

European Society of Biomechanics

NEWSLETTER

Spring 1994

THE GROWTH OF BIOMECHANICS

Looked at objectively, the area of biomechanics should be thinly populated. There are very few undergraduate courses on the subject. The career structure is precarious and hard to define. There is not a great deal of funding evident, compared with other field. Related areas such as biomaterials seem to offer a much greater opportunity for future advances. Yet all the evidence is that biomechanics is steadily expanding. At almost every conference on an applied subject, whether orthopaedics or cardiovascular, biomechanics is recognised as an important ingredient, while the training of medical specialists would be incomplete without it. Who would have thought that the First World Congress of Biomechanics held in 1992 would have attracted over a thousand attendees. Even more amazing is that the Second World Congress to be held this year in Amsterdam looks likely to attract an even greater attendance, and this in Europe, not the United States! Because of increasing submissions it is becoming harder and harder to have a paper accepted for presentation at conferences while the poster sessions are bursting at the seams.

**General Assembly
of the ESB in
Amsterdam
See page 2**

**"Clinical
Biomechanics"
Special subscript. rate
See page 4**

This apparently anomalous situation needs some explanation. Who are all these people? What is all the work about? The answer can be summed up in one word - diversity. The motive can be summed up in another word - fascination. Biomechanics can be applied in a multitude of ways to the world around us. It is fascinating because it links so many different disciplines. It deals with topics which are of both concern and pleasure to us all, whether we are talking about the functional analysis of sport, the fluid flow in blood vessels, the way cells respond to mechanical effects, the aerodynamics of birds and sea creatures, why we get arthritis, and perhaps more down to earth what we can do about it.

**Second World
Congress of
Biomechanics
See page 3**

Recently, the European Society of Biomechanics made an arrangement with Butterworths to make the journal "Clinical Biomechanics" available to members at a reduced price. The aim was to both provide an outlet for and encourage members to focus on clinically relevant problems. At the same time we maintain our special relationship with the Journal of Biomechanics as our official journal. As we all know, many of the articles in the latter journal are basic in nature, including advanced theoretical treatments. To say that biomechanics should be applied, or should be fundamental, or should be something else, is to miss the point about what biomechanics is all about. Biomechanics is about what people wish to do with it, what it interests people to do, and what people can get the resources to do. It is easy to look at a theoretical study and say that it is of no use whatsoever. Perhaps it isn't, but somebody wanted to do it and presumably others want to read about it. If they didn't the journal it appeared in would soon go out of business! Likewise it is easy to look at a report of a testing programme on an implant design, or even a report of a new design concept itself, and accuse it of being too unsophisticated, not breaking new ground in technique or methodology. Yet such a contribution could be an invaluable practical study with far-reaching application.

The point is that biomechanics is a field of great diversity and fascination, and we should see it in that way. The field looks to have an even brighter future. The tools available to us are facilitating the solution of problems that would almost be unimaginable 10 years ago. It is hard to see how computer modelling and analysis with all of its new possibilities will not make a major impact. There will no doubt be new and exciting ways of monitoring what happens inside the body, revealing facts which we can now only dimly grope at. Biomechanics will tackle problems on a submicroscopic level, possibly even merging to some extent with cell biology.

However, whatever we do, whether elegant, practical, theoretical, or routine, we must avoid the trivial and aim for the highest standards possible. At conferences, we must not confuse big with best, and we must recognise the value of the smaller and more focused meetings. There is an endless amount of important work to be done. The European Society of Biomechanics, along with its involvement with the World Committee on Biomechanics, provides a base for this work in all of its diversity and fascination.

Peter S. Walker

Invitation of all members of the ESB for participation in the
General Assembly of the ESB
at the 2nd World Congress of Biomechanics in Amsterdam:
→ Wednesday, July 13, 12.30 - 13.30 ←

Agenda:

1. Minutes of the General Assembly in Rome, 1992, 2. Report from the president
3. Report from the treasurer, 4. Awards, 5. Council elections
6. ESB Congress 1996, 7. ESB in the year 2000, 8. Other business

Council Elections

The following members have been elected until 1996: Fabio Catani (1992-96), Leif Ryd (1988-96), Erich Schneider (1988-96), Frédéric A. Schuind (1992-96), Peter S. Walker (1988-96).

The following members of the Council have indicated, that they will resign in 1994 at the Biomechanics Congress in Amsterdam (with their years of service in the Council): Ivan Hvid (1986-94), Peter Niederer (1990-94), Michel Jaffrin (1990-94).

Re-election is necessary for: Georg Bergmann (1990-94), Alain Meunier (1990-94).

