systematic need for contributions. For the coming issues we call upon you for more "special articles". "P.h.D. abstracts", "Attended Conference News", and "Laboratory Features".

We did already publish a few "Laboratory Features" in the past which gave a good inside view on the things that are happening in the different departments. Such contributions are easy to make based on the internal reports most of us have to make from time to time; but also should be considered as a functional publicity for you and your collaborators and of course for your university... take this opportunity and we all may learn from it!

Since a few years the ISB Newsletter became a regular quarterly and we would like to keep it that way.

However, we do have the "editor frustration syndrome" since we have difficulty to evaluate whether the Newsletter is used and read or just classified upon received. Apart from the ISB Council and on laboratory visitors, we have very little response from which we can deduct the functionality of the Newsletter and from which we should propulse the necessary criticism. So if you have a free moment we would greatly appreciate comments and criticism because ISB is continuously growing and we want to keep up with it.

If we don't hear from you, we do hope to meet you in Bielefeld (Swimming Conference) this summer, or in Amsterdam, Warsaw (Computer Simulation Satellite Conference) and/or Brussels (Archery - Satellite Conference) next summer.

Jan Pieter Clarys
Editor

Jan Cabri
Ass. Editor

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

NONSENSE IN BIOMECHANICS SOCIAL LIFE AT THE X. INTERNATIONAL CONGRESS OF BIOMECHANICS

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BIOMECHANICS OF ISB CONGRESS

INTRODUCTION

Recently, the past president of ISB stressed the need for more nonsense in biomechanical research (Nigg, 1985). As it is anticipated that many conservative biomechanists might hesitate to follow the new guideline, therefore some studies were designed in order to overcome this effect of inertia. This article shows by examples that the new version of biomechanical work can be applied to all fields, including interdisciplinary cooperations. Data collection was carried out during the X. International Congress of Biomechanics in Umea and during the following week.

Explanatory notes are provided at the end of each section (*****). These are for the ISB members who missed the events cited in the text or did not attend the Congress.

In his opening address, the Past President complained about the lack of general scope in today's biomechanical work. He cited issues like those of Einstein, whose work seemed like nonsense at the first glance.

SECTION 1: OCCUPATIONAL BIOMECHANICS POWER DISSIPATION IN LOAD CARRYING

It was stated by Johnson et.al. (1985) that the students' hotel could be easily reached from the railway station. A study was carried out in order to replace the expression "easily" by objective biomechanical data. Two participants of the congress (C.P. and J.Y. volunteered as subjects. They were loaded with 50 kg. each (for the Americans: 111 pound, 2 ounces) with a mass of 80x50x20 cm size (31.6"x19.8"x7.9"), to be carried along with a handle. The power was measured by a portable spiroergometer. The study resulted in 400 W and 430 W respectively, dissipated within 130 minutes. As the equivalent for the work done is only 5, the expression "easily" seems acceptable. This even holds true for the equivalent in Swedish currency: 5 SKr. (1)

In recognition of their achievement both volunteers were honoured by the "D + D-award for the greatest work performed at the congress, II". ISB members might remember that the first award was presented at the congress of Jyväskylä to a colleague from Japan for outstanding work at the tennis court during congress time.

Two Canadian Ladies placed explicit trust in the information given by the cited letter. They carried their luggage from the station to the hotel (3 km and 50 m elevation). One of the highlights of every ISB Congress is the "D + D-awards", where Dick Nelson and Dewey Morehouse caricature special occurrences during each Congress.

SECTION 2: BIOMECHANICS AND PERFORMANCE, ANTHROPOGENESIS.

BIOMECHANICS OF MOSQUITO PROTECTION

1. Empirical study

During preparation for a rift ride, the number of mosquitos placed on 1 cm² of the body surface of volunteers was measured in relation to the velocity of the subject's locomotion. The result is shown in fig. 1. It is seen that only those subjects have a chance for survival who are moving perpetually. This finding in particular explains the fact that the salesfigure of acoustic pacemakers for joggers is low in Sweden when compared to other countries. The reason therefore is obviously that the mosquito biofeedback system works more efficiently.

2. Antropogenetical considerations

Biomechanical consideration on mosquito protection is also a means for proving Darwin's hypothesis of the survival of the fittest.

3. Swedes

Swedish male are exceptionally tall. This developmental characteristic can be easily understood by the following consideration.

In general, the body shape of all human beings is considered similar (in a mathematical sense, Nigg, 1977), however, the surface of the body available for mosquitos is $\sim H^2$, where H is the body height. In contrast, the volume of the body and thus the supply of blood is $\sim H^3$. Therefore, it is obvious that taller subjects have a greater chance for survival. (The exceptional physical appearance of Swedish women is not covered by this theory).

