

Greetings from the President

On behalf of the International Society of Biomechanics in Sports (ISBS) and the Faculty of Health Sciences of the University of Ottawa, I wish to extend a cordial welcome to all participants of the XXIInd International Symposium of Biomechanics in Sports at Canada's University.

The annual symposium of the ISBS serves to provide a forum for researchers, teachers, and coaches to disseminate scientific information and to exchange ideas on biomechanics in sports. This symposium will promote, amongst other topics, two specific themes, which are Biomechanics of Winter Sports and Biomechanics of Sports Injuries and Rehabilitation.

The quality of research presented and materials produced are at the cutting edge of knowledge and technology. In addition to over 100 oral presentations and 60 poster presentations delivered by scientists from over 25 countries, selected sports science topics are covered in depth through special lectures. A very special feature is the Geoffrey Dyson Memorial Lecture presented by an outstanding scientist in sports biomechanics: Dr. Benno Nigg, the director of the Human Performance Laboratory at the University of Calgary. He is this year's recipient of the Geoffrey Dyson Award. This award recognizes sports scientists who, throughout their professional careers, have bridged the gap between biomechanical research and sport practice. He will deliver the opening lecture of the symposium: "*Impact Forces and Movement control - a new paradigm*". Another special addition to the symposium this year is the presence of Professor Einar Eriksson who will deliver a special lecture entitled "*How a Sports-Orthopaedic Surgeon Realized the Importance of Biomechanics*" in order to give us insight into multi-disciplinary research. Well-known researchers such as Prof Giuliano Cerulli, Dr. Antonie J. van den Bogert, Dr. Richard Smith, Dr. Roger Bartlett, and Prof. Mag. Dr. Erich Müller will deliver keynote lecture during the symposium.

The commercial exhibition will provide up-to-date information on equipment, software, and applications to biomechanics. The exhibition will be open for three and half days during oral and poster sessions, breaks, and at special times reserved for this purpose.

Besides scientific exchanges, social events have been arranged for the symposium. The first evening will feature a welcome at the historical hall of the University of Ottawa. A half-day boat cruise on the Ottawa River will be offered on the Wednesday afternoon visiting the most picturesque areas of the capital city. For the closing of the symposium, an elegant banquet is scheduled at one of the most prestigious museums of the National Capital region. Do not miss it!!!

All members of the Organizing Committee will do their best to make this annual symposium successful both professionally and personally for all participants. So the days spent in the Canada's capital will be remembered as both pleasant and stimulating.

Prof. Mario Lamontagne Ph.D.
President
XXIInd International Symposium of Biomechanics in Sports
University of Ottawa
Ottawa (On), Canada

Greetings from the Rector

The University of Ottawa is both excited and honoured to be the host of the XXIInd International Symposium of Biomechanics in Sports. We will be working hard to make your stay at the University both pleasant and rewarding. A wide range of services as well as the use of many campus facilities will be offered to guarantee the success of this event.

The University of Ottawa, located in Canada's capital, is North America's largest bilingual university. This unique feature helps promote multiculturalism and a dynamic learning environment. The university is a major player in the economic and cultural development of the region. In addition, thanks to our success in attracting and retaining the most gifted researchers and educators, the University of Ottawa consistently ranks among the leading Canadian universities in research funding.

I am confident that the University of Ottawa is an ideal intellectual and social setting for this year's symposium. A 23-member scientific committee from across the globe has reviewed hundreds of submitted articles to guarantee the use of only the highest quality and most innovative material at this event. The presence of several outstanding scientists including Dyson Award winner Dr. Benno Nigg from the University of Calgary, Canada and Ejnar Eriksson from the Karolinska Institute, Sweden will also contribute to the high quality of presentations.

We at the University of Ottawa extend a warm welcome to all participants and wish you a stimulating and enjoyable symposium at Canada's University.

Gilles G. Patry
Rector and Vice-Chancellor

Greetings From the dean of the Faculty of Health Sciences

On behalf of my colleagues at the Faculty of Health Sciences, University of Ottawa, I wish to extend a warm welcome to all the participants of this year's International Symposium of Biomechanics in Sports. The University of Ottawa is honoured to have been chosen as the host for this annual symposium. I would like to thank the members of the organizing committee who have made every effort to guarantee the success of this event.

With a wide range of programs in the fields of human kinetics, rehabilitation sciences and nursing, the Faculty of Health Sciences at the University of Ottawa regroups a critical mass of researchers in the field of Sports Biomechanics. Our students and professors are looking forward to sharing their research. More importantly, they are excited for the opportunity to meet and learn from the hundreds of international researchers who will be presenting their work at the symposium. With participants from over 25 countries representing all continents, this truly is an international symposium.

During the symposium, a wide range of topics will be addressed, such as biomechanics of injury, biomechanics in winter sports, biomechanical evaluation of sports technique. Furthermore, the ski, golf and hockey symposiums will assure that a great number of disciplinary and clinical research areas will be represented.

I invite all participants to take full advantage of the symposium activities as well as the city of Ottawa, the National Capital of Canada, which is especially lively and beautiful in the summer. I extend my best wishes to all the participants, who, I am confident, will make this event pleasant, productive, and successful.

Thank you for accepting our invitation. Enjoy your stay at the University of Ottawa, Canada's University.

Denis Prud'homme, MD, MSc

Dean

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Geoffrey Dyson Memorial Lecture

“IMPACT FORCES AND MOVEMENT CONTROL – TWO NEW PARADIGMS”

Benno Nigg, University of Calgary, Canada.

Keynote Lectures

“HOW A SPORTS ORTHOPAEDIC SURGEON REALIZED THE IMPORTANCE OF BIOMECHANICS”

Ejnar Eriksson, Karolinska Institute, Sweden.

“MODELING AND COMPUTER SIMULATION IN SPORTS BIOMECHANICS: APPLICATION TO THE PREVENTION OF KNEE LIGAMENT INJURIES ”

Antoine J. van den Bogert, Lerner Research Institute, U.S.A.

“BIOMECHANICS IN WINTER SPORTS”

Erich Müller, University of Salzburg, Austria.

“BIOMECHANICS OF INJURY: ITS ROLE IN PREVENTION, REHABILITATION AND ORTHOPAEDIC OUTCOMES”

Giuliano Cerulli, University of Perugia, Italy.

“IS MOVEMENT VARIABILITY IMPORTANT FOR SPORTS BIOMECHANISTS?”

Roger Bartlett, University of Otago, New Zealand.

“APPLICATION OF MECHANICAL MODELING TO SPORT BIOMECHANICS”

Richard Smith, University of Sydney, Australia.

GENERAL INFORMATION

Registration

The registration counter will be located in the Jock Turcot University Centre, room 216 (see map 1). All materials and receipts will be distributed upon registration. Please note that organizers and volunteers will be wearing white golf shirts (sponsored by Peak Performance) with the conference logo.

Registration Hours:	Sunday August 8 th	(14:00 – 17:00)
	Monday August 9 th	(8:00 – 17:00)
	Tuesday August 10 th	(8:00 – 17:00)
	Wednesday August 11 th	(8:00 – 17:00)
	Thursday August 12 th	(8:00 – 17:00)

Keynote Lectures

Each topic will be introduced with a 45 minute lecture including questions. Keynote lectures will be held in the Alumni Auditorium in the Jock Turcot University Centre.

Oral Presentations

Speakers will be limited to 15-minute presentations including questions. Oral presentations will be held in Montpetit Hall rooms 202 and 203 (see map 1). We strongly recommend that all oral presentations be saved onto the conference server (go to Montpetit room 207). For presenters wishing to make modifications to their presentations, 10 computer stations with CD and Powerpoint are available in Montpetit room 302. **Please avoid last minute technical difficulties by testing your presentation in Montpetit room 201.**

Poster Presentations

Poster space of approximately 1m x 1m will be provided. Special periods will be provided for the presentation of posters (Mon. 15:00 – 16:00, Tues. 15:30 – 16:30, Wed. 11:15 – 12:15). Presenters are asked to set up and take down their poster in the morning and afternoon of their presentation, respectively. Please refer to the scientific program for the board number assigned to your poster. Posters will be on display in the hall in the Jock Turcot University Centre adjacent to the Montpetit Hall lecture rooms. Presenters should be available for questions during the presentation of posters.

Audio-visual Equipment

Each lecture hall will be equipped with the following audio-visual equipment; overhead projector, two slide projectors, a PC computer with Windows XP and PowerPoint presentation software. For computer presentations you can also connect your laptop via a standard VGA connector. For data exchange we provide a CD-ROM (650 MB). If bringing your own equipment such as a laptop, please note that the power supply is 110 volts at 60 Hz.

Commercial Exhibitions

A display area is provided for companies in the Terminus in the Jock Turcot University Centre from Monday to Thursday. Delegates are strongly encouraged to visit our sponsors during the scheduled coffee breaks. An exhibitor event is also planned for Monday evening.

Transportation to Off-Campus Events

Shuttle buses will provide the transportation to both the boat cruise and the closing banquet. The buses will pick up delegates in the parking lot of the residential complex of the University. Delegates are asked to respect the departure times indicated on the general program.

