



# ISAKOS

newsletter

## SUMMER 2009

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## ISAKOS Celebrates the Success of the 7th Biennial ISAKOS Congress

ISAKOS would like to thank all who participated in the 7th Biennial ISAKOS Congress, held in Osaka, Japan on April 5–9, 2009. Held at the Osaka International Convention Center during the peak of cherry-blossom season, the ISAKOS Congress was a great success with more than 2300 attendees from more than 74 different countries.

Program Chair Kazunori Yasuda (JAPAN) and the ISAKOS Program Committee developed an exceptional educational program. Special thanks also to Past-Program Chair Lars Engebretsen, and 2011 Congress Program Chair Andreas Imhoff for their assistance.

The 2009 ISAKOS Congress featured a busy 5-day scientific program including more than 280 scientific paper presentations, 450 electronic posters, 28 Instructional Course Lectures, 6 Socratic debates, 30 symposia, 20 lectures and 14 surgical demonstrations. Presented topics varied widely and included presentations on all major joints including shoulder, elbow, hip, knee and ankle. Presentations on the future of sports medicine, single vs. double bundle ACL reconstruction, meniscal transplant, arthroscopic rotator cuff repair and instabilities, injury prevention, and knee arthroplasty were especially well attended. All presentations reflected the vitality and variety that have become trademarks of the ISAKOS Congress' international perspective.

The ISAKOS Board of Directors, Executive Committee and Program Committee wish to thank all who attended the 2009 ISAKOS Congress. It is your international perspective and participation that makes the ISAKOS Congress a fantastic and worthwhile educational event.



### 2009 ISAKOS CONGRESS

All paper abstracts, poster abstracts and handouts from Instructional Courses are available online for ISAKOS Members Only.

[WWW.ISAKOS.COM](http://WWW.ISAKOS.COM)

### WIN A FREE REGISTRATION

Complete the online 2009 Congress Evaluation. All members who complete the Evaluation will be entered into a drawing to win a FREE ISAKOS Congress registration for the 2011 ISAKOS Congress in Rio de Janeiro, Brazil.

# FROM OUR LEADERSHIP



## Editor's Note

**James H. Lubowitz, MD (USA)**

### *Summing Up Osaka*

First, it is clear we must acknowledge the hospitality of our hosts at the 7<sup>th</sup> Biennial ISAKOS Congress held on April 5–9, 2009 in Osaka, Japan. Everything was organized, spotlessly efficient, safe, clean and modern, and as expected, delicious. The academic atmosphere of our host country seemed innovative and open to new ideas, committed to the evidence-based practice, inquisitive, and earnest. A combination of good-humor and hard work is an inspirational model for a productive ethos.

Thoughts on ACL, shoulder, hip, and knee arthroplasty navigation dominated the surgical side of the meeting, and the sports medicine emphasis was on prevention and rehabilitation. Instructional Course Lectures and Symposia were marked by open audience participation and discussion. In the 21<sup>st</sup> century, it is clear that telecommunication and networking are not a substitute for open discourse and sharing of ideas.

It is humbling to observe the diversity and prevalence of international centers of arthroscopy, knee surgery, and orthopaedic sports medical excellence. All of us risk developing the myopia of the mundane, but a far-sighted appreciation of the breadth of our purposeful endeavors to learn and educate and improve outcomes is attained by attendance and participation.

Our leadership reflects our membership, and we are in fine hands under the guidance of the Presidential line of Freddie H. Fu (USA), Moises Cohen (Brazil), and Masahiro Kurosaka (Japan). 2011 Congress Program Chair Andreas Imhoff (Germany) and Vice Chair Marc Safran (USA) are already hard at work on the 8<sup>th</sup> Biennial ISAKOS Congress to be held in Rio de Janeiro, Brazil.

Michele Johnson and the ISAKOS staff work tirelessly on development, planning, communication, and are committed to exploring collaboration with national societies, and state of the art internet services. Special thanks to staff members Donna Festo, Sandi Wasteneay, Elizabeth Collins-Gibson, Katie Anderson and Vanessa Forcari.

Summing up Osaka, we return to the lessons of Japanese culture and society: on the surface—very modern; beneath the surface—based on great tradition. Similar is the basis of the knowledge we apply to treat our patients. I gained a new perspective as a result of my participation and encourage all members who have not attended a Congress to consider attending the 2011 ISAKOS Congress in Rio—the ISAKOS Congress is an experience not to be missed.



## President's Message

**Freddie H. Fu (USA)**

Dear Friends and Colleagues,

Thank you to all who participated in the recent 7<sup>th</sup> Biennial ISAKOS Congress, held on April 5–9, 2009 in Osaka, Japan. The meeting was a tremendous success thanks in large part to the hard work of the Program Committee under the guidance of Program Chairman Kazunori Yasuda, and Deputy Chairman Andreas Imhoff. Additional thanks to all of the paper presenters, faculty members, and local hosts. We hope you enjoyed both the educational and social aspects of the meeting.

Following the success of the recent ISAKOS Congress, I look forward with great anticipation and hope for the upcoming 2009–2011 term. As ISAKOS President, I thank my predecessors Paolo Aglietti (ITALY) and John Bergfeld (USA) for their dedication and hard work on behalf of ISAKOS. ISAKOS has been successful because of the efforts of all of our ISAKOS Past Presidents.

Looking forward, my focus as ISAKOS President will be to improve the infrastructure of ISAKOS. The ISAKOS Committees will be a specific focus of mine as we work with the Committee Chairs to improve communication, encourage dialogue between committees, develop and recruit new, young talent to the ISAKOS Committees, and develop new committee projects. I especially look forward to Committee projects currently under development including an online biannual ISAKOS Newsletter, as well as the Scientific Committee's handbook "A Practical Guide to Research: Design, Execution, and Publication", which is currently being developed.

Much work is also planned to improve the ISAKOS website—plans include building an online, interactive ISAKOS Library to include Surgical Demonstration videos, online education courses, and committee projects. We hope you will continue to visit the ISAKOS website for these and other changes.

I also plan to continue to strengthen ISAKOS' relationship with regional leaders. I recently returned from a trip to Shangdong, China for the 2009 Chinese Sports Medicine and Arthroscopy Conference, as the Presidential Speaker. The conference was attended by more than 800 sports medicine surgeons from all provinces of China. During the meeting, I formally introduced ISAKOS to the conference attendees. Dr. GuoPing Li, who served as the chief medical officer in 2008 Beijing Olympics, is the Chairman of the conference and Chinese Sports Medicine Association. He expressed strong interest in collaborating with ISAKOS in the near future.

The Strategic Plan, developed by current and past ISAKOS Committee Members, will be the guiding force for our efforts in the coming years. For more information on the ISAKOS Strategic Plan, please refer to page 9.

On behalf of the ISAKOS Executive Committee, I thank you for your support of ISAKOS, and look forward to my term as your president.

## Message from the ISAKOS Office:

**Michele Johnson**

Executive Director, ISAKOS

The ISAKOS Office would like to thank all who participated in the recent 2009 ISAKOS Congress held in Osaka, Japan. Special thanks to **Kazunori Yasuda** (JAPAN) for his diligent work as the ISAKOS Program Chairman. Additional thanks go to **Andreas Imhoff**, Program Vice-Chairman, and all members of the ISAKOS Program Committee for their hard work in creating a complex and exciting scientific program. The ISAKOS Office also appreciates the continued support of the ISAKOS Executive Committee for their hard work and dedication.

Additionally, ISAKOS would like to thank Congress Platinum Sponsor, Smith & Nephew, as well as gold sponsors ArthroCare Sports Medicine, Arthrex, ConMed Linvatec, and DePuy Mitek. Additional thanks to silver sponsors Covidien, Karl Storz Endoscopy, and Stryker. ISAKOS thanks these companies for their support, as well as all other exhibitors for their support of ISAKOS' goal of global education.

Special thanks also to ISAKOS surgical demonstration assistants **Judy Cooper**, **Rich Leutheuser** and **Terry Heil**. The lab staff traveled to Las Vegas this year to assist in the recording of the surgical demonstration videos that were utilized at the Congress. Their assistance is appreciated by the ISAKOS staff as well as the involved surgeons and companies. As always, our continued gratitude for Integrated Events Management, led by **Phil Haney**, for their help once again with the excellent audio visual coordination.

