

VOL. 7 NO. 1

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# SPORTS BIOMECHANICS

## NEWSLETTER





## Editor's Notes

The ISBS Newsletter has developed into a fine professional document over the past few years, through the extended efforts, imagination, dedication and persistence of one individual Dr. Hans Gros. From the NEWSLETTER'S early days Hans had taken on the task of editor with such zest that in many instances the contributions were manifested from the pen of the editor. He took the NEWSLETTER through its lean

times without complaint or question, and kept us informed with many bits of information.

As time went on Hans was able to generate sufficient interest in the NEWSLETTER so that the ISBS membership were making regular contributions. He was also instrumental in convincing the Board that the Society should have an international Logo and thus he conducted the mail vote for the logo search and acceptance.

It is not a complete break for Hans from the NEWSLETTER, as he will still act on the editorial Board as the "Past Editor". But please allow me the privilege of thanking Dr. Hans Gros for all his wisdom, effort and dedication to the ISBS NEWSLETTER and its establishment. Hans, once again a job well done and thank you.

*BILL MORRISON*

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## ISBS - NEWS

Well here we are into a new decade with a new logo for the Society and also a new editorial Board for the NEWSLETTER. As Hans has pointed out in the Fall 1989 edition of the Newsletter, the Board of Directors has approved a new structure put forward by Blaine Hoshizaki (V.P. Publications). The publications committee will consist of the V.P. Blaine Hoshizaki, Hans Gros (Past Editor) and the editorial team of Lela June Stoner and myself (Bill Morrison).

Hopefully the new format will continue to deliver the NEWSLETTER in a quality suitable to the membership. Remember this is your NEWSLETTER therefore its content will depend on you. Feel free to submit material to any of the members of the publications committee.

*BILL MORRISON*  
*Editor*



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## Message from the Executives

*Blaine Hoshizaki*  
*Vice - President, Publications*

Two years ago when I decided to undertake this position it was with the intention of improving the quality of the publications produced on behalf of our society and to decrease the time required to print the proceedings from each congress. I am pleased to say that with the help of the conference chairpersons we are completely caught up with the proceedings which at one time were four years behind. As I am sure you are aware this was only possible by the fine efforts of Dr. Leftaris

Tsarouchas, Dr. Juris Terauds, Dr. Ellen Kreighbaum and Dr. Bill Morrison. I am also pleased to announce that Bill Morrison and Lela June Stoner are now working together to continue producing the newsletter with the same high standards set by Hans Gros. I believe we owe Hans a great deal of gratitude for his commitment and skill in producing the newsletter for so many years. Thank you Hans.

Finally, I had one other project on my agenda and that was to produce a strategy to launch a journal for Applied Biomechanics of Sport. I have prepared a document for consideration by the executive, at the Prague Congress, 1990. The intention of the journal is to provide an opportunity for our members to participate in the society even if they are unable to attend the conference. It is hoped that this will allow a broader range of publications and a better exchange of papers related to the applied aspects of our profession. Clearly the goal of all academic societies is to provide an opportunity for its members to participate and interact at an academic level. It is my belief that through quality publications this goal is more easily attained.

## Special Reference Materials from 1989

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Pawlowski, D., Perrin, D.H., Relationship between shoulder and the elbow isokinetic peak torque, torque acceleration energy, average power, and total work and throwing velocity in intercollegiate pitchers. *Athletic Training* (Dallas, Tex.) 24 (2), Summer 1989, pg. 129-130,132.

Watson, A.S., Assessing and managing overuse running injuries. *Sport Health*, (Canberra, Australia) 7 (2), 1989, pg. 7 - 9.

Van Ingen Schenau, G.J., Push-off mechanics in endurance sports. Proceeding, First IOC World Congress on Sport Sciences (Colorado Springs, U.S.A.) 1989, pg. 233 - 238

Alexander, M.J.L., The relationship between muscle strength and sprint kinematics in the elite sprinters. *Canadian Journal of Sport Science*, 14 (3) Sept. 1989, pg. 148 - 157.

Messier, S.P., Cirillo, K.J., Effects of a verbal and visual feedback system on running technique, perceived exertion and running economy in female novice runners. *Journal of Sport Science* (London) 7 (2) Summer 1989, pg. 113 - 126.

Vardaxis, V., Hoshizaki, T.B., Power pattern of the leg during the recovery phase of the sprinters stride for advanced and intermediate sprinters. *International Journal of Sport*

*Biomechanics* (Champaign, Ill.) 5 (3) Aug 1989, pg. 332 - 349.

Threlkeld, A.J., Horn, T.S., Wojtowicz, G.M., Rooney, J.G., Shapiro, R., Kinematics, ground reaction force and muscle balance produced by backward running. *Journal of Orthopaedic and Sports Physical Therapy*. (Baltimore, Md.) 11 (2) Aug 1989, pg. 56 - 63.