4. Italians

Italians obviously have a disadvantage in terms of H. For compensation, they have developed an amazing technique of orally supporting their gesticulation, taking advantage of their low momentum of inertia. Considering this point of view, the crude mechanical approach of Nelson and Morehouse, 1985, has to be rejected. These authors tried to control the noise level of a conference hall by simply applying twin steel bracelets around the wrists of a prominent Italian speaker, not taking into account that basic abilities for survival were affected in this way. On the other hand it might be that these abilities are not more important today as they were in the past, because most successful persons are decorated in this way in today's Mafia society, as stated by Dal Monte (1985).

SECTION 3: BIOMECHANICS AS AN AUXILIARY SCIENCE FOR SOCIAL STUDIES SOCIOGRAM OF THE CONGRESS

1. Introduction

"Two Norwegians, two Danish and two Swedes were shipwrecked to a lonely island. When they were rescued after several years, the Norwegians were fighting, the Danish had founded a cooperative and the Swedish were waiting to be introduced" (Paul, 1985, cited without permission of the author).

2. Hypothesis

Based on this background the following hypothesis was derived: At the congress in Sweden there will be less contact between the hosts and the foreign congress members than in previous congresses.

3. Method

Oral contact was measured by ultrasound microphones, fixed to every foreign and to every Swedish congress member. Similarly, body contact between these two groups was measured by a conducting wire like in fencing. Taking into account the resistance during contact phase, textile contact and skin contact could be discriminated. For evaluation, oral contact was weighed 1x, textile contact 2x and skin contact 3x, respectively. Moreover, an additional weighting factor of 5 was applied when officials of ISB were involved.

4. Results

It turned out that the total weighed contact time in Sweden was significantly larger when compared to similar measurements conducted in the past. Such, the hypothesis could not be verified.

5. Outlook

For more convenience in developing a new hypothesis, it is suggested that in the study by Paul the string constants indicating the nationality be replaced by the string variables N 1 \$, N 2 \$, and N 3 \$. Then, the study can be easily adapted to the result of a similar German study simply assigning N 3 \$ "English."

The prime characteristics of the hosts were their cordiality and their excellent knowledge of the English language. It was learned that the second characteristics is an absolute necessity as their TV is partly in English.

The joke cited in the introduction was told by John Paul during a bus ride. The author wishes to apologize for the citation and he wants to stress that the story does not reflect John Paul's opinion in general.

During the banquet the former President of ISB officially kissed all female assistants of the organizer. The author wishes not to apologize for reporting this event, he wants to stress that this occurrence does reflect the Past President's opinion in general.

SECTION 4: BIOMECHANICS OF INJURY PREVENTION AND REHABILITATION

LOAD EXERTED IN SHOULDER TAPPING

The main topic of the final session of the Congress was the mutual shoulder tapping of all officials and organizers. In preparation of this session a study was carried out in order

to assess (a) the time needed for tapping and (b) the accumulated load on the shoulders of the persons involved.

It is known from basic statistics, the total number of tapping actions is n^2 which amounts to 1600 actions for 40 participants. If the time needed for one action is considered to be 30 seconds, the total time needed is 13 h 20'.

If a peak force of 300 N is exerted in one tapping action, and if the accumulation theory for weight lifting (e.g. 10 tons per training unit) is accepted, the load per shoulder amounts to 12 kN (= 1.2 tons). A model of the shoulder girdle was developed to which this load was applied. It turned out that the height of the loaded shoulder was irreversibly reduced by 7 cm. As the officials felt that persons afflicted with this laterality would be unsuitable for purposes of representation, they decided that the number of tapings had to be reduced.

As a first step the tapping of someone's own shoulder was omitted. When it turned out that this involved only a marginal reduction, the total number was reduced to 200 and the participants were appointed randomly.

At the banquet the organizers and officials of ISB thanked each other for outstanding work. The author wishes to apologize for Section 4, he wants to stress that Section 4 does not reflect his opinion in general. In contrast he wishes to acknowledge the fact that biomechanics has a lively international organization, though biomechanics is a very small scientific discipline compared to some others which have not attained this high level of organization. The existence of ISB facilitates work in biomechanics significantly.

SECTION 5: BIOMECHANICS AS AUXILIARY SCIENCE IN LINGUISTICS

ON THE FREQUENCY OF SWEDISH WORDS

1. Introduction

Numerous contributions which appeared in semiscientific journals during the prohibition time in Sweden state that "Skal" is the word most often used in Swedish language. Now, the law-prohibition has been replaced by a tax- and sales-prohibition. So, the question arises if this had an influence on the terminology of drinking.