With three positions to be filled in 1994 we wish you all to take time to join us at the General Assembly of the Society. The selection of an appropriate, balance and strong Council is important to run the Society smoothly and organize a high-quality, bi-annual congress. In addition, the European Society of Biomechanics needs to interact with other scientific societies, political or governmental institutions, certifying bodies, etc. If you wish to propose someone including yourself to fill the gaps in the Council, please let the Secretary-General know in advance in writing. It would be helpful to ask the member proposed in advance, if he/she is willing to serve. The General Assembly is a forum to propose new activities, establish specialized research groups, take influence on the direction of the Society, etc.

Second World Congress of Biomechanics

→ July 10 - 15, Amsterdam ←

The ESB patronizes the following three symposia :

1. Orthopaedic Implant Design and Materials

2. Biomechanics of Joints and Ligaments

3. Cell Mechhanics

Conference secretariat:

Biomechanics Section, Inst. of Orthopaedics, Univ. of Nijmegen

P.O. Box 9101, NL - 6500 HB Nijmegen, The Netherlands

ESB Research Award

The ESB Research Award is given to an outstanding, full length scientific paper in the field of biomechanics. In earlier years submission of six to eight manuscripts to compete for the Award has been customary. However, this year the ESB Congress is associated with the Second World Congress of Biomechanics in Amsterdam, and an amazing 26 submissions were received. This, of course, represents a significant work load for the Award Committee, since each paper must be evaluated by two reviewers, and the higher scoring manuscripts reevaluated by the Committee.

The Committee consisted of myself as Chairman (a job that in the later phase was taken over with great skill by Erich Schneider, our Secretary General, due to my long term leave), Erich Schneider, Peter Niederer, Michel Jaffrin, Peter Walker, Frederic Schuind, Maurice Hinsenkamp, and Thomas P. Andriacchi. To dilute the work-load, each of the Committee members received three to four manuscripts and were asked to have them reviewed by well merited researchers in specific fields of biomechanics research. The reviewers were asked to fill in an evaluation sheet leading to a score for each paper, and to supply a written review. When the evaluations were returned to my office, the four highest ranking papers were taken through a final evaluation round among the Committee members, and the winning paper selected. These four papers were all of outstanding quality, and the final choice was a very difficult one which, nevertheless, had to be made. Finally the following *two* papers were chosen as winners:

S.C. Cowin: "A case for bone canaliculi as the anatomical site of strain generated potentials"

J. Heegaard: "Biomechanics of the human patella during passive knee flexion"

We congratulate these individuals on their outstanding contribution.

In addition to the prize of USDollar 1,000, the papers will be printed in the Journal of Biomechanics, and read at the Congress. To those of you not being able to attend the Congress, I'm sure you will read more about it in the post-congress newsletter. I would like to take this opportunity to thank my Colleagues in the Award Committee for all their work and advice, and especially I would like to thank the many reviewers who found time to help us evaluating the submissions.

Ivan Hvid

"Clinical Biomechanics" - Special subscription rate for ESB members

As announced in the last newsletter, the journal "Clinical Biomechanics" offers a special discounted subscription rate for all ESB members. This journal is well suited for the clinical publication and information demands of many members. The reduced rate was offered because many members wanted to obtain a clinically oriented journal additionally to the J. Biomechanics. To make the subscription more convenient, an information and order form of the publisher Butterworth Heinemann is enclosed with this newsletter.

→ **Order form enclosed** ←

Membership body of the ESB spring 1994

The membership of the European Society of Biomechanics is slowly growing and has now passed the 300 mark; 309 to be exact. As has previously been the case, members from western Europe dominate and countries like the Benelux countries, France, Italy, the U.K., Germany, Switzerland, and the Scandinavian countries combined contribute with 20 - 40 members each. Spain, Portugal and Greece are also represented. Possibly due to special efforts, Eastern Europe is slowly increasing its representation. The former Czechoslovakia combined has a large congregation, Romania is well represented and almost all countries in Europe are now found in the membership roster. From over-seas both the USA and the Peoples Rep. of China, Japan and Singapore and even Chile are represented. The council finds it thrilling that the membership is growing and that the Society attracts members from all over the world.

Members of the Society receive a subscription of the Journal of Biomechanics, which is included in the modest 34 Pounds yearly fee. Members also enjoy a reduction of the congress fees, imminently the upcoming Second World Congress in Amsterdam in July 1994. In order to facilitate for (young) scientists to go to there and present a paper a number of travel grants will be offered and can be applied for by all members of the ESB.

