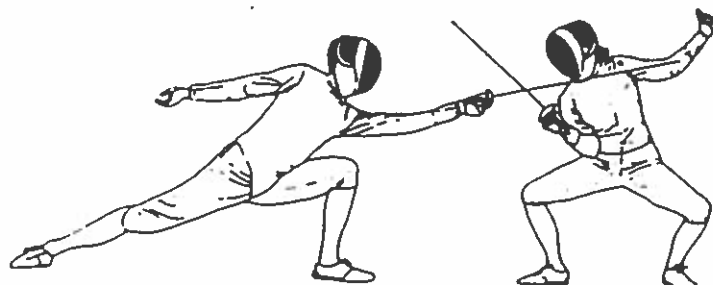

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SPORTS BIOMECHANICS NEWSLETTER

I S B S

International Society



of

Biomechanics in Sports

SPORTS BIOMECHANICS NEWSLETTER

Volume 2
Number 2

Marlene Adrian, Acting President
Gail Evans, Acting Secretary General
John Ostarello, Treasurer
Kathy Barthels, Newsletter Editor Vol. 2 No. 2

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INTERNATIONAL SOCIETY OF BIOMECHANICS IN SPORTS

Sports Biomechanics Newsletter

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## PRESIDENT'S MESSAGE

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As the interim President, August 1985 to June 1986, I am pleased to provide leadership to a vibrant organization dedicated to establishing linkages and collaborative exchanges of knowledge between sports biomechanics researchers and coaches. The officers, sports coordinators, and committees are hard at work planning the many activities of our organization. The proceedings of the 1985 Summer Conference in Greeley have been published. The Board of Directors meetings at that conference were most productive ones. Our revised constitution will be ready for membership balloting in the Spring. A name change is being voted upon by the Board of Directors for consideration by the membership when consensus is achieved. I believe that the acronyms ISB and ISBS are confusing and a hindrance to the function of both organizations. I hope that we will be able to establish cooperative activities with the Board of ISB. Our group is solely a sports biomechanics group, international in focus, and consisting of coaches and sport biomechanics researchers focusing upon improvement of sports performance. Although persons from throughout the world were not represented at our conference in Greeley, there were members from North America, Europe, Asia, and Africa. Our next meeting, June 1986, is in beautiful Nova Scotia, Canada. In 1987, we will have our annual meeting in the beautiful country of Greece.

Each member is encouraged to become affiliated with a sports committee and to work toward identifying and disseminating knowledge in that sport, determining needed research, and doing what they can to share the knowledge internationally. Please let your friends know of our existence and ask them to join. Any suggestions you would like to direct to the Board of Directors are welcome. Please send them to me or Gail Evans, our Executive Secretary.

I would like to acknowledge Juris Terauds and Jim Crakes for all the hard work they performed during the initiating years of ISBS. I know that they will continue as members of the organization and hope that they will be helpful in future growth of our organization. My heartfelt "thank you" to both Juris and Jim.

Marlene Adrian
Professor of Physical Education
Professor of Bioengineering
Director, Biomechanics Research Laboratory
University of Illinois at Urbana-Champaign

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REPORT OF THE PAST PRESIDENT

The International Society of Biomechanics in Sports is the only international organization totally dedicated to sports biomechanics. The need for ISBS has been demonstrated by the dramatic surge of membership (over 400) and the enthusiasm of participation by 29 countries. The truly international character of ISBS can be seen within the Board of Directors which presently seats 17 countries, and the Executive with four countries in office.

It has been an honor and privilege to be President of this distinguished group of dedicated sports biomechanists and practitioners for the past three years. For this I want to thank all those who helped to work toward the objectives of ISBS as well as those adversaries who sharpened the resolve to make ISBS the solid organization it is. As a charter member of ISBS and ISB I have had the opportunity to meet most of the productive and active members of the biomechanics community and I must say that we do indeed have some fine individuals who have made our conferences congenial, friendly and productive.

ISBS has had four international conferences and produced three sets of proceedings, which have been widely subscribed to by university and college libraries as well as biomechanics researchers, graduate students and practitioners throughout the world. The last (1985) ISBS was ably Chaired by Dr. Jerry Barham, for which he deserves praise and our sincere thanks. It may be added that the proceedings from the ISBS conference in Greeley were published in less than two months from the time of presentation.