Cavanaugh, P.R., Kram, R., Stride length in distance running: velocity, body dimension and added mass effects. *Medicine and Science in Sports and Exercise*. (Indianapolis) 21 (4) Aug 1989, pg. 467 - 479.

Bahr, L., Stride length: The key to speed. *Running times* (Beverly Hills, Calif.) 152, Sept 1989, pg. 20, 22.

Bhowmick, S., Bhattacharyya, A.K., Kinematic analysis of arm movements in sprint start. *Journal of Sport Medicine and Physical Fitness* (Torino, It) 28 (4) Dec 1988, pg. 315 - 323.

Pfoerringer, W., Rosemeyer, B., The golf shoe. The shoe in sport (Chicago, Ill.) *Yearbook Medical Publishers*, 1989, pg. 121 - 128.

Subotnick, S.I., Sports - specific biomechanics. Sport medicine of the lower extremity. (New York, NY.) *Churchill Livingstone*, 1989, pg. 203 - 214.

Luhtanen, P., Relationships of individual skill, tactical understanding and team skills in Finnish junior basketball. *Proceedings, VII International Symposium of Biomechanics in Sport* (Footscray, Australia) 1989, pg. 73 - 78.

## United States Tennis Association

### USTA Announces Research Grants Available

PRINCETON, NJ - Individuals currently involved in tennis research are encouraged to apply for United States Tennis Association 1990 Research Grants.

"The USTA is very interested in original research being conducted on the many aspects of tennis," explained Paul Roetert, coordinator of research for the USTA, and administrator of the grant program. "In coordination with the USTA Player Development Program, new findings are a key element in helping American players reach their potential."

If you are independently, or in conjunction with academic institutions, exploring information related to the teaching or playing of tennis, you may be eligible for a USTA Research Grant. During 1989, 18 grants were awarded on a wide range of topics including minority youths and tennis participation, illness and injury



tracking of junior competitive tennis players, dietary counselling and its effect on performance, the ability of tennis coaches to predict anxiety levels in their athletes and the effects of counterforce bracing on wrist and forearm muscle function.

For 1990, the USTA has set aside \$15,000 in grant money. Awards will range from \$250 to \$1,000. Research results can be presented in the form of a report, thesis paper or project summary. Information gained from these efforts will be widely disseminated by the USTA to tennis players and coaches.

Interested individuals should write for an application form to Susan Corwin, USTA, 707 Alexander Road, Princeton, New Jersey 08540-6399. Completed grant applications must be returned to Princeton by June 1, 1990. Grant decisions will be made by July 9, 1990 and all applicants will be notified.

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## UPDATE

### VIII International Symposium of Biomechanics in Sports

A recent letter from Dr. Petr Susanka has shed additional light on the symposium program and influencing factors. The happenings in Czechoslovakia at the end of 1989 were most unexpected. However, the liberation and democratization has disrupted some of the Symposium organization. With the new structure, many of the guarantees were lost and a re-organization had to be developed.

From an organizational standpoint the ISBS Symposium is back on-line and we will be using well equipped facilities, lecture halls, video studios and accommodations, previously used by the communist political school. Also, the video festival and exhibition is organized and there will be a reception plus some social activities made

available. The symposium will pay for all transit buses and public transportation fares for all participants.

The ONLY condition which must be met is that of pre-registration. The Symposium requires no less than 50 fully paid pre-registration participants. The registration fee is \$200:00 (U.S.) and it must be in Prague by April 23, 1990.

We are turning to you the members of ISBS to ask you to help us with the ensuring number of participants. The promotion was interrupted by our "velvet" revolution, however we firmly believe we will catch up the delay with your help.

We thank you in advance for your help.

With Regards  
*Petr Susanka*  
*ISBS Organizing Committee*

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## The Athletic Coaching Program at the University of Jyvaskyla

*Dr. Pekka Luhtanen*  
*Faculty of Physical and Health Education*  
*University of Jyvaskyla*  
*SF-40100 Jyvaskyla, Finland*

The Faculty of Physical and Health Education at the University of Jyvaskyla is the only university level faculty in this field in Finland and as such has the main responsibility for carrying out research and development in the various fields of physical education. The faculty's research activities take place within department and in cooperation between departments (Figure 1). Permanent staff and research

facilities provide a basis for long-term planning and research. Modern research tools of biomedicine and biomechanics are used in investigations, a considerable number of which have been designed and built in the faculty.