The major activity of the Society is the organization of bi-annual meetings; this coming summer the meeting will be held in collaboration with the World Society of Biomechanics. In 1996, the regular ESB meeting will be held in Leuven, Belgium (Prof. G. van der Perry, Katholieke Universiteit, Leuven, B-3030 Heverlee, Belgium). As well as the bi-annual ESB meeting, the Society co-sponsors other meetings in Europe which have a substantial biomechanics focus. The ESB workshops are a particularly efficient type of meeting. They are small meetings, 30-50 participants, with a pertinent topic at low costs.

Again, scientists and clinicians who work in areas related to biomechanics are encouraged to join the Society and its activities. The meeting in Amsterdam this summer promises to be a very major event.

Leif Ryd

EUROPEAN SOCIETY OF BIOMECHANICS ANNUAL FINANCIAL REPORT 1993

	Belgian Francs (FB)	English Pounds (GBP)	Danish Krones (DKK)
December 31, 1993	1.234.586	1.450,10	71.810,27
Financial Statement 1992	1.033.044	4.640,33	66.607,84
Membership dues	277.729	5.319,00	0,00
Interests	68.235	0,00	5.202,43
Expenses:			
- bank charges	-22.431	-34,23	0,00
- secretary / treasurer	-110.238	-1.000,00	0,00
- mail	-11.753	0,00	0,00
- subscription Journal of Biomechanics	0	-7.475,00	0,00
TOTAL:	1.234.586	1.450,10	71.810,27

This report is subjected to approval by the General Assembly of the ESB at the World Congress of Biomechanics in Amsterdam.

F.A. Schuind

Questionnaire about the ESB-meetings

The questionnaire about the ESB-meetings has been evaluated. We got 46 answers, all from ESB members. Regarding the outcome of this action, some conclusions can be drawn:

1. The members prefer to reject contributions which are not excellent instead of presenting them in the poster sessions.
2. The quality of the poster session should be improved. Several proposals were repeated:
 - a. Most comments propose to arrange short oral presentations of the posters (2 - 3 minutes). Guided tours, appointed questionners, chairpersons or speakers corners are proposed as an alternative.
 - b. Several people would like more time for the poster presentations for example by separate poster sessions. Using normal breaks to visit the posters was criticized several times.
 - c. Better locations for the posters (central, spacious, bright) and coffee facilities are proposed several times.
3. A slight majority would *not* attend the meetings if they do not get a paper accepted. Nearly all people would attend the meetings if a paper had been accepted as a poster although it was submitted for oral presentation.
4. The size of the meeting seems to be ok for nearly all people. Obviously there is no need to increase the number of participants by accepting low quality contributions.
5. Only half of the people think that the quality of the presentations could be improved by awards.
6. Three parallel sessions as usual seem to be the best.
7. Three conference days are clearly preferred.
8. A majority likes to see the tradition of 1 day precourses continued.
9. Most people also like to keep on with the invited lectures.
10. The majority prefers 10 minutes of oral presentation, directly followed by a 5 minute discussion.
11. Panel discussions are not popular.
12. For the majority the Conference Banquets improve the attraction of the meeting.
13. Not so many people think that a program for accompanying persons is important.
14. The sessions on Biomaterial found only a limited resonance. They should last 1/2 day.

15. Identical proposals for *additional* research areas to be included were not listed by more than one or two persons.
16. Many topics for invited speakers were mentioned. Several votes mention fluid dynamics or haemodynamics as well as topics related to gait analysis.
17. The overwhelming majority likes to see the two-year periods of the meetings continued.
18. There are several valuable proposals as how to improve the meetings, but only two of them require the same: to have the accomodation close to the meeting site.

Some interesting results of this action seem to be that :

The overall structure from the past seems to be ok.

Accepting papers for poster instead of oral presentation seems not to be a disadvantage if the quality of the poster sessions is improved at the same time.

There is no reason to accept low quality papers only to increase the number of participants.

Georg Bergmann

Report

40th Ann. Meeting Orthopaedic Research Society, New Orleans, Febr. 1994

Although the fine spring weather in New Orleans, the Winter Olympic Games at Lillehammer and the especially fascinating atmosphere of French Quarter were serious rivals for this meeting, the interest of the ORS participants in orthopaedic research was big. With respect to orthopaedic research, all the events took place at the Hyatt Regency Hotel.