The ISAKOS Office is hard at work on new projects initiated by the ISAKOS Committees for the 2009–2011 term. Staff members have been assigned as liaisons to the committees, and we are committed to assisting in accomplishing the ISAKOS Strategic Plan.

The ISAKOS Office appreciates the continued dedication of ISAKOS Office staff members **Donna Festo**, **Elizabeth Collins-Gibson** and **Katie Anderson**. We are rejuvenated by the leadership of **Dr. Freddie Fu**, and will continue to work closely with the membership to advance ISAKOS' mission around the world.

## Pay Your ISAKOS Membership Dues Today!

Please visit [www.isakos.com](http://www.isakos.com) and log in to ISAKOS Members Only to pay your membership dues online or download your invoice. Your membership dues must be paid in full to receive the following ISAKOS Member Benefits:

- Automatic subscription to the official ISAKOS Journal – *Arthroscopy: the Journal of Arthroscopic and Related Surgery*
- Optional online subscription to *Knee Surgery, Sports Traumatology, Arthroscopy* (KSSTA), the official journal of the European Society of Sports Traumatology, Knee Surgery and Arthroscopy (ESSKA)
- ISAKOS Biannual Newsletter in print
- ISAKOS Today – the NEW biannual online ISAKOS Newsletter
- Discounted registration fees for the ISAKOS Congress
- Access to “Members Only” at [www.isakos.com](http://www.isakos.com)
- Opportunity to participate in ISAKOS Teaching Centers and Approved Courses
- Complimentary publications from ISAKOS Committee Projects



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INDIA  
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MRCS (Edinburgh) M.Med  
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Narin Chotirosniramit, THAILAND  
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Ion Bogdan Codorean, ROMANIA  
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COLOMBIA  
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Yoichi Kataoka, MD, PhD, JAPAN  
Ryosei Katsuragi, JAPAN  
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Kazutaka Kinugasa, MD, JAPAN  
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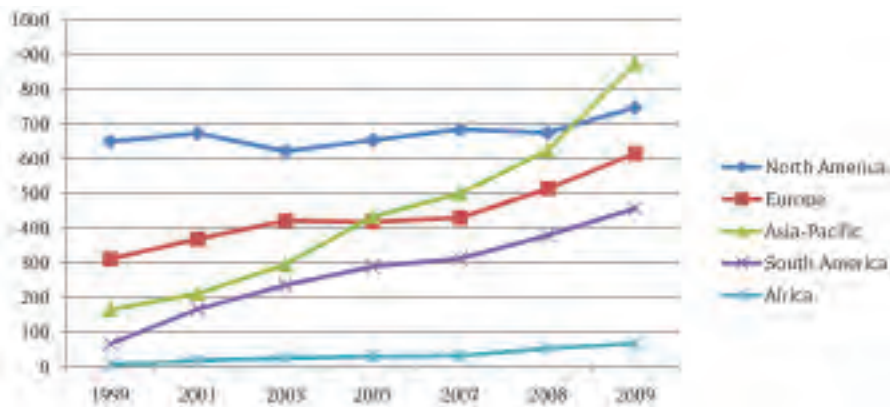
## NEW MEMBERS

We depend on our members to make the society what it is today and to embrace the potential it has in the future. It is the responsibility of members to recruit NEW MEMBERS to join ISAKOS and its goal to reach across the world.

Download an application online at [www.isakos.com](http://www.isakos.com) or contact the ISAKOS office at (925) 807-1197 for a NEW MEMBER Recruit Packet.

## ISAKOS MEMBERSHIP GROWTH BY REGION 1999 TO JUNE 2009

Growth by Region	1999	2001	2003	2005	2007	2008	2009
North America	650	673	622	653	684	675	748
Europe	311	369	421	418	430	514	615
Asia-Pacific	165	211	295	433	500	624	870
South America	66	166	237	289	312	379	437
Africa	6	18	25	30	32	53	67
<b>TOTAL</b>	<b>1,198</b>	<b>1,437</b>	<b>1,598</b>	<b>1,828</b>	<b>1,958</b>	<b>2,245</b>	<b>2,763</b>



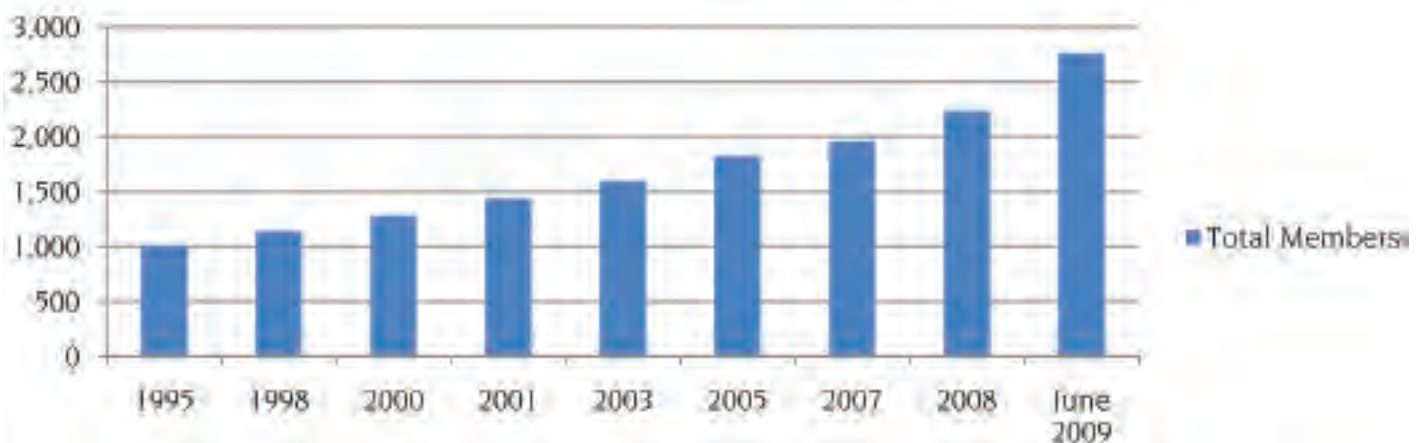
## ISAKOS MEMBERSHIP BY CATEGORY

# of Members	Category
1701	Active
15	Affiliate
851	Associate
13	Corresponding
169	Emeritus
14	Honorary
<b>2763</b>	<b>- Total Count -</b>

## ISAKOS MEMBERSHIP GROWTH

Year	Total Members
1995	1,005
1998	1,141
2000	1,282
2001	1,437
2003	1,598
2005	1,828
2007	1,958
2008	2,231
June 2009	2,763

## TOTAL MEMBERS





# ISAKOS 2009–2011 COMMITTEES

## ISAKOS COMMITTEE MEMBERS APPOINTED

Following the ISAKOS Congress in Osaka, Japan, the Committee on Committees and ISAKOS President Freddie Fu, MD announced the 2009–2011 committee members.

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Allen Anderson, USA  
Guillermo Arce, ARGENTINA  
Klaus Bak, DENMARK  
Mark Clatworthy, NEW ZEALAND  
Moises Cohen, BRAZIL  
Myles Coolican, AUSTRALIA  
Ramon Cugat, SPAIN  
M. Nedim Doral, TURKEY  
Benno Ejnisman, BRAZIL  
Joao Espregueira-Mendes, PORTUGAL  
Julian Feller, AUSTRALIA  
Jon Karlsson, SWEDEN  
Francois Kelberine, FRANCE  
James Lubowitz, USA  
Robert Marx, USA  
Eric McCarty, USA  
Norimasa Nakamura, JAPAN  
Mitsuo Ochi, JAPAN  
David Parker, AUSTRALIA  
Kevin Plancher, USA  
David Rajan, INDIA  
Rene Verdonk, BELGIUM

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Robert Marx, USA, Deputy Chair  
Norimasa Nakamura, JAPAN, Deputy Chair  
Constance Chu, USA  
Mario Ferretti, BRAZIL  
Iftach Hetsroni, ISRAEL  
Dimitr Jontschew, GERMANY  
Sinan Karaoglu, TURKEY  
Robert LaPrade, USA  
Stephen Lyman, USA  
Nick Mohtadi, CANADA  
Kevin Shea, USA  
Michael Soudry, ISRAEL  
Stefano Zaffagnini, ITALY  
Bruce Levy, USA, Consultant  
Savio Woo, USA, Past Chair