2. Methods

Data were collected on June 22, 1985 at the entrance of five shops and kiosks, respectively, in a small Swedish town. The typical process would be the following one. A car stops at the front of the shop. Someone leaves the car and approaches the door expectantly and relaxed. There he is reflected (2), he stands quiet for about ten seconds, while his face turns angry. Then he returns to the car where a ä-, ö-, a-based conversation of about 5 minutes is carried out. This was filmed with a Locam camera at 500 fps. A total of 50 variables to the movement of the lips were evaluated, speaking actions with similar parameter combinations were collected into classes, the signals of every class were averaged (3). For acoustic output, the averaged signal was fed to a rigid body/wobbling mass model of the human mouth which had been developed by H. Woltering and K. Gruber (4) for the Vicon company on a "you are welcome to do so"-bases. (Macleod, 1985)

3. Results

It was noted that the word "stängt" was used most often by far. The word "midsommer" was found on the second place. The word "skal" was used only one time, apparently

in an ironical meaning. In this way, a great influence of administrative actions to language could be proved.

Congress time was followed by the midsummer weekend. All shops and even nearly all hotels and restaurants were closed ("stängt") which created some problems for travellers. It was amazing that many of the Swedes had no knowledge of these closings.

One of the social activities was a "sour herring party", where "sour" means "fermented". The smell of this restrained some participants from approaching even as close as 10 m. One of them commented: "Every nation has its specific kind of humor. The English have the black one."

During the discussion of A. Macleod's paper, H. Woltering proposed a complex model for the movement of markers on the body surface as a small addition to the study. Mrs. Macleod's comment: "You are welcome to do so."

ACKNOWLEDGEMENT

The author wishes to acknowledge everyone who contributed to this article. These contributions and the manner they were presented in recent years, when added to the conventional work, make the congresses of ISB really outstanding events.

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FOOTNOTES

- (1) For conversion the equivalent 1 Dollar = 100 SKr was used which is the mean of the individual experience of the participants of the congress
- (2) The reflexion model can be widely used in human movement studies. The reflector may be mechanical (as here), biological (e.g. body check) or chemical (e.g. sour herring party)
- (3) The less complex method of using a taperecorder was rejected as it does not comply to high standard of research, as demanded by the past president of ISB (Nigg, 1985)
- (4) The wobbling mass model was originally developed by K. Gruber et.al. (1985), with emphasis on the lower extremities. Then the area of application was extended because it was felt that the model is much more suitable for other regions.

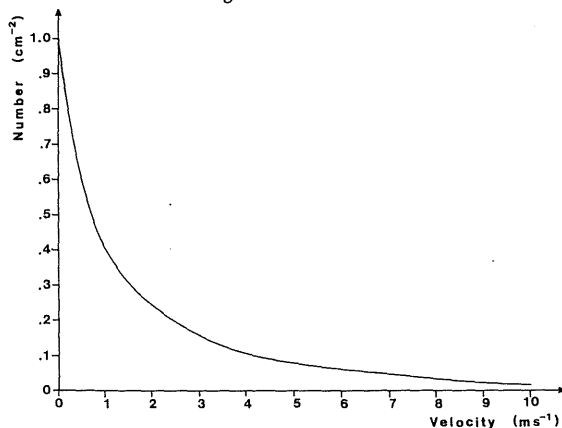


Fig. 1 Number of mosquitos per cm² of body surface in relation to the subject's velocity

Membership news

MINUTES OF THE I.S.B. EXECUTIVE COUNCIL MEETING,

UMEÅ, SWEDEN, JUNE 19th 1985

Present: V. Balsevich, D. Chaffin, J. Clarys, J. Hay (Chairman), B. Jonsson, B. Nigg, R. Norman, C. Morehouse, J. Paul, E. Schneider, G. Wood.

Apologies: M. Miyashita, D. Grieve, A. Capozzo, R. Huiskes.

1. BUSINESS

The Chairman extended his personal congratulations to J. Paul for his election to the position of President-elect, and to all Council members for their successful election/re-election to Council.

2. APPOINTED OFFICERS

The President informed Council that C. Morehouse and J. Clarys would continue in their respective capacities as Treasurer and Newsletter Editor. The position of Secretary General vacated by B. Jonsson was to be filled in the future. Expressions of appreciation for B. Jonsson's contribution to the society as S.G. were voiced with acclamation.

