International Society of Biomechanics Newsletter

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PROMISING SCIENTIST GRANT

RULES

Preamble: Encouragement to persons possessing inquisitive minds, a sound and fundamental grasp of basic biomechanics, and promise of future significant contributions to the body of knowledge is offered by the International Society of Biomechanics (ISB) through financial support in the form of a scholarship grant.

Art. 1 The amount of the grant is 1500 US dollars. One grant is awarded each year.

Art. 2 Grants are awarded on the understanding that the grantee will spend a minimum of four months in a recognized biomechanics laboratory, in a continent other than the one were the grantee usually works, with the aim of carrying out a research project.

Art. 3 Eligibility: persons under 30 years of age, enrolled in an accreditated Ph. D. or other training programme in biomechanics; both the candidates and his academic advisor must be ISB members.

Art. 4 Applicants should forward their request for a grant to the ISB President. All applications must be submitted on the form shown in the ISB Newsletter. The application form should be accompanied by the following documents: a) letter of presentation from the candidate's academic advisor, b) at least one letter of support from a senior scientist in biomechanics working in a different Institution from the applicant who has personal knowledge of his capabilities, c) curriculum vitae and list of publications, d) copies of a maximum of five relevant publications, e) detailed research programme and justification for visiting the laboratory abroad, f) letter of acceptance of the host Institution indicating that they are aware of the candidate's research programme and that they have the required research facilities, g) estimated budget.
Five copies of the above material should be submitted.

Art. 5 Selection process and deadlines.

a. Grant applications must be submitted to the Society President by March 1 of each year.
b. The President appoints a board of judges comprising five Council Members — selected to avoid potential conflicts — and sends them the applications and relative enclosures by April 1.
c. Each judge will review the applications and make a grading list of the candidates and send it to the President by May 15.
d. The President will make the final grading by averaging the rank position of each candidature. If more than one candidate has the same rank the President will make the final decision.
e. The President will make a report of the outcome of the selection process and circulate it to all Council Members by June 1.
f. Council Members have the right to object to the President's report, however with no veto capacity, before June 28. The President may, at his discretion, accept the objection and reconsider the grading list.
g. The President sends a copy of the grading list to the candidates by July 1.
h. The winner must accept the grant by formal letter to the President by August 1. Should this not occur the second will be considered to be the winner and so on down in the grading list.
i. The grantee will start his visit to the foreign laboratory between September 1 of the year of award and September 1 of the following year. The visit will be of not less than 4 months duration and not more than 12 months.

Art. 6 It is a condition of the grant that a typed report of the grant activities is to be filed with the ISB Council no later than three months following the grant expiration date. The report will be published in the Newsletter. The grantee will be given the opportunity to present his/her work at a special session at the following ISB Congress.

USTA ANNOUNCES RESEARCH GRANTS AVAILABLE

PRINCETON, NJ — To help individuals currently involved in or interested in pursuing tennis research, the United States Tennis Association is pleased to announce the availability of Research Grants.

'The purpose of these grants is to encourage people who are independently, or in conjunction with academic institutions, exploring information that is related to the teaching or playing of tennis,' said Paul Roetert, coordinator of research, who is heading up the grant program. 'Our primary interest is in original research that is being done with tennis players and will benefit the tennis playing public at large,' he added.

For 1988, the USTA has set aside $10,000 in grant money. In most cases, awards will range from $250 to $750. Research can be done on any number of topics. During 1987, 15 grants were awarded, covering the sociopsychological, as well as the biophysical aspects of tennis, including equipment, survey and performance studies. The results can be presented in the form of a report, thesis paper or project summary. Information gained from these efforts will be widely disseminated by the USTA to all tennis players and coaches to contribute to the enchancement of the game.

Interested individuals should write for an application form to Paul Roetert, USTA, 707 Alexander Road, Princeton, NJ 08540.

Contact: Lisa Dampf
USTA Center for Education and Recreational Tennis, 729 Alexander Road, Princeton, NJ 08540, (609) 452-2580.

Congress Guidelines

1. INTRODUCTION

Motivation

The formulation of these guidelines has been motivated by a number of factors:

- Every organizer who is going through the process of conducting a larger international conference is experiencing similar (positive and negative) experiences. Very little of this experience is passed along to the next organizer.
- The organizers of an international congress are very often individuals experienced in conducting high caliber research, but normally not trained for an undertaking of this kind.
- Chances are high, that due to unforeseen circumstances a considerable number of last minute actions will be performed. The quality of the actions taken under those circumstances might be lower than desirable.
- Errors committed during previous meetings should not be repeated.
- It is desired by the executive council of the ISB, that all the future meetings have an equally high standard as well as — to a certain degree — uniformity, but without restricting the creativity of the organizers.

Purpose and Goal

The purpose of these guidelines is to give to the new organizer of an international congress a flexible planning tool, to provide examples of previous conferences, to raise awareness of possible problems as early as possible, to communicate ideas and experiences of precessors, and to thereby decrease stress as much as possible as well as to increase the joy and benefit for the organizer and the participants alike.

The goal of this pamphlet then is to provide an organizer with complete guidelines and other helpful organizational means like time tables, check lists etc. for the organization of a meeting. The information should be presented in an attractive way and should always contain up to date information of the last conferences performed.

Format

This guide is organized in chapters, covering the main aspects to be considered for an international conference. The order of the chapters follows the flow of events and provides a step by step guide through the actions. It contains a number of timetables, check lists and lists of critical issues to be adressed and solved as early as possible. An index as well as a table of contents should make the use of this guide as easy as possible. In the appendix, the material of previous conferences is collected in a standard format. After each congress, this appendix should grow by an additional chapter.