### Basic Teaching in the FPHE

The degree program is constructed on a goal-oriented multi-disciplinary plan. It is designed to develop and equip the student with the scientific expertise needed in the professional field. There are areas of specialization within the faculty such as teaching physical education, coaching, physiotherapy

and administration. The study program for the degree of master of science in physical education consists of general studies, basic studies, subject studies and specialized studies. The general and basic studies are common for all students within the faculty. The subject and specialized studies are specific for each course. The extent of each course is 160 study weeks (about five years). Each study week is meant to require on average 40 hours of study.

The department of Biology of Physical Activity (DBPA) has the main responsibility for the training of coaches, and in connection with

the Department of Health Sciences the training of physiotherapists. The graduated coaches work in sports organisations (Sport association - club), universities and sports institutes coaching, educating coaches, developing the sport and performing research in coaching.

### Degree Structure in Coaching Program

Specialization in coaching provides competence and qualification to perform tasks related to training management, research and development work in sports coaching and to act as a specialist coaches.

The training of coaches' 160 study weeks include 2600 compulsory hours in lessons, practice and seminars (Table 1).

There are 37 obligatory courses for all students together in general and basic studies.

Research oriented courses are as follows:

	study weeks
1. Research methods and statistics I	4
2. Research methods and statistics II	3
3. Research methods in biomechanical sciences	3

The contents of the coaching program in specialized and deeply specialized studies can be seen in the Tables 2 and 3.

*Table 1  
The training of coaches' 160 study weeks include 2600 compulsory hours in lessons, practice and seminars*

**FIGURE 1  
Research Activities by Departments in the Faculty of Physical Education**

Department	Primary Academic Field	Field Application
DBPA	Exercise Physiology Biomechanics Applied Physiology	Coaching Physiotherapy Fitness training Ergonomics
DPE	Physical Education Psychology of Sports	Sports teacher Training Leisure sports Competitive sports
DSSS	Sport Psychology Sport Planning	Sport administration Sport communication Leisure time
DHS	Public Health Sports Medicine Health Education	Health training Fitness training Exercises for handicapped Rehabilitation physiotherapy



**Table 1  
The contents of the master degree in coaching**

Contents	Time In Hours			Study Weeks
	Lessons	Practice	Seminars	
1. General Studies	190 (45%)	193 (46%)	36 (9%)	19
2. Common PE Studies	384 (58%)	242 (37%)	34 (5%)	35
3. Specialized Studies in Coaching	345 (42%)	387 (46%)	92 (12%)	42
4. Deeply Specialized Studies In Coaching	114 (22%)	262 (52%)	134 (26%)	49
(Compulsory) In Total	1040	1084	296	145
(Optional)				15
Relatively (%)		43	45	12

<b>Table 2. The specialized studies in the coaching program</b>				
	Lesson (hrs)	Practice (hrs)	Seminar (hrs)	Study Weeks
1. Anatomy and Physiology	6	8		2
2. Management and Organization	18	6	1	
3. Basic Course in Different Sports	94	201		9
4. Advanced Course in a Special Sport Event	84	120	24	10
5. Biochemistry and Biophysics	30			3
6. Mechanics	24			1
7. Exercise Physiology	8			5
8. Biomechanics	40	16	20	3
9. Kinesiology	20	16		1
10. Research Methods	30	20	24	2
11. Introduction Into Research Work			48	5
In Total	354	387	92	42
Relatively (%)	42	46	12	

*Table 2  
From the point of view of research the specialized studies include one course in biomechanical research methods, two preparing seminars one in biomechanics and one in a special sport event and practical introduction into research work.*

<b>Table 3. The deeply specialized studies in the coaching program</b>				
	Lesson (hrs)	Practice (hrs)	Seminar (hrs)	Study Weeks
1. Biology of Coaching	40	20	30	4
2. Sports Medicine	13	12		2
3. Philosophy of Sports	15			1
4. Psychology of Sports				2
5. Theory and Practice of Training	20	20	20	3
6. A. Biomechanics or B. Physiology or C. Psychology in Coaching				4 4 4
7. Practical Training of Coaching (School, Club, Association and Sports Institute, Testing Station)	24	130		13
8. Research Work I (project)		80	54	8
9. Research Work II (project)		30	12	
In Total	114	262	134	49
Relatively (%)	22	52	26	

*Table 3  
These studies include two preparing seminars for research projects I and II. These are seminars in biology of coaching and theory of training.*

**Table 4. An optional sub program of the coaching program for testing.**

Course	Study Weeks
1. Research and Testing Methods	4
2. Biology of Coaching	4
3. Special Requirement in Testing	3
4. Automatic Data Processing in the Testing Stations	3
5. Biomedical Special Problems in Testing	4
6. Practical Training in the Testing Stations	6
7. Business and Administration In Sport	2
8. Literature	4
<b>In Total</b>	<b>30</b>



The main research projects carried out during recent years have been supported by the Ministry of Education, University of Jyväskylä, The Finnish Olympic Committee, Sports Associations and different Foundations. Examples of the research have been listed as follows:

- I. Mechanism of neuromuscular function
- II. Endurance and its training
- III. Speed and its training
- IV. Training and measurement of strength, explosive force and muscle elasticity
- V. Profiles and techniques of various sport events, and
- VI. Biomechanics research in physiotherapy

Every year departments of the faculty receive several visiting researchers from different parts of the world and from other Universities in Finland. The effect of this international research cooperation is also seen from the considerable number of faculty researchers who take part in international scientific congresses conferences and symposia.