3. COMMITTEE ASSIGNMENTS

Council members were informed that they would be assigned to particular sub-committee(s) through which they will best be able to serve the activities of I.S.B. during their term of office. Details of these sub-committees were given as follows:

- (i) **Constitution and Operating Codes** (C. Morehouse, Chairman) to effect approved changes to constitution; to draft amendments (not a policy making group); to complete documentation of office bearers' job descriptions.
- (ii) **Terms of Office** (J. Paul, Chairman) - to examine efficiency of current two year (minimum) term of office; to examine conditions of appointment of I.S.B. members to other committees (e.g. appointments to the Working Group on Sports Biomechanics).
- (iii) **Honorary and Life Membership** - to establish criteria for nomination/election (as has been done for collective membership). Jonsson and Clarys to provide current list of recipients.
- (iv) **New Investigator Award** - to evaluate current practices and problems; to establish criteria for nomination/selection.
- (v) **Proceedings** (R. Norman, Chairman) - to seek ways of overcoming current problems regarding publication delays and financial/editorial burden for Congress organisers. Congress '87 organisers to be kept informed of decisions.
- (vi) **Recruitment** - to examine ways of expanding the ranks of I.S.B. Two mechanisms currently proving effective are personal contacts and affiliate memberships.
- (vii) **Standards and Terminology** (G. Wood, Chairman) - to continue preparation of materials for early publication through the Newsletter.
- (viii) **New Projects** - to seek new ways of promoting Biomechanics given the healthy financial situation of I.S.B.
- (ix) **Publications** - to examine possibilities of I.S.B. publishing documents, e.g. standard and terminology material, brochure on "What Is Biomechanics?".

- (x) **Other** - No other areas of special activity were identified. In response to a question on committee's power to co-opt, the President encouraged members to do this, but to keep the executive informed of people's involvement.

4. REPORT ON 10th CONGRESS

Bengt Jonsson spoke of the delicate financial balance he had to achieve in organising the Congress. The necessary sale of 350 copies of the Proceedings was now assured through over 400 registrations, a very small number of which (10-20) were not for the full 5 days. The publication of a Proceedings was the major financial commitment, and this had in part been eased by good financial support from sponsors, and valuable assistance in other areas by the National Board of Occupational Safety and Health. It was agreed that much helpful advice was available from past Congress organisers, and that this should be recorded in a permanent form for use by future organisers.

5. NEXT MEETING OF COUNCIL

Several options were considered for the location of the 1986 Council meeting, each being the site of a scientific conference. After some discussion the meeting place of the combined ASB/CSB (Montreal, August 25-28, 1986) and that of the ESB (West Berlin, September 7-10, 1986) were identified as the most popular choices. No final decision was made.

6. Report on Preparations for the '5th International Symposium of Biomechanics and Medicine in Swimming', Bielefeld, July 27-31, 1986.

Dr. Bodo Ungerechts, invited to the meeting for this item, reported that he had already received 75 replies from other countries to his first announcement and was confident that the financial break-even number of 125 would be attained. A detailed budget was presented to Council together with a preliminary program. Dr. Ungerechts was congratulated by Council on the thoroughness of his preparations and wished every success for the Symposium.

7. REIMBURSEMENT OF COUNCIL EXPENSES

J. Paul presented a case for Council members' out-of-pocket expenses being met by I.S.B. given the current strong financial position of the society and the acceptance of this practice in other societies.

Some members expressed their preference that I.S.B. not put itself in this compromising situation, at least not without the formal support of the membership. The matter was left in abeyance.

8. OTHER BUSINESS

J. Clarys requested that minutes of both Council meetings held in Umeå and those of the General Assembly, be forwarded to him for publication in the Winter issue of the Newsletter.

Further, it was requested that an editorial on new and departing Council members be prepared for publication in the next Newsletter.

Finally, in regard to I.S.B.'s sponsorship of a brochure to be prepared by the Working Group of Biomechanics of Sports, it was agreed that the three Presidents should be consulted on the nature of the documents to be published.

GRAEME A. WOOD
(Minutes Secretary)

INTERNATIONAL SOCIETY OF BIOMECHANICS

Membership Report

(August, 1983 to June, 1985)

As of June 1, 1985, there were 584 active members in ISB. This represents a net gain of 129 members over the last three years. The breakdown of this steady growth on an annual basis is indicated below.

Period	New Members Accepted	Members on Inactive Status	Net Gain
1 January to 31 December, 1983	103	4	+ 99
1 January to 31 December, 1984	34	32	+ 2
1 January to 1 June, 1985	30	2	+ 28
TOTALS	167	38	+ 129

The 167 individuals who have become new members of ISB during the period 1 January, 1983 to 1 June, 1985 are from 25 different countries. A listing of the countries represented by these new members and the number from each country are as follows:

Australia	8	Italy	4
Belgium	3	Japan	20
Brazil	1	Jordan	1
Canada	32	Korea	1
China, Peoples Republic	2	Netherlands	1
China, Taiwan	1	New Zealand	1
Czechoslovakia	2	Poland	2
Egypt	2	Scotland	2
England	6	Spain	1
Finland	3	Sweden	12
Germany, Federal Republic	8	Switzerland	3
		United States	50
		Yugoslavia	1