Literature

There is not much specific literature available covering the topic of this guide. In addition, the new burden placed on the shoulders of the organizer usually prevents him from performing an extensive study of the appropriate literature. This is also one of the reasons, why this guide follows more of a telegram-like style. A copy of a useful document by M.L. Ward (The organization of international conferences, Technical paper n° 346, National Research Council of Canada, Division of Building Research, Ottawa, 1971) may be obtained from the committee.

2. NEW SITE PROPOSALS

Guidelines

The guidelines as given by the Executive Council of the ISB should be studied carefully, in order to make an estimate of the effort associated with the conduction of such a meeting. A decision to apply should be based on sound estimations of work load, finances and personnel available.

Authorities

The local political and institutional authorities should be contacted with respect to support before any binding decision is taken.

Information

The following points must be investigated before any decision can be taken (based on an estimate of the number of participants to be expected and possible calendar dates):

- Availability and location of congress facilities
- Availability and location of hotel rooms
- Availability and location of restaurants
- Financial situation (deficit guarantee, sponsors)

Proposal

The proposal should be written in the format requested by the Executive Council of the ISB (contained herein?).
As much additional information as possible should be added (street plans, maps of conference site and lecture halls etc.).
Timely submission is most important.

3. IMITATION

Organizing Committee

One of the first actions is to set up the organizing committee and to assign the different tasks (secretary, treasurer, exhibition, programme, proceedings, social programme). The routes of communication between the members of the organizing committee should be planned, meetings scheduled.

Local arrangements

It is also urgent, to make early reservations of facilities (including lecture halls, poster and exhibition rooms, slide ready room, registration, information and travel agent's booths), housing (on campus and/or hotels of different categories), audiovisual equipment (slide, movie and video projectors, overhead projectors, microphones).

4. PREPARATION

Time planning

It is probably one of the most crucial things to have and periodically check on the time schedule. In these guidelines, schedules are presented in negative time units, with zero being the day when the conference starts. They may in the specific situation be adapted with 'absolute' dates.
A number of schedules are necessary:

Schedule of Deadlines:

— Submission of abstracts	- 5 mth
— Notification of acceptance	- 3 mth
— Early registration	- 5 mth
— Registration (fee received)	- 1 mth
— Submission of manuscripts	- 3 wks

Schedule of Actions:

— Invitation to keynote speakers	- 1 yr
— Invitation to opening ceremony dignitaries	- 1 yr
— Invitation to session chairperson	- 1 yr
— Setting up of advisory board	- 1 yr
— Printing of stationary	- 1 yr
— Mailing of first announcement	- 2 yrs
— Mailing of second announcement	- 1 yr
— Provisional programme	- 6 mths

Resources planning

The resources to be planned include personnel, finances and other material.
Initially, secretarial help is most important for all the mailings, invitations etc. Towards the conference, more and more people are needed to take care of the different aspects of the meeting. Experience has shown, that a minimum number of people is necessary during the different stages of preparation as summarized in the following table:

Action	Personnel	Time
Planning	1	- 1 yr
Preparation	2-3	- 6 mths
Setting up	4-5	- 3 wks
Conference	8-10	0
Afterwards	1-2	+ 1 yr

A budget should be established as early as possible, taking the following categories into account:

INCOME:
— Registrants fees
— Exhibitors fees
— Donations
— Loans
— Awards

EXPENDITURES:
— Audiovisual equipment renting
— Awards
— Banquet
— Coffee
— Congress materials (badges, briefcases, plastic holders, name tags, labels, stationery supplies, etc.)
— Congress office (computer rental, copy machine, typewriter rental, etc.)
— Congress souvenir
— Decorations
— Excursion
— Invited speakers (lodging, travel, etc.)
— Ladies programme
— Loan returns
— Meals (Keynote speaker, chairperson, council)
— Organizers (travelling, etc.)
— Photographer
— Postal charges
— Printing (first and second announcement, author's kits, flyers, letterheads, programme, stationary supplies)
— Proceedings
— Reception
— Rentals (Lecture, poster and exhibition halls)
— Salaries
— Security
— Telephones
— Unforeseen

The following list contains further material necessary:

— Computer with word-processing capabilities
— List of addresses for mailings
— etc.

5. CALL FOR PAPERS

It is advisable to produce a call for papers similar in appearance to previous conferences, but in a different color. Usually, a first and a second call (see examples in the appendix) are produced. Among others, they contain latest information on
— program outline
— speakers
— local information (climate, social program)
— costs
— return answers

PROGRAMME

The quality of the programme is probably one of the most important aspects for all those having to decide whether or not they will take part in this conference. Since the largest amount of income is from the fees of the participants, this is to a certain axtent also a financial consideration. Careful consideration therefore must be given to the selection of t keynote lectures, the emphasis on specific topics and finall the presentations themselves.
Experience shows, that a program should be finalized by one or two persons only.