## ● COMING EVENTS ●

**April 26 - 27**

Centre for Biomechanics at  
Chalmers University, Sweden  
Gunilla Ekman  
Centre for Biomechanics  
Chalmers University of Technology  
S-41296 Goteborg Sweden

**May 27 - June 1**

RAI International Congress and  
Exhibition Centre Amsterdam  
XXIVth FIMS World Congress of  
Sport Medicine  
RAI Organisatie Bureau  
Amsterdam bv  
Europaplein 12  
1078 GZ Amsterdam, Netherlands

**June 3 - 7**

World Congress on Sport for All  
P.O. Box 151  
SF-00141 Helsinki, Finland

**June 4 - 6**

Pre-Conference      Workshop,  
Cologne FRG  
Athletic Centre of the German  
Sports University  
Institut für Leichtathletik and  
Turnen  
Deutsche Sporthochschule Köln  
Carl-Dien-Weg 6  
D - 5000 Köln 41, FRG.

**June 7 - 10**

Techniques in Athletics - The First  
International Conference  
Institut für Leichtathletik and  
Turnen  
Deutsche Sporthochschule Köln  
Carl-Dien Weg 6  
D - 5000 Köln, FRG.

**July 3 - 9**

Czechoslovakia Association of  
Physical Culture, Prague  
VIII International Symposium of  
Biomechanics in Sport  
and Video Festival.  
Dr. Karel Ontl  
UV CSTV  
Spartakiadni U, 160 00 Praha 6  
CSSR.



### July 9 - 13

University of St. Andrews,  
Scotland  
First World Scientific Congress of  
Golf  
Department of Physical Education  
University of St. Andrews  
St. Andrews, Fife KY 16 9DY  
Scotland, U.K.



### August 30 - September 4

University of California, San  
Diego.  
The First World Congress of  
Biomechanics  
AMES - Bioengineering R - 102  
U.C.S.D.  
La Jolla CA 92093

### September 7 - 11

The Liverpool Polytechnic,  
Liverpool U.K.  
Sixth International Symposium in  
Biomechanics and Medicine in  
Swimming  
Centre for Sport and Exercise

Sciences  
Liverpool Polytechnic  
Byron Street, Liverpool L3 3AF

### November 15 - 16

University of Miami-Coral Gables,  
Florida  
14th Annual Meeting of the  
American Society of Biomechanics  
Division of Conferences and  
Institutes  
School of Continuing Studies  
University of Miami  
P.O. Box 248005  
Coral Gables, FL 33124-1610

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## ISBS Conference Proceedings

### HALIFAX - 1986

The published papers as well as the  
up and coming publications of the  
Halifax Conference are available  
through the following contact:

Dr. Juris Terauds  
Sport Science  
Colorado State University  
Fort Collins, Colorado, USA 80523

### ATHENS - 1987

The proceedings of the Fifth  
International Symposium of  
Biomechanics in Sports, held in  
1987 at Athens, Greece, can be  
obtained from:

Dr. E. Tsarouchas  
Director of Biomechanics  
Hellenic Olympic Committee  
Sports Research Institute  
37 Kiffissias Avenue  
Maroussi, Athens, Greece

### BOZEMAN - 1988

The proceedings of the Sixth ISBS  
Symposium held in 1988 in  
Bozeman, Montana, USA are  
available at a cost of \$30 (US) plus  
postage (\$3 in US; \$4 to Canada  
and \$5 overseas). Make payments  
to "ISBS 6th Symposium - MSU"  
and Send orders to:

Melanie Stocks,  
Conference Coordinator  
Conference Centre  
Strand Union Building  
Montana State University  
Bozeman, Montana USA 59717

### FOOTSCRAY - 1989

Proceedings of the Seventh  
International Symposium of  
Biomechanics in Sports held in  
July 1989 at the Footscray Institute  
of Technology are available at a  
cost of \$30.00 for members, \$40.00  
for non-members, \$50.00 for  
Libraries or Institutions, plus \$3.00  
for postage and handling.  
Payments and requests should be  
directed to:

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