Transportation to-and-from Airport

-Public Transportation: Bus route 97 departs from the terminal at the curb outside the Arrivals area. Two tickets are required to go downtown at the cost of 0.90\$/ticket. Tickets can be purchased at the Ground Transportation Desk located on Level 1 at the centre door of the Arrivals area.

-Hotel Shuttle Service: A shuttle bus travels between the airport and downtown hotels. The departure point is located on the curb outside the Arrivals exit. The departures from the airport are scheduled every half hour at 5 minutes and 35 minutes after the hour. This shuttle service will bring passengers to both the Novotel and Les Suites Hotels. The shuttle bus also travels to the airport from these hotels every half hour on the hour and the half hour. For information contact (613) 260-2359 or visit www.nationalairportshuttle.com . The cost for one-way transportation is 12\$/person.

-Taxi Service: Taxis are available at all times to travel from the airport to downtown. The cost to get to downtown Ottawa is approximately 25\$. The dispatch number is (613) 523-1234.

-Limousine Service: The airport limousine service can be contacted at (613) 523-1560 or toll-free at 1-888-901-6222.

Internet Access

Online access is available in Montpetit Hall rooms 140 and 302.

ISBS '04 AWARDS

Geoffrey Dyson Award

The **Geoffrey Dyson Award** is the most prestigious award presented by the International Society of Biomechanics in Sports. It recognizes sport scientists who, throughout their professional careers, have bridged the gap between biomechanical research and sport practice. The award is a recognition of individuals who embody and carry out the mission of the Society.

This year's laureate is Dr. Benno Nigg, Dr.sc.nat., Director of the Human Performance Lab at the University of Calgary, Canada. Dr. Nigg adds this award to a long list of accomplishments. Over the course of his career he has been the recipient of numerous awards and prizes recognizing his research and innovation as well as outstanding teaching. He has published over 230 articles and is also the author and/or editor of nine books. He will be delivering the Geoffrey Dyson Memorial Lecture at 9 a.m. on Monday August 9th in the Alumni Auditorium.

The following award will be given at the closing banquet on Thursday, August 12th 2004:

New Investigator Award

The purpose of the **New Investigator Award** is to recognize the new researchers and to encourage them to become productive members of the Society by expanding the knowledge base of sports biomechanics through research and dissemination of information.

Eligibility:

All members of the ISBS who have completed their final degree (masters or doctoral) within the past two years are eligible for consideration. Please supply a confirmation from your university. Candidates must be the first author of the abstract submitted and accepted for oral presentation at the ISBS '04 Symposium. They must also present their paper at the symposium.

GENERAL PROGRAM

*-Registration, poster presentations and coffee breaks will be held in the **Jock Turcot University Centre** -Terminus and room 216.*

*-Keynote lectures will be held in the **Alumni Auditorium** (1st floor of the Jock Turcot University Centre).*

*-Oral communications will be held in **Montpetit Hall** rooms 202 or 203.*

-Lunch will be held in the cafeteria of the Jock Turcot University Centre.

-All other locations are indicated below.

Sunday, August 8th 2004

14:00 – 17:00	Registration	
17:30 – 20:00	Welcome Reception (Sponsored by Vicon Motion Systems & Rector's office)	Tabaret Hall room 112

Monday, August 9th 2004

08:00 – 09:00	Registration and Coffee	
08:30 – 09:00	Opening of the Symposium	Alumni Auditorium
09:00 – 09:45	Geoffrey Dyson Memorial Lecture: Dyson Award Recipient, Dr. Benno Nigg	Alumni Auditorium
09:45 – 10:45	Oral Communications	
10:45 – 11:15	Break	
11:15 – 12:15	Oral Communications	
12:15 – 13:15	Lunch	
13:15 – 14:00	Keynote Lecture: Prof. Ejnar Eriksson	
14:00 – 15:00	Oral Communications	
15:00 – 16:00	Poster Presentations	
16:00 – 16:30	Break	
16:30 – 17:30	Oral Communications	
17:30 – 19:00	Exhibitors Event	

Tuesday, August 10th 2004

08:00 – 09:00	Registration and Coffee	
09:00 – 09:45	Keynote Lecture: Dr. Antoine J. van den Bogert	
09:45 – 10:45	Oral Communications	
10:45 – 11:15	Break	
11:15 – 12:15	Oral Communications	
12:15 – 13:15	Lunch	
13:15 – 14:00	Keynote Lecture: Prof. Mag. Dr. Erich Müller	
14:00 – 15:30	Golf Symposium	Montpetit room 202
	Alpine Skiing Symposium	Montpetit room 203
15:30 – 16:30	Poster Presentations	
16:30 – 17:00	Break	

17:00 – 18:15 Oral Communications

Wednesday, August 11th 2004

08:00 – 09:00 Registration and Coffee

09:00 – 09:45 Keynote Lecture: Prof. Giuliano Cerulli

09:45 – 10:45 Oral Communications

10:45 – 11:15 Break

11:15 – 12:15 Poster Presentations

12:15 – 13:00 ISBS Annual General Meeting

Montpetit room 202

13:00 – 13:30 Departure for Ottawa River Boat Cruise
*(*Pick up your lunch at the cafeteria [Jock Turcot
University Center] before departure)*

Residence Parking Lot

13:30 – 17:30 RSscan International Boat Cruise

Thursday, August 12th 2004

08:00 – 09:00 Registration and Coffee

09:00 – 09:45 Keynote Lecture: Dr. Roger Bartlett

09:45 – 10:45 Oral Communications

10:45 – 11:15 Break

11:15 – 12:15 Ice Hockey Symposium

Montpetit room 203

12:15 – 13:15 Lunch

13:15 – 14:00 Keynote Lecture: Dr. Richard Smith

14:00 – 15:00 Oral Communications

15:00 – 16:15 Oral Communications

18:15 – 18:30 Departure for the Canadian Museum of
Civilization

Residence Parking Lot

18:45 – 20:00 Cocktails (sponsored by Motion Analysis)
and visit of the museum

20:00 – Closing Banquet

SCIENTIFIC PROGRAM

Sunday, August 8th, 2004	
14:00 – 17:00	Registration (Jock Turcot University Centre – 216)
17:30 – 20:00	Welcome Reception (sponsored by Vicon Motion Systems & Rector's Office) (Tabaret 112)

Monday, August 9th, 2004

<p>8:00 – 17:00</p>	<p>Registration & Coffee (Jock Turcot University Centre – Terminus & 216)</p>	
<p>8:30 – 9:00</p>	<p>Opening of the Symposium (Alumni Auditorium – Jock Turcot University Centre)</p>	
<p>9:00 – 9:45 Alumni Auditorium (Jock Turcot University Centre)</p>	<p>Geoffrey Dyson Memorial Lecture “IMPACT FORCES AND MOVEMENT CONTROL – TWO NEW PARADIGMS” Dr. Benno Nigg – University of Calgary (Canada) Session Chairs: Bruce Elliot</p>	
<p>9:45 – 10:45</p>	<p>Oral Communications</p>	
	<p>Lecture Hall 202 “Montpetit Hall” Session Chairs: Jing Xian Li</p>	<p>Lecture Hall 203 “Montpetit Hall” Session Chairs: David Pearsall</p>
<p>9:45 – 10:00</p>	<p>FORCES RESULTING FROM BAT IMPACT ON THE CHEST OF ADULT HUMAN HYBRID DO NOT DEPEND ON THE TORSO INERTIA Ismail, El Maach, Cathie Kessler, François-Xavier Jetté, Jean-Philippe Dionne. Canada</p>	<p>DEVELOPMENT OF A FINITE ELEMENT TOOL FOR STRESS ANALYSIS OF A SURGICALLY ALTERED FEMUR Anthony Au, Adrian Liggins, James Raso, Alidad Amirfazli. Canada</p>
<p>10:00 – 10:15</p>	<p>THE CHARACTERISTICS OF BIOMECHANICS AND EMG ACTIVITIES ON WEIGHTED COUNTERMOVEMENT JUMP Feng-Jen Tsai, Yu Liu, Shau-Hua Chen, Yun-Ching Huang. Taiwan</p>	<p>A STUDY ON THE ACCURACY OF THREE-DIMENSIONAL SPACE RECONSTRUCTION FOR POLES SYSTEM ON A 6 x 6 m² FIELD Azmin Sham Rambely, Wan Abu Bakar Wan Abas. Malaysia</p>
<p>10:15 – 10:30</p>	<p>PLANTAR PRESSURE ANALYSIS DURING STAIR DESCENT WITH VARIOUS LOADS IN CHILDREN Youlian Hong, Jing Xian Li, De Wei Mao. China</p>	<p>RELIABILITY OF POWER OUTPUT DURING ROWING CHANGES WITH ERGOMETER TYPE AND RACE DISTANCE Clara Soper, Patria A. Hume. New Zealand</p>
<p>10:30 – 10:45</p>	<p>THE EFFECT OF PASSIVE AND ACTIVE IMPULSE ON THE PERFORMANCES OF DROP JUMPS Jenqdong Lin, Feng-Jen Tsai, Yu Liu. Taiwan</p>	<p>RELIABILITY AND VALIDITY OF LASER DISTANCE AND VELOCITY DETERMINATION DURING RUNNING Andrew J. Harrison, Randall L. Jensen, Orna Donoghue. Ireland</p>