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Freddie Fu, USA, Deputy Chair  
Moises Cohen, BRAZIL  
Peter Fowler, QATAR  
Roland Jakob, SWITZERLAND  
Gary Poehling, USA  
Per Renström, SWEDEN  
Barry Tietjens, NEW ZEALAND  
John Bergfeld, USA, Past Chair

## STRATEGIC PLANNING COMMITTEE

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Per Renström, SWEDEN, Deputy Chair  
Annunziato Amendola, USA  
John Bergfeld, USA  
Stephen Burkhart, USA  
James Chow, USA  
Kenneth DeHaven, USA  
Benno Ejnisman, BRAZIL  
Julian Feller, AUSTRALIA  
Alberto Gobbi, ITALY  
Philippe Hardy, FRANCE  
Roland Jakob, SWITZERLAND  
Masahiro Kurosaka, JAPAN  
Maurilio Marcacci, ITALY  
Philippe Neyret, FRANCE  
Robert Stanton, USA  
W. Jaap Willems, THE NETHERLANDS  
Gary Poehling, USA, Past Chair

## UPPER EXTREMITY COMMITTEE

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Guillermo Arce, ARGENTINA,  
Deputy Chair  
Kevin Plancher, USA, Deputy Chair  
Gregory Bain, AUSTRALIA  
Steven Cohen, USA  
Giovanni Di Giacomo, ITALY  
Mauricio Gutierrez, COLOMBIA  
Vicente Gutierrez, CHILE  
Eiji Itoi, JAPAN  
William Kibler, USA  
David Lintner, USA  
Wei Lu, CHINA  
Raffy Mirzayan, USA  
Matthew Provencher, USA  
Felix Savoie III, USA  
Ettore Taverna, ITALY  
John Uribe, USA  
Ethan Wiesler, USA  
W. Jaap Willems, THE NETHERLANDS  
Benno Ejnisman, BRAZIL, Past Chair

# YOUR COMMITTEES AT WORK

## COMMUNICATIONS COMMITTEE



The ISAKOS Communications Committee met in Osaka, Japan on April 4th 2009. The main focus of our meeting was the ISAKOS website. It was agreed that the ISAKOS website is in good condition. The Committee discussed having some ISAKOS online content available for non-members so potential members can see the online educational content ISAKOS has to offer. It was also proposed to

streamline the online membership application process—this will be a joint effort between the ISAKOS Communications and Membership Committees. It was also agreed that the 2009 ISAKOS Award Winners' papers should be uploaded to the ISAKOS website. Teaching centre information must be clear providing visitors to the site with a current and up to date list of all centres in the world.

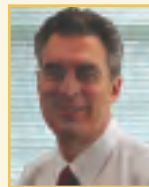
Above all we propose working in correspondence with the Arthroscopy Committee who announced their production of high quality videos of normal arthroscopic anatomy of the ankle, elbow, hip, knee, shoulder and wrist. We would like to continue with this by uploading the different pathologies, diagnostics and treatments of the above mentioned joints and following this theme also do the same for Sports Medicine and Knee Surgery.

I would like to welcome new members and thank those who have completed their time with us. I would like to express my gratitude to the ISAKOS Executive Committee, the Program Committee Chair and all the ISAKOS staff for the successful 2009 Congress in Osaka, Japan.

### Ramon Cugat MD

*Communications Committee Chairman*

## KNEE COMMITTEE



The ISAKOS Knee Committee met in Osaka on Sunday, 5th April.

The Committee charges were reviewed. Following the successful Master's Pre-Course on Total Knee Arthroplasty and Navigation in Osaka, the future of such courses was discussed in detail. There is ongoing dialogue with the Board of Directors regarding the ongoing commitment to Pre-Course meetings. The Knee Committee has suggested that one possibility might be to have a routine Pre-Course on *Current Concepts in Knee Surgery*. There could be two half day components to this, addressing two separate topics, one of which should always be an open knee topic. Current concept projects could then be incorporated into this format of Pre-Course, depending on the suitability of the topic.

The status of the various projects was reviewed:

**Navigation in Knee Surgery (D. Parker).** The Pre-Course on this topic was well attended and the feedback was positive. A Current concepts article for publication will now be put together by David Parker, Kelly Vince and Julian Feller.

**Knee Navigation Online Survey (R. Verdonk).** This survey has been completed and the results were presented in the Masters Pre-Course. A summary of the results will be included in the Current Concepts Review article.

**Meniscal Tear Classification (A. Anderson).** This project has been completed and Allen Anderson gave a lecture on the project at the Osaka meeting. It was felt that this classification should be publicized as widely as possible and Allen Anderson agreed to write an article for the newsletter on the topic. In addition, the Arthroscopy Committee will use this terminology for meniscal lesions in the Committee's review of terminology. The Socrates database (ICRS) will also include this classification.

**Biologics Current Concepts Meeting (A. Miniaci).** This is the next major Current Concepts project. Tony Miniaci is to head a sub-committee consisting of himself, Fred Almqvist and Martin Lind. There will be a one day meeting of Knee Committee members. Each member will be given a topic to review and present. The reviews will then be put together in one or more review articles to be submitted for publication.

### Julian Feller

*Knee Committee Chairman*

## MEMBERSHIP COMMITTEE



The ISAKOS Membership Committee is chaired by M. Nedim Doral (Turkey), and co-chaired by Allen Anderson.

The committee met in Osaka, Japan, during the course of the 2009 ISAKOS Congress. In addition to the Chair and Co-chair, J. Huyelbroek (Belgium), H. Pinar (Turkey), J. Bartlett (Australia), and R. Smigielski (Poland) were present. ISAKOS currently has 2763 members from 89 different countries, which is an increase of more than 1400 members since 2008. The committee would like to thank all of those who made this remarkable growth possible.

The goal of the ISAKOS Membership Committee is to add 200 new members by September 1, 2009. To achieve this goal, the committee will enhance the ISAKOS Regional Coordinator concept. The current regional coordinators are: Benno Ejnisman (South America), Allen Anderson (North America), John Bartlett (Asia-South Pacific), Hose Huyelbroek (Western Europe), Mitsuo Ochi (Asia-Central), Robert Śmigielski (Eastern Europe), M. Hussein (Balkan's region). The Regional Coordinator handbooks and sample letters have been written and the handbooks will be distributed to the regional coordinators. The coordinators of each region will select a country or state coordinator who will use the handbook as a guideline to recruit Fellows and young orthopaedic surgeons. Special attention will be given to countries who have only a few members in ISAKOS.

Items that the Membership Committee will focus on for the 2009–2011 committee term include improving communication between education and membership committees; evaluating the success of the Regional Coordinator system and creating an infrastructure for work by future Regional Coordinators, and promotion of ISAKOS membership via the Teaching Centers and Approved Courses.

The next meeting of the Membership Committee will be in March 2010, at the AAOS Meeting in New Orleans, LA.

Best Regards,

**MN DORAL MD/Chair & AA ANDERSON MD/Co-Chair**

## SCIENTIFIC COMMITTEE

The 2009–2011 Scientific Committee under the leadership of Jon Karlsson (chair), Robert Marx and Nori Nakamura (co-chairs) had its first meeting in Osaka.

The primary goal of the Scientific Committee is to develop a handbook of research methods. The goal is to create a practical handbook on available research methods, study designs, biostatistics and publication of manuscript. The purpose is to help surgeons and other scientists who submit manuscripts to produce better manuscripts. The handbook is planned to be finished before the ISAKOS meeting in 2011.

The Scientific Committee will also continue the article series on Evidence-based Medicine, currently being published in *Arthroscopy*. The series started with an Editorial by Drs Woo, Marx and Karlsson and an Introduction to Evidence-base Medicine by Dr. Bandahri. The first articles are already published and more will follow.



# YOUR COMMITTEES AT WORK

Additionally, the Scientific Committee will continue to provide articles to the Newsletter. Please see page 22 for a manuscript by Dr Nakamura.

The Scientific Committee is currently developing program ideas for the upcoming ISAKOS congress in 2011. The Scientific Committee is planning an extension of previous symposia and ICLs on scientific methods and study designs.

**Jon Karlsson**

*Scientific Committee Chairman*

## UPPER EXTREMITY

The Upper Extremity Committee had two successful meetings during the ISAKOS Congress in Osaka. It is a great honor for me to take over the chairmanship this very productive committee from the previous always hard working chair, Dr. Benno Enjismann from Sao Paolo, Brazil.