Further important steps include:
— select programme reviewers
— develop reviewers checklist
— send out abstracts (2 reviewers per abstract)
— receive abstracts
— set up programme
— print programme

7. ABSTRACT BOOK (PROCEEDINGS)

— request cost estimate from printer
— edit
— assemble
— print
— deadline for delivery

8. SCIENTIFIC EXHIBITION

— Define space available
— Define format for posters
— Print author's package
— Design layout for the posters accepted in the space available (must be positioned linearly to allow for traffic flow and maximum room for discussion)
— assign time for presentation and/or discussion not competing with other presentations

9. COMMERCIAL EXHIBITION

— list of previous exhibitors
— make plan of building
— provide guidelines
— price, costs
— brochure for exhibitors

. PUBLICATION (may change for future ISB congresses)

— Set up review/selection process
— Appoint board of reviewers
— Make contract with publisher (consult with prev. ed.)
— Define schedule
— Define and send guidelines and forms to authors
— Appoint staff for time of congress
— Set up editorial room
— Collect and check manuscripts
— Plan on actions to increase sales of book

11. THE CONFERENCE

The time of the conference is usually very hectic for the organizer and he will not be available to further help in the organization during the day, because he will have to meet all his friends participating in the conference. It was found to be a good idea to assemble all the members of the local team for breakfast and to discuss the activities of the day (and possible problems) there. It might be recommended to name somebody responsible for organization when the main organizer is busy during the conference. This person will always be in contact with him.

The following is a list of tasks to be organized *before* the first y of the conference:

— prepare and distribute the following information to the participants:
  - programme
  - pen
  - paper
  - map of congress facilities
  - map of surrounding
  - sightseeing tours
  - tourist information
— someone to take care of last minute phone calls (assign a person)
— registration
— money (foreign currency)
— projection (backup projectors)
— slide ready room
— posters
— coffee breaks
— meals
— arrows and signs to congress site
— transportation to/from hotel
— spouse's programme
— travel agent
— first aid/physician availability and other emergency plans (fire etc.)
— excursions to other institutions
— gifts
— awards
— post congress tours
— opening ceremony
— closing ceremony
— banquet (master ceremonies, programme; head table, special guests and seating, awards)

12. AFTER THE BATTLE

— manuscripts
— finances

13. TIME TABLES, FLOW CHARTS, CHECK LISTS

14. 'GOOD' IDEAS WITH NEGATIVE OUTCOME

Means to attract participants

It has been attempted to attract delegates by attracting families with children on holidays,
a. by providing baby sitting service (which failed because parents of small children did not want to leave them in stranger's hands), and
b. by providing a special children's program like sports, computer games etc. (which failed because of the wide age and interest ranges of the children and the resulting small number of children per group).

Location of equipment and poster exhibition

To have equipment exhibits near eating facilities for noon hour browsing and so that they are the major focus of attention of delegates for about a 2.5 hour period each day failed because the exhibitors want to be in the Congress Hall so that their employees work a full day and see delegates in small numbers throughout the day, not in large groups for concentrated periods.

To have posters also in an area near equipment exhibits but far from the lecture rooms with presentations over extended lunch periods failed because posters must also be in the Con-

gress Hall. Even short travel times between buildings cut down on audience.

To have posters on 3-sided free standing boards (120° separation walls) to save space failed because the noise level is too high and people are too close together.

15. APPENDIX

The following information should be collected from previous and new congresses and presented in a standard format:

- General information
  - number of participants
  - number of papers (oral/poster)
  - number of exhibitors
  - finances
- Examples (copies of):
  - letters
  - calls for papers
  - organizational lists
  - programme
  - etc.
- Specific personal experiences

THE VOLVO AWARDS FOR LOW BACK PAIN RESEARCH 1989

In order to encourage research in low back pain, the Volvo Company of Göteborg, Sweden, also this year has sponsored three prizes of US $ 8.000 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 or submitted for publication. A multiple authorship is acceptable. The manuscripts should be in the form of a complete report, including original illustrations, not exceeding 30 typewritten pages, double-spaced, and in a form suitable for submission to a scientific journal. One original and 5 copies of each paper submitted in full should **reach the address given below not later than November 15, 1988**.

One of the authors should be prepared, at his own expenses, to come to Kyoto, Japan, at the time of the meeting of the International Society for the Study of the Lumbar Spine, May 15-19, 1989, to present the paper and receive the award.

The 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 correspondence to:
Professor Alf Nachemson
Department of Orthopaedics
Sahlgren Hospital
S-413 45 Göteborg, Sweden

CALENDER OF WORLDWIDE INTERNATIONAL SCIENTIFIC EVENTS FROM 1988 UNTIL 1990

July 17-24, 1988
"2nd International Convention for P.E. teachers", Budapest, Hungary (c/o Mr. István Tamás, Alkotás 44, H-1123 Budapest)

July 18-22, 1988
Paris, France, 12th IMACS World Congress on Scientific Computation (c/o The Secretary 12th IMACS World Congress, IDN, BP 48, 59651 Villeneuve D'ASCE CEDEX, France).

July 20-23, 1988
Exeter, Devonshire, UK. "Fifth International Auxology Congress" (c/o Prof. J.M. Tanner, V. Auxological Congress, Room 115, Institute of Child Health, 30 Guilford Street, London, UK, WC1N 1EH, England).

July 24-31, 1988
Zagreb, Yugoslavia, 12th International Congress of Anthropology and Ethnological Sciences (c/o Laboratory of Anthropology, Institute for Medical Research and Occupational Health, Mose Pijade, 158, P.O. Box 291, 41000 Zagreb, Yugoslavia, tel. 041/432-186 or 432-286.

July 26-31, 1988
Madrid, Spain. "1988 AIESEP World Convention". Theme: "Humanism and New Technology in Physical Education and Sport - The Present Situation and Prospects" (c/o Prof. J.J Hernandez Vasquez, Instituto Nacional de Eudcaiòn Fisic Ciudad Universitaria, Avda Martin Fierro, s/n Madrid, Spain).