10:45 – 11:15	Break (Jock Turcot University Centre – Terminus & 216)	
11:15 – 12:15	Oral Communications	
	Lecture Hall 202 “Montpetit Hall” Session Chairs: Darren Stefanyshyn	Lecture Hall 203 “Montpetit Hall” Session Chairs: Al Finch
11:15 – 11:30	ISOKINETIC EVALUATION OF SHOULDER INTERNAL AND EXTERNAL ROTATORS STRENGTH AND ENDURANCE IN FOUR LEVELS OF SCHOOL-AGED BASEBALL PLAYERS Chia-Huei Shen, Shun-hwa Wei, Chien-Lu Tsai. Taiwan	DEVELOPMENT OF A COMPLEX MEASURING UNIT FOR SPRINGBOARD DIVING Falk Naundorf, Klaus Knoll. Germany
11:30 – 11:45	SNOWBOARDER'S FRACTURE: CHANGING JOINT MECHANICS BY FOOT POSITION DURING A SIMULATED LANDING TASK (<i>WiP</i>) Uwe G. Kersting, Paul R. McAlpine. New Zealand	DESIGN OF MACHINE TO EVALUATE ANKLE JOINT UNDER VARIABLE INVERSION-EVERSION TORQUES AND DEGREES OF PLANTAR FLEXION-DORSIFLEXION Eugene W. Brown, Miguel Narvaez, Toru Tanaka, Kris Kotrla. USA
11:45 – 12:00	GENDER DIFFERENCES IN CHANGE OF DIRECTION MANEUVERS WITH LONG AXIS ROTATION: A PRELIMINARY INVESTIGATION Jeremy Crenshaw, Adam Johnson, Michael Bird. USA	AN ACCURATE ESTIMATION OF THE SPRINGBOARD REACTION FORCE IN VAULTING TABLE OF GYMNASTICS Shinya Sano, Yasuo Ikegami, Hiroyuki Nunome, Tommy Apriantono, Shinji Sakurai. Japan
12:00 – 12:15	EFFECTS OF STATIC STRETCHING ON MAXIMAL ISOKINETIC TORQUE Randall L. Jensen, Brian J. Begg, Patrick G. Butler, Brendan M. Egan, Lisa E. Fitzgerald, Sarah C. Keane. USA	ACCURACY OF THE SOFTWARE GENLOCK WITH DIGITAL CAMCORDERS (<i>WiP</i>) Young-Hoo Kwon, Sukhoon Yoon, Rak-Joon Sung. USA
12:15 – 13:15	Lunch (Cafeteria – Jock Turcot University Centre)	
13:15 – 14:00 Alumni Auditorium (Jock Turcot University Centre)	Keynote Lecture “HOW A SPORTS ORTHOPAEDIC SURGEON REALIZED THE IMPORTANCE OF BIOMECHANICS” Prof. Ejnar Eriksson – Karolinska Institute (Sweden)	

	Session Chairs: Mario Lamontagne	
14:00 – 15:00	Oral Communications	
	Lecture Hall 202 “Montpetit Hall” Session Chairs: Lothar Thorwesten	Lecture Hall 203 “Montpetit Hall” Session Chairs: Young-Hoo Kwon
14:00 – 14:15	CAN LOW HAMSTRING ACTIVATION EXPLAIN ACL-INJURY? A CASE STUDY Jesper Bencke, Henrik Næsborg, Klaus Klausen. Denmark	THE EFFECTS OF SAND DUNE AND HILL RUNNING ON LOWER LIMB KINEMATICS AND RUNNING SPEED IN ELITE SPRINTERS Andrew J Harrison, Randall L Jensen, Carla B McCabe. Ireland
14:15 – 14:30	EFFECTS OF ANKLE STABILIZATION ON PUSH-OFF MECHANICS FROM A THREE-POINT STANCE IN FOOTBALL William M. Wrigley, John W. Chow, Mark D. Tillman, Ronald A. Siders. USA	THE MOVEMENT COORDINATION OF RUNNING AFTER BIKE-RUN-TRANSITION IN TRIATHLON Kerstin Witte, Nico Ganter, Jürgen Edelmann-Nusser. Germany
14:30 – 14:45	SHORT RANGE OF MOTION ISOKINETIC EXERCISE: REHABILITATION IMPLICATION Yaron Barak, Moshe Ayalon, Zeevi Dvir. USA	THE EFFECTS OF ARMS AND COUNTERMOVEMENT ON VERTICAL JUMPING OF FEMALES Mark Walsh, Erin Klein, Julie Rouse. USA
14:45 – 15:00	KNEE JOINT LIGAMENT RECONSTRUCTION: ON PRETENSION AND COUPLING IN CRUCIATE LIGAMENTS Aboufazi Shirazi-Adl, K.E. Moglo. Canada	DETERMINATION OF HEEL STRIKE AND TOE-OFF IN THE RUNNING STRIDE USING AN ACCELEROMETER: APPLICATION TO FIELD-BASED GAIT STUDIES Tamika Heiden, Angus Burnett. Australia
15:00 – 16:00	Poster Presentations	
	“Jock Turcot University Centre – Terminus & 216”	
	<p>(1.1) KINEMATIC ANALYSIS OF LOWER EXTREMITY ON DIFFERENT RUNNING SPEED Wu-chen Lin, Tzu-Lin Wong, Jin-Cherng Wang, Rong-Jung Shih. Taiwan *****</p> <p>(1.2) BIOMECHANICAL CONSIDERATIONS OF TAKEUMA-WALKING IN WATER Masahiro Nakagawa, Kyoko Tanaka, Takayuki Okada, Takayuki Ishi, Motoi Fukushima, Naotoshi Minamidani, Kimitaka Nakazawa, Hiroh Yamamoto. Japan *****</p> <p>(1.3) ENERGY PARAMETERS ANALYSIS DURING THE SNATCH MOVEMENT OF ELITE CHINA WEIGHT LIFTER (WiP) Xiangdong Wang, Hua Li, Rou Wen. China</p>	

(1.4) CHANGES OF KINEMATICS IN ROPE SKIPPING AFTER FATIGUE

Pui-lam Wong, Youlian Hong. China

**(1.5) DELIVERIES TO HOME PLATE AND FIRST BASE MADE BY LEFT-HANDED
BASEBALL PITCHERS**

Dave Fortenbaugh, Monique Butcher Mokha. USA

**(1.6) CHANGES IN THE TRANSFER OF ANGULAR MOMENTUM THROUGH FATIGUE
AFTER 120 BASEBALL PITCHES (WiP)**

Tomohisa Miyanishi. Japan

(1.7) A THREE DIMENSIONAL ANALYSIS OF THE WINDMILL SOFTBALL PITCH

Gretchen Oliver, Jerry Wilkerson, Young-Hoo Kwon. USA

**(1.8) A KINEMATC COMPARISON BETWEEN THE SEMI-FINALS AND THE FINALS FOR
50M SWIMMING RACES OF THE FOUR STROKES**

Hashem Kilani, Wasim Zeidan. Jordan

**(1.9) HIP AND SHOULDER COORDINATION DURING THE HANDSPRING FRONT
SOMERSAULT ON THE VAULTING 'HORSE' AND 'TABLE'**

Gareth Irwin, David R. Mullineaux. UK

(1.10) GIANT SWINGS ON THE PARALLEL BARS: A CASE STUDY (WiP)

S. Prassas, J. Ostarello, C. Inouye. USA

**(1.11) AN EXAMINATION OF THE BIOMECHANICAL FACTORS THAT PRODUCE SPIN ON
A VOLLEYBALL IN THE SKILL OF SPIKING (WiP)**

J. Pierre Baudin, Pierre Gervais, Tom Wu. Canada

**(1.12) FACTORS RELATED TO THE DEVELOPMENT OF BALL SPEED AND TO THE
INCIDENCE OF ONE-LEGGED LANDINGS IN THE FRONT ROW VOLLEYBALL ATTACK**

Peter F. Vint, Richard N. Hinrichs. USA

**(1.13) DETERMINISTIC FACTORS OF OVERALL CONTACT HEIGHT DURING HIGH-
OUTSIDE ROW VOLLEYBALL ATTACKS**

Peter F. Vint, Richard N. Hinrichs. USA

(1.14) REST PERIOD FOR STRENGTH RECOVERY DURING ISOKINETIC TESTING

Barbara L. Warren, Ivan Blazquez. USA

**(1.15) TIBIO-FEMORAL JOINT FORCES DURING THE LANDING PHASE OF DIFFERENT
TYPES OF VERTICAL JUMP**

Woen-sik Chae, John W. Chow, Min-Hyung Lee, Chang-Soo Yang, Young-Tae Lim,
Jae-Moo So. Korea

**(1.16) THE EFFECT OF LOAD CARRIAGE AND SCHOOLBAG DESIGN ON LATERAL
TRUNK POSTURE DURING STAIR DESCENT IN CHILDREN**

Daniel TP Fong, Youlian Hong, Jing Xian Li. China

(1.17) ARM SWING IN CHILDREN CARRYING BACKPACKS (WiP)