Collective Members

1. Dr. J. Valente
President, Czechoslovak National Committee on Biomechanics
Czechoslovak Academy of Sciences
Vysehradská 49
128 00 Praha 2
CZECHOSLOVAKIA
2. Societe de Biomechanique
Attention: J.P. Renaudeau
LMEF - Bat. 502
Campus Universitaire
91404 Orsay Cedex
FRANCE
3. USSR Soviet Sports Committee
Nab 8
119270 Moscow Luzhnetskia
USSR
4. Korean Society of Biomechanics
Attention: Dr. Keung Seh Lee, President
Dept. of Physical Education
Seoul National University
San 15, Shinrim-Dong, Kwanak-Ku
Seoul 15
KOREA
5. China Sports Biomechanics Association
Attention: Dr. Huang Zongcheng, President
Tennis Association of the People's Republic of China
9Tiyujuan Road
Peking
PEOPLE'S REPUBLIC OF CHINA

Former collective member but is delinquent in collective dues.

Canadian Society for Biomechanics
Dr. Art Quanbury, President
Rehabilitation Centre for Children
633 Wellington Crescent
Winnipeg, Manitoba R3M OA8
CANADA

NEW MEMBER LIST FOR ISB:

- STOKES, VIRGIL P. n° 862
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S-11433 Stockholm
SWEDEN
- ODDSSON, LARS I. n° 863
Dept. of Physiology III
Ki Lidingovagen
S-11433 Stockholm
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- D'ANGELO, MARIO DONATO n° 864
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St. Albert, Alberta,
CANADA T8N 0H6
- HIRATA, TOSHIHIKO n° 871
Tsushima-Kuwanoki-4-4-F-302
Okayama
JAPAN
- KOBAYASHI, MASUO n° 872
470-32, Okuda,
Mihama-Cho,
Chita-Gun, Aichii,
JAPAN

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The EDG System provides an optional Calibration Module to ensure linear test results and a higher degree of accuracy.

The Calibration Module provides the EDG System 1184 with a higher level of inter-test and intra-test accuracy. Each time a test procedure is run, the Calibration Module initiates a sensor "zeroing" or calibration curve for that particular set of sensors and test.



The basic Electrodynogram System is priced as low as \$9500.

For as little as \$9500 you'll get the hardware and software you need to obtain gait-related force/time data *in situ* when used in conjunction with your computer.

This special offer includes:

- Your choice of either the General Ambulation (2A) or Sport Activity (2S) software.
- The Model 2A or 2S Force Data Collector and Remote Activator. (If you order them at the same time, you'll get both the 2A and the 2S software and Force Data Collectors for an additional \$2,000. That's a savings of \$2,000 off the \$4,000 price of adding either package at a later date.)
- One set of Ankle-to-Waist Cable Assemblies with Permanent Sensors.
- One box of either 2A or 2S Disposable Sensors (12 subject tests).
- The optional Calibration Module and software are available at an additional cost.
- To support your EDG 1184, Langer has a technical staff available for consultation.

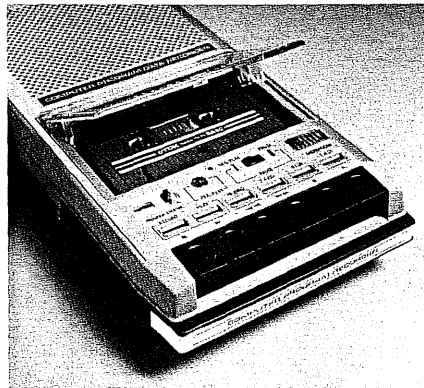
If you don't have access to an EDG-compatible computer, Langer is offering the EDG System plus an IBM PC or PC/XT for a special low price.



Force Data Collectors:

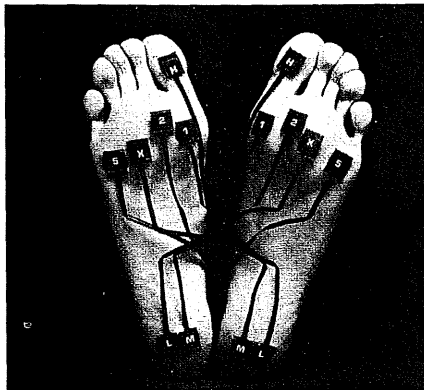
MODEL 2A—Used for general ambulation testing of cadences between 90 and 120 steps per minute. Acquires individual sensor data at 10 millisecond scan rate.

MODEL 2S—Used for tests during running or other sport activities. Acquires individual sensor data at 5 millisecond scan rate.



Multi-test capacity at satellite locations.