After a successful current concepts meeting on Shoulder instability in Cancun, Mexico in conjunction with the SLARD meeting in June 2008, the Upper Extremity Committee has developed new projects to improve knowledge and understanding of AC-joint pathology. The project is three-sided: Past Chairman, Benno Enjismann, will conduct an internet survey on AC-joint dislocation with emphasis on etiology, classification and treatment. Secondly, The Upper Extremity Committee is planning a multicenter study on the treatment of the acute and chronic unstable AC-joint. Treatment methods and indication differs throughout the world, and the purpose of the study is to have an indication of what the ideal treatment approach should be. Preliminary results will be published June 2010 and during the ISAKOS Congress in Rio de Janeiro 2011. Thirdly, the Committee will meet for a Closed Current Concept Meeting in Copenhagen June 2010 in conjunction with the ESSKA meeting in Oslo, where the Committee will be running a symposium on AC-joint instability. The Current Concept meeting in Copenhagen 2010 will include the following presentations:

- *Epidemiology of AC-joint disorders*
- *Anatomical considerations of the acromio-clavicular joint*
- *The role of the CC-and AC-ligaments*
- *Biomechanics of scapula-humeral clavicular articulation with clinical application*
- *The painful AC-joint, diagnosis and treatment*
- *Osteolysis of the distal clavicle*
- *Acute AC-joint dislocation—a critical review of the Tossy and the Rockwood*
- *Imaging of AC joint injuries*
- *Decision making in treating AC-joint injuries*
- *Prospective randomized study on the treatment of acute AC-joint dislocation*
- *Endobutton reconstruction for acute AC-joint*
- *Reconstruction of the unstable AC-joint with the Weaver-Dunn procedure*
- *The docking procedure method of fixation of AC/CC joint reconstruction*
- *Coraco-clavicular reconstruction of the chronic unstable AC-joint.*
- *Surgical reconstruction with allograft*
- *Reconstruction of the CC and AC-ligaments with a gracilis autograft*
- *Pitfalls in the treatment of AC-joint injuries*
- *Associated pathology—evaluation and treatment*
- *Evaluation and treatment options of the distal clavicle fracture*
- *Reconstruction of the anterior unstable SC-joint*
- *Presentation of the internet survey on AC-joint injuries*
- *Presentation of the Upper Extremity Committee Multicenter Study on surgical treatment of the unstable AC-joint*

Outlines will be available for ISAKOS to publish on the website, and a Current Concept Report will be written and submitted for publication in either the ISAKOS Newsletter or Journal of Arthroscopy. Further planned projects are intended for online education, and are based on Current Concepts meetings in the Upper Extremity Committee.

At the ISAKOS Congress in Osaka, Japan, the Upper Extremity Committee announced the Caspari Award Winner, Mark Haber from Australia (Biomechanical Contact Properties of Rotator Cuff repairs during passive Arm Movement). The second prize was won by Dr. Roderich Heikenfeld, Germany (Arthroscopic repair of Cuff Tears with Associated Lesions of the Biceps tendon).

The 2009 Upper Extremity Traveling Fellowship was given to Dr. Sigitas Ryliskis from Lithuania. The 2010 Upper Extremity Traveling Fellowship was awarded to Dr. Hatem Said, Egypt.

The next meeting of the ISAKOS Upper Extremity Committee will be held in Copenhagen on May 10, 2010.

**Klaus Bak**

*Chairman of the Upper Extremity Committee of ISAKOS*

## ISAKOS STRATEGIC PLANNING COMMITTEE—2009–2011

The ISAKOS Strategic Planning Forum was held at the 2009 ISAKOS Congress. More than 100 ISAKOS Committee members (both past and present) participated in this meeting under the guidance of Committee Chairs Barry Tietjens and Per Renström. The ISAKOS Strategic Plan is the plan that will guide all ISAKOS activities in the current Committee term.

The ISAKOS Strategic Plan for the 2009–2011 Committee Term will focus on three things—*Education, Membership and Financial Planning.*

### **EDUCATION**—*Promote Education beyond the biennial ISAKOS Congress*

As stated in ISAKOS' mission statement, ISAKOS seeks to "advance the worldwide exchange and dissemination of education, research and patient care". This goal will be accomplished by increasing online education via the development of an online Library to include Congress content and surgical demonstrations, as well as committee projects. Additionally, ISAKOS will work to improve the ISAKOS Teaching Center Program by reviewing existing Teaching Centers, and promoting applications for new Teaching Centers. Finally, ISAKOS will work to improve ISAKOS Courses and Workshops, including continuing the Teacher to Teacher Program.

### **MEMBERSHIP**—*Increase ISAKOS Membership*

ISAKOS seeks to increase membership. ISAKOS has experienced remarkable growth in recent years, and we hope to continue this trend. Therefore, ISAKOS will improve collaboration between the ISAKOS Education and Membership Committees including promoting membership at ISAKOS educational programs and promoting educational activities that will attract new members. ISAKOS will also continue to develop the Regional Coordinator and National Membership Coordinator programs including improved communication and marketing strategies. ISAKOS will be seeking out younger members by targeting graduating residents, fellows and young surgeons, and providing additional opportunities for younger surgeons to participate in the ISAKOS Congress as speakers or moderators. Finally, ISAKOS will increase marketing efforts in countries with few ISAKOS members.

### **FINANCIAL PLANNING**—*Increase Financial Resources for the future*

ISAKOS seeks to maintain our stable financial position. Therefore, we will continue to preserve our financial assets by maintaining our present investment strategies for reserve funds, as well as seeking educational grants from Industry. ISAKOS will continue to evaluate the ISAKOS Congress, including potential fund-raising opportunities, as well as the cost effectiveness of various elements such as the Pre-Courses.

***Thank you for your membership and support of ISAKOS. We look forward to achieving our Strategic Plan in the coming years.***

# NEW MEMBER PROFILE

## DR. HIROSHI OHUCHI

ISAKOS Member Since 2008

I first learned about ISAKOS in 2008, when I was staying in the U.S. as an international fellow. I studied sports medicine and arthroscopic surgery for six months at Taos Orthopaedic Institute in New Mexico. Dr. James Lubowitz, director of Taos Orthopaedic Institute, told me that this was the largest and most advanced international society for arthroscopy and sports medicine. He also told me that it was the best society to meet the world's leading physicians and to learn the most advanced skills in knee surgery, arthroscopy and orthopaedic sports medicine. I immediately searched for sponsors and applied for membership.



I was born in Tokyo, Japan, but spent my elementary and junior-high school years in California, USA. I then came back to Japan for high school, and graduated from Tokyo Medical and Dental University. I completed an orthopaedic residency at Saku Central Hospital in Nagano, where we had the '98 winter Olympics. After my residency I did a fellowship at Sakudaira Sports Medicine and Arthroscopy Center also located in Nagano. This is where I learned my basics for sports medicine and arthroscopic surgery. We took care of a lot of high level snowboarders with shoulder dislocations and skiers with ACL injuries. Also during my 3 years in Nagano, I was fortunate to be able to visit various leading surgeons (9 in Japan and 5 in the United States) to improve my arthroscopic skills in shoulder, elbow, ankle and knee arthroscopy, and also to update my sports medicine knowledge.

In 2008, I was invited to the Sports Medicine Department at Kameda Medical Center in Chiba, which is one of the largest private hospitals in Japan. We have over 50 departments with over 450 physicians which is quite large for a single private hospital. We make full use of this scale in our patients and take care of every problem that an athlete can suffer. The hospital building is located right in front of a beach, and my patients' boards have shifted from snowboards to surfboards. We take care of a lot of professional surfers and also take care of a local professional baseball team as well as local school children. My areas of interest and research are surfing and snowboarding medicine and orthopaedic ultrasound.

I attended the 2009 ISAKOS congress in Osaka. We were very lucky to hit the peak season of the beautiful cherry blossoms in full bloom. My experience at the congress was wonderful. Thanks to Dr. Lubowitz, I had the privilege of meeting many excellent surgeons from America, Europe, Australia, Africa, and Asia. Meeting and speaking with different surgeons from different continents always helps in giving me new ideas on my operations. I also spent a lot of my time at the congress introducing our residents and fellows to the international doctors who taught me my arthroscopic skills and they all look forward to studying abroad with my mentors some day. I truly hope and believe that our experience will lead to a lot of personal friendships, and maybe even visits to and from these countries.