Peter Hinmon, Shannon Manning, Heidi Orloff. USA

(1.18) AGE DIFFERENCE IN TRUNK KINEMATICS DURING WALKING WITH DIFFERENT BACKPACK WEIGHTS IN 6 TO 12 YEAR OLD CHILDREN

Jing Xian Li, Youlian Hong. China

(1.19) EFFECTS OF BACKPACK DESIGN AND FATIGUE ON POSTURE IN CHILDREN

Shannon Manning, Heidi Orloff, Peter Hinmon. USA

(1.20) FOOT ALIGNMENT AND UNIPODAL POSTURAL STABILITY OF DANCERS TRAINED IN CLASSICAL BALLET

Suzanne Hackman, Rosemary Dyson, Corinne Abraham. UK

(1.21) ANALYSIS OF THE AERIAL AND LANDING PHASES OF THE GRAND JETÉ

T. Thomas, J. Murray, L. Stanley, P. Galler, D.G.E.Robertson. Canada

(1.22) MOTION ANALYSIS: ONE VERSUS TWO STRIDE ANALYSES

Heidi Orloff, Shannon Manning. USA

(1.23) THE EFFECTS OF ELASTIC GROIN WRAPPING ON THE KINEMATICS OF ICE SKATING (WiP)

Bradley Jellis, B. Christina Kippenhan. USA

(1.24) THE ECOLOGICAL VALIDITY OF INJURY PREVENTION SCREENING MEASURES USED TO IDENTIFY PELVIC INSTABILITY IN ELITE MALE SPRINTERS

Noel Lythgo, Mark Moresi. Australia

(1.25) LOADING RATE IN SELF-INITIATED VERTICAL JUMP LANDINGS: DEVELOPMENTAL AND GENDER COMPARISONS (WiP)

Pamela J. Russell, Erik, E. Swartz, Ron V. Croce, Laura C. Decoster. USA

(1.26) THE EFFECT OF FUNCTIONAL KNEE BRACE MIGRATION ON THE KNEE JOINT MOMENT AND POWER PATTERNS DURING WALKING

Jonathan Singer, Mario Lamontagne. Canada

16:00 – 16:30

Break

(Jock Turcot University Centre – Terminus & 216)

16:30 – 17:30

Oral Communications

Lecture Hall 202

“Montpetit Hall”

Session Chairs: Edward Lemaire

Lecture Hall 203

“Montpetit Hall”

Session Chairs: Joe Hamill

<p>16:30 – 16:45</p>	<p>THE EFFECT OF TAPE ON THE AMOUNT AND RATE OF ANKLE INVERSION BEFORE, DURING, AND AFTER 60 MINUTES OF EXERCISE</p> <p>Kimberly A. Woelfel, Miriam N. Satern. USA</p>	<p>FORCES AT THE FRONT AND REAR BLOCKS DURING THE SPRINT START</p> <p>Steven Cousins, Rosemary Dyson. UK</p>
<p>16:45 – 17:00</p>	<p>VERTICAL AND HORIZONTAL FORCES DURING CUTTING IN BASKETBALL UNDER DIFFERENT CONDITIONS</p> <p>Eneida Y. Suda, Isabel C. N. Sacco, Henrique Y. Takahasi, Ângela A. Vasconcellos. Brazil</p>	<p>BOWLING ARM MECHANICS IN CRICKET</p> <p>René Ferdinands, Bob Marshall. New Zealand</p>
<p>17:00 – 17:15</p>	<p>POSITION AND ALIGNMENT OF FLEX ZONES IN RUNNING SHOES</p> <p>F.I. Kleindienst, R. Morrison, M. Walther, X. Kälin. Germany</p>	<p>KINEMATIC COMPARISON OF TETHERED, STATIONARY UNDERWATER RUNNING AND TREADMILL RUNNING (<i>WiP</i>)</p> <p>Janet Halverson, Moira McPherson, Carlos Zerpa. Canada</p>
<p>17:15 – 17:30</p>	<p>CHANGES IN ANKLE ANGLE AND MUSCLE ACTIVATION DURING CYCLING TO FATIGUE</p> <p>Erin Klein, Mark Walsh. USA</p>	<p>CONTINUOUS REGISTRATION OF THE HAND-CURVE IN ROWING: DIFFERENCES BETWEEN SCULL AND SWEEP ROWERS</p> <p>Angus Burnett, Matthew Doyle, Bruce Elliott. Australia</p>
<p>17:30 – 19:00</p>	<p align="center">EXHIBITORS EVENT (Jock Turcot University Centre – Terminus)</p>	

Tuesday, August 10th, 2004

<p>8:00 – 17:00</p>	<p>Registration & Coffee (Jock Turcot University Centre – Terminus & 216)</p>	
<p>9:00 – 9:45 Alumni Auditorium (Jock Turcot University Centre)</p>	<p>Keynote Lecture “MODELING AND COMPUTER SIMULATION IN SPORTS BIOMECHANICS: APPLICATION TO THE PREVENTION OF KNEE LIGAMENT INJURIES” Dr. Antoine J. van den Bogert – Cleveland Clinic Foundation (USA) Session Chairs: Hermann Schwameder</p>	
<p>9:45 – 10:45</p>	<p>Oral Communications</p>	
	<p>Lecture Hall 202 “Montpetit Hall” Session Chairs: Richard Smith</p>	<p>Lecture Hall 203 “Montpetit Hall” Session Chairs: Angus Burnett</p>
<p>9:45 – 10:00</p>	<p>COMPONENT INERTIA MODELLING OF FEMALE BODY SEGMENTS Marianne Gittoes, David Kerwin. UK</p>	<p>VISUAL REGULATION DURING COMPETITION LONG JUMPS AND RUN-THROUGHS Elizabeth J. Bradshaw, Brad Aisbett. New Zealand</p>
<p>10:00 – 10:15</p>	<p>A NEW MODEL OF THE SPRINGBOARD IN DIVING Pui W. Kong, M. R. (Fred) Yeadon, Mark A. King. UK</p>	<p>KINEMATIC ALTERATIONS IN WOMEN'S 100M HURDLE TECHNIQUE OVER CURRENT 84CM HURDLE AND PROPOSED 91CM HURDLE HEIGHTS Jason Francis, Alfred Finch, Gideon Ariel. USA</p>
<p>10:15 – 10:30</p>	<p>A BIOMECHANICAL APPROACH TO DRAG FORCE AND HYDRODYNAMIC COEFFICIENT ASSESSMENTS Morteza Shahbazi-Moghaddam, Ross Sanders. UK</p>	<p>3D KINEMATIC AND KINETIC ANALYSIS OF JAVELIN THROWING PERFORMANCE <i>(WiP)</i> Didier Gonzalez, David Amarantini, Gilles Dietrich, Jean-Paul Micallef, Daniel Favier. France</p>
<p>10:30 – 10:45</p>	<p>A SIMPLE MATHEMATICAL MODELING FOR KINEMATIC, DYNAMIC STUDIES OF SWIM TURN PERFORMANCES Morteza Shahbazi-Moghaddam, Ross Sanders, Roozbeh Naemi. UK</p>	<p>DYNAMICS OF THE SHOULDER AND ELBOW JOINTS OF THE THROWING ARM DURING ROTATIONAL SHOT PUTTING - CASE STUDY Hsiente Peng, Chenfu Huang, Hsiensen Peng. Taiwan</p>

10:45 – 11:15	Break (Jock Turcot University Centre – Terminus & 216)	
11:15 – 12:15	Oral Communications	
	Lecture Hall 202 “Montpetit Hall” Session Chairs: Ton van den Bogert	Lecture Hall 203 “Montpetit Hall” Session Chairs: Stuart Miller
11:15 – 11:30	OPTIMISATION OF PERFORMANCE IN RUNNING JUMPS FOR HEIGHT Cassie Wilson, Mark A. King, M. R. (Fred) Yeadon. UK	BIOMECHANICAL ANALYSIS OF TRUNK & LOWER EXTREMITY IN TENNIS SERVE Kuo-Chen Lo, Lin-Hwa Wang, Chia-Cheng Wu, Fong-Chen Su. Taiwan
11:30 – 11:45	PREDICTING POTENTIAL JUMP HEIGHT IN THE POLE VAULT FROM YOUR VARIABLES Aaron Decker, Michael Bird. USA	KINETIC COMPARISON OF INSTEP SOCCER KICK BETWEEN PREFERRED AND NON-PREFERRED LEG IN HIGHLY SKILLED PLAYERS Hiroyuki Nunome, Yasuo Ikegami, Tommy Apriantono, Shinya Sano. Japan
11:45 – 12:00	RESPONSE ANALYSIS OF THE KNEE JOINT IN FLEXION UNDER QUADRICEPS ACTIVATION Wissal Mesfar, Aboufazel Shirazi-Adl. Canada	SOLVING INVERSE PROBLEMS IN BIOMECHANICS USING LEG EXTENSIONS AS AN EXAMPLE Karen Roemer. Germany
12:00 – 12:15	PREDICTION OF TRUNK MUSCLE FORCES AND INTERNAL LOADS DURING FORWARD FLEXION ACTIVITIES Navid Arjmand, Aboufazel Shirazi-Adl. Canada	
12:15 – 13:15	Lunch (Cafeteria – Jock Turcot University Centre)	
13:15 – 14:00 Alumni Auditorium (Jock Turcot University Centre)	Keynote Lecture “BIOMECHANICS IN WINTER SPORTS” Prof. Mag. Dr. Erich Müller – University of Salzburg (Austria) Session Chairs: Dany Lafontaine	
14:00 – 15:30	Applied Programs	
	GOLF	ALPINE SKIING