Aug. 1-5, 1988
Sydney, Australia. "10th Congress of the International Ergonomics Society" (c/o Secretariat IEA88, P.O. Box 380, Spit Junction NSW 2088, Australia) Tel.: (02)9691400.

Aug. 6-12, 1988
Orebro, Sweden. "SWEDUCATION & ICHPER Europe Congress, Theme: "Physical Education, Health and Development of the Human Being" (c/o SWEDUCATION, P.O. Box 923, 70130 Orebro, Sweden) Tel.: (19) 140100

Aug. 8-12, 1988
Finnish Fair Centre, Helsinki, Finland. "3rd International Conference on Environmental Ergonomics" Institute of Occupational Health, Finland SINTEF, Norway.

Aug. 16-19, 1988
Ottawa, Canada. "Vth Biennial Conference of the Canadian Society for Biomechanics: Biomechanics - Occupational, Rehabilitation, Sport Applications." A Symposium on Human Locomotion will be held in conjunction with the conference. (c/o Dr. D.G.E. Robertson, Kinanthropology Dept., University of Ottawa, 35 McDougal Lane, Ottawa, Ontario, Canada, K1N 6N5).

Aug. 21-27, 1988
17th Congress International de Mécanique Théorique et Appliquée. (Secrétariat: ICTAM 88 - Institut de Mécanique de Grenoble - Domaine Universitaire B.P. 68 - F. 38402 St. Martin d'Heros Cedex).

Aug. 24-26, 1988
"2nd annual international symposium on sport surfaces - biomechanical, medical aspects, design, testing". At the University of Calgary, Calgary, Alberta, Canada. The University of Calgary (c/o Madeleine Aldridge, Conference Office, The University of Calgary, 2500 University Drive N.W., Calgary, Alberta, Canada, T2N 1N4). Tel.: (403) 220-7319.

Aug. 26-31, 1988
Hong Kong. "VIth International Symposium on Comparative Physical Education and Sport". Theme: "Competition in Sport" (c/o Dr. Frank Fu, Dept. of Phys. Educ., Chinese Univ. of Hong Kong, Shatin NT, Hong Kong) Tel.: (852) 540-7637.

Aug. 28-Sep. 2, 1988
Washington, USA. "First World Congress on Fitness for Life" (c/o Mr. George Allen, President's Council of Physical Fitness and Sport, Washington, D.C. 20202, USA).

Sept. 4-8, 1988
11th Annual Meeting of the European Neuroscience Association. (Secrétariat: Brain Research Institute - University of Zurich August Forel - Sr. 1 - 8029 Zurich)

Sept. 5-7, 1988
Osaka, Japan. "1988 Symposium of the International Council for Physical Fitness Research". Theme: Current topics in the physical fitness research on the Aged, the Disabled and the Industrial Worker" (c/o Secretariat of ICPFR Symposium 88, Osaka, Osaka College of Physical Education, Gakuencho 1-1, Ibaraki-shi, Osaka 567, Japan) Tel.: 0726-34-3141 - Fax: 0726-34-8374

Sept. 5-8, 1988
Budapest, Hungary. "6th Congress of the European Anthropological Association" (c/o Congress Secretariat, Dept. of Anthropology ELTE, Puskin ucta 3. Budapest, Hungary, H-1088) Tel.: (36-1) 187-857

Sept. 9-15, 1988
Seoul, Korea. "Seoul Olympic Scientific Congress". Theme: "New Horizons of Human Movement: Issues and Implications for Development, Performance and Health" (c/o 1988 Seoul Olympic Scientific Congress Organizing Committee, RM 203, Dankook Bldg, nº 97. Nonhyun-dong, Kangnam-ku, Seoul 135, Korea). Tel.: (02) 542-8886, 546-8837/8 Telex: DK Univ K 227741, Bumju K 22962. Fax: (02) 546-0356

Sept. 11-14, 1988
Bristol, European Society of Mechanics Meeting. (Secrétariat: Dr. A.E. GOODSHIP School of Veterany Science Park Row - Bristo - BS1 5 LS - UK).

Sept. 15-16, 1988
Louvain. XIIIème Congrès de la Société de Biomécanique. (Secrétariat: Dr. L. PLAGHKI Université catholique de Louvain, Unité READ, Tour Pasteur 5375, Av. Mounier 53, 1200 Bruxelles - Belgium) Tel.: 02/764.53.75

Sept. 20-22, 1988
"Progress in Bioengineering. Artificial organs, delivery of rehabilitation, orthopaedic biomechanics, prosthetics and orthotics, technological advances". An international seminar on the occasion of the 25th anniversary of Strathclyde Bioengineering Unit. Bioengineering Unit, Wolfson Centre, University of Strathclyde, Glasgow, Scotland. Tel. 041-552-4400 ext. 3029. Telex: 77472 (UNSLIB G). Fax: 041-552-0775.

Sept. 28-30, 1988
Toulouse. Colloque International: Interactions Homme-Médecine et Intelligence Artificielle dans les domaines de l'aéronautique et de l'espace. (Secrétariat: G. PICCHI - CERT - B.P. 4025 31055 Toulouse Cedex).

