



# American Society of Biomechanics Newsletter

Vol. 2

December, 1989

No.2

## From Our President - Roger M. Enoka -

"Hey! Hey, you! Hey, you there!" This was the creative expression used by one of our eminent biomechanicians in Burlington in an attempt to get the attention of a native; we were lost at the time. Since it seemed quite effective in Burlington, although I don't know why, I thought that I would use it here to get your attention. If you are reading this column, then I guess that it is appropriate.

As you are aware, we recently completed our 1989 Annual Meeting (Thanks Dave Wilder and Jean Landa-Pytel) and hence we begin another cycle of the Executive Board. In addition to me becoming your President, George Rab has been elected as President-Elect, Melissa Hoy is the new Secretary/Treasurer, Kit Vaughan assumes the role of Program Chair-Elect, Terry Khalil is the 1990 Meeting Chair, and Mary Rodgers has agreed to serve as Chair of the Education Committee. The other members of the Board who will continue their service include Malcolm Pope as Past-President, Ed Chao as Program Chair, Tom Brown as Chair of the Membership Committee, and Keith Williams as the Newsletter Editor. In addition, Phil Martin (Arizona State University, Tempe) has been selected as the 1991 Meeting Chair and Louis Draganich (Chicago) has agreed to serve as the 1992 Meeting Chair; the 1992 Meeting will be held in conjunction with the Canadian Society. We are honored to serve the Society and to continue the heritage that was established by our founders in 1977.

Since the beginning of the Society we have been fortunate to have had a number of talented and creative individuals who have served on the Executive Board. However, one outcome of this creativity has been that each Board has added one or two innovations to the operation of the Society so that today it requires considerable effort by the Board to ensure that all the programs and guidelines are implemented with due process. A major goal of the Board this year is to consolidate these activities to ensure continuity. In addition, we plan to address such issues as: Should the Annual Meeting be extended to 2.5 days? How can we improve the poster presentation format so that the posters are given due recognition? What format would be most appropriate for tutorials at the Annual Meeting? How can we ensure that both the program of the Annual Meeting and the membership of the Society retain the interdisciplinary flavor that is central to the objectives of the Society? What can we do to retain the 40 or so members that we lose each year? Is the Society financially secure?

Many of these issues will be raised by various members of the Executive Board in the Newsletter and your assistance will be solicited. Be assured that we value your input and will need your assistance if the Society is to adhere to its ideals. I encourage you

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## Borelli, Young Scientist Awards

Congratulations are in order for the most recent winners of ASB research awards who made presentations at the Annual Meeting in Burlington. The Young Scientist Award, Post-Doctoral, was given to Kenton R. Kaufman from the Orthopaedic Biomechanics Lab at the Mayo Clinic for his paper entitled "Muscle and joint forces in the knee during isokinetic exercise". The Pre-Doctoral Young Scientist Award went to Donald D. Anderson from the Department of Orthopaedic Surgery at the University of Iowa. His presentation was entitled "Dynamic finite element analysis of impulsive loading of the extension-splinted rabbit knee."

The Borelli Award went to Maury L. Hull of the Mechanical Engineering Department at UC Davis. His paper, entitled "Progress towards the prevention of knee injuries in Alpine skiing accidents", was highlighted by his final comment that the only safe way to ski is on the back of another skier. Perhaps this method will become the newest rage in skiing this winter.

## ASB Travel Fellowship

Once again ASB is sponsoring a travel fellowship for the purpose of conducting research. All ASB members are eligible to apply, including student members. Travel and lodging costs are covered, and budget requests may be up to \$1000. Matching funds from the host's or candidate's institution or grants are desirable, but not required. Applications must be received by June 30, 1990 and the funding period is from November 1, 1990 through October 31, 1991. Notice of the award will be given by September 30, 1990.

Applications must include a current curriculum vita, cover letter, letter from host indicating support for travel, a synopsis (2 pages maximum) describing purpose and significance of travel, and a detailed budget with justification. A short report (2 pages maximum) explaining the significant outcomes of the travel must be submitted, and at the annual meeting following the completion of the travel, Fellows will be expected to present a 5 minute presentation to all attendees at the meeting.