	Lecture Hall 202 "Montpetit Hall" Session Chairs: Morteza Shahbazi	Lecture Hall 203 "Montpetit Hall" Session Chairs: Erich Müller
	GOLF SWING MECHANICS: THE PATH TO THE FUTURE GOLF SWING René Ferdinands. New Zealand	SKI GLIDING TECHNIQUE ON A QUASI STATIC LABORATORY DEVICE – COMPARISON WITH THE SITUATION "ON SNOW" AND POSSIBILITIES OF PERFORMANCE ENHANCEMENT Josef Kröll, Gerhard Stricker, Klaus Mayrhofer, Erich Müller. Austria
	MECHANICAL DIFFERENCES BETWEEN AN OPTIMUM GOLF SWING MODEL AND THE CONVENTIONAL SWING (WiP) René Ferdinands, Bob Marshall. New Zealand	BIOMECHANIC ASPECTS OF SPORT SPECIFIC TESTING IN ELITE ALPINE SKI RACERS Christian Raschner, Reinhard Pühringer, Carson Patterson, Hans-Peter Platzer. Austria
	GOLF SWING MECHANICS AND MUSCLE FUNCTION USING SURFACE EMG - METHODOLOGICAL CONSIDERATIONS (WiP) Uwe G. Kersting. New Zealand	DETERMINATION OF TURNING PARAMETERS IN CARVED SKIING AND APPLICATION TO A NUMERICAL SKI-BINDING MODEL Peter Federolf, Anton Lüthi, Mathieu Fauve, Hansueli Rhyner, Walter Ammann, J. Dual. Switzerland
	TEACHING OPTIMAL SWING MECHANICS Cameron Strachan, René Ferdinands. New Zealand	APPLIED BIOMECHANICS IN ALPINE SKIING – PAST, PRESENT AND FUTURE ISSUES Hermann Schwameder, Erich Müller, Christian Schiefermüller, Josef Kröll. Austria
	QUALITATIVE ANALYSIS OF MOE NORMAN'S GRIP AND SWING MECHANICS (WiP) Cameron Strachan, René Ferdinands. New Zealand	
15:30 – 16:30	Poster Presentations "Jock Turcot University Centre – Terminus & 216"	
	<p>(2.1) KINEMATICAL MODEL OF HURDLE CLEARANCE TECHNIQUE Milan Coh, Milan Zvan, Bojan Jost. Slovenia *****</p> <p>(2.2) EFFECT OF DIFFERENT RUNNING SPEED ON VERTICAL OSCILLATION AND STRIDE Tsung-En Tsai, Tzu-Lin Wong, Jin-Cherng Wang, Chia-Hung Lin. Taiwan *****</p> <p>(2.3) STUDY ON STRIDE LENGTH, RATE, AND SPEED OF 100M SPRINTER RUNNING WITH FIVE KINDS OF SPEED</p>	

Songhua Yan, Jichun Jin. China

(2.4) A COMPARATIVE ANALYSIS ON SELECTED KINEMATICS PARAMETERS BETWEEN THE "SEPAK KUDA" SERVE AND THE "SEPAK SILA" SERVE IN SEPAK TAKRAW

Juliana Usman, Wan Abu Bakar Wan Abas. Malaysia

(2.5) THE VARIATION IN SPINS PRODUCED BY SINGAPORE ELITE TABLE TENNIS PLAYERS ON DIFFERENT TYPES OF SERVICE

K.T. Lee, W. Xie. Singapore

(2.6) COMPARATIVE STUDIES BETWEEN THE TECHNIQUES OF SINGAPORE AND THAILAND MALE ELITE TABLE TENNIS PLAYERS FOR SEA GAMES 2001

K.T. Lee, W. Xie. Singapore

(2.7) THE EFFECT OF CLUB DRIVER LENGTH UPON HIP, SHOULDER AND PELVIC MOTION IN GOLF

Noel Lythgo, David Hanna. Australia

(2.8) KINEMATIC ANALYSIS OF GOLF SWING PERFORMED WITH INTENDED LATE HITTING

Jae-Moo So, Young-Tae Lim, Kyung-Ok Lee, Chul-Jung Jung, Woen-Sik Chae. Korea

(2.9) BAT KINEMATICS IN BALL HITTING TASK

Noriyuki Tabuchi, Tomoyuki Matsuo, Ken Hashizume. Japan

(2.10) EFFECTS OF A 10 WEEK TRAINING PROGRAM ON PHYSICAL CONDITIONING AND INSTEP KICK KINEMATICS IN SOCCER (*WiP*)

E. Manolopoulos, C. Papadopoulos, S. Prassas, E. Kellis. USA

(2.11) REPEATABILITY OF INTRAMUSCULAR ELECTROMYOGRAPHIC RECORDINGS DURING CYCLING

Andrew Chapman, Bill Vicenzino, Peter Blanch, Joanna Knox, Paul Hodges. Australia

(2.12) A SINGLE CAMERA PANNING VIDEO METHOD TO OBTAIN THE BASIC CHARACTERISTICS OF SPEED RUNNING IN SPRINT RUNNING

Luis Cunha, Orlando Fernandes. Portugal

(2.13) THE PREDICTION OF PHYSICAL ACTIVITY USING TREADMILL VIBRATION

Tsung-Ying Hung, Chiu-Sheng Lin, Chiang Liu, Chen-Kai Su, Tzyy-Yuang Shiang. Taiwan

(2.14) MEASUREMENT ERROR IN SIMULATED 2D GAIT DATA EXTRACTED BY A VIDEO-BASED MOTION MEASUREMENT SYSTEM

Noel Lythgo, Rezaul Begg. Australia

(2.15) A DEVICE FOR MEASURING THE VELOCITY-TIME HISTORY OF ATHLETES (*WiP*)

Peter M. McGinnis. USA

(2.16) MEASURING OPEN SPACE QUANTITATIVELY IN ONE-UP-ONE-BACK FORMATION

	<p style="text-align: center;">DURING SOFT-TENNIS DOUBLES GAME Seiji Kusubori, Motonobu Ishii, Hirofumi Ida. Japan *****</p> <p style="text-align: center;">(2.17) AN APPROACH OF RELATIVE MOTION ANALYSIS FOR CALCULATING SEGMENTS CONTRIBUTION TO THE WORK DONE TO THE BASEBALL Tomoyuki Matsuo. Japan *****</p> <p style="text-align: center;">(2.18) A MECHANICAL MODEL FOR LEG STIFFNESS AND AVERAGE AND MAXIMUM FORCE ESTIMATIONS Morteza Shahbazi-Moghaddam. UK *****</p> <p style="text-align: center;">(2.19) WEB-BASED LABORATORY MODULES FOR LINEAR AND ANGULAR KINEMATICS John W. Chow, Les G. Carlton, James H. Cauraugh, Aaron R. Duley, Sang-Bum Kim, Curtis Weldon. USA *****</p> <p style="text-align: center;">(2.20) BIOMECHANICS CONCEPT INVENTORY: VERSION TWO Duane Knudson. USA</p>	
16:30 – 17:00	<p>Break (Jock Turcot University Centre – Terminus & 216)</p>	
	<p>Oral Communications</p>	
17:00 – 18:15	<p>Lecture Hall 202 “Montpetit Hall” Session Chairs: Wayne Marino</p>	<p>Lecture Hall 203 “Montpetit Hall” Session Chairs: Doris Miller</p>
17:00 – 17:15	<p>THE EFFECTS OF WHEELCHAIR CAMBER AND HANDRIM SIZE IN WHEELCHAIR BASKETBALL MOVEMENT (<i>WiP</i>) Bee-Oh Lim, In-Sik Shin, Chul-Soo Chung, Ki-Kwang Lee, Suk-Hoon Yoon, Young-Hoo Kwon. USA/Korea</p>	<p>BODY ROLL AND STROKE KINEMATICAL CHANGES DURING A RACE-PACE SWIM IN BACKSTROKE Francisco Alves, Luís Cardoso, António Silva, António Veloso. Portugal</p>
17:15 – 17:30	<p>A KINEMATIC AND DYNAMIC ANALYSIS OF ELITE ALPINE SKIERS (<i>WiP</i>) Guillaume Rao, Eric Berton, David Amarantini, Daniel Favier. France</p>	<p>FORCE DEVELOPMENT PROFILE OF THE LOWER LIMBS IN THE GRAB AND TRACK START Nat Benjanuvatra, Andrew Lyttle, Brian Blanksby, Dawne Larkin. Australia</p>
17:30 – 17:45	<p>EXPERIMENTAL SETUP TO COLLECT INPUT DATA FOR CALCULATING LOADING ON THE LOWER EXTREMITIES IN SKIING AND SNOWBOARDING Miriam Klous, Hermann Schwameder, Erich Müller. Austria</p>	<p>EFFECTS OF SIX WEEKS OF TRAINING ON INTERSEGMENTAL COORDINATION IN THE ROWING STROKE OF NOVICE INTERCOLLEGIATE ROWERS Monique Butcher Mokha, Kathryn M. Ludwig, Shawna A. Wood, Paul S. Mokha. USA</p>