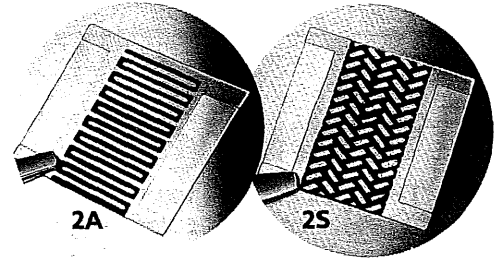
The EDG System 1184 Multi-Test Recorder for recording test data at remote or satellite locations. The stored data can later be transferred to the main computer console for analysis.



Patented Disposable Force Sensors* measure segmental and sequential forces.

Disposable Force Sensors (pressure transducers) are quickly and easily applied to measure forces at predetermined key segmental locations on the plantar aspect of the subject's feet. Additional sensors may be placed on any desired location.

*The Force Sensor is patented. Registered U.S. Pat. No. 4,426,884.



Disposable Sensors for general ambulation and sport activities.

The EDG System 1184 utilizes thin, comfortable, Disposable Sensors that are available in two designs and force range formats: 2A to record ambulatory forces and 2S for the higher forces normally associated with sport activities.

Force data collection—indoors or out.

With the lightweight EDG System 1184 Force Data Collector, the subject is independent of any connections to stationary instruments and can move naturally. Remote radio activation permits testing at the specific desired moment in the subject's activity without influencing the subject's gait.

The Electrodynamogram System 1184

General Specifications:

Disposable Flexible Force Sensors:

- 2A—General ambulation
- 2S—Sport activity

Thickness: .004 inch

Sensor Force Range:

The Disposable Sensors measure forces between .1 kg/cm² and 8 kg/cm².

Permanent Force Sensor Lead:

Thickness: .0114 inch

Force Data Collector:

Scan Rate: 2A— 10 milliseconds
2S—5 milliseconds

Dimensions: 6½" deep x 1½" high x 7¼" wide

Weight: 13 ounces

Operates from 2 internal 9 volt batteries.

Approvals: UL, UL544, FCC Class A, CSA and VDE

Additional technical specifications available upon request.

The EDG in use.

"Our pilot experiences in using the Langer Electrodynogram for Olympic sports has indicated to us that it has great potential for providing meaningful information in sports analysis."

CHARLES DILLMAN, Ph.D.
Director of Sports Science Programs
United States Olympic Committee

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STEVEN GASKILL
Sportmedicine/Coaches Education Director
U.S. Ski Team-Nordic Dept.

"It would appear that the EDG recording system does provide valuable information on selected aspects of dynamic foot function..."

BARRY T. BATES, Ph.D.,
Director, Biomechanics/Sports Medicine
Laboratory, University of Oregon

"THE EVALUATION OF FOOT FUNCTION
USING TWO MEASUREMENT SYSTEMS"

PRESENTED AT
HUMAN LOCOMOTION III

THE THIRD ANNUAL CONFERENCE OF THE
CANADIAN SOCIETY FOR BIOMECHANICS
AUGUST, 1984.

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Langer/Australian Podiatry Services
27 Clovelly Road
North Randwick N.S.W. 2031, Australia
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Telex: 790-20149 AUSTAS

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SHORT NOTE

In the article of Mr J.W. Wielogorski entitled "Development and Testing of a Clinical Capillary Blood Viscometer, published in Biomechanics VII-A" proceedings on pages 544-547 the name of E.W. Abel was omitted. Mr Abel the previous M. Sc. student of J.W. Wielogorski developed and patented a viscometer in 1976.

The announcement on this matter was published in the Journal of Medical Engng. and Technology, 1977, pp. 42-44 under the title E.W. Abel and J.W. Wielogorski "A Clinical Capillary Blood Viscometer". The Editors of "Biomechanics VII-A" proceedings are sorry for the mistake.

Prof. A. Morecki

Free Publicity

TENTH ANNUAL CONFERENCE OF THE AMERICAN SOCIETY OF BIOMECHANICS AND THE FOURTH CONFERENCE OF THE CANADIAN SOCIETY OF BIOMECHANICS.

Short notice for announcements and call for papers

The North American Congress on Biomechanics combined with the Tenth Annual Conference of the American Society of Biomechanics and the Fourth Biannual Conference of the Canadian Society for Biomechanics, will be held August 25, 26 and 27, 1986 in Le Grand Hôtel, Montreal, Quebec, Canada. The activities of the congress will be distributed into two programs: one about the various aspects of biomechanics such as solid and fluid biomechanics, ergonomics, and sports, and the other on human locomotion in all its aspects. Conference information and call for papers are available from NACOB, Congress secretariat, Department of Physical Education, University of Montreal, P.O. Box 6128, Succ. "A", Montreal, Quebec H3C 3J7, Canada. Phone number: (514) 343-7934.