I appointed Dr. Larry Holt to Chair the next ISBS conference (June 27 to July 2, 1986) at Dalhousie University in Halifax, Nova Scotia, Canada. In meeting with Larry at "Dal" this October I found intense preparation underfoot. Not only has Larry developed a comprehensive plan from a scientific point of view, but Larry and Mrs Holt have exciting social events in store for all participants. Under the expert and imaginative leadership of Larry Holt, the Halifax conference promises to be the best ever.

ISBS now has 48 committees to take care of most popular sports' biomechanics needs and to establish guidelines and working relationships with sports bodies. The Executive Director for each sport is charged with "bridging the gap" between the researcher and practitioner in that sport as well as to promote research that may be of value in the "real world". At Greeley committees were established or rejuvenated for nomination of new officers, revision of the ISBS constitution, publication of newsletters, publication of proceedings, public relations, clinics, conferences, youth sports, and equipment safety. Dr. Eleftherios Tsarouchas of Greece was placed in charge of organizing ISBS involvement in the European Junior Athletic Championships in Greece as well as the Chairing of an ISBS conference in Greece in 1986. Dr. Hans Gros, of the University of Stuttgart is organizing ISBS involvement in the European Championships in Germany.

ISBS has been fortunate in having most of the best biomechanists as its members, but in particular I appreciate having the Dean of Biomechanics, Dr. John M. Cooper in our midst. John's wisdom has guided us during our extensive meetings toward dignity and stability.

With the foundation in place I have confidence that ISBS will play its role to provide a forum for the exchange of ideas among researchers and practitioners of all geographic areas, to "bridge the gap", and in general to gather and disseminate information on sports biomechanics. With that thought in mind I pass the ISBS Presidency to our most able President Elect, Dr. Marlene Adrian, who has the duty to preserve the name and objectives of ISBS as dictated in our constitution.

Let us continue "to learn how to see and unravel the harmony of motion in sports".

Juris Terauds, Ph.D.  
Professor of Biomechanics  
Past President of ISBS



#### ISBS MEMBERS' RECEIVE JOURNAL DISCOUNT

Human Kinetics Publishers, Inc., is offering ISBS members a \$2.00 discount on a yearly subscription to the International Journal of Sport Biomechanics. Indicate that you are an ISBS member when you subscribe and pay only \$22.00 per year. Subscriptions are available from:


Human Kinetics Publishers, Inc.  
Box 5076  
Champaign, IL., 61820  
U.S.A.

**HELP!**


#### Wrestling Injuries

Dr. Carl R. Wirth, M.D., Professor of Orthopaedic Surgery, Albany Medical College, is requesting information regarding wrestling injuries, especially Free Style and Greco-Roman wrestling styles. Dr. Wirth requests that you enclose the age of the competitor, weight class, and list the injuries observed in that wrestler. It would be greatly appreciated if the treatment of the injury was outlined as well.

Please send the information you have to Dr. R. Wirth, Albany Medical College of Union University, Albany, New York 12208 USA



REPORT ON THE THIRD INTERNATIONAL SYMPOSIUM  
OF BIOMECHANICS IN SPORTS  
Greeley, CO. June 28 - July 3, 1985



Walter Cryer  
Brigham Young University

Approximately 100 individuals from at least 18 states, 4 provinces of Canada, China, Czechoslovakia, Finland, Greece, Japan, and West Germany attended the Third International Symposium of Biomechanics in Sports at the University of Northern Colorado (UNC) in Greeley, Colorado, USA June 28 - July 3, 1985. In addition to UNC hosting the symposium, the International Society of Biomechanics in Sports (ISBS) and the Research Center in Sports (RCS), Del Mar, California, USA served as sponsors.

#### SESSIONS

During the 4-day conference, there were 16 sessions consisting of 45 papers, 9 lectures, 3 data handling opportunities, 3 poster presentations, and a general business meeting. In addition, there were social events, exhibitors, film sessions, and trips to the US Olympic Training Center, a rodeo, and the mountains.

#### Papers and Poster Presentations

Many sports--baseball, soccer, basketball, bowling, badminton, softball, gymnastics, diving, swimming, combatives, track & field, cycling, rowing and canoeing, volleyball, weight training, hockey--were represented by the papers and posters.

#### Lectures

In the first session, Juris Terauds presented the Geoffrey Dyson Lecture. This was given in honor of Coach Dyson (now deceased) who has written extensively about the application of biomechanical principles to sport techniques. Geoffrey Dyson's book, The Mechanics of Athletics, has been translated into several languages and is a valuable resource to all who have a copy.