<p>17:45 – 18:00</p>	<p>ANKLE KINEMATICS DURING FORWARD HOCKEY SKATING: ACCELERATION TO CONSTANT VELOCITY</p> <p>Curt Dewan, David Pearsall, René Turcotte. Canada</p>	<p>ANTHROPOMETRY AND STRENGTH PREDICTORS OF GRINDING PERFORMANCE IN AMERICA'S CUP SAILORS</p> <p>Simon Pearson, Patria A. Hume, Tim Ackland, David Slyfield. New Zealand</p>
<p>18:00 – 18:15</p>	<p>A MYOELECTRIC COMPARISON OF TREADMILL AND ICE SKATING</p> <p>Curt Dewan, David Pearsall, René Turcotte. Canada</p>	<p>A THREE-DIMENSIONAL MOTION ANALYSIS OF TWO-HANDED AND WAIST BELT PULLING BACKWARD EXERCISES IN ELITE TUG OF WAR ATHLETES</p> <p>Katsue Tanaka, Yasuhiro Yamaguchi, Yasuroh Furuichi, Saki Sodeyama, Masayuki Horie, Cao Yulin, Masae Konishi, Hiroh Yamamoto. Japan</p>

Wednesday, August 11th, 2004

<p>8:00 – 17:00</p>	<p align="center">Registration & Coffee (Jock Turcot University Centre – Terminus & 216)</p>	
<p>9:00 – 9:45 Alumni Auditorium (Jock Turcot University Centre)</p>	<p align="center">Keynote Lecture “BIOMECHANICS OF INJURY: ITS ROLE IN PREVENTION, REHABILITATION AND ORTHOPAEDIC OUTCOMES” Prof. Giuliano Cerulli – University of Perugia (Italy) Session Chairs: John Chow</p>	
<p>9:45 – 10:45</p>	<p align="center">Oral Communications</p>	
	<p align="center">Lecture Hall 202 “Montpetit Hall” Session Chairs: Larry Noble</p>	<p align="center">Lecture Hall 203 “Montpetit Hall” Session Chairs: Manfred Vieten</p>
<p>9:45 – 10:00</p>	<p align="center">EFFECT OF FATIGUE ON MUSCLE COORDINATION IN REPEATED ALL-OUT BOUTS Francois Billaut, Fabien A. Basset, Magali Giacomoni, Guy Falgairette. Canada</p>	<p align="center">A COMPARISON OF METHODS TO CALCULATE THE OPTIMAL LOAD FOR MAXIMAL POWER OUTPUT IN THE POWER CLEAN Angus Burnett, Adam Beard, Robert Newton, Kevin Netto. Australia</p>
<p>10:00 – 10:15</p>	<p align="center">ELECTROMYOGRAPHIC QUADRICEPS/HAMSTRING RATIOS DURING DROP JUMPS Johnathan E. Lawrence, Randall L. Jensen, Michael R. Koskineemi. USA</p>	<p align="center">THE USE OF COMPUTATIONAL FLUIDS DYNAMICS TO OPTIMISE UNDERWATER KICKING PERFORMANCE Andrew Lyttle, Matt Keys. Australia</p>
<p>10:15 – 10:30</p>	<p align="center">THE EFFECT OF FATIGUE ON SINGLE-LEG HOP BIOMECHANICS (<i>WiP</i>) Karl F. Orishimo, Ian J. Kremenic. USA</p>	<p align="center">APPLICATION OF AN ARMA-MODEL AS A METHOD OF TIME-VARIANT SPECTRAL ANALYSIS TO SURFACE EMG-SIGNALS IN SWIM BENCH EXERCISES Kerstin Witte, Mario Heller, Jürgen Edelmann-Nusser, Astrid Zech. Germany</p>
<p>10:30 – 10:45</p>	<p align="center">A COMPARISON OF TWO FUNCTIONS REPRESENTING VELOCITY OF A HUMAN BODY SUBJECT TO PASSIVE DRAG Roozbeh Naemi, Ross H. Sanders. UK</p>	<p align="center">TRIPLE F (F³) FILTERING OF KINEMATIC DATA Manfred M. Vieten. Germany</p>
<p>10:45 – 11:15</p>	<p align="center">Break (Jock Turcot University Centre – Terminus & 216)</p>	

11:15 – 12:15

Poster Presentations

“Jock Turcot University Centre – Terminus & 216”

(3.1) KINEMATIC ANALYSIS OF THE SKELETON START

Derek Kivi, Sarah Smith, Rachel Duckham, Brian Holmgren. USA

(3.2) THE BIOMECHANICAL ANALYSIS OF TAEKWONDO AXE-KICK IN SENIOR HIGH SCHOOL ATHLETIC

Yeh-Jung Tsai, Shuei-Pi Lee, Chenfu Huang. Taiwan

(3.3) MULTIDISCIPLINE TRAINING DEMANDS MAY IMPAIR ADAPTATION OF THE NEUROMUSCULAR SYSTEM IN TRIATHLETES (WiP)

Andrew Chapman, Bill Vicenzino, Peter Blanch, Joanna Knox, Paul Hodges. Australia

(3.4) THE INFLUENCE OF REGULAR TAI CHI EXERCISE ON NEUROMUSCULAR REACTION IN OLD PEOPLE

Dongqing Xu, Wei Zhang, Youlian Hong, Jing Xian Li. China

(3.5) THE EFFECT OF TWO DIFFERENT WEIGHTED BADMINTON RACKETS ABOUT VELOCITY AND TORQUE WHEN OUTSTANDING BADMINTON PLAYERS WAS PERFORMING SMASH MOVEMENT

Chih-Chien Hsieh, Tzu-Lin Wong, Jin-cheng Wang, Ming-Ju Chung. Taiwan

(3.6) KINETIC AND EMG ANALYSIS OF THE NEW DESIGN STEPWISE LOADING SYSTEM

Wan-Chin Chen, Tian-Xiang Zheng, Hsiang-Hsin Wang, Tzyy-Yuang Shiang. Taiwan

(3.7) A COMPARISON OF THE CUSHIONING EFFECT OF THREE TOP RATED RUNNING SHOES AND A SHOE USING A NEW SPRING TECHNOLOGY

Mike Flores, Darla R. Smith. USA

(3.8) COMPARISON OF SHOCK ATTENUATION BETWEEN SPORT SHOES WHEN LANDING FROM VERTICAL JUMP

Pui-lam Wong, Youlian Hong. China

(3.9) IMPACT FORCES AND MATERIAL PROPERTIES OF SOCCER HEADGEAR (WiP)

Pam Marsh, Moira McPherson, Carlos Zerpa. Canada

(3.10) RELATIVE EFFECTS OF WARM-UP WITH UNDERWEIGHT, OVERWEIGHT, AND STANDARD WEIGHT BATS ON BAT VELOCITY AND SEGMENTAL MOVEMENT

Larry Noble, Nolan Harms. USA

(3.11) INVENTION OF A SHOOTING DEVICE FOR PARAPLEGIA AND QUADRIPLÉGIA AND PROPOSING A NEW FIELD OF SPORT IN PARA OLYMPIC MATCHES

Seyed M. Rajaai, Kamran Rezaie, Leila Radmard. Iran

(3.12) EXAMINATION OF THE ORIGINAL AWAODORI GUIDANCE WITH THE LAPTOP COMPUTER

Reina Sekino, Tomohiro Okada, Takayuki Okada, Takayuki Ishii, Motoi Fukushima, Naotoshi

Minanidani, Hiroh Yamamoto. Japan

**(3.13) EFFECTS OF THE BENCH SHIRT ON SELECTED BENCH PRESS MECHANICS
(WiP)**

Ryan Williams, Monique Butcher Mokha, Tobin Silver. USA

**(3.14) EFFECTIVENESS OF ORTHOSES IN CONTROLLING REARFOOT MOTION IN A
GROUP OF SUBJECTS WITH REARFOOT VARUS**

O. Donoghue, A. J. Harrison. Ireland

**(3.15) THE REGULATION OF LEG STIFFNESS AND EMG ACTIVITIES ON PERSON WITH
VISUAL IMPAIRED DURING STEP-DOWN WALKING**

Yun-Ching Huang, Wen-Jie Huang, Feng-Jen Tsai, Yu Liu. Taiwan

**(3.16) COORDINATED INTRA-LIMB RELATIONSHIPS AND CONTROL IN GAIT
DEVELOPMENT VIA THE ANGLE-ANGLE DIAGRAM**

Kyung Ok Yi. Korea

(3.17) EVIDENCE FOR THE EXISTENCE OF A MOVEMENT SIGNATURE IN SPORT

Wayne Maschette, Noel Lythgo. Australia

**(3.18) EFFECT OF TREADMILL GRADE ON ACTIVATION OF LOWER LIMB MUSCLES
DURING HOCKEY STRIDE (WiP)**

Scott McGrail, Tegan Upjohn, René Turcotte. Canada

(3.19) THE EFFECT OF ACCLIMATIZATION TO THE SKATING TREADMILL (WiP)