Keeping with tradition, the ORS started Monday morning and ended on Thursday with oral presentations divided into 4 parallel sessions (in total 44 oral sessions) and two poster sessions. Among the 851 communications published in the two volume proceedings, 258 were oral presentations and 593 were posters (only 7 years ago, there were only a third that number of posters, only 2 years ago, there were two third that number of posters!). A brief count of the oral presentations tells us that about 16 % of the lectures came from outside the US and Canada. Sweden accounted for about 4 %, UK 3 %, Japan 2.3 %, The Netherlands 1.9 %, Germany 1.5 % and countries like Israel, Norway, Australia, Switzerland, Denmark and Italy provided only one or two presentations. A cheese and wine party took place as usual during the first poster session on Monday afternoon. 22.7 % of all posters came from overseas, whereby Japan accounted for 8% and the UK for 4.5 %. The second poster session was held during a "Hosted Lunch" on Wednesday morning. The huge increase in the number of posters made it difficult to have a closer look at all posters covering 33 topics from all fields of orthopaedic research.

The main areas of orthopaedic research including biology, biochemistry, biomechanics, biomaterials, developmental biology, pain research and clinical research gave - as usual - a good overview of orthopaedic research at large. Besides the usual sessions like ligaments, bone, cartilage, allografts or extremities, newcomers like aging or mechanisms of mechanotransduction gained interest among the research society with complete sessions devoted to them. Additionally, 12 workshops (8 of them held between 7 and 8.30 AM) were held on subjects like What do cells know about mechanics ?, magnetic resonance imaging, muscle research, cytokines, pain research, adhesion molecules, spinal fusion, growth plate, polyethylene, aging in musculoskeletal soft tissues and gene therapy, covering the whole spectrum of orthopaedic research.

The quality and in particular the quantity of the posters was quite impressive. As usual the meeting gave a good overview of all aspects of orthopaedic research and pointed to new trends in this field of science. Beside these, this meeting offered a good soil for intensive discussions and stressed the outstanding interdisciplinary character of this conference.

Magdalena Müller-Gerbl

Custom Prostheses Society Changes its Name

The International Society for the Study of Custom Prostheses (ISSCP) is about to change its name to reflect the expanding opportunities for the application of new technology to the design of standard and specialised implants. The society was founded seven years ago by a group of orthopaedists and scientists who were enthusiastic about the application of imaging techniques and CAD-CAM technology to the design and manufacture of custom implants. For example closely fitting uncemented hip replacements could be made by the use of CT images with contouring software, in combination with analytical and experimental studies of optimal stem shape. The first meeting was held in Chicago organised by Dr. David Stulberg from Northwestern University, Dr. Peter Thumler from Germany and Professor Jean Aubaniac from Marseilles. To recognise the international participation, the annual meetings have alternated between the USA and Europe, the most recent meetings being in the attractive venues of Amelia Island Florida, London U.K., San Francisco, and Nice. From the outset, those attending the meetings have represented a wide range of disciplines and backgrounds, with no particular speciality dominating. This has been a major strength of the Society, where a holistic approach has been taken to the solution of problems. Manufacturers of implants, imaging equipment and software, and small companies dealing with new materials, have been strongly represented. Methods of producing hip stems have covered CT reconstruction, as well as the Identifit system of making a casting of the femoral cavity at surgery and manufacturing the stem within the next forty-five minutes. However, a weak link in fitting uncemented implants has always been the methods of forming the bone surfaces. Enter Robodoc, a highly sophisticated imaging and robotically controlled milling system for precise surgery, developed from the surgical point of view by Dr. Hap Paul and Dr. William Bargar in Sacramento. Dr. Stulberg is adapting the system for knee replacement.

The range of applications of the meetings has considerably expanded from custom hips to include custom acetabula for revision hips, pelvic parts, custom knee replacements, bone tumour implants in fact, almost anything. Of course materials development has played an important part, the most obvious example being HA coating, but other bioactive coatings, growth hormones, and bone substitutes have all received attention.

To return to the change of name. It became clear that the nature of the meetings had expanded beyond the original conception of custom prostheses: it had moved into the application of technology solving a wide range of current problems and exploiting new opportunities. The new name as finalised by the Executive Committee at its recent meeting in New Orleans, will be ISTAA, International Society for Technological Advances in Arthroplasty. The first key word is "advances". Technology should introduce new possibilities and does not necessarily have to be expensive. Expense is an unwelcome word in medicine today! The second key word is "arthroplasty": it was decided to restrict the subject of the meetings primarily to problems concerning joints. The Society offers an interesting field for many of us in Orthopaedic Biomechanics (and Biomaterials).

P.S. Walker

7th Annual International Symposium on Custom-Made Prosthesis (ISSCP)

Conference topics:

Basic research - biomechanics, gait analysis, design methodology, imaging in design and evaluation of arthroprosthesis, computer modelling, manufacturing technologies.