ISAKOS is Ichi-ban!!

### **Dr. Hiroshi Ohuchi**

*Chief, Department of Sports Medicine  
Kameda Medical Center, Chiba, Japan*



## GRONINGEN UNIVERSITY SPORTS MEDICINE CENTER

[www.sportgeneeskundegroningen.nl](http://www.sportgeneeskundegroningen.nl)



The Groningen University Sports Medicine center is a multidisciplinary center, part of the greater Groningen University Medical Center. The sports medicine center is dedicated to treatment,

rehabilitation and prevention of sports injuries, has activities in the medical supervision of top performance athlete's and organizations, is active in "exercise = medicine" programs, and is a national leader in sports and exercise research. It is a recognized training center for sports physician specialists, and provides training for orthopedic and trauma surgeons and rehabilitation physicians, as well as sports physical therapists.

The staff is formed from a collaboration of sports physicians, orthopedic surgeons, trauma surgeons, rehabilitation physicians and physical therapists, all with specialization in sport related injuries. The medical staff comprises:

Prof.Dr. Ron.L. Diercks, Orthopedic Surgeon  
Steef Bredeweg, MD, Sports Physician  
Hans Zwerver, MD, Sports Physician  
Bram Bessem, MD, Sports Physician  
Dr Klaus Wendt, Trauma Surgeon  
Dr Rienk Dekker, Rehabilitation Physician  
Elvira Tijdens, MD, Orthopedic Surgeon  
Dr Marcus Raum, Trauma Surgeon  
Dr Corry van der Sluis, Rehabilitation Physician

Activities include sports injury out-patient clinics, multidisciplinary patient conferences, sports exercise testing, sports rehab and arthroscopic or open surgical interventions in sportsmen and –woman, of different levels.

Top-reference activities include treating patients with tendinopathy, arthroscopic shoulder surgery, knee instability rehab and reconstruction, running injuries and handicapped sports. In all these patient groups PhD. research programs are performed.

There is an intensive collaboration with the orthopedic, traumatology and rehabilitation departments of the Groningen University Medical Center, the largest university center of the north of the Netherlands, a level 1 trauma center and specialized orthopedic center for arthroplasty, and a specialized rehab center for posttraumatic lesions and paraplegics.

Resident and fellowship training in general orthopedic surgery, spinal surgery, arthroscopic surgery and trauma surgery is organized on an academic level. Fellows can join

in on specialized procedures and advance their expertise in more general procedures.

The University Medical Center Groningen has an up-to-date skills lab, where arthroscopic virtual simulators are at hand for training. Learning and training is the dominant culture of the University Hospital, and this culture will be perceived as very stimulating.

Clinical conferences are held every day, and weekly in multidisciplinary conferences and rounds. Every week, teaching lectures are performed by and for the residents, fellows and staff of the orthopedic department, with sometimes hands-on teaching at the skills lab, cadaver dissections, or guest lectures, or presentations of own research or journal clubs.

Every year, a 2-day cadaver course is organized by the orthopedic, traumatology and the plastic surgery department, a compulsory course in the training scheme for orthopedic surgeons.

The yearly Groningen Sports medicine Symposium attracts about 200 professionals, and many distinguished speakers in sports medicine from around the world have attended as instructors.

Research is performed within the University center for sports, exercise and health, <http://www.rug.nl/umcg/onderzoek/faciliteiten/ucsbg/onderzoek>, a regional research collaboration, in cooperation with the sports sciences division of the University center for human motion sciences. Part of this research is epidemiologic, or in sports participation. Clinical research focuses on shoulder impingement, rotator cuff repair, meniscus allograft, development of navigational techniques in endoprosthesis and ACL surgery.

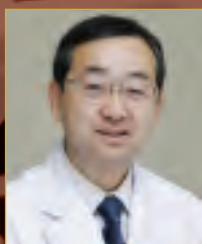
Nationally, the University sports medicine Center/ University center for sports, exercise and health works in close collaboration with 3 other Universities in developing sports and health research: Utrecht University, Maastricht University and the Free University in Amsterdam. These four universities are recognized as leading knowledge centers in sports, sports injuries and sports health research in the Netherlands, and a number of research projects are funded by national grants. These are shown on the website of the University center for sports, exercise and health <http://www.rug.nl/umcg/onderzoek/faciliteiten/ucsbg/onderzoek>

In education, research and development, there is a close collaboration, locally, with the Hanze Institute for Sports Studies, Instituut voor Sportstudies – Hanzehogeschool Groningen, which has a large sports university with a sports field lab.

Through this cooperation, research and development projects are performed with the national Olympic committee and several national top-performance organizations.



# 7<sup>TH</sup> BIENNIAL ISAKOS CONGRESS



## *Message from the Program Committee for the 2009 ISAKOS Congress*

The 7<sup>th</sup> Biennial ISAKOS Congress held in Osaka was very successful. On behalf of the ISAKOS Program Committee, I would like to thank all attendees and all members of the ISAKOS committee for their great contributions. Also I would like to appreciate the local organizing committee in Japan as well as the ISAKOS Office for their perfect organization and arrangement.

We had approximately 2000 medical attendees register for the Congress (doctors, allied health, residents & fellows) from 75 countries as well as 300 exhibitors.

Special thanks are owed to the presenters and faculty. More than 1300 abstracts were submitted for the 2009 ISAKOS Congress—nearly 290 were selected for podium presentation, and an additional 450 were selected as electronic posters. The acceptance ratio for podium and e-poster presentations was 54%. This extremely competitive value shows that the ISAKOS Congress is one of the most highly scientific meetings. Additionally, the “Top 20” electronic posters were selected and broadcasted during the Congress for viewing by attendees. Congratulations to all the authors of these electronic posters.

The Scientific Program was based on the “Integration Between EBM and Future Challenges,” and included 30 symposia, 6 Socratic debates, 20 educational lectures, 28 ICLs, 14 live surgical video demos, and 20 lunchtime workshops. The two pre-courses, “ISAKOS Master’s Pre-Course: Total Knee Arthroplasty and Navigation” and “ISAKOS Team Physician Course: Hot Topics in Sports Medicine” were also very successful with nearly 300 participants.

The ISAKOS Program Committee 2007–2009 believed that we could provide a variety of new prophylactic, therapeutic, and surgical information, allowing attendees not only to expand their knowledge but also to enhance their own surgical skill. I am confident ISAKOS will continue to provide a unique opportunity for the exchange of knowledge and dissemination of research throughout the international community in the next 2011 Congress.

**Kazunori Yasuda, MD, PhD**  
*Chair, 2007–2009 ISAKOS Program Committee*



**OSAKA, JAPAN • APRIL 5 – 9, 2009**







## ISAKOS CONGRATULATES AWARD & FELLOWSHIP WINNERS

ISAKOS proudly presented the following awards at the 7<sup>th</sup> Biennial ISAKOS Congress held in Osaka, Japan.

### JOHN J. JOYCE AWARD

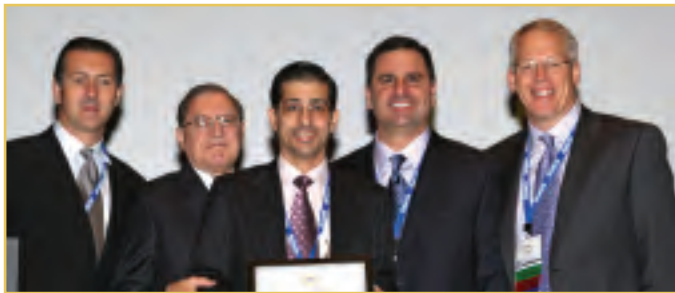
*Sponsored by Smith & Nephew Endoscopy*

In 1981, Dr. John J. Joyce III offered a monetary prize for the best arthroscopy paper read during the Scientific Program of the 4<sup>th</sup> Congress of the International Arthroscopy Association in Rio de Janeiro. With characteristic generosity, he endowed a prize to be awarded at every IAA Congress thereafter. A committee comprised of members of the ISAKOS Arthroscopy Committee selects the first, second and third-place prize-winning papers from manuscripts presented at the ISAKOS Biennial Congress.