## Mid-year Executive Board Meeting

The midyear meeting of the Executive Board is scheduled for Thursday, February 8 in New Orleans. Anyone who has any items they would like to see discussed at this meeting should contact a member of the Board.

## ASB 1989-1990 Officers and Committees

### President

Roger Enoka  
Dept. of Exerc. and Sport Sci.  
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### President-Elect

George T. Rab  
Dept. of Ortho. Surgery  
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916-453-2958

### Past-President

Malcolm H. Pope  
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Burlington, VT 05405  
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### Secretary/Treasurer

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### Program Chair

Edmond Y. Chao  
Biomechanics Laboratory  
Mayo Clinic  
Rochester, MN 55901  
507-284-2262

### Program Chair-Elect

Christopher "Kit" L. Vaughan  
Motion Analysis Laboratory  
Kluge Children's Rehab. Center  
2270 Ivy Road  
Charlottesville, VA 22901  
804-924-2364

### 1990 Meeting Chair

Tarek M. Khalil  
Dept. of Industrial Engineering  
University of Miami  
P.O. Box 248294  
Coral Gables, FL 33124  
305-284-2344

### Nominating Committee

Malcolm H. Pope, Chair

Jean Landa Pytel  
Pennsylvania State Univ.  
814-863-0754

Richard A. Brand  
University of Iowa  
319-335-7531

### Awards Committee

Malcolm H. Pope, Chair

R. Bruce Martin  
Univ. of Calif, Davis  
916-752-3333

Don B. Chaffin  
Univ. of Michigan  
313-763-2245

### Education Committee

Mary Rodgers, Chair  
Dept. of Rehab. Med. and Re-  
storative Care  
School of Medicine  
Wright State University  
3171 Research Boulevard  
Dayton, OH 45420  
513-259-1326

Mark D. Grabiner  
Cleveland Clinic Foundation  
216-444-7276

Harcharan S. Ranu  
New York College of  
Osteopathic Medicine  
516-626-6926

## *Notes From the ASB Executive Board Meetings - August, 1989 -*

### ASB 14th Annual Meeting - 1990

The 1990 Annual Meeting will be held November 14-16 in Miami at the Hyatt Regency. The date is later than usual to avoid conflict with the World Congress on Biomechanics in San Diego and the Human Factors Meeting in Orlando, and to take advantage of "low season" rates. Tarek Khalil from the University of Miami is the Meeting Chair. Lab tours are planned at the University of Miami, and plans for tutorials are currently under discussion by the Education Committee. If you have any suggestions for tutorials or their format, contact Mary Rodgers.

### ASB 15th Annual Meeting - 1991

The Executive Board considered three proposals for the 1991 Annual Meeting - from Tulane University, Wichita, and Arizona State. A blind vote resulted in the selection of Arizona State University, with Philip Martin as Meeting Chair.

### ASB 16th Annual Meeting - NACOB - 1992

Louis Draganich reported that preparations for the 1992 North American Congress on Biomechanics, held in conjunction with the Canadian Society of Biomechanics, is progressing, with target dates of August 23-27 in Chicago. At least three concurrent sessions are planned, and negotiations are taking place with the McCormick Place in Chicago.

### Short Subjects

- The number of abstracts submitted for the meeting in Burlington was 130, a 12% increase over 1988. Blind reviews were used for the first time. Sixty-eight papers were chosen for oral presentation, with fifty-four included in the poster presentations and six abstracts were rejected.
- Income in ASB now equals rather than exceeds expenses. Primarily this is due to added new programs such as the Traveling Fellow and Young Scientist Awards. The Executive Board has chosen to try to boost funds through recruitment of Sustaining Members before considering an increase in dues.
- Malcolm Pope reported that a strike at Pergamon Press was resolved and the backlog of articles would be printed serially. The rejection rate for the Journal of Biomechanics is about 60% and is due to lack of quality rather than lack of space.
- Thanks to Mont Hubbard from UC Davis for providing the Borelli illustrations, from an original copy of *De Motu Animalium*, used for the Borelli plaque.