Several lecturers discussed sports biomechanics programs in their respective countries and universities. Research facilities and equipment, personnel, and projects were items given consideration.

Other lecturers talked about the implications of and need for varied biomechanical research in sports.

#### Data Acquisition and Analysis

The symposium participants were given opportunities to experience "hands-on" data acquisition and analysis. The value of videography and cinematography for the purpose of obtaining sport movement data was discussed, as was electromyography, ergonometry, and electrodyamometry.

Two-and three-dimensional skill analysis devices, such as oscilloscopes, digitizers, projectors, computers, and computer graphics, were available to view and handle. Exhibitors who made contributions included: Ericsson Personal Computers; Instrumentation



Marketing Corp., who provided complimentary notebook covers; Tri-Tronics, Inc.; and Visual Data Systems, Inc.

### Amenities

The symposium was well hosted by Jerry Barham and his colleagues. The dormitory rooms made available for those who wanted inexpensive housing were air conditioned. Students especially appreciated these accommodations, as well as the "eat-all-you want" cafeteria meals. The facilities of the University such as the library, swimming pool, and courts were readily accessible and used by symposium participants. Another thoughtful service provided by UNC was the shuttle between the airport and the campus.

The coffee breaks between sessions allowed time for informal visiting with others and provided opportunity to look at and discuss data acquisition and analysis equipment. Appreciated by some was the variety of soft drinks, fruits, and doughnuts served in addition to coffee. Receptions, a picnic, and the banquet also provided opportunities for getting better acquainted. The banquet was particularly enjoyable, with its excellent food, slow-motion sport skits, talks, and the singing of original poetry set to music, "Ode to ISBS," by G. Ostarello.

### Business Meeting

The general business meeting of the ISBS was held in conjunction with the symposium. The purpose of ISBS was stated and the officers and directors introduced. Some of the business conducted by the Board of Directors prior to and during the symposium was announced. More important items included:

1. A new membership category for groups, such as sport federations, will be initiated. Only one representative will receive mailings for the group and will then be responsible for distribution to the group. Individual and group membership dues of \$10.00 (U.S. dollar) for professionals and \$3.00 for students are due and payable June 1st of each year. Citizens from countries other than the USA with "soft currency" may pay with their own money through the Treasurer of their organization. Checks are payable to ISBS and are to be mailed to the Treasurer, Dr. John Ostarello, Department of Kinesiology and Physical Education, California State University, Hayward, CA 94542, USA.

2. The Proceedings of the Third Annual Symposium of Biomechanics in Sports may be obtained for \$36.00 (U.S. dollar) by non-members and libraries, and for \$18.00 by members. Request your copy by writing to the Past-President, Juris Terauds, RCS, Box 188, Del Mar, CA 92014, USA.

3. The Fourth International Symposium is scheduled for June 27 to July 2, 1986 and will be hosted by Dalhousie University. Inquiries regarding presentations and accommodations may be sent to: Dr. Larry E. Holt, Symposium Chairperson, School of Rec. Health and P.E., Dalhousie University, Halifax, Nova Scotia B3H 3J5, CN.

4. The fifth Symposium is scheduled for the Summer of 1987 in Greece.

5. Papers presented at future ISBS symposia will be subject to peer review.

6. A committee was appointed to revise the ISBS Constitution. The committee is to solicit recommended changes and suggested improvements from the members. When revisions are completed, the draft of the proposed revised constitution will be mailed to the membership for approval. The Chairperson is John Cooper.

7. A committee was appointed to investigate publishers for the proceedings of the Fourth International Symposium. Eugene Brown is the Chairperson.

#### Final Comment

Each of the three symposia sponsored by ISBS has had a positive influence on the biomechanics of sports. Especially commendable was the thrust to unite the practitioner and researcher. The prevailing attitude was one of mutual respect and courteousness. The symposia were teaching and learning experiences based on common goals and the sharing of ideas, techniques, and talents. Please continue to help "bridge the gap."



### ODE TO ISBS '85

As I walked out in the streets of Greeley,  
As I walked out in Greeley one day,  
I spied a group dressed up in prison-gray sweatsuits,  
All jogging along, they were trying to play.

I see by your outfits that you are not cowboys,  
You're not here in Greeley to see the Stampede.  
You didn't come here for the rides or the rodeo,  
You're not here for Campbell or the Pancake Feed.

We're here with the ISBS group they told me,  
And it IS BS we are quick to admit.  
We talk about throwing and catching and running,  
But don't tell the athletes or the coach will have a fit.