#### First Place:

“Comparison of Open Versus Arthroscopic Fixation for Isolated PCL Tibial Bony Avulsions: A Prospective Randomized Study with Minimum 2 Year Follow-up”

**Dinshaw Pardiwala** (India)



*Mark Clatworthy, Ruben Rosales (Smith & Nephew), Dinshaw Pardiwala, Michael Frazzette (Smith & Nephew), Steve Howell*

#### Second Place:

“Biomechanical Study and Preliminary Results for a Newly Developed Arthroscopic Coracoclavicular Ligament Reconstruction Using Tendon Graft”

**Yon-Sik Yoo**, (South Korea)

#### Third Place:

“Surgical Treatment of Osteochondral Lesions of the Talus with a New One-step Arthroscopic Procedure”

**Sandro Giannini** (Italy)

### RICHARD B. CASPARI AWARD

*Sponsored by DePuy Mitek*

Beginning at the 2003 ISAKOS Congress in Auckland, New Zealand, a monetary prize in honor of Richard B. Caspari was awarded to the best upper extremity paper read at the scientific program of the congress. A panel composed of members of the ISAKOS Upper Extremity Committee selects the prize-winning paper read at the ISAKOS Biennial Congress.

#### First Place:

“Biomechanical Contact Properties of Rotator Cuff Repairs During Passive Arm Movement: Perilously Low Levels Occur with Single Versus Double-row Repairs”

**Mark Haber** (Australia)



*Klaus Bak, Mark Haber, Benno Ejnisman*

#### Second Place:

“Arthroscopic Repair of Cuff Tears with Associated Lesions of the Biceps Tendon: Technique and Results After 3 Years”

**Roderich Heikenfeld** (Germany)

### SCIENTIFIC AWARD

Beginning at the 2007 ISAKOS Congress in Florence, Italy, a monetary prize was awarded to the best scientific paper presented during the scientific program of the congress. A panel composed of members of the ISAKOS Scientific Committee selects the prize-winning paper papers from manuscripts presented at the ISAKOS Biennial Congress.

**Winner:** “In Vivo Response of Human Tenocytes to Extra-Cellular Matrix Patches used for Rotator Cuff Repair”

**Kevin Shea** (USA)



*Savio Woo, Jon Karlsson, Kevin Shea, and Robert Marx*



## ALBERT TRILLAT YOUNG INVESTIGATOR'S AWARD

Sponsored by Stryker

Established in memory of Professor Albert Trillat, past president and founder of the International Society of the Knee, this award provides recognition for a young researcher who has done outstanding clinical laboratory research contributing to the understanding, care or prevention of injuries to the knee. A panel composed of members of the ISAKOS Knee Committee reviews the award applications and the winning manuscript is presented at the ISAKOS Biennial Congress.

**Winner:** "The effect of meniscectomy and meniscal allograft transplantation on knee and anterior cruciate ligament biomechanics"

**Jeffrey T. Spang MD (USA)**



Julian Feller, Eric Lyaudet (Stryker), Jeffrey Spang, and Allen Anderson

## ACHILLES ORTHOPAEDIC SPORTS MEDICINE RESEARCH AWARD

Sponsored by DJO, Inc.

This ISAKOS award recognizes researchers who have done outstanding clinical or laboratory research in the field of sports medicine, such as the care and prevention of injuries. A panel composed of members of the ISAKOS Orthopaedic Sports Medicine Committee reviews the award applications and the winning manuscript is presented at the ISAKOS Biennial Congress.

**Winner:** "Low Energy Extracorporeal Shock"

**John Patrick Furia MD (USA)**



Myles Coolican & John Furia

## THE PATELLOFEMORAL RESEARCH EXCELLENCE AWARD

Sponsored by The Patellofemoral Foundation, Inc.

The Patellofemoral Research Excellence Award was established in 2003 to encourage outstanding research leading to improved understanding, prevention and treatment of patellofemoral pain or instability. A panel composed of representatives from the ISAKOS Knee and Scientific Committees, The International PF Study Group and The Patellofemoral Foundation review the award applications and the winning manuscript is presented at the ISAKOS Biennial Congress.

**Winner:** "Three Dimensional In Vivo Patellofemoral Kinematics and Contact Area of ACL Deficient and Reconstructed Subjects Using MR Images"

**C. Benjamin Ma (USA), Co-Authors: Choongsoo Shin, R. Dana Carpenter, Sharmila Majumdar**



Julian Feller, C. Benjamin Ma, John Ferguson

## NICOLA'S FOUNDATION YOUNG RESEARCHER AWARD

Sponsored by The Patellofemoral Foundation, Inc.

This ISAKOS award recognizes young researchers who have done outstanding work in arthroscopy, knee surgery or orthopaedic sports medicine.

**Winner:** "Outcome and Predictors of Microfracture for Osteochondral Lesions of the Ankle"

**Bavornrit Chuckpaiwong (Thailand)**



Giuliano Cerulli, Bavornrit Chuckpaiwong

## ISAKOS FELLOWSHIPS

### THE PATELLOFEMORAL TRAVELING FELLOWSHIP

*Sponsored by the Patellofemoral Foundation, Inc.*

This travel award is to promote better understanding and communication regarding patellofemoral pain. This opportunity will be available on a competitive basis to an orthopaedic surgeon interested in the study and advancement of understanding of the patellofemoral joint. Preference will be given to those who have established an academic record of accomplishment. The Patellofemoral Foundation will provide a stipend to permit visits to several centers, worldwide, that offer opportunities to learn about the complexities of patellofemoral pain. The fellow will write a report of the experience, which will be considered for publication in *Arthroscopy: The Journal of Arthroscopic and Related Surgery*.

**Nicola Maffulli** (United Kingdom)

**Christian Lattermann** (USA)

**Petri Sillanpaa** (Finland)

**Philip Schoettle** (Germany)



### THE UPPER EXTREMITY TRAVELING FELLOWSHIP

This fellowship was developed to promote better understanding and communication regarding injuries or conditions involving the structures of the Upper Extremity. This opportunity will be available on a competitive basis to an orthopaedic surgeon between the ages of 35 and 45 years, interested in the study and advancement of understanding of injuries to the Upper Extremity. Preference will be given to those who have established an academic record of accomplishment. A stipend will be provide to permit visits to several centers, worldwide, that can match their facilities with the applicant's interest. The fellow will write a report of the experience which will be considered for publication in *Arthroscopy: The Journal of Arthroscopic and Related Surgery*.

**Sigitas Ryliskis** (Lithuania)

**Hatem Said** (Egypt)



## HONORARY MEMBERS

ISAKOS would also like to congratulate the recently appointed ISAKOS Honorary Members. Honorary Membership is the highest honor available to ISAKOS Members, and we thank them for their commitment to our society and in the fields of arthroscopy, knee surgery and orthopedic sports medicine, as well as their contributions to the growth of ISAKOS. The Honorary Members (from Left) are Barry Tietjens (New Zealand), Hideshige Moriya (Japan), and Per Renström (Sweden).





## WELCOME RECEPTION

ISAKOS thanks all who participated in the 2009 ISAKOS Congress Welcome Reception. Congress participants and their guests enjoyed authentic Japanese cuisine, as well as an exciting performance by a taiko drum group.

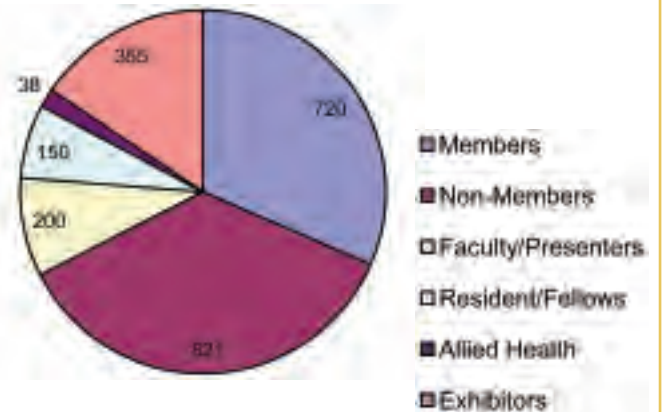


## REGISTRATION

More than 2300 registrants attended the 2009 ISAKOS Congress!



## REGISTRATION CATEGORY TOTALS



## SPOUSE PROGRAM





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## LUNCHTIME LECTURES & WORKSHOPS

Lunchtime Lectures and Workshops were sponsored by various companies, and provided up to the minute information on various techniques with lectures and hands-on workshops.