## NASA Symposium: Influence of Gravity and Activity on Muscle and Bone

Bionetics is sponsoring a NASA Symposium on The Influence of Gravity and Activity on Muscle and Bone on January 29-30, 1990 at the NASA/Ames Research Center in Moffett Field, CA. The interdisciplinary symposium will present recent advances in knowledge of musculoskeletal adaptation to gravity and activity level, and will focus on musculoskeletal modeling and scaling, the structure and mechanical properties of muscle and bone, and functional adaptation and metabolic processes. In Session I:, Gravity and Activity, development, adaptation, and function of the musculoskeletal system will be examined from the perspective of the physical and environmental constraints imposed by gravity and activity. Session II:, Structural and Mechanical Properties, will focus on the structure and mechanical properties of muscle, bone, and connective tissue which must support the forces exerted on

these tissues during daily activity. In session III:, Functional Adaptation, the role of mechanical simulation in maintaining and altering the structure and mechanical properties of musculoskeletal tissue will be addressed. And in Session IV:, Metabolic Processes, the metabolic processes which regulate and integrate the localized response of the musculoskeletal tissue to environmental factors will be discussed.

### Couldn't Come To ASB at UC Davis?

Were you not able to come to the ASB meeting in 1987 at UC Davis? Or have you lost your coveted copy of the proceedings from that meeting? If so, you are in luck. Bruce Martin reports that there are about 100 copies looking for a home, and he would be happy to send you one if you let him know. A dollar for postage is requested but not required. Contact Bruce at Orthopaedic Research Laboratories, TB139, University of California, Davis, 95616.

??? Tom-A-to OF Tom-Ah-to ???

If you owned a tomato factory, would you process tom-A-to's or tom-Ah-to's? And would they be processed into Catsup or Ketchup? If you were a french-fry, would you rather your heritage be from a pot-A-to or a pot-Ah-to? If you work in the area of biomechanics, are you a biomechanician, a biomechanist, a biomechanic, a biomechanique (in French Canada?), or something else? And is the language that those doing biomechanics research use to confuse students, editors, department chairs, promotion committees, and the popular press called biomechanese or some other perturbation of the English language? Across the nation, those who blend biology and mechanics into a profession are encountering sleepless nights and an identity crisis over the question: What should a person in biomechanics be called?

Often even the person spending their livelihood in biomechanics is confused. Recently overheard was this discussion involving a group of biomechan (-ists, -icians, -ics, -iques): "...is something often addressed by biomechanicians, or biomechanists, or whatever we're supposed to be called.....". How can you promote an area to which you yourself cannot attach an appropriate label?

Biomechanics is not the only scientific/medical area with problems. A person replacing hip joints is sometimes called an orthopedist, other times referred to as an orthopaedist, and sometimes called an orthopod. Webster's has a definition for someone doing pediatrics listed as pediatrician, but also list a definition for a pediatrist (you guessed it, the definition is: "a pediatrician"). There is no such word as a dietst, but there is either a diettian or a dietician. While nutritionst sounds appropriate, nutritionician has some flair to it.

Those in biomechanics typically try to understand how some type of biological system functions, while those in automechanics try to find out why the autos of those in biomechanics do not function. The person who works and works and works on your car is not a mechanician, or a mechanist, he or she is a mechanic. Those in mechanical engineering call themselves engineers, so maybe we should be biomechaneers (with those investigating the mechanics involved in hearing being biomechaneers). Should the head of the Biomechanics Department at Louisiana State University studying alligator swimming techniques be called a bayoumechanist?

It is obvious that what is needed is a vote to set the trend for label-affixing, and here is your chance. Clip out the form below and send it along with your designation to the newsletter editor as to which label you prefer. If a term you favor is not shown below, feel free to suggest it. Results will be summarized in the next ASB Newsletter. While there is not likely to be common agreement, at least we will have an idea of what other biomechanicianistics think about the situation.

Check the label you prefer, and provide a short comment if you desire.