Sept. 28-30, 1988
University of Illinois at Urbana-Champaign. Meeting announcement and call for papers. Manssour H. Moeinzadeh, Ph. D. Meeting Chairperson, ASB. Department of General Engineering. University of Illinois at Urbana-Champaign, 104 South Mathews Avenue. Urbana, Il 61801 USA (217) 333-0406

Oct. 18-19, 1988
"Biomat 88". Hybrid artificial organs. Concepts and development. University Hospital of Bordeaux II - France (c/o Mrs. Rouais, Biomat 88 - INSERM U 306 - Université de Bordeaux II, 146, rue Léo-Saignat, 33076 Bordeaux Cedex Phone 56 93 12 72. Telex 550 491 F.

Jan. 5-7, 1989
Convention announcement and call for papers. The Annual Meeting of the National Association for Physical Education in Higher Education will be held in San Antonio, Texas. Theme: What should professionals in physical education know? What should professionals in physical education do?

April 27-29, 1989
Leuven, Belgium, "XIVth Meeting of the European group of Pediatric Work Physiology" (c/o Prof. Dr. G. Beunen, K.U.L., I.L.O., Tervuurse Vest 101, 3030 Heverlee, Belgium) Tel.: 016/22.23.10.

May 14-19, 1989
Papendal, The Netherlands, "IXth Congress for Sports Information", Theme: "Effective Sports Information for the Nineties" (c/o: Rob Timmer, Secr. Gen. of IASI, Laan van Meerdervoort 1a, 2517 AA The Hague, The Netherlands) Tel.: (070)632963. Telex: 34379 nsfsp.

June 21-24, 1989
Berlin (West), FRG, "7th Intern. Symposium Adapted Physical Activity - an interdisciplinary approach" (c/o 7th ISAPA BERLIN '89, Secretary, Institut für Sportwissenschaft, Freie Universität Berlin, Rheinbabenallee 14, D-1000 Berlin 33) Tel.: (030)824.37.31.

June 26-30, 1989
Los Angeles, "XII Congress of Biomechanics" (c/o XII Intern. Congress of Biomechanics, UCLA Deptm. of Kinesiology, 2854 Slichter Hall, Los Angeles, CA 90024-1568, USA. Tel.: (213)825-3910 of 825-5376.

September 11-15, 1989
At the London Hospital, London, England. VIIIth World fina Medical Congress on Aquatic Sports. Further Information: Conference Service Limited, Aldine House, 9-15 Aldine Street, London W12 8 AW. Tel.: 01-740 8121 (International 2 44-1-740 8121) Telex: 916024 Confer G.

Jan. 28-Feb. 02, 1990
Auckland, New Zealand, IXth Commonwealth and International Conference (c/o Conference Convenor 1990, Ms. Rosalie King, Auckland College of Education, Private Bage, Symonds St., Auckland, New Zealand).

May 27-June 01, 1990
Amsterdam, The Netherlands, XXIV FIMS World Congress of Sports Medicine (c/o Organisatie Bureau Amsterdam b.v., Europaplein 12, 1078 GZ Amsterdam, The Netherlands, Tel.: 31/2044087. Telex: 13499 raico nl.).

(date and place to be fixed)
International ISAK-congress "Kinanthropometry IV"

(date & place to be fixed)
"6th Symposium on Biomechanics and Medicine of Swimming"

(date & place to be fixed)
Maastricht, The Netherlands, Second World Congress of Science and Football (c/o Prof. J.M. Greep, Deptm. of Surgery, Academic Hospital St. Annadel, Maastricht, The Netherlands).

Past Conference News

XIth INTERNATIONAL CONGRESS OF BIOMECHANICS, 29 JUNE TO 3 JULY, AMSTERDAM

The XIth ISB Congress in Amsterdam was held from June 29th-July 3rd 1987 in the Main Building of the Free University, organized by the Faculty of Human Movement Sciences (formerly Interfaculty of Physical Education) of that University.

On Saturday 27th and Sunday 28th ISB Council and various representatives of affiliated (national) societies met in Novotel-Hotel. The former were guests of the Amsterdam-organizers. Congress-desk was open in Novotel-Hotel from 14.00-18.00 hours. A welcome reception was given at the same hotel, the University Buildings and facilities not being available on Sundays.
Registration was again open from 8.00 hrs onwards on Monday and very lively up to the start of the welcoming reception given by the Vice Chancellor of the Free University and the Faculty Board in the Main Building of the University at Monday Evening.
The opening session, with short introductions by the organizers, the Vice Chancellor and the President of ISB was in the Grand Auditorium of the University, a site in accordance in largeur and grandeur for the key note Wartenweiler Memorial lecture by Savio Woo of San Diego, California.
The programme proper started at 11.30 hrs. It was organ ed as a rule in four parallel sessions except for Wednesday and Thursday mornings between 9.00 and 10.30 hrs. Sessions were of 1.00 to 1.30 hrs. duration. Coffeebreaks of 30 min., Lunchpauses 1.30 hrs. Key note lectures were held by Peter R. Cavanagh, S.M. Perren, D.W. Grieve, A.L. Hof, L.E. Lanyon, R. McNeill Alexander, C. Gielen, A.B. Schultz. The Closing Lecture was held by J.P. Paul, A.E. Chapman, R.A. Brand, two invited key note lectures fell ill. Key note lectures were so dispersed in the programme that they never were on the same time in different sessions. In some cases this has a result that in sessions not containing such a lecture the audience may be small in number.
Duration of key note lectures including discussion: 45 min. Duration of free communicated papers including discussion: 15 minutes.
On Wednesday from 11.00 hrs. onwards a special programme in a 350 seatings lecture hall was organized, comprising:

a. The presentation of the Muybridge medal by Chairman of the Committee, Don Grieve.
b. The addressing of the Muybridge Lecture by the Laureate: Peter R. Cavanagh.
c. ISB-Business Meeting.