## E-POSTERS

More than 450 Electronic Posters were presented as part of the 2009 ISAKOS Congress Scientific Program. The Top 20 E-Posters were selected by the Program Committee, and presented on a video screen at the E-Poster viewing stations. For a complete list of the E-Poster Top 20, and to view their posters, please visit [www.isakos.com](http://www.isakos.com).



## GENERAL SESSION

Concurrent sessions offered a wide variety of topics for Congress participants.



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THANKS

## INTERNATIONAL SOCIETY PRESIDENTS

Freddie H. Fu, ISAKOS President 2009–2011, welcomed international society presidents with a breakfast and presentation on Monday, April 6<sup>th</sup>.



## ISAKOS INTERNATIONAL PRESIDENTS' COUNCIL

The ISAKOS Executive Committee welcomed the leaders of our partner societies, AANA, AOSSM, APOSSM, ESSKA, and SLARD to discuss the challenges facing their respective societies.

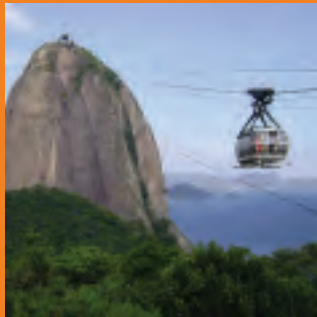


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# ISAKOS IN



# Brazil

**L**ocalized eastern South America, bordering the Atlantic Ocean, Brazil, the largest Portuguese speaking country, has an area slightly smaller than the US, totalizing 8,511,965 sq km. Brazil has a marvelous coastline of over 7 thousand Km, serviced with hundreds of year round Summer Resorts.

As a relatively new democracy, Brazil was first discovered by Portuguese expeditions by 1500 and had its Independence by 1822. Today, Brazil, has a population of over 190 million (est. 2008), divided on 26 states and the Federal District of Brasilia (the Capital City).

In 2001, economist Jim O'Neill created the term BRIC (Brazil, Russia, India and China) in order to refer to the four main emerging countries. Over the past decade Brazilian economy has had a GDP real growth rate of 5.2% (est. 2008) with a GDP of \$1,6 Trillion which gives Brazil the 9th place as the richest nation on the globe. As a developing country, Brazil is nowadays facing problems common to developing nations such as creating new clean energy solutions and, on the other hand, has to deal with the challenge of wealth fair distribution and education.

The country of Brazil, has a great variety of touristic attractions, from Rio to Iguassu Falls, passing through Amazon Rain Forests, Pantanal (Brazilian Swamps), Northeast region outstanding natural beauty beaches and its world-class Summer Resorts. Fishing and wild bird watching are a big and growing touristic destination. Brazilians, world known for its friendship and hospitality, are a result of centuries of emigrations from all over the world. Different from other new world countries, our people have had a miscegenation between native Indians and immigrants from Europe, Africa and Asia.

The history of Brazil and ISAKOS has a strong connection. Since the early days of its existence Brazilian Orthopaedics have been involved with ISAKOS. On the past 5 years alone the number of members have increased over 140% to 245 with active members working in nearly all ISAKOS Committees. Brazil has three ISAKOS Approved Teaching

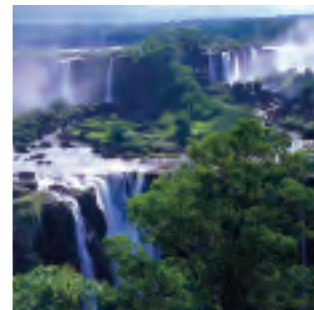
Centers, two in São Paulo (CORE and CETE) and one in Joinvile. All the effort of making Brazil a strong player on the international Orthopaedic scenario is due to 2009–2011 ISAKOS Vice President, **Moises Cohen**, along with **Gilberto Camanho, MD**, **Rene Abdalla, MD** and **Arnaldo Hernandez, MD** among others.

Brazilian Orthopaedic organized history started with the foundation of SBOT (Brazilian Orthopedic and Traumatology Society) in 1935. Today, SBOT holds over 8 thousand members and its Annual Meetings hosts over 4 thousand orthopaedic surgeons from all over Brazil on an intensive 4 days State of the Art Meeting.

Dealing with the challenge of bringing State of the Art Education and Health Care on a Developing and Continental country is really a huge effort of SBOT and the partnership with ISAKOS has played an important role on this effort.

The 8th Biennial ISAKOS 2011 Meeting will be held in Rio de Janeiro, A Cidade Maravilhosa (The Marvelous City) and it will be the turn of a new page on the Brazilian Orthopaedics and ISAKOS relationship. **Moises Cohen**, our local host, will lead a team of Brazilian Orthopaedic Surgeons willing to offer you an unforgettable Congress. Come to Rio and experience it all by yourself!

**Lucio Ernlund, MD, MSc**  
INSTITUTO DE JOELHO E OMBRO  
CURITIBA, PARANA STATE, BRAZIL  
ISAKOS NEWSLETTER and SPORTS MEDICINE  
COMMITTEE MEMBER



## FUTURE OF SPORTS MEDICINE: APPLICATION OF STEM CELLS TO RESTORE CHONDRAL SURFACE

**NORIMASA NAKAMURA, MD, PHD**  
**SAVIO L-Y. WOO, PHD**

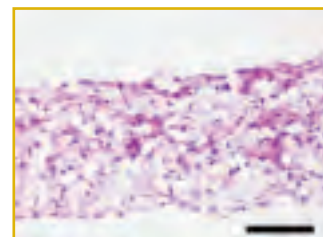
It is widely accepted that chondral injury does not usually heal spontaneously due to its avascular surroundings and unique matrix organization. Therefore, a variety of approaches have been tested to improve cartilage healing. Among them, cell-based therapies have received much attention since the successful report of autologous chondrocyte implantation. However, this procedure may have limitations including the need to sacrifice uninvolved cartilage within the same joint and *in vitro* expansion of the cells. With the degenerative changes in aging cartilage, the availability of the cells may be limited in elderly individuals. Also, *in-vitro* chondrocyte expansion in monolayer cultures could result in dedifferentiation. To overcome these issues, mesenchymal stem cells (MSCs), which have the capability to differentiate into a variety of connective tissue cells including bone, cartilage, tendon, muscle and adipose tissue, have been tested to regenerate cartilage. These cells can be isolated from various tissues such as bone marrow, skeletal muscle, synovial membrane, adipose tissue, and umbilical cord blood and can be expanded in culture through many generations, while retaining their potential to differentiate. Pluripotent cells isolated from synovial membrane are also well suited for cell-based therapies for cartilage because of the ease of harvest and their strong capability of chondrogenic differentiation.

In addition to the selection of cell source, delivery of stem cells to chondral lesions locally has been another concern. To optimize cell proliferation and chondrogenic differentiation, the appropriate three-dimensional (3D) environment is important, i.e. using a 3D scaffold, where stem cells are seeded. These scaffolds generally consist of synthetic polymers or of biological materials. Various scaffolds have been approved for clinical use by governmental institutions. However, there remain several issues with their long-term safety as synthetic polymers may have potential problems regarding retention and degradation *in situ* while biological materials can carry the risk of transmission of infectious agents and immunological reactions. Taken together, such materials should ideally be excluded, in order to avoid unknown risk. To address these issues, we have established a novel scaffold-free 3D tissue engineered construct (TEC) that is composed

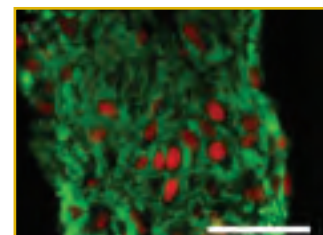
from cultured synovial cells and the extracellular matrices (ECM) synthesized by the cells without any animal-derived or chemical material.

### CHARACTERIZATION OF THE TEC

When synovial cells are cultured in the presence of ascorbic acid-2 phosphate (Asc-2P), collagen synthesis significantly increases and a stiff sheet-like structure is developed, which could be easily detached from the substratum by exerting mild shear stress at the cell-substratum interface. After detachment, the monolayer sheet begins to actively contract and form a thick, three dimensional tissue. Histology of the contracted tissue shows that the extracellular matrix and the cells are integrated together into a three dimensional structure at high cell density (Fig.1 A), which is termed as the TEC. Immunohistochemical analysis shows that adhesion molecules such as fibronectin and vitronectin are abundantly distributed throughout the matrix within the TEC (Fig.1 B). In reality, the TEC is adhesive and rapidly adheres to various joint tissues such as cartilage.