Nicholas Broad, Alex Trumper, René Turcotte, David Pearsall. Canada

(3.20) DYNAMIC PRESSURE MEASUREMENT ABOUT THE FOOT AND ANKLE

Curt Dewan, David Pearsall, René Turcotte. Canada

(3.21) QUANTIFYING FIT IN ICE HOCKEY SKATE BOOTS (WiP)

Cristian R. Gheorghiu, David J. Pearsall, René A. Turcotte. Canada

(3.22) MUSCLE ACTIVATION PATTERNS DURING AN ICE HOCKEY SLAP SHOT (WiP)

Karen Lomond, David Pearsall. Canada

(3.23) THE ICE HOCKEY SLAP SHOT, ELITE VERSUS RECREATIONAL

Timothy Woo, Jonathan Loh, René Turcotte, David Pearsall. Canada

**(3.24) STATIC AND DYNAMIC CHARACTERISTICS OF COMPOSITE ONE-PIECE HOCKEY
STICKS**

Etienne Simard, Eric Roy, Geneviève Martin, Hugo Cantin, René Therrien. Canada

12:15 – 13:00

ISBS ANNUAL GENERAL MEETING

(Montpetit Hall 202)

13:00 – 13:30	DEPARTURE FOR OTTAWA RIVER BOAT CRUISE <i>* Pick up your lunch bag at the cafeteria (Jock Turcot University Centre) before departure</i> (RESIDENCE PARKING LOT)
13:30 – 17:30	RSSCAN INTERNATIONAL BOAT CRUISE & COCKTAIL

Thursday, August 12th, 2004

<p>8:00 – 17:00</p>	<p>Registration & Coffee (Jock Turcot University Centre – Terminus & 216)</p>	
<p>9:00 – 9:45 Alumni Auditorium (Jock Turcot University Centre)</p>	<p>Keynote Lecture “IS MOVEMENT VARIABILITY IMPORTANT FOR SPORTS BIOMECHANISTS?” Dr. Roger Bartlett – University of Otago (New Zealand) Session Chairs: Yves Lajoie</p>	
<p>9:45 – 10:45</p>	<p>Oral Communications</p>	
	<p>Lecture Hall 202 “Montpetit Hall” Session Chairs: Christina Kippenhan</p>	<p>Lecture Hall 203 “Montpetit Hall” Session Chairs: Youlian Hong</p>
<p>9:45 – 10:00</p>	<p>INDIVIDUAL BIOMECHANICAL PROFILES OF CHANGES IN TECHNIQUE BETWEEN PRACTICE AND COMPETITION IN SEVEN COLLEGIATE POLE VAULTERS Bryan Christensen. USA</p>	<p>CHANGES OF GAIT PATTERN ON SLIPPERY WALKING SURFACES ON SIMULATED CONSTRUCTION WORKSITE ENVIRONMENTS Daniel TP Fong, Youlian Hong, Jing Xian Li. China</p>
<p>10:00 – 10:15</p>	<p>EVOLUTION OF THE RELATIONSHIP BETWEEN PERFORMANCE AND APPROACH RUN VELOCITY IN THE WOMEN'S POLE VAULT Peter M. McGinnis. USA</p>	<p>EFFECT OF FITNESS LEVEL ON FORCE IMPULSE PATTERNS DURING OBSTRUCTED AND UNOBSTRUCTED WALKING IN ELDER FEMALES Maria Lourdes Machado, António Veloso, Helô Isa André, Filomena Brandão. Portugal</p>
<p>10:15 – 10:30</p>	<p>EFFECTS OF BANKED-CURVES ON ANKLE AND KNEE KINEMATICS DURING RUNNING (<i>WiP</i>) Luc De Garie, David J. Pearsall, Sophie J. De Serres. Canada</p>	<p>TO EXAMINE THE DIFFERENCES IN REARFOOT KINEMATICS DURING TREADMILL AND OVERGROUND RUNNING O. Donoghue, A. J. Harrison. Ireland</p>
<p>10:30 – 10:45</p>	<p>KINEMATICS OF ASSISTED AND RESISTED SPRINTING AS COMPARED TO NORMAL FREE SPRINTING IN TRAINED ATHLETES J Steven LeBlanc, Pierre L Gervais. Canada</p>	<p>THE EFFECTS OF AN OVER-THE-COUNTER ORTHOTIC ON LOWER EXTREMITY KINEMATICS IN RECREATIONAL RUNNERS (<i>WiP</i>) Ahmed Alzahrani, Aric Warren, Robert Gregory. USA</p>
<p>10:45 – 11:15</p>	<p>Break (Jock Turcot University Centre – Terminus & 216)</p>	

	Applied Program	
11:15 – 12:15	ICE HOCKEY Lecture Hall 203 “Montpetit Hall” Session Chairs: René Thérien	
11:15 – 11:30	REVERSE ENGINEERING THE SKATE David Pearsall. Canada	
11:30 – 11:45	MATCHING THE IMPLEMENT TO THE PLAYER: HOCKEY STICK RESEARCH AND DEVELOPMENT G. Wayne Marino, Joel Cort. Canada	
11:45 – 12:00	ANALYZING KINEMATICS VARIABLES: A STRUCTURAL EQUATION MODEL APPLICATION FOR THE ASSESSMENT OF SKATING IN DEVELOPMENTAL AND ELITE ICE HOCKEY PLAYERS Maira McPherson, William Montelpare, Allan Wrigley, Neil Purves. Canada	
12:00 – 12:15	KNEE AND BOOT 3D KINEMATICS DURING FORWARD ACCELERATION IN ICE HOCKEY SKATING MEASURED WITH A MOBILE CAMERA ARRAY Dany Lafontaine, Mario Lamontagne. Canada	
12:15 – 13:15	Lunch (Cafeteria – Jock Turcot University Centre)	
13:15 – 14:00 Alumni Auditorium (Jock Turcot University Centre)	Keynote Lecture “APPLICATION OF MECHANICAL MODELING TO SPORT BIOMECHANICS” Dr. Richard Smith – The University of Sydney (Australia) Session Chairs: D. Gord E. Robertson	
	Oral Communications	
14:00 – 15:00	Lecture Hall 202 “Montpetit Hall” Session Chairs: John Blackwell	Lecture Hall 203 “Montpetit Hall” Session Chairs: Eugene Brown
14:00 – 14:15	KINEMATICS STUDY OF JUNIOR AMATEUR GOLFERS IN SINGAPORE D. Lim, W. Xie, V. Ong, K.C. Teh. Singapore	INCREASES IN JOINT RANGE OF MOTION WITH THE BODYWALL™ SYSTEM Patria A. Hume, Simon Pearson, Chris Whatman. New Zealand

14:15 – 14:30	<p>ANALYSIS OF LEFT ARM SEGMENTAL CONTRIBUTION IN GOLF SWING</p> <p>Koon Kiat Teu, Wangdo Kim, Franz Konstantin Fuss, John Tan. Singapore</p>	<p>PREPARATION WITH A "SOMERSAULT SIMULATOR" FOR LEARNING A NEW TASK WITH YOUNG DIVERS</p> <p>Falk Naundorf, Juergen Krug, Sascha Lattke. Germany</p>
14:30 – 14:45	<p>THE INFLUENCE OF CLUB SHAFT CHARACTERISTICS ON THE HIP-SHOULDER SEPARATION ANGLE DURING THE GOLF DRIVE <i>(WiP)</i></p> <p>Jonathan S. Wheat, Paul Freeland. UK</p>	<p>MECHANICAL AND METABOLIC ENERGY ASPECTS OF DIFFERENT BINDING-BOOT SYSTEMS IN SKI-TOURING</p> <p>Hermann Schwameder, Peter Schilcher, Elke Lindenhofer, Susanne Ring. Austria</p>
14:45 – 15:00	<p>EFFECT OF LEG MUSCLE FATIGUE ON INSTEP SOCCER KICK</p> <p>Tommy Apriantono, Yasuo Ikegami, Shinya Sano, Hiroyuki Nunome. Japan</p>	<p>TRAINING AND REHABILITATION WITH CONTROLLED ECCENTRIC OVERLOADING - EVALUATION AND APPLICATION OF A NEW DEVICE <i>(WiP)</i></p> <p>Alf Thorstensson, Anna Frohm, Kjartan Halvorsen, Leif Larsson, Ulf Arnesson. Sweden</p>
15:00 – 16:15	Oral Communications	
	<p>Lecture Hall 202 "Montpetit Hall"</p> <p>Session Chairs: Pierre Gervais</p>	<p>Lecture Hall 203 "Montpetit Hall"</p> <p>Session Chairs: Roger Bartlett</p>
15:00 – 15:15	<p>TEMPORAL ANALYSIS OF TYPICAL TAI CHI FORM - BRUSH KNEE TWIST STEP</p> <p>Tze Chung Luk, Youlian Hong. China</p>	<p>THE ANALYSIS OF MUSCULAR STRENGTH AND EMG IN KAYAK STROKE <i>(WiP)</i></p> <p>Xian-Wei Dai, Wei-Hua Ho, Li-Chiun Chang, De-Zhi Liu. Taiwan</p>
15:15 – 15:30	<p>THE KINEMATICAL CHARACTERISTICS OF THE LOWER EXTREMITIES DURING TAI CHI CHUAN EXERCISE</p> <p>Dewei Mao, Youlian Hong, Jing Xian Li. China</p>	<p>THE STUDY OF PASSIVE REPEATED PLYOMETRIC TRAINING ON VAULT PERFORMANCE IN ARTISTICS GYMNASTIC <i>(WiP)</i></p> <p>Ming-Feng Kao. Taiwan</p>
15:30 – 15:45	<p>KINEMATIC ANALYSIS OF THE CRESCENT KICK IN TAEKWONDO <i>(WiP)</i></p> <p>Miguel A. Narvaez-Silva, Eugene W. Brown, Anthony Moreno, Kris Kotrla, Toru Tanaka, Adam Bruenger. USA</p>	<p>CHANGES IN ISOMETRIC AND ISOKINETIC STRENGTH, POSTURAL BALANCE AND ENDURANCE AFTER THAI-BO TRAINING PROGRAM</p> <p>L. Thorwesten, C. Beckemeyer, S. Kollenberg, M. Kuhlmann, K. Völker. Germany</p>
15:45 – 16:00	<p>MECHANICAL SIMILARITIES OF HIGH BAR PROGRESSIONS</p>	<p>EVALUATION OF A SWIM BENCH</p> <p>Jürgen Edelmann-Nusser, Andreas Hohmann, Kerstin Witte, Mario Heller, Andreas Krüger,</p>