It was thought that two hours would be ample time for this programme: both b. and c. were longer than expected by several minutes.
Poster sessions were held on Tuesday and Thursday and ar ranged in the same Lobbies were also tea and coffee was served and the Exhibitions were organized.

It had been planned to chair four Poster Sessions at each period of time in order to give each presenter 5 minutes time to explain the main points of his poster. Due to the noise level and due to the fact that spontaneous discussions were already going on at 11.00 hrs. this did not work out the way it was anticipated.
Twelve exhibitors hired 10 or 20 m^2 of floor space, various electric outlets and in some cases a telephone extension. The local University Publisher coordinated the book-stand.
The Closing Ceremony was held on Friday between 16.00 and 17.00 hrs. Short statements by the organizers and the President of ISB were made. Bob Gregor announced the XIIth Congress at AUCLA. John Paul held the closing lecture.
The Congress Proceedings will be published by Free University Press. Editors de Groot, Hollander, Huijing and Van Ingen Schenau were contacting authors during Congress and hope the authors will meet the deadlines aimed at publication of the selected papers within a year after Congress.
The participation was subdivided according to country:

Australia	10
Austria	2
Bahrain	2
Belgium	16
Brazil	2
Bulgaria	1
Canada	59
Czechoslovakia	1
Deutsche Dem. Rep.	3
Denmark	7
Finland	17
France	11
Greece	1
India	1
Israel	5
Italy	4
Japan	54
Kuwait	1
New Zealand	5
Northern Ireland	2
Norway	2
Peoples Rep. China	12
Poland	20
South Africa	2
Sweden	38
Switzerland	10
The Netherlands	69
Turkey	1
United States of America	70
U.S.S.R.	8
West Germany	29
Yugoslavia	5

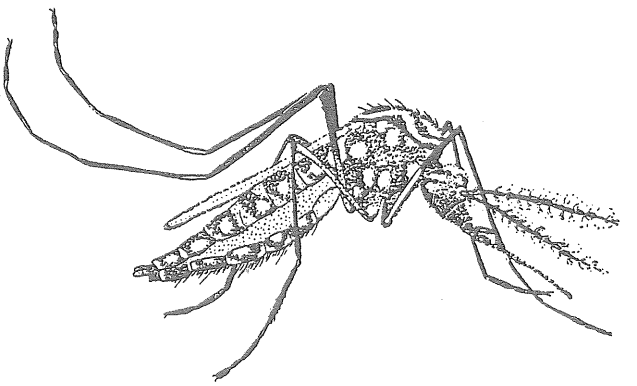
In this list Congress Delegates as well as accompanying persons are included.

The social Programme included next to the Welcome Reception on Sunday and the Reception on Monday, various excursions on Wednesday afternoon, a Reception by the Burgomaster and Aldermen of the City of Amsterdam and the Secretary of Science and Education on Thursday. This reception was organized in the Van Gogh Museum. Most of the delegates and their guests made a beautiful tour along Vincent's pictorial legacy.
The Closing Banquet was organized in the Amsterdam Zoo, Artis. Participants were allowed to feed the animals as well as themselves. They were to choose from dishes stemming from different countries: Indonesian, Italian, Nordic and Dutch. The Young Investigator's Award was given to Yves Gagnon of Edmondson, Canada. This price of $ 500 was generously placed to the disposal of ISB by Mrs. Wartenweiler. She was present at the Dinner and personally presented the Award. A second Award was disposed by the Organizing Committee of the Xth Congress at Umea. Bengt Jonsson presented this Award to André Plamondon of Montreal.
It is customary to organize Special Courses or Sessions in which application of Biomechanics to sport activities and coaching is aimed at. On Wednesday evening such a session was held. Peter Cavanagh, Charles Dillman and Jim Hay were speaking to coaches and other interested people in Arnhem at Papendal. This session was organized by Peter Hollander (in fact which session was not?) and tutored by the National Sports Academy of the Netherlands.

Sports Biomechanics was a very important topic for Congress. Always one parallel session was dedicated to this subject. Medical applications in Rehabilitation, Orthopaedics and subjects like Gait and Spine Research comprised also about a quarter of the programme. Rather fundamental subjects like Mouvement Control, Biomechanics of joints and muscles as well as Methodology (simulation, data processing etc.) were well represented, as was ergonomics as a field of application. Soft tissue biomechanics and electromyography comprised each a half day programme in one of the sessions.

The total number of presentations exceeded 315 (2/3 oral and 1/3 poster), while the number of participants was 393 for the full week, 13 for 2 or 3 days, 29 for one day; 26 persons accompanied the Delegates.

R.H. Rozendal,
Chairman Organizing Committee



SOFTWARE DEVELOPMENT IN BIOMECHANICA*

HERMAN J. WOLTRING

The requirements of appropriate software development in many applied research fields are strongly underestimated. Typically, in-house programming is a rather amateuristic activity, academically unrewarding, and with insufficient attention to material from parent disciplines.

Biomechanics and its affiliated fields are not exceptional in this respect, and Hatze (1984) has discussed the educational requirements for succesful human motion research: 'The scientist engaging in this field should be anatomist, physiologist, mathematician, computer and systems scientist, and, possibly, progammer, all in one person. It is obvious that very few professionals would be in a position to meet these requirements. The only reasonable solution appears to be the concept of teamwork', and he continued by stating that the 'motor research laboratory of the future will be strongly computer-orientated'.