Complete announcements and call for papers

The North American Congress on Biomechanics combined with the Tenth Annual Conference of the American Society of Biomechanics and the Fourth Biannual Conference of the Canadian Society for Biomechanics will be held August 25, 26, 27 1986 in Le Grand Hôtel, Montreal, Quebec, Canada.

Conference Information

In addition to the normal free communications and poster presentations, there will be keynote speakers on selected

topics. The activities of the congress will be distributed into two programs: the one about the various aspects of biomechanics such as solid and fluid biomechanics, ergonomics, sports; the other on the special theme of human locomotion in all its aspects, over the ground, through the air, and through the water. Two awards will be granted by both the American and the Canadian Societies.

Borelli Award

The American Society of Biomechanics invites submissions for this award for an outstanding original, unpublished research paper or series of published research papers on a single topic or theme in the area of biomechanics.

New Investigator's Award

The Canadian Society of Biomechanics invites submissions for this award for an outstanding original and unpublished research paper on one of the following areas of biomechanics related to human locomotion: kinematics and kinetics; muscle mechanics; instrumentation and technological development; modelling. The candidates must be less than 35 years of age.

Languages

The official languages of the Congress are French and English. No simultaneous translation service will be available.

Deadline

Submission of manuscripts: March 15, 1986. Notification of authors: June 1, 1986.

Inquiries

NACOB, Congress secretariat, Department of Physical Education, University of Montreal, P.O. Box 6128, Succ. "A", Montreal, Quebec H3C 3J7, Canada. Phone number: (514) 343-7934.

FIRST WORLD CONGRESS OF "SCIENCE AND FOOTBALL"

To be held at Liverpool Polytechnic, Liverpool, England, April 13-17, 1987.

This is the First World Congress of Science and Football ~~and is being~~ held under the aegis of the World Commission of Sport Biomechanics (WCSB) of the International Council of Sport, Science and Physical Education (ICSSPE) and the International Society of Biomechanics (ISB). The brief of ~~the~~ Congress is to bring those scientists whose research work is related to the various codes of football, and practitioners of football together. The broad aim is to help bridge the gap between research and practice so that scientific knowledge about football is communicated and applied. The theme of football covers all codes including soccer, rugby football union, rugby football league, American football, Australian rules football, Gaelic football and national variations of these games.

The Congress will provide a forum for the debate of scientific research, principles and practice applied to the various

forms of football played throughout the world. An important aspect of the conference ~~is~~ the forging of links between sports scientists, medical and paramedical practitioners, coaches and players. To this end the programme will include sessions not only on original scientific work but also seminars on key issues in the sport, and practical demonstrations of current practices in playing, training and rehabilitation.

CONGRESS ORGANISERS

Dr Thomas Reilly

Dr Adrian Lees

CONGRESS ADDRESS

Secretariat, World Congress of Science and Football

Department of Sport and Recreation Studies

Liverpool Polytechnic, Byrom Street, Liverpool, L3 3AF, ENGLAND

Calendar of scientific events

1986

June 16 - 21, 1986

Formia, Italy. "Biomechanics of Human Movement - Applications to Ergonomics, Sports and Rehabilitation" - Scuola Nazionale di Atletica Leggera.

June 25 - 27, 1986

Kuopio, Finland, "Articular cartilage and other joint structures in relation to loading and movement" - XVth Symposium of ESOA.

July 18 - 23, 1986

Glasgow, Scotland, "Conference '86: The VIIIth Commonwealth and International Conference on Sport, Physical Education, Dance, Recreation and Health" (c/o Mr. B. Wright, Conference '86 Director, Jordanhill College of Education, Southbrae Drive, Glasgow G13 1PP, Scotland)

July 27 - 31, 1986

Bielefeld, FRG, "Vth Int. Symposium on Biomechanics in Swimming" c/o Dr. Bodo Ungerechts, Univ. Bielefeld, Abt. Sportwissenschaft, Postfach 8640, D-4800 Bielefeld 1, FRG)

July 30 - Aug. 2, 1986

Cuneo Italy, ICHPER Europe Congress (Unione Nazionale Chinesiologi, c/o Centro Attivita Motorie, Via Colvera 8, 33170 Pordenone, Italy)

August 22 - 26, 1986

Heidelberg, FRG, AIESEP World Convention "The Physical Education Teacher and Coach today" (c/o Prof. H. Rieder, Inst. f. Sport und Sportwissenschaft, Im Neuenheimer Feld 710, 69 Heidelberg, FRG)

August 25-26-27, 1986

Montréal, Québec, Canada. Le grant Hôtel. "North American Congress on Biomechanics".

September 1-5, 1986

Wingate, Israel, "Outdoor Education & Recreation: Sport & Tourism", Seminar. (c/o Wingate Inst. of Phys. Educ. & Sport, Wingate Post Office, Israel)

September 8 - 10, 1986

Berlin (West), Germany, Fifth Meeting of the European Society of Biomechanics.