There are members from Greece and Japan and from England,  
From France and from Spain and almost every state,  
We've been treated with gracious Midwest hospitality,  
The first day we all had to evacuate.

We rise every morning at 4:30 a.m.  
And meet in Executive session at 5,  
The papers begin here at 6:30 promptly,  
How we hope that the coffee and the donuts arrive.

We finish at midnight unless there are questions,  
Three times we dismiss for a short potty break.  
One day we had time to have lunch and dinner,  
Somebody screwed up, it was just a mistake.

The UNC campus has treated us royally,  
Provided good food and provided good drink.  
Handball and tennis and swimming were handy,  
The papers we heard were terrific we think.

Before we leave Greeley a big thanks to Jerry,  
It really was fun, gave us time to relax,  
We pass the baton to the next runner, Larry,  
And hope we'll see all of you in Halifax.

Tune: Streets of Laredo  
Words: G. Ostarello





## MOTIONS PASSED AT THE 1985 ISBS EXECUTIVE BOARD MEETING

It was moved, seconded and approved that

1. ISBS allow members of countries with soft currency to pay ISBS dues in their own currency. The money will be held in bank accounts in the respective countries and will be used for ISBS business in those countries.
2. ISBS initiate a new membership category to be called a group membership.
3. ISBS initiate a new membership category to be called an affiliate membership.
4. the expiration of the old and installation of the new officers will be at the annual meeting. The fiscal year of ISBS will be June 1 through May 31. Dues will cover the fiscal year.
5. Dr. Ellen Kreighbaum, Montana State University, be appointed as chairperson of the 1985-86 nominating committee for officers. There will be a minimum of five members on the committee with at least four countries represented.
6. ISBS will endorse cinematography at the World Cup in Australia. Bruce Mason of the Australian Institution of Sports and ISBS member will be asked to serve as the ISBS representative.
7. papers presented at the ISBS conference would be subject to peer review rather than be refereed.
8. at future conferences, the proceedings will be included in the conference registration fee.
9. Dr. Eugene Brown, Michigan State University, will chair a committee to investigate the options for future publication of the proceedings of the ISBS annual conferences.
10. ISBS request to participate in sport biomechanics research at the Jr. World Athletics Championships in Greece in 1986. Dr. Eleftherios Tsarouchas, Athens, will make contact with appropriate sport bodies.
11. ISBS accept Greece's invitation to host the ISBS conference during the summer of 1987.
12. the ISBS executive board accepted a report from the President's committee on cooperation with the ISB. A letter to the ISB will be sent requesting that liaisons be appointed to each respective executive board.
13. the president will appoint a constitution revision committee to work on revisions for the 1986 conference.
14. Essam E.A. Moustafa from Egypt be appointed the sports director of boxing.
15. the Geoffrey Dyson Memorial Lecture be given each year at the ISBS annual conference and that the executive appoint the 1986 memorial lecturer.



### ◆ Interim Officer Appointed ◆

⑥ Gail Evans, San Jose State University, California, has been appointed Interim Secretary General to complete the term of our previous Secretary General, Jim Crakes of Point Loma College in San Diego, California. Jim certainly deserves our gratitude for the service he has given to ISBS. We all thank you, Jim, for your fine work. Thank you, Gail, for the contributions you are making in this interim.

# Baseball Softball

The initial meeting of the Baseball/Softball Sports Group was held in Greeley, Colorado on 1 July 85 in conjunction with the 3rd International Symposium of Biomechanics in Sports. Current ISBS members who have volunteered to serve with this group include:

Jack Groppe, Univ. of Illinois, Urbana, Illinois, USA  
Nakazawa Kimitake, Kanazawa Univ., Kanagawa, Ishikawa, Japan  
Stephen Messier, Wake Forest Univ., Winston-Salem, North Carolina,  
Larry Noble, Kansas State Univ., Manhattan, Kansas, USA  
Mary Ridgway, Univ. of Texas-Austin, Austin, Texas, USA  
Ross Vaughn, Boise State Univ., Boise, Idaho, USA

The group generated several ideas to help bridge the gap between coaches and scientists. Ross Vaughn will initiate contact with the American Baseball Coaches Association-Research Committee to attempt to develop a cooperative, active relationship. Stephen Messier is compiling a bibliography of pertinent baseball/softball articles that could be made available to researchers and coaches. Several suggestions were offered to promote the objectives of ISBS including the involvement of coaches in research projects, sponsoring of workshops for coaches, and conducting of interactive meetings for coaches and researchers.