	Gareth Irwin, David Kerwin. UK	Kai Sikorski, Martin Hofmann. Germany
16:00 – 16:15	<p>BIOMECHANICAL APPROACH TO BALLET MOVEMENTS: A STUDY OF THE EFFECTS OF BALLET SHOE AND MUSICAL BEAT ON THE VERTICAL REACTION FORCES</p> <p>Andreja Paley Picon, Paula H. Lobo da Costa, Isabel de C. N. Sacco, Alberto Carlos Amadio. Brazil</p>	
18:15 – 18:30	DEPARTURE FOR THE CANADIAN MUSEUM OF CIVILIZATION (RESIDENCE PARKING LOT)	
18:45 – 20:00	CANADIAN MUSEUM OF CIVILIZATION VISIT & COCKTAIL (SPONSORED BY MOTION ANALYSIS)	
20:00 –	BANQUET DINNER (CANADIAN MUSEUM OF CIVILIZATION)	

RECREATIONAL AND SOCIAL EVENTS

Several recreational and social events will be offered throughout the week. Delegates will have access to the newly equipped Health and Lifestyle Centre (Open Mon. - Fri. 6:30 – 23:00) in the Sports Complex (801 King Edward Ave.). In addition, the area is famous for its green spaces, bicycle paths and rivers, making it especially appealing to people with an active lifestyle. The University campus is 5 minutes from the beautiful Rideau Canal, with several kilometers of trails ideal for walking and jogging.

Social events will include a welcome reception (sponsored by Vicon & the Rector's office), the RSscan International boat cruise on the scenic Ottawa River, and the closing banquet at the Canadian Museum of Civilization, where participants will be able to visit its many exhibits free of charge. Shuttle-buses will provide the transportation to both these events.

The central location of the University campus is ideal for those looking to take in some of Ottawa's tourist attractions. The Parliament buildings, the Byward Market, and the National Gallery of Canada are all within walking distance from the campus.

HOST TOWN AND UNIVERSITY

Nestled on the banks of three rivers, Ottawa, Canada's capital has consistently been ranked among the top cities in the world in which to live. Ottawa has a vibrant French and English cultural life with an abundance of theatres, national museums and festivals. Despite its more than one million residents, its green spaces are found in abundance, making it especially beautiful in the summer months. The city is home to some of the country's biggest and most prestigious galleries and museums, great sightseeing, outdoor adventure, and entertainment.

The University of Ottawa, located in the heart of downtown Ottawa, has emerged as a vibrant "centre of learning", with a total population - including students, teaching and support staff - of 30,000. The largest bilingual university in North America, the University is a major player in the cultural and economic development of the National Capital Region. With its proximity to major libraries, government agencies and research institutions, and its involvement in global technological initiatives, the University of Ottawa provides students and professors with access to an outstanding national resource.

MAPS Note:We reorganized this section a little bit, both maps should fit on one page

University of Ottawa Campus

(Insert campusmap.psd here)

Downtown Ottawa

(insert ottawamap.psd here, below)

1 Novotel Hotel

33 Nicholas St
Ottawa ON, K1N 9N7
Tel: (613) 230-3033
Fax: (613) 760-4765

2 Les Suites Hotel

130 Besserer St
Ottawa ON, K1N 9M9
Tel: (613) 232-2000
Toll Free: 1-800-267-1989

3 Quality Hotel

290 Rideau St.
Ottawa ON, K1N 5Y3
Tel: (613) 789-7511
Fax: (613) 789-2434

RESTAURANTS

General information

<http://www.ottawaplus.ca/portal/section/section.jsp?sectionID=104>

<http://www.restaurantthing.com>

Pricing

\$ = Average

\$\$ = Premium

Byward Marketplace

Black Tomato	\$	11 George Street	613-789-8123
Cafe Baci	\$	297 Dalhousie	613-241-2224
Café Shafali	\$	308 Dalhousie Street www.shafali.com	613-789-9188
Clair de Lune	\$\$	81-B Clarence http://www.clairdelune.ca/	613-241-2200
Courtyard Restaurant	\$\$	21 George Street www.courtyardrestaurant.com	613-241-1516
Mangia Restaurant	\$	121 Clarence Street www.mangia.ca	613-562-4725
Patty Boland's Irish Pub	\$	101 Clarence Street http://members.rogers.com/pattybolands	613-789-7822
Social	\$\$	537 Sussex Drive http://social.ca	613-789-7355
The Fish Market	\$	54 York Street http://fishmarket.ca	613-241-3474
The Keg	\$	75 York Street www.kegsteakhouse.com	613-241-8514

Downtown

Al's Steakhouse & Seafood	\$	327 Elgin Street www.alssteakhouse.ca	613-233-7111
Beckta Dining and Wine	\$\$	226 Nepean Street www.beckta.com	613-238-7063
Café Paradiso	\$	199 Bank Street www.cafeparadiso.ca	613-565-0657
Friday's Roast Beef House	\$\$	150 Elgin Street http://members.rogers.com/lidaken/Fridays/intro.htm	613-237-5353
Hy's	\$\$	170 Queen Street www.hyssteakhouse.com/index.html	613-234-4545
Mekong Restaurant	\$	637 Somerset Street West http://64.35.31.254/mindex.htm	613-237-7717
Vietnam Palace Restaurant	\$	819 Somerset Street West	613-238-6758

Little Italy / Coros Italia

La Roma Restaurant	\$	430 Preston Street	613-234-8244
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		www.laromaottawa.com	
La Vecchia Trattoria	\$	228 Preston Street	613-230-0009
Trattoria Caffè Italia	\$	254 Preston Street	613-236-1081
		www.trattoriaitalia.com	

Hull-Gatineau, Québec

Fiorentina	\$\$	189 St. Joseph Blvd (Hull)	819-770-7273
Le Panaché	\$\$	201 Eddy (Hull)	819-777-7771
Le Sterling	\$\$	832 Jacques Cartier Street (Gatineau) http://www.sterlingrestaurant.com	819-568-8788
Le St-Estèphe	\$\$	711 St. Joseph Blvd (Hull)	819-777-5552
Zen d'Asie	\$	651 St. Joseph Blvd (Hull)	819-777-8111

Note: maybe this could fit on one page somehow?

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USA

www.peakperformance.com

Motion Analysis Corp

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Santa Rosa, CA, 95403-1067
USA

www.motionanalysis.com

RSscan International

Lammerdries 27
2250 Olen
Belgium

www.rsscan.com

SIMI Reality Motion System GmbH

Max-Planck-Strasse 11
85617 Unterschleissheim
Germany

www.simi.com

Vicon Motion Systems, Inc.

9 Spectrum Pointe Drive
Lake Forest, CA 92630
USA

www.vicon.com

EXHIBITORS

Advanced Mechanical Technology Instruments (AMTI)

176 Waltham Street
Watertown, MA 02472-4800
USA

www.amtiweb.com

Human Kinetics Publishers Canada

475 Devonshire Road unit 100
Windsor, Ontario, N8Y 2L5
Canada

www.humankinetics.com

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Scottsdale, AZ 85254
USA

www.noraxon.com

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St. Paul, MN 55105
USA

www.novel.de

Qualysis Medical AB

Esperantoplatsen 7-9
S-411 19
Gothenburg
Sweden

www.qualisys.se

Tekscan

307 West First Street
South Boston, MA 02127
USA

www.tekscan.com