Biomechanist     Biomechanician     Biomechanic     Other: \_\_\_\_\_

Comments: \_\_\_\_\_

Send to Keith R. Williams, ASB Newsletter Editor, Physical Education Dept., Univ. of Calif., Davis, CA 95616

## BIOMCH-L

### ELECTRONIC MAIL DISCUSSION LIST FOR BIOMECHANICS

In the last copy of the newsletter an announcement was made concerning an electronic mail forum, BIOMECH-L@HEARN, for biomechanics set up by Herman Woltring. Somewhere along the line an error was made in the access code, and the correct access is listed here. Subscription (or other administrative) requests must be sent to LISTSERV@HEARN, using the interactive or email request SUB BIOMCH-L <full\_personal\_name>, while postings to the readership should be sent to BIOMCH-L@HEARN. Dr. Woltring reports that the system has 79+ subscribers in Asia, Canada, Europe, and the USA.

### Election Results / Preferred Meeting Dates

Outgoing Secretary-Treasurer R. Bruce Martin reported the results of ASB elections for 1990-1991 at the Annual Meeting. One hundred and seventy two ballots were received, and congratulations are in order for: George A. Rab from UC Davis, President Elect; Melissa G. Hoy, VA Medical Center in Polo Alto, CA, Secretary-Treasurer; and Christopher (Kit) Vaughan, Dept. of Bioengineering, Clemson University, Program Chair for the 1991 Annual Meeting.

Bruce also reported the results of a poll taken of members regarding what part of the week was preferred for the Annual Meeting. The questionnaire was enclosed with the dues statement sent out in December, 1988. Of 294 responses received, 131 preferred holding the meeting during the week, 114 indicated a preference for weekend dates, and 49 were undecided. Because the majority selected meeting dates during the week, the Executive Board has indicated that the Wednesday/Thursday/Friday format or some similar variation will continue.

### Did You Ever Wonder...

What it takes to make a successful ASB Annual Meeting? Manssour H. Moeinzadeh presented the ASB Executive Board with a final report from the 1988 meeting at the University of Illinois in Urbana-Champaign. Here are a few interesting items from that report: Approximately 2200 "Call for Paper" packets were distributed.... Requests for free announcements for the meeting were sent to 20 Journals and Newsletters.... Approximately 400 final programs were mailed.... There were 234 participants.... 46 were non-members.... The state with the most attendees was Illinois (45), followed by Michigan (24), California(18), Iowa(17), Pennsylvania (14), Ohio (12), and Indiana (11).... Canada had 18 representatives, and there were 15 others from foreign countries.... 73 attendees went on laboratory tours.... There were four sponsors, and six exhibitors adding a total of \$6700 to income.... Total income was \$23,475 with expenses of \$21,970.42, leaving a profit of \$1,504.58 which went into the ASB general fund.

### From Our President

(continued from front page)

to participate in the activities of the Society by nominating individuals for various awards, by making your opinions known to the Executive Board, by encouraging colleagues (especially those in biology and ergonomics) to join the Society, by nominating individuals for Emeritus and Honorary membership, and by soliciting corporations to become Sustaining members. We are grateful for the contributions made to many of the activities of the Society by the corporations Aircast, Don Joy, Protek, and Zimmer, who are the current Sustaining Members of the Society.

Remember that the purpose of the Society is to facilitate the exchange of ideas among researchers in biomechanics. The unique feature of the Society is the emphasis that we place on interdisciplinary interactions in the pursuit of this goal. We thrive on diversity! By the way, did you see those two posters by Bejjani et al. at Burlington, one on piano performance and the other on the violin vibrato. I would like to bestow the Presidential Award (I just created this award!) to Dr Bejjani and his colleagues for contributing most to the diversity of our interactions on biomechanics at the Annual Meeting. My challenge to each of you this year is to identify a biomechanician at your institution who works on a completely different system or has a completely different application to you and encourage that individual to join the Society. If half of us can achieve this goal, we will be the benefactors at the next (November 14-16, 1990) Annual Meeting of the Society.