The Baseball/Softball Sports Group encourages participation of other ISBS members. If you are interested in working with this sports group, please convey this interest to:

JOHN OSTARELLO  
Dept. of Kinesiology and Physical Education  
Calif. State Univ., Hayward  
Hayward, California 94542  
U.S.A.



## Swimming

As Sport Coordinator of the ISBS Swimming Group, I am seeking individuals interested in becoming involved in the group. Our purpose is to identify researchers and coaches interested in the biomechanical aspects of swimming and to develop means by which questions may be asked and information can be gained and shared. Please send your letter of interest to:

Kathy Barthels  
PE/RA Dept.  
CAL POLY STATE UNIVERSITY  
San Luis Obispo, CA. 93407 U.S.A.



WHO'S WHO IN SPORT BIOMECHANICS \* \* \*

DR. MARLENE ADRIAN

Marlene Adrian is currently professor of Physical Education and Bio-engineering and Director of the Biomechanics Laboratory at the University of Illinois. Prior to moving to Illinois, Dr. Adrian directed the laboratory at Washington State University, Pullman, Washington, U.S.A. Marlene received her Bachelor's Degree in Physical Education/Recreation from the University of Wisconsin-Lacrosse. While pursuing her Master's Degree at the University of Wisconsin, Madison, she worked in the Cinematography laboratory of Dr. Ruth Glassow. She received her Doctor of Physical Education from Springfield College in physiological sciences and had four years of post-doctoral work in the lab of Peter Karpovich where she conducted research in electrogoniometry.

Dr. Adrian has done considerable research in the physiology and biomechanics of swimming and fencing. Sport research interests include track and field, gymnastics, volleyball, racquet sports, kinanthropometry of athletes, sports equipment and safety in sports. Her current projects include the stresses on the foot and leg of high jumpers using the flop technique, muscular involvement and forces during rope jumping on various surfaces, evaluation of curved handled tennis and racquetball racquets, new designs of golf clubs, analysis of stress to the lumbar spine during the parallel squat, and the kinematic and kinetic parameters of fencing during practice and competitive conditions. Dr. Adrian is also interested in occupational biomechanics, aging and handicapped research.

Dr. Adrian was a biomechanics cinematographer at the 1978 British Commonwealth Games in Canada, has been an invited speaker in Japan, the Netherlands and the U.S.A., and has coauthored two texts, Kinesiology and Catastrophic Injuries in Sports: Avoidance Strategies. She is a fellow of the American College of Sports Medicine, has served as chairperson of the Research Consortium of the AAHPERD and is chairperson of the United States Gymnastics Federation Biomechanics Committee. Dr. Adrian is serving as President of the ISBS for the 1985-86 fiscal year.

In addition to her professional accomplishments, Dr. Adrian has competed in fast-pitch softball, basketball, field hockey, badminton, tennis and fencing. Currently, she is ranked among the top eight epee fencers in the U.S.A. and is one of the top women fencers in sabre. She was 32nd in women's foil fencing at the 1984 USFA competition and placed 10th in a fencing tournament in France. Dr. Adrian has served as an official in basketball, volleyball, field hockey, softball, swimming, diving and fencing.

With all of her accomplishments, Dr. Adrian certainly deserves her place in WHO'S WHO IN SPORT BIOMECHANICS.

## FILM



### Czechoslovakian Technical Film



"Two technical films produced by Kratky Film were shown as part of the Third International Symposium of Biomechanics in Sports held at the University of Northern Colorado. The films, entitled, "Race Walking" and "Long Jump and Triple Jump," were taken at the 1983 World Track and Field Championships in Helsinki, Finland. They consist of colorful footage of competition in these events as well as technical biomechanical analyses of the performances. These films could be used as an excellent instructional aid in an undergraduate or graduate biomechanics class. Anyone interested in acquiring use of the films should contact:

Dr. Juris Terauds  
2450 Lozana Road  
Del Mar, CA 92014  
(619) 481-7470

## BOOK REVIEW

### BIOMECHANICS OF THE JAVELIN THROW

Juris Terauds PhD  
Academic Publishers, 1985  
Reviewed by Hans Gros, Institute for Sportwissenschaft,  
University of Stuttgart, Germany

Dr. Teraud's book is written for all coaches and athletes who are serious about javelin throwing. It exemplifies how complex biomechanical and aerodynamical research can be translated into information that is meaningful and useful in technique training. The author does not get stuck with complex equations, statistics and computer simulations but furthermore validates his hypothesis and predictions in a windtunnel and with the 'java gun' - a unique device for realistic test of the flight behavior of javelins. Dr. Terauds' continuous cooperation with elite athletes and coaches certainly helped to make the book not only theoretically sound but also practical. For the first time the 'new rules javelin' - the implement that will be used starting in April 1986- is researched and discussed. Technique modifications and other implications of this rule change are outlined. For once a biomechanist is ahead of the game!