September 15 - 17, 1986

Istituto Rizzoli - Bologna, Italy, European Conference on Biomaterials.

September 16-18, 1986

Seoul, Korea, 1986 Asian Games Scientific Congress. Theme: "Better Life through Sports". (c/o Dr. Keung Seh-Lee, Director, Org. Comm. of the 1988 Olympic Scientific Congress, Korea Sports Sc. Inst., C.P.O. Box, 1106 Seoul, Korea).

September 22 - 26, 1986

Brisbane, Australia, XXIIIrd FIMS World Congress of Sports Medicine (c/o Organizing Committee, XXIII FIMS World Congress, P.O. Box 439, Fortitude Valley, Queensland, 4064, Australia)

October 3-6, 1986

Athens, Greece, "Third Intern. Course on Physiological Chemistry of Exercise and Training" (c/o Dr. J. Poortmans, ULB, ISEPK, Chimie Physiologique, 28 Av. Paul Héger, B-1050 Bruxelles, Belgique).

November 24-27, 1986

Université Libre de Bruxelles, Brussels, "Adapted physical activity for disabled persons".

1987

September 28 - October 2, 1987

Athens, Greece, "Int. Seminar on Ergometry" (c/o Prof. Dr. V. Klissouras, Univ. of Athens, Dept. of Phys. Educ. & Sport Science, 41 Olgas Street, Dafne 17237, Athens, Greece)

July 6 - 10, 1987

International Seminar on Archery, Vrije Universiteit Brussel - Experimental Anatomy; Under the auspices of Olympic Solidarity and World Commission for Sports Biomechanics of Sport (ISB-ICSSPE), Brussels, Information: Prof. Dr. J.P. Clarys, Belgium

June 29 - July 3, 1987

Xth International Congress of Biomechanics, Vrije Universiteit Amsterdam, Amsterdam, the Netherlands.

1988

September 11-15, 1988

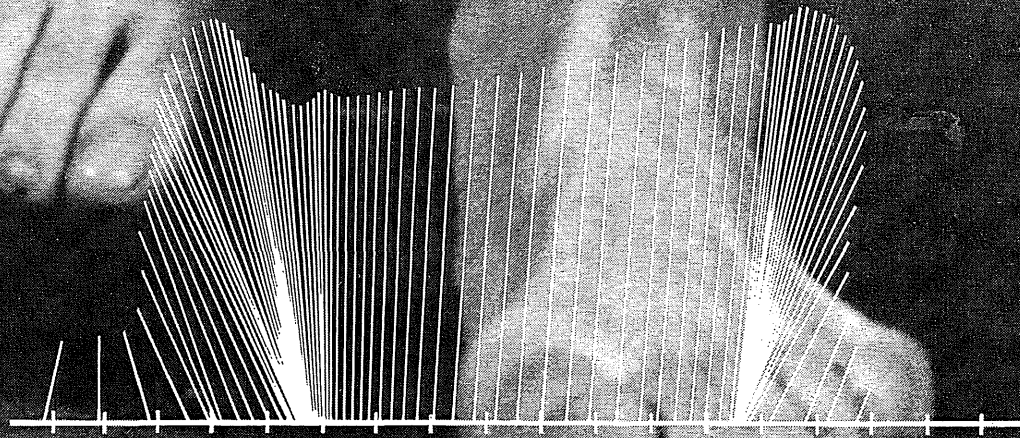
Seoul, Korea, "1988 Olympic Scientific Congress" Theme: "Human Movement Science Toward 2000" (c/o Dr. Keung Seh-Lee, Director, Org. Comm. of the 1988 Olympic Scientific Congress, Korea Sports Science Inst., C.P.O. Box, 1106 Seoul, Korea).

SIX PHASES OF A PROJECT

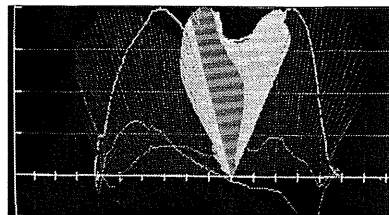
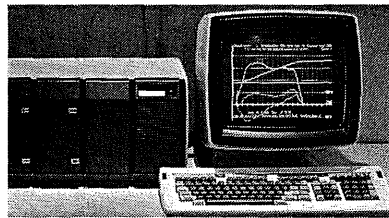
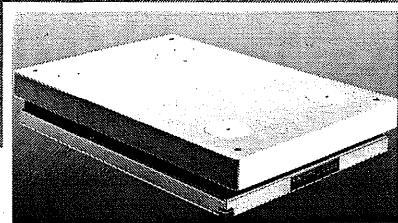
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