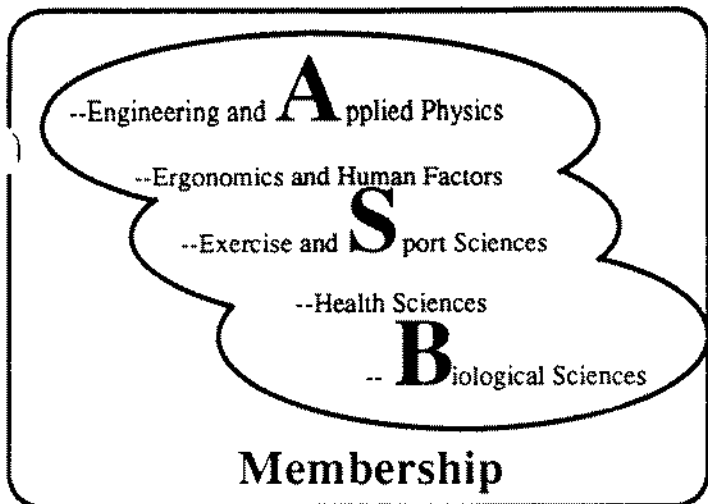
Many of you have expressed a desire to me to be involved in the activities of the Society. We appreciate this commitment and will do what we can to provide you with this opportunity. If you have any ideas on how we can improve the Society, however, do not hesitate to convey them either to me or to another member of the Executive Board. We are looking forward to another year of continued growth, of improved service to the membership, of expanding recognition for the Society, and an exciting Annual Meeting in Miami.

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### *The Newsletter Needs Your Contribution!*

Members are encouraged to contribute to the newsletter. A note, a letter to the editor, a lead to an interesting story, information about a scientific meeting, an opinion, or a feature article - anything that might be of interest to others in the Society. There is particularly a need for contributions specific to the various subdivisions within ASB, including information about upcoming meetings. Send information scrawled in longhand, or on disk via Macintosh or IBM Microsoft Word, or in text format. Anyone interested in contributing on a one-time or regular basis should send suggestions to:

Keith R. Williams  
Newsletter Editor, ASB  
Physical Education Department  
UC Davis  
Davis, CA 95616  
Tel. 916-752-3337



### SUSTAINING MEMBERSHIP

The ASB has recently set up a Sustaining Membership category, aimed at encouraging affiliation by commercial organizations that market products which are used by the biomechanics research community, or companies that are otherwise engaged in activities that fall within the Society's general interest areas. We currently have four sustaining members, two of them orthopaedic implant companies (Zimmer and Protek) and two of them brace/orthotics manufacturers (Aircast and Don Joy). Increasing this initial base of sustaining memberships will benefit the Society in several ways, not the least of which is the financial assistance that our sustaining members provide.

So far, most of the suggestions to the Membership Committee about companies to approach in this regard have come from the Executive Committee. Obviously, the more suggestions we get, the more successful we're likely to be in attracting new sustaining members. Therefore, we invite all members of the Society to suggest names of potential sustaining members. Possibilities include your research sponsor(s), companies from whom you regularly purchase supplies or equipment, companies whose products you evaluate, companies whose products make use of your research results, etc. Please send your suggestions to Tom Brown (Membership Committee Chairperson) at the address indicated on page 2. If you have a particular contact person at the company, please make sure to include his/her name.

### Other Membership Categories

The majority of the membership in ASB is in the Regular and Student categories. Within the five areas identified as sub-areas in ASB, Engineering and Applied Physics continues to dominate membership (42%), followed by Exercise and Sport Science (21%). Health Sciences has increased from 11 to 14% in the last year, but Biological Science (9%) and Ergonomics/Human Factors (8%), continue to be under-represented. In fact, no applications were received from anyone in the Biological Sciences during the last reporting period. Students make up 16% of the membership, and 41% of members are female. Everyone is encouraged to identify and recruit new members in all areas.

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## Jobs! Jobs! Jobs!

This location will be used to advertise any positions that might be of interest to ASB members. Forward a copy of the position announcement and it will be included in the next issue of the newsletter.

### University of California, Davis

Assistant/Associate Professor in Neuromuscular Basis of Human Movement. **Responsibilities:** Conduct research in human neuromuscular control of movement, develop UG and G coursework in this area, teach existing courses in motor learning and motor control, advise graduate students. **Qualifications:** Earned doctorate in neuromuscular physiology, biomechanics, motor control, or bioengineering with a research interest in an integrated view of neural, physiological, and biomechanical aspects of motor control. **Application:** Send a cover letter describing interests and qualifications, a vita, copies of relevant research publications, and the name, phone number, and address of three individuals who you will have submit letters of recommendation to E. Dean Ryan, Chair, Department of Physical Education, University of California, Davis, CA 95616. Candidate applications will be reviewed beginning February 1, 1990, and will continue until the position is filled.