Biomaterials - new cements and biomaterials, coatings, new bone substitutes.

Modular Prosthesis (Hip, Knee) - applications and clinical outcome.

Custom-made prosthesis (Hip, Knee) - applications and clinical outcome.

Modern philosophies in off-the-shelf prosthesis.

Modular or custom devices in special cases and in reconstructive surgery - mega-prosthesis, revision surgery, shoulder, elbow, pelvic replacement - applications of computer and robots in

surgery. Cost quality and innovation in implant manufacturing.

Deadlines - Abstracts dealing with one of the above mentioned main topics, must be sent with four copies before April 30th, 1994.

Conference Organization: O.I.C; s.r.l, Via A La Marmora, 24-50121 Florence/Italy, Tel.: +39 55 5000631, Fax: +39 55 5001912/570227, Telex: 572659 OIC, Fax: +39 2 58300285.

International Congress and Instructional Course
"Advances in Elbow Biomechanics and Surgical Techniques"
Deutsche Gesellschaft für Orthopädie und Traumatologie (D.G.O.T.)
and European Society of Biomechanics (E.S.B.),
Cologne/Germany, March 2nd - 5th, 1995

The European Society of Biomechanics (ESB) is pleased to be a cosponsor of this outstanding International Congress on the Elbow Joint. While the ESB holds its own dedicated meetings every two years, it seeks to co-operate with other organisations and individuals on an ongoing basis, regarding other meetings which have a biomechanical context. This particular meeting on the Elbow combines together biomechanics, biological science and surgery to provide an authoritative picture of the state-of-the-art. The organisers have assembled some of the best experts from around the world, providing you, the participants, with a unique opportunity to learn from them first hand, and so interact in the discussion sessions. Furthermore, while the lower extremity receives extensive coverage, it is rare that a symposium of this quality is assembled on a joint of the upper extremity. It is fully expected that this blend of biomechanics and surgery applied to the important elbow joint will be a most rewarding experience.

Contact: Dr. H.P. Bischoff, Argental-Klinik, D-88316 Isny-Neutrauchberg.

Peter S. Walker

INFORMATION ON EC - PROGRAMS

Cooperation in Science and Technology with Central and Eastern European Countries (Copernicus)

The objectives of this program is to transfer and develop technologies likely to contribute to the rehabilitation of the economy of Central and Eastern Europe Countries (Albania, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic and Slovenia). New states from former Soviet Union may also participate but only in addition to other Eastern European Countries. Two types of actions are considered:

- **Joint Research Projects** which must include a minimum of two partners from at least two different Central and Eastern European Countries and at least one partner from a Community Member State,
- **Proposals for Concerted Actions** which must include a minimum of two partners from two different Central and Eastern European Countries and at least two partners from different EC member states.

The maximum duration is three years and maximum total cost is 500,000 ECU per project. In Joint Research Projects, at least 75 % of funding must be for the Central and Eastern European partners. No strict break down is imposed for concerted actions but preference will be given to proposals involving substantial Eastern Europe participation. The allowable expenses in this case are limited to administration, travel, exchange and mobility costs.

Research Sectors

1. Information technology (microelectronics, software systems, computer integrated

- manufacturing and engineering, business and home systems),
2. Communication technologies, telematics and language engineering,
3. Manufacturing, production, processing and materials (including design and recycling),
4. Measurement and testing (including standards and regulations),
5. Agro and food industries (food safety, food quality, packaging and distribution),
6. Biotechnology (development of vaccines, diagnostics and therapeutics, biomarkers of exposure to mutagenes and carcinogenes).

All projects must have a project coordinator responsible for the management of the project, who must be from a EC member State.

Deadline for submission: May 2, 1994

Information and application documents can be obtained from the following persons:

Belgium	Mrs. Desmeth	Tel. (32) 2 238 3453	Fax: 2 230 5912
Denmark	Mr. S. Caspersen	Tel. (45) 98 14 23 33	Fax: 98 15 15 22
France	Mrs. Legrand	Tel. (33) 146 34 35 35	Fax: (1) 46 34 34 72
Germany	Mr. K. Nagel	Tel. (49) 228 59 31 36	Fax: 228 59 36 03
Italy	Prof. G. Castro	Tel. (39) 63 234 363	Fax: 68 521 584
Netherlands	Mr. P. Finger	Tel. (31) 79 563 650	Fax: 79 53 13 53
U.K.	Mr. T. Garret	Tel. (44) 71 839 55 61	Fax: 71 925 26 20

Bilateral proposals involving EC member states and new states from former Soviet Union should be addressed to the INTAS Program (International Association for the promotion of Cooperation with Scientists from the Independent States of the former Soviet Union).