Software development is a professional activity, and should be honoured as such in order to make investments in computational facilities worth-while; see Bell (1986) for some illuminating remarks. A major reason that human movement studies have hardly penetrated in applied environments is the 'academic' background of most researchers in this field, with little interest to create reliable data acquisition *and* processing systems for routine use. Yet, such data processing facilities are necessary in order to create transformed data which are sufficiently different from what can be observed by the trained observer's eye to allow reliable presentation of (potentially) useful information in an applied context.

It seems that commercial environments are more open to such efforts, as apparent from the data acquisition systems regularly advertised in this Journal, and from the existence of commercial software houses in the biomechanical domain. Unfortunately, confidence in the applicability of human motion research has been quite low, since the long-standing tradition of this field has resulted in only a few viable systems and methods for routine use, so funding of new research suffers from a vicious circle which is difficult to break through. Hatze's concept of teamwork should be exploited even beyond the individual research place, in order to show that the investments currently envisaged in human movement studies have also potential outside the academic research environment.

Fortunately, the programming aspect is facilitated through the 'Software Survey Section' in the *Journal of Biomechanics* and through the accessibility of high-quality software on internationally operating, academic and public computer networks like the ARPAnet, CSnet, UUCP, and EARN/BITNET/NETNORTH, with various interconnecting 'gateways' (Quarterman & Hoskins, 1986).

An example is the NETLIB fileserver (Dongarra and Grosse, 1987) at Argonne National Laboratories in Illinois and at AT&T Bell Laboratories in Murray Hill, NJ. The simple requests *send index, send index for gev*, and *find spline* (one per line) to 'netlib @ anl-mcs' or to 'netlib @ research.att.com' on the ARPA-network will result in three return mailings: one with the general index of these libraries, one with the index of the 'gev spline' sublibrary from NETLIB, and one with a list of all spline software in NETLIB. Thus, writing, rewriting, or purchasing substantial amounts of software, and processing of magtapes with awkward formats obtained from colleagues are rendered obsolete by electronic mailing facilities that allow efficient software distribution for testing and use worldwide.

These communication facilities can also enhance research collaboration between individuals and institutions: exchange of software and data, memos and manuscripts is much easier via these channels than via ordinary mail. Furthermore, there are many special-interest groups (e.g. in numerical analysis, finite-element software, and artificial intelligence) with 'public bulletin boards' via electronic mail. Memos sent to the moderators of these bulletin boards are distributed to all subscribers, often at little or no cost for the individual senders and receivers (there are also many 'unmoderated' bulletin boards, but these tend to contain less interesting information).

It would be timely to consider the use of such facilities in biomechanics and in human motion research.

REFERENCES

Bell, K. (1986) Some thoughts on design, development and maintenance of engineering software. *Adv. Engng Software* 8, 66-72.

Dongarra, J.J. and Grosse, E. (1987) Distribution of mathematical software by electronic mail. Comm. of the ACM 29(5), 403-407. (This paper is also available from NETLIB via the request *send netlib-paper from misc*).

Hatze, H. (1984) Quantitative analysis, synthesis and optimization of human motion. *Hum. Mvmt Sci.* 3, 5-25.

Quarterman, J.S. and Hoskins, J.C. (1986), Notable Computer Networks. *Comm. of the ACM* 29(10), 932-971.

Woltring, H.J. (1988) Modeling and measurement errors in kinematics. *Biomechanics of Human Movement—Applications in Ergonomics, Sports and Rehabilitation.* Proceedings of a Study Institute and Conference in Formia (Italy) (Edited by Cappozzo, A. and Berme, N.).

* Partly controlled by the republic of Akademia. Biomechanica is a small and lively country with a moderate climate. Its name derives from contemporary Greek, where biomeichania (Gr.) stands for *industry*; cf. biomeichanos (Gr.), *industrialist*, and biomeichanikos (Gr.), *industrial*, as in e.g., biomeichaniki idiokteisia (Gr.), *Industrial Property (Law)*. This contribution is a slightly modified version of the final section in Woltring (1988), and of a Letter to the Editor of the *Journal of Biomechanics 20(2)*, p. 219 (1987).

Special article

'Opinions expressed or statements made in this column do not necessarily represent those of the Editor, the Executive Council nor members of ISB'.

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Thesis Abstract Corner

AN INDIVIDUALIZED APPROACH TO THE OPTIMIZATION OF A HUMAN MOTION

by

Pierre Leo Gervais

The University of Alberta

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfilment of the requirements for the degree of Doctor of Philosophy
Department of Physical Education and Sport Studies