### Nike

Research Technician in the Nike Sports Lab. **Responsibilities:** Collect, process and analyze lab data from research projects and shoe tests, and perform preliminary analysis of data. **Qualifications:** M.S. or B.S. degree with research background, coursework and laboratory work, and background in anatomy, biomechanics, ergonomics, and engineering. **Application:** Send resume to Personnel Office, 3900 SW Murray Blvd. Beaverton, OR 97005.

### University of Pittsburgh

Biochemist, molecular biologist, and biomechanical engineers at the Assistant, Associate, and full Professor levels in the Department of Orthopaedic Surgery. Tenure track positions with secondary appointments in Engineering or the Depts. of Microbiology, Biochemistry, and Molecular Biology. **Responsibilities:** Conduct research and participate in the department's teaching program. **Qualifications:** Ph.D. and suitable postdoctoral experience. Senior level candidates should have a track record of original research in biochemistry and molecular biology. Preference will be given to candidates interested in animal models of osteoarthritis and biochemical changes that occur in the cartilaginous matrix during osteoarthritis. **Application:** Send curriculum vitae and three letters of recommendation to James H. Herndon, M.D., Professor and Chairman, Department of Orthopaedic Surgery, University of Pittsburgh School of Medicine, Pittsburgh, PA 15261; 412-648-2311.

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In addition to the Regular, Student, and Sustaining Membership categories, ASB has two additional levels of membership. Honorary membership is meant to recognize individuals who have made significant contributions to biomechanics while Emeritus membership is for those who have retired from professional employment in biomechanics related fields. Members are encouraged to submit names of individuals they think are deserving of the Honorary Member category to the Executive Board.

## Jobs (continued)

### Rawlings Sporting Goods Company

Research engineer in the area of biomechanics or related areas. **Responsibilities:** Initial assignment would be in the research and development of protective products for football and baseball. **Application:** Contact Charles A. Pineau, Director, Employee & Customer Relations, Rawlings Sporting Goods Company, P.O. Box 22000, St. Louis, Missouri 63126. (314) 349-3500.

### Rensselaer Polytechnic Institute

Biomedical Engineering. **Responsibilities:** Conduct research, supervise graduate students, and teach courses in specialty area as well as in basic undergraduate engineering (RPI engineering curriculum). **Qualifications:** Ph.D. or equivalent degree, with research area open, but with preference given to candidates with interests in the biomechanics of implant design, specifically in relation to the tissue-implant interface, bone modeling/remodeling and related biological mechanics, perhaps involving cellular biomechanics. **Application:** a complete resume and three professional references should be sent to: Rob Roy, D.Eng.Sc., M.D., Head, Department of Biomedical Engineering, 7049 Jonsson Engineering Center, Rensselaer Polytechnic Institute, Troy, New York 12180-3590; 518-276-6959.

### University of Wisconsin-Madison

Asst. Prof. in Biomechanics. **Responsibilities:** Establish research program with external funding, teach UG and G courses in the biomechanics area, advise graduate students, fulfill service expectations. **Qualifications:** Ph.D. in biomechanics-related area, ability to teach UG and G courses, demonstrated record of refereed publications, postdoctoral experience desired. **Application:** Letter of application, curriculum vita, three reprints of most recent research, names, addresses, and phone numbers of three references. Send to: Professor J.J. Safrit, Henry Bascom Professor, Search Committee - Biomechanics, Dept. of Physical Education and Dance, 2000 Observatory Drive, Univ. of Wisconsin-Madison, Madison, WI 53706. Deadline: November 1, 1990, or until position is filled.

### University of Wisconsin - Milwaukee

Position in Biomechanics with research focus in biomedical rehabilitation, industrial/occupational biomechanics, or sport biomechanics. **Responsibilities:** Graduate teaching in biomechanics and support undergraduate instruction; direct and advise Masters students in biomechanics; develop and maintain an active research program; seek extramural funding; engage in University scholarly/professional service activities. **Qualifications:** Earned doctorate with emphasis in biomechanics or related fields; research focus on the biomechanics of human movement; demonstrated commitment to related scholarly/professional organizations; extramural funding experience preferred. **Application:** Submit a letter describing research program, curriculum vitae, college transcripts, samples of published research, and names/addresses of three references to Dr. Mark S. Sothmann, Co-Chair, Biomechanics Search and Screen Committee, Enderis Hall Rm 415, P.O. Box 413, University of Wisconsin-Milwaukee, Milwaukee, WI 53201, (414) 229-6080/5676. Applications must be post-marked no later than 10 February 1990.