M. Y. Jaffrin

Upcoming events

1994

May 16-19, XXIX. Ann. Congress of European Society for Surgical Research, Montpellier, France. Contact: ESSR - Scientific Secretariat, Hopital Lapeyronie, 34059 Montpellier Cedex 01, France. Phone: (33) 67 04 10 63, Fax: (33) 67 04 10 63.

June 21-24, 10th Congress of Internat. Society of Electrophysiological Kinesiology (ISEK), Charleston, South Carolina/USA. Contact: Richard Shiavi, Biomedical Engineering, Vanderbilt Univ., Nashville, Tennessee 37235, Phone: 615-322-3598, Fax: 615-343-7919.

June 28 - July 4, 8th CIMTEC World Ceramics Congress, Florence/Italy. Contact: 8th CIMTEC, P.O.Box 174, 48018 Faenza/Italy; includes the **Forum on new materials "Materials in Clinical Applications"**, Florence/Italy.

July 2-6, XII. Internat. Symp. on Biomechanics in Sports, Budapest-Siofok, HUNGARY. Contact: ISBS '94 Symposium Secretariat, Hungarian University of Physical Education, H-1123, Budapest, Alkotás u. 44, HUNGARY. Phone: (36-1) 156-4444, Fax: (36-1) 156-6338.

July 4-7, European Joint Conference on Engineering Systems Design and Analysis, London, U.K.. Contact: Dr. Minoo Dabestani or Prof. P.S. Walker, Biomedical Engineering Department, Institute of Orthopaedics, Brockley Hill, Stanmore, Middlesex, U.K. HA7 4LP.

July 10-15, 2nd World Congress on Biomechanics in

conjunction with 9th Meeting of the European Society of Biomechanics, Amsterdam, The Netherlands. Contact: Second World Congress of Biomechanics, Biomechanics Section, Institute of Orthopaedics, University of Nijmegen, P.O.Box 9101, NL-6500 HB Nijmegen, The Netherlands.

July 16-19, 3rd Internat. Symp. on Biofluid Mechanics "Blood Flow in Large Vessels", Munich, Germany. Contact: Joyce McLean, Lothstr. 34, 80335 München 2, Germany.

July 28-30, 7th Internat. Symposium on Ceramics in Medicine, Turku/Finland. Contact: Dr. Örjan H. Andersson, Abo Akademi University, Department of Chemical Engineering, Biskopsgatan 8, FIN - 20500 Abo/Turku, Finland. Phone: +358 21 654 883, Fax: +358 21 654 479.

Aug. 22-26, World Congress on Medical Physics and Biomedical Engineering, Rio de Janeiro/BRASIL. Contact: Rua do Ouvidor, 60/414 - 20040-030 - Rio de Janeiro RJ-BRASIL, Phone: +55-21-224-6080, Fax: +55-21-231-1492.

Sept. 2nd week, 11th European Conference on Biomaterials. Prof. P. Giusti, Via Diotisalvi N 2, 56100 Pisa, Italia.

Sept. 13 - 14, Autumn 1994 Meeting of the British Orthop. Res. Society, Nottingham, abstract deadline May 27, D. Marsh, Hope Hosp., Dept. Orthop. Surg., Salford M6 8HD, UK

Sept. 13-16, 5th Internat. Conf. Biomechanics of Man '94, Benesov near to Prague. Contact: Ing. Jitka Jírová, CSc., ITAM AS CR, Pod vodárenskou věží 4, 18200 Prague 8, Czech Republic.

Sept. 16, One Day Symposium "Optical Methods in

Biomechanics", London/Great Britain. Contact: Dr. Julia Shelton, IRC in Biomedical Materials, Queen Mary & Westfield College, Mile End Road, London E1 4NS.

Sept. 21-23, 6th Symp. on Biomaterial "Ceramic implant materials in orthopaedic surgery", Göttingen, Germany. Contact: Dipl.-Ing. G.H. Buchhorn, Orthopaedic Hospital, University of Göttingen, Robert-Koch-Str. 40, 37075 Göttingen/Germany

Sept. 26-29, 2nd Internat. Symp. on Three-dimensional Scoliotic Deformities combined with 8th Internat. Symp. on Surface Topography and Spinal Deformity, Pescara/ITALY. Contact: Dr. M. D'Amico & Dr. A. Morelli, CERBITEB, Fond. Paolo VI, L.re Giovanni XXIII, I-65126 Pescara, Italy.