Ordering information:  
Academic Publishers, Box 188  
Del Mar, CA. 92014 U.S.A.

# VIDEO TAPES

## FOR PURCHASE

### MISALIGNMENTS AND ANALYSIS OF RUNNERS' LOWER EXTREMITIES

The following four video programs are available for purchase on 1/2 inch or 3/4 inch VHS format. Each program is 20-30 minutes in length and helps the student progress from identification of misalignments in runners in a static mode through identification and analysis of misalignments at regular speed. The following program titles are included in this package:

1. Bones, Articulations, Movements and Misalignments of the Lower Extremity
2. Misalignments of the Lower Extremity in a Static Stance and Stop Action Mode
3. Diagnosing Misalignments in Runners
4. Runners in Stop Action, Slow Motion and Regular Speed Modes.

Cost: 1/2 inch (4 programs on 2 tapes)           \$150.00  
      3/4 inch (4 programs on 2 tapes)           \$100.00

Send order and check made out to "HPER Department, MSU" to:

M.S.U. HPER Department  
c/o Dr. Ellen Kreighbaum  
Montana State University  
Bozeman, Mt. 59717 U.S.A.

### BIOMECHANICS: QUALITATIVE ANALYSIS

A 40 minute videotape has been produced by the University of Alberta to introduce qualitative physical activity analysis skills to a broad audience. The presentation includes a detailed model of pre-observation and observation techniques with major emphasis on the need to plan before making the observation. Additionally, there is considerable information on 'how to observe', including hints on positioning, minimizing distraction, scanning, etc.

Methods of presentation of the material include slow motion videography, graphics and narration as well as interviews with sport scientists and coaches. A preview audience has suggested that this videotape would be useful for undergraduate Physical Education courses in kinesiology, biomechanics, instruction, leadership and coaching. Several national coaching course program instructors thought the material ideal for N.C.C.P. theory courses. The videotape was produced by Wendy Bedingfield, written and directed by Moira McPherson and filmed by Keith Barbutza. To order, please specify VHS or Betamax and send cheque or money order for \$89.95 Canadian payable to The University of Alberta and forward to: Dr. Wendy Bedingfield; Department of Physical Education and Sport Studies; University of Alberta; Edmonton, Alberta; T6G 2H9.



# BIOMECHANICS IN SPORTS II

## PROCEEDINGS OF ISBS 1985



ACADEMIC PUBLISHERS

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EDITED BY **Juris Terauds & Jerry N. Barham**

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**ABSTRACTS**

Persons who wish to present papers or give presentations are invited to submit abstracts of proposed topics. Free communications on all sports will take place, with a special emphasis on competitive paddling. Deadline for abstracts is April 1, 1986. Acceptance or rejection will be announced by April 15, 1986.

**PAPERS (MANUSCRIPTS)**

Authors of accepted papers will be furnished with an author's kit, giving detailed information on writing the manuscript. Manuscripts will be refereed for publication.

**PRESENTATIONS**

Presentations will be limited to 12 minutes for presentation and 3 minutes for questions. Invited papers will have special time arrangements.

**POSTER PRESENTATIONS**

Location and times for poster presentations will be available on arrival at Dalhousie University.

**FILM FESTIVAL**

Biomechanics research film and video, as well as technical sports films and video are invited for participation in the Film Festival. The materials will be judged for content and presentation and prizes will be awarded.

**EXHIBITS**

Exhibits will include scientific instrumentation, literature, imprint services and sports equipment. Exhibitors must secure space by June 1, 1986.

**ACCOMODATION AND MEALS**

Comfortable dormitory accommodations will be available on the Dalhousie University Campus. For single room with breakfast the cost is \$22.00 Canadian (\$16.00 US).

Double room with breakfast is \$15.00 Canadian (\$11.00 US).

**HIGHLIGHTS AND RECREATION**

The extensive recreational facilities of Dalhousie University and the city of Halifax will be made available to all attendees. Highlights will include the Nova Scotia Tattoo, Canada Day Celebrations, and a visit to the National Training Center for Flat Water Canoeing.

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