Edmonton, Alberta

Fall 1986

ABSTRACT

The purpose of this study was to develop an approach to assess an individual's performance and then to predict that individual's performance. The skill choosen for this task was the handspring 1 1/2 front salto vault in men's artistic gymnastics. This study was delimited to the study of the preflight, push-off and postflight phases. The performance assessment consisted of first developing a deterministic model of the task's performance objective of maximizing the points awarded for the execution of the skill. Measurement of the performances variables, determined the model, was carried out using standard high speed cinematography. These measures indicated quantitatively that the performance of the skill was a good typical high levl performance. Based on the performance result of *points awarded*, the performer's objective function was composed of those performance variables that if maximized, would minimize the point deductions. Postflight height and distance were identified as those variables. Angular momentum was included in a penalty function form to assure that sufficient angular momentum was present for successful completion of the skill. A Lagrangian approach was used to derive the equations of motion and a *Ritz* procedure, using fifth degree polynomials was used to represent and discretize the state variables (the generalized coordinates). A Complex algorithm was used to solve the optimization problem. Simulation of the postflight's predicted results was achieved using an interactive computer program which made use of an optimization scheme. The cost function used in the program was the difference between the simulated coordinates for the center of mass and the predicted values. Adjoined to this function was the difference between the simulated and predicted postflight angular momentum quantity. The predicted optimum performance of the skill displayed greater virtuosity in both postflight height and distance. Angular momentum was also greater. A comparison of this study's results with previously published data on the handspring 1 1/2 front salgo vault support the conclusion that the optimum solution predicted valid results and a feasible optimal performance for the individual investigated.

THE LOWER LIMB MECHANICS AND ELECTROMYOGRAPHIC PATTERNS OF NORMAL STAIR ASCENT AND DESCENT: DESCRIPTION AND INTERPRETATION

by

Brad McFadyen

Graduated Fall, 1985

Supervisor: Dave Winter

ABSTRACT

Stair walking is a frequently required mode of locomotion involving a gait strategy different from level gait. Stair gait becomes a great concern to people suffering from insufficient structural or neurological control.

In this study, three normal males of similar height and weight walked up and down a five step staircase comprised of 21.59 centimeter risers and 27.94 centimeter treads on the first four steps. Eight trials were performed for each mode of ascent and descent, and data was collected only for the stride over the second to fourth step. Information obtained simaltaneously for the right lower limb included electromyography of the rectus femoris, vastus lateralis, semitendinosus, gluteus maximus, gastrocnemius, soleus and tibialis anterior, as well as, kinematic and kinetic data including muscle moments and joint powers.

Movement from one step to the next involved both lifting and horizontal translation of the body. It was shown that this movement over one stride can be divided into specific phases for progression. These include (in succession from foot contact to foot contact) weight acceptance, pull-up, forward continuance, foot clearance and foot placement for ascent, and weight acceptance, forward continuance, controlled lowering, leg pull-through and foot placement for descent. The muscles about the knee played the dominant role in progression from one step to the next in both modes. Although, the ankle's role is increased when lowering the body in descent. Stabilization was evident by the use of cocontractions, especially during descent. The ranges of both the knee and ankle were greater in both modes of stair gait than is seen for level gait. Finally, the support moments were highly correlated between modes of stair gait within and between subjects. This suggests a common 'system output' for different modes of locomotion.

FUNCTIONS AND INTERACTIONS OF ONE- AND TWO-JOINT MUSCLES IN ISOMETRIC CONTRACTIONS

by

Nancy Evans Stüber

Graduated Spring, 1986

Supervisor: Richard Wells

ABSTRACT

An implicit assumption in the biomechanics research of recent decades is that the muscles recruited to perform a task depend on the joint moments required by that task. The hypothesis tested in this work predicts that the two-joint muscles will act when the moments so produced will contribute to the required moments at both of the affected joints. When this is not the case, they will not act: the one-joint (or other two-joint) muscles will act instead.

Two versions of a computer program were written to predict the forces (or activities) in eight one- and two-joint muscles of the leg according to this hypothesis, under forty-nine combinations of joint moments at the hip and knee (seven at each). Electromyograms were recorded from the same eight muscles and forty-nine conditions in five adult female subjects. Comparisons of the predicted muscle forces (activities) with the recorded activities show that the hypothesis is capable of predicting all the muscle activities, but neither of the two versions can predict all of the muscles with equal success. These results support the hypothesis, but it does not explain all of the observed variance in the electromyogram signals. Non-linear multiple regressions were performed to determine the relationship between the electromyographic activity and the joint moments over both agonist and antagonist isometric contractions. A piece-wise linear fit (segmented at zero) described the relationship well for all muscles.

These results indicate that the basic relationship between muscle activity and joint moment is linear, with the slope depending on the sign of the joint moment. It is also concluded that the muscles of a synergist group tend to be recruited together, not independantly. Also, interactions between muscles can occur resulting in significant relationships between certain muscles (specifically, iliacus and vastus lateralis) and the moment at a joint which they do not cross and are unable to affect directly.

DESIGN OF A SYSTEM TO FACILITATE DONNING OF A SELF SUSPENDED ABOVE KNEE SOCKET

by

M.N. Ireland, B. Eng.

13th, September 1985

This thesis is submitted in partial fulfilment of the requirements for the degree of M.Sc. in the Bioengineering Unit, University of Strathclyde.

Supervisor: J. Paul

ABSTRACT

Elderly and other enfeebled amputees are restricted by prosthetic technology, to using prostheses which require to be suspended either from waist or the shoulders; rather than the more acceptable stump suspension by suction. This is basically because of the considerable physical effort that is required to apply a suction type socket on to the stump.

In the course of this project a number of socket designs have been produced which provide, for the use of such frail amputees and indeed any other, the same benefits of self suspension that the suction socket provides, but without the difficulties involved in donning.

This thesis outlines the basic problem and reviews literature relevant to socket shape design. It describes a concept of overcoming the problem using inflatable compartments and gives details of 5 designs that have been produced. A prototype was manufactured for each design which were evaluated clinically. The subjective reactions of the clinic team were supplemented by objective measurements. The concept proved succesful and further developments are recommended.