Sept. 27 - Oct. 1, The 4th Conference of The International Society for Fracture Repair, Kobe/Japan. Contact: ISFR-94 Secretariat, c/o JCS Kobe branch, 6-9-1, Manitojima Nakamachi, Chuo-ku, Kobe 650, JAPAN.

Oct. 7-20, The 8th International Conference on Biomedical Engineering, Singapore. Contact: The Secretariat, 8th ICBME 1994, 336 Smith Street, #06-302, New Bridge Centre, Singapore 0105.

Oct. 27-30, SICROT 94, 3rd Inter-Meeting, Boston, Massachusetts/USA. Contact: Henry J. Mankin, M.D., Dep. of Orthopaedics, Massachusetts General Hospital, Boston, MA, USA 02114.

Oct. 27-30, Symposium "Advances in Orthopaedic Biomechanics and Their Clinical Applications", Baltimore, Maryland. Further information: Office of Continuing Education, Johns Hopkins Medical Institutions, Turner 320, 720 Rutland Avenue,

Baltimore, Maryland 21205-2195, Phone: (410) 955-2959, Fax: (410) 955-0807.

Dec. 9-11, 2nd Int. Congress of the Osteoarthritis Research Society, Orlando, Florida, USA. Abstract deadline July 1, OARS, P.O. Box 30096, Bethesda, MD 20824, USA

1995

Febr. 13-16, 41st Ann. Meeting of the Orthopaedic Research Society, Orlando, Florida. Contact the Society Office for further information.

Sept. 10-11, Internat. Hand and Wrist Biomechanics Symp.: An Advanced Workshop, San Francisco, CA. Contact: Dr. David Nelson, Box 0728 University of California, San Francisco, CA 94143.9728. Phone: 415 476 1166, Fax: 415 476 1304.

Sept. 2nd week, 12th European Conference on Biomaterials. Prof. M.A. Barbosa, INEB - Instituto Nacional de Engenharia Biomédica/FEUP, Rua dos Bragas, 4099 Proto Cedes, Portugal

Nov. 5-8, 2nd Combined Meeting of the American, Japanese, European, and Canadian Orthopaedic Research Societies, San Diego, CA. Contact: Sheril King, Society Manager, Orthopaedic Research Society, 6300 N River Road, Suite 727, Rosemont, IL 60018. Phone: 708 678 1625, Fax: 708 823 0536.

Nov. 9-10, 2nd Interdisciplinary World Congr. on Low Back Pain, La Jolla, California, USA. Europ. Conference Organizers, P.O. Box 4334, 3006 AH Rotterdam, The Netherlands, Fax: 31-10-4147988

Name: HAYASHI

First Name: Kozaburo

Title: Ph.D., Professor

Address: Department of Mechanical Engineering
Faculty of Engineering Science, Osaka University
Toyonaka, Osaka 560, JAPAN

Tel.: +81-6-844-1151 (Ext. 4470) **Fax:** +81-6-845-3373



Main research areas:

Vascular mechanics; Mechanics of knee joint tendon and ligament; Remodeling and functional adaptation of biological tissues; Development and evaluation of biomaterials and artificial organs.

Available research methods:

Electroservo hydraulic material testers, Tensile tester, VDA-systems, Computer work stations.

Possible support and cooperation for other researchers:

Some publications: Takamizawa, K., Hayashi, K.: "Strain energy density function and uniform strain hypothesis for arterial mechanics". J. Biomechanics 20 (1987), 7-17

Hayashi, K., et al.: "Elastic properties and strength of a novel small-diameter, compliant polyurethane vascular graft." J. Biomed. Mat. Res., 23-A2 (1989), 229-244.

Yamamoto, N., et al.: "Mechanical properties of the rabbit patellar tendon". Trans. ASME, J. Biomech. Eng. 114 (1992), 332-337

Staff-members in the lab: 30	permanently: 8	on funds:	students: 17	others: 5
Funding (percent)	univ:	govnm.: 30	grants: 50	others: 20
Educ. programs, student grants:				

Name: VERRIEST **First Name:** Jean-Pierre **Title:**
Address: INSTITUT NATIONAL DE RECHERCHE SUR LES TRANSPORTS
 ET LEUR SECURITES (INRETS)
 Laboratoire Ergonomie Santé Confort
 109, av. Salvador Allende - Case 24 - 69675 BRON Cédex - FRANCE
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Main research areas: Biomechanics applied to ergonomic design of transport vehicles.
 Whole body 3D modelling for computer aided design systems.
 Posture and movement analysis for simulation on CAD systems.