### United States Olympic Training Center

Senior Biomechanist. **Responsibilities:** Be involved in clinical and applied sports biomechanics programs; present lectures and professional programs for athletes, coaches and peers; contribute to multi-disciplinary activities. **Qualifications:** Doctorate in biomechanics; demonstrated capability of scholarly productivity and involvement in applied sports biomechanics. **Application:** Submit letter of interest, resume, work and related experience, and list of professional references and salary requirements to J.T. Kearney, Ph.D., Sports Science Division, United States Olympic Committee, 1750 East Boulder St., Colorado Springs, CO 80909-5760. (719) 578-4516. Application must be received by March 30, 1990 for full consideration. 6

## Coming Events

### January 8-9, 1990

The 6th International Jerusalem Symposium on Sport Injuries, The Mitzpeh Rachel Hotel, Jerusalem, Israel. (c/o Gideon Mann, M.D., Unit of Sports Medicine, The Cosell Center for Physical Education, Leisure and Health Promotion, The Hebrew University, Jerusalem, ISRAEL 91904).

### January 29-30, 1990

The Influence of Gravity and Activity on Muscle and Bone, NASA Ames Research Center, Mountain View, CA. (c/o Joellen Stolarik, Bionetics, Ames Research Center/SL: 239-17, Moffet Field, CA 94035, Tel: 415-694-5745).

### May 22-25, 1990

37th American College of Sports Medicine Annual Meeting, Salt Lake City, Utah. (c/o American College of Sports Medicine National Center, P.O. Box 1440, Indianapolis, IN 46206-1440; 317-637-9200).

### May 27-June 1, 1990

XXIV FIMS World Congress of Sports Medicine, Amsterdam, The Netherlands. (c/o Congress Secretariat, XXIVth FIMS World Congress on Sports Medicine, c/o RAI Organisatie Bureau Amsterdam bv, Europaplein 12, NL-1078 GZ Amsterdam, The Netherlands, Tel.: 31.20.5491212, ext. 1764. Telex: 13499 raico nl., Telefax: +31.20.464469).

### July 8-11, 1990

7th Congress of the European Society of Biomechanics, Aarhus, Denmark. (c/o 7th Congress of ESB, Biomechanics Laboratory, Orthopaedic Hospital, Randersvej 1, 8200 Aarhus N, Denmark. Tel. +45 616 7500 ext. 4649).

### August 12-16, 1990

8th International Congress of the International Society of Electrophysiological Kinesiology (ISEK), Baltimore, Maryland. (c/o ISEK 1190, Congress Secretariat, P.O. Box 986, Hunt Valley, MD 21030 USA).

### August 26-28, 1990

The East-Coast Conference on Biomechanics, Old Westbury, Long Island. One page abstract by February 1, 1990. (c/o Professor H.S. Ranu, Dept. of Biomechanics, NYCOM, New York Institute of Technology, Old Westbury, New York 11568, Tel: 516-626-6926, Fax: 516-626-1306).

### August 30-September 4, 1990

First World Congress of Biomechanics, La Jolla, CA. Abstracts due January 1, 1990. (c/o Dr. Geert W. Schmid-Schönbein, Secretary General, The First World Congress of Biomechanics, AMES - Bioengineering R-012, University of California, San Diego, La Jolla, CA 92093 USA, Tel: 619-534-4272, Fax: 619-534-5722).

### December 6-8, 1990

Sixth International Conference on Biomedical Engineering, Singapore. (c/o Secretary, 6th Biomed Conference 1990, Dept. of Orthopaedic Surgery, National University Hospital, Lower Kent Road, Singapore (0511)).

### December 9-14, 1991

ISB XIII Congress, University of Perth - Western Australia organisation: Dr. Graeme Wood.