Available research methods:

3D trajectography ELITE system. 3D ultrasonic position transducers. Multiadjustable measurement seat for sitting comfort analysis.

Possible support and cooperation for other researchers:

Some publications:

MAN3D - A functional and geometrical model of the human operator for computer aided ergonomic design.

VERRIEST, J.P., TRASBOT, J., REBIFFE, R.

Advances in Industrial Ergonomics and Safety, Karwowski, W., and Yates, J.W. (Eds.). Taylors & Francis 1991

Staff-members in the lab:	permanently: 24	on funds:	students: 4-6	others: 5
Funding (percent)	univ:	governm.: 30	grants: 70	others: 10
Educat. programs, student grants:				

Name: HASENKAM **First Name:** J. Michael **Title:** MD. D.M.Sc.
Address: Dept. of Cardiovascular & Thoracic Surgery,
 Skejby Hospital, 8200 Aarhus N, Denmark
Tel.: +45 86 78 45 11/ext. 54 38 **Fax:** +45 86 78 45 33



Main research areas: Hemodynamic studies in the heart and large arteries. Turbulence and velocity fields at heart valves and vascular prostheses. Development and evaluation of new non-invasive methods and technique.

Available research methods: Color-Doppler echocardiography, MR-scanning (imaging and flowfields), Hot-film anemometry, vibrocardiography, in vitro models, animal experimentation, human studies.

Possible support and cooperation for other researchers: Site visits, joint projects, scientific meetings and exchange of students are feasible and are given high priority.

Some publications: Approximately 50 publications concerning hemodynamic studies.

Hasenkam et al.: "Turbulence stress measurements downstream of aortic valves". J. Biomech. 21 (1988), 631-645.

Hjortdal et al.: "Velocity field studies at arterial stenoses". J. Biomech. 24 (1991), 1081-1093.

Nygaard et al.: "Two-dimensional color-mapping of turbulent stress distribution downstream of two aortic bioprosthetic valves in vitro". J. Biomech. 25 (1992), 423-440.

Staff-members in the lab: 15	permanently: 3	on funds: 10	students: 5	others: 5
Funding (percent)	univ: 30	governm.: 20	grants: 40	others: 10
Educat. programs, student grants: Diploma students (M.S.), ph.d.-students. Doctoral thesis.				

Name: ISAAZ **First Name:** Karl **Title:** MD, FESC, FACC
Address: Service de Cardiologie C, Centre Hospitalo - Universitaire de Nancy
 Hopital Central, Av. de Lattre de Tassigny, 54035 Nancy (France)
Tel.: +33/ 83 85 17 17 **Fax:** +33/ 83 85 11 78

Main research areas: Cardiac and Vascular Mechanics.

Available research methods: Cardiac catheterization, doppler echocardiography, digital transfer of ultrasound data, vessel measurements by echotracking (diarad).

Possible support and cooperation for other researchers:

Some publications: Am. J. Cardiol. 64 (1989), 81 - 87; Am. J. Cardiol. 64 (1989), 66 - 75; Am. J. Cardiol. 65 (1990), 1246 - 51; J. Am. Coll. Cardiol. 17 (1991), 112 - 121; J. Am. Coll. Cardiol. 18 (1991), 1661 - 1670; J. Biomechanics 25 (1992), 581 - 590; Computers in Cardiology, IEEE Comp. Soc. Press, Proceedings 1992, pp 279 - 282

Staff-members in the lab: 2	permanently: 2	on funds:	students:	others:
Funding (percent)	univ:	governm.:	grants:	others:
Educat. programs, student grants:				

Name: CIUPA **First Name:** Radu V. **Title:** Prof. Dr. eng.
Address: Technical University of Cluj-Napoca
 Str. Sinaia 33, 3400 Cluj-Napoca, ROMANIA
Tel.: +40 95 132456 **Fax:** +40 95 112055

Main research areas:

Hemodynamics, Blood flow phenomena, computer simulation of blood flow, rehabilitation.

Available research methods:

Mathematical analysis, simulation, the construction of electrical models, experimental tests.

Possible support and cooperation for other researchers:

Collaborative projects for young researchers, especially in the domain of electrical models.

Some publications:

Electronic simulator for arterial pulse (1985); Analogical and numerical modelling of the blood flow in arteries (1986); The study of the blood flow in vessels by means of equivalent electric design (1989); Achillian reflexometer (1992).

Staff-members in the lab: 3	permanently: 3	on funds:	students: 5	others: 1
Funding (percent)	univ: 80	governm.:	grants: 20	others: 10
Educat. programs, student grants: Medical electronics and medical informatics courses, no student grants.				



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