*Fig. 1a. Photomicrograph (Bar = 100  $\mu$ m.) of the TEC. The extracellular matrix and cells are integrated together into a 3D structure.*



*Fig. 1b. Immunohistochemistry of the TEC stained with fibronectin. Fibronectin is diffusely distributed within the TEC. Bar=100  $\mu$ m.*

When the TEC was cultured on the injured surface of chondral fragment for 7 days, it remained stably attached to the fragment. Histology shows close adhesion of the TEC to the injured surface of chondral fragment with intense deposition of fibronectin at the interface between the TEC and the chondral fragment. The TEC cultured in chondrogenic medium containing BMP-2 for 14 days displayed increased glycosaminoglycan (GAG) synthesis by intense Alcian blue staining (Fig.1 D) and increased expression of cartilage-specific marker genes such as collagen II (Col 2A1), aggrecan and Sox 9

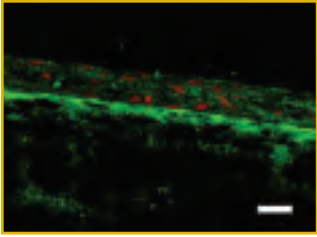


Fig. 1c. Fibronectin staining of the cultured chondral fragment for 7 days after the implantation of the TEC on the injured surface. As can be seen, the TEC is closely attached to the injured surface where fibronectin was localized. Bar = 100  $\mu$ m.



Fig. 1d. Alcian Blue staining of the TEC in the chondrogenic medium including BMP-2.



Fig. 1e. Semi-quantitative reverse transcription (RT-PCR) analysis for chondrogenic marker genes, aggrecan, collagen II (Col 2A1), Sox 9, and GAPDH in the monolayer cultured synovial mesenchymal stem cells or in the TEC. Elevated expression of Collagen II, aggrecan and Sox 9 is detected in the TEC cultured in the chondrogenic medium containing BMP-2.

(Fig. 1 E), suggesting that the TEC has strong chondrogenic differentiation potential.

## FEASIBILITY OF THE TEC TO CARTILAGE REPAIR

The feasibility of the TEC to repair cartilage was tested in a porcine partial thickness chondral injury model at the medial femoral condyle of the knee. After implantation, the TEC firmly adhered to the injured joint surface without any reinforcement procedure for fixation. At 6 months, the defect in the control group was only partially filled with fibrous tissue, which was negatively stained with Safranin O (Fig.2 A). Conversely, when treated with the TEC, the defect was completely filled in with repaired tissue with good tissue integration to the adjacent cartilage (Fig.2 B). Notably, the majority area of repaired tissue was positively stained with Safranin O. Further, there were no significant differences between the tangent modulus for the repair tissue with

TEC implantation and that for normal cartilage (Fig.3), suggesting that the biomechanical properties of the tissue in defects repaired with TEC are comparable to those of normal cartilage. However, it should be noted that the surface area lacked Safranin O staining (Fig.2 C), suggesting the repaired tissue is not identical to the normal as it has a mixture of hyaline and fibrous tissue. Taken together, the scaffold-free tissue engineered construct (TEC) is a promising novel implant for cartilage repair. More importantly, a cell based construct without scaffold would result in less risk and potential side effects caused by artificial (or extrinsic) biological materials. Finally, the abundance of adhesion molecules within the matrix that contributed to the availability of suture-less implantation should lead to a reduction of surgical time.

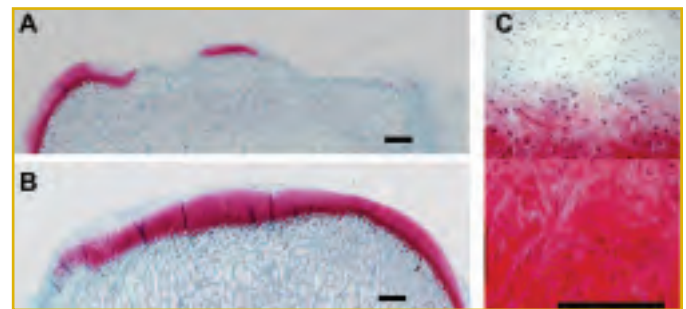


Fig. 2abc **In vivo implantation study**  
Photomicrograph (Safranin O staining) of porcine partial-thickness chondral defect treated without (A) or with (B) the TEC for 6 months. Bar = 1mm. Higher magnification view of the partial-thickness chondral defect treated with the TEC for 6 months at center area of the repaired tissue. Bar = 500  $\mu$ m.

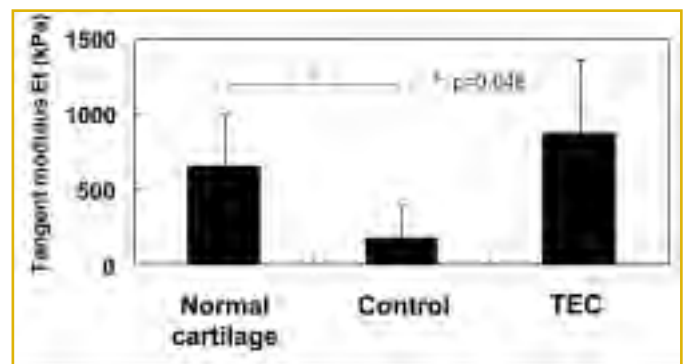


Fig. 3 **Mechanical assessment of repaired tissue**  
Tangent modulus of normal cartilage (N=11), the chondral lesion in the TEC-treated group (N=7) and that in the untreated group (N=4) at a compression rate of 100 mm/s. There was no significant difference between the tangent modulus of repair tissue treated with TEC and that of normal cartilage.



## FUTURE OF SPORTS MEDICINE: APPLICATION OF STEM CELLS TO RESTORE CHONDRAL SURFACE *(cont.)*

### NEXT STEPS

It is notable that the implantation of the TEC without any pretreatment to promote a specific differentiation pathway resulted in tissue repair with an active chondrogenic differentiation response. However, the neo tissue still contained “fibrous” (not hyaline cartilage-like) tissue at the surface area. Therefore, it is necessary to biologically manipulate the TEC for true cartilage regeneration. Known biological manipulations include the treatment by chemical compounds, proteins and genes. Amongst them, potential of growth factor therapy including insulin-like growth factor-I (IGF-1), transforming growth factor-beta (TGF- $\beta$ ), fibroblast growth factor-2 (FGF-2), and bone morphogenetic proteins (BMPs) have been tested in animal models. However, there are still safety concerns that need to be addressed before their clinical application.

As such, what are the potential candidates to promote biological manipulation? Literature suggests that platelet rich plasma (PRP) contains 3–6 times platelets of normal blood and platelet rich growth factors (or PRGF) that contain a high density of alpha granules, proteins, growth factors, such as PDGF, IGF-1, TGF-B, EGF, FGF-2, VEGF, could have positive effect on chondrogenesis. Therefore, whether the feasibility of PRP can be used to promote cell-based cartilage repair, especially the quality of repaired tissue should be studied in the laboratory and then translate into the clinical area.

### ACKNOWLEDGEMENT

We thank the Scientific Committee of ISAKOS for providing us the opportunity to prepare this manuscript. We also thank Drs. Ramon Cugat and Alberto Gobbi for providing us the information on PRP technology.

*Full article and references also available online at [www.isakos.com](http://www.isakos.com).*

## INDICATIONS FOR ROTATOR CUFF REPAIR

**ROBERT G. MARX, MD MSC FRCS**

*Associate Professor of Orthopedic Surgery Weill Cornell Medical College Hospital for Special Surgery New York, New York*

Rotator cuff repair has been documented to improve symptoms and function for patients. There have been major advances in surgical technique, with the latest controversy surrounding the use of a “double row” or “transosseous equivalent” to more anatomically reconstruct the cuff insertion, or footprint, on the proximal humerus. While continued research on surgical technique is critical, it is important for shoulder surgeons to keep in mind that many patients with rotator cuff tears are asymptomatic and that others may resolve their symptoms with non-operative care. Despite the large amount of literature on this topic, there is substantial disagreement among surgeons with respect to the indications for rotator cuff repair and how to select patients for whom we should recommend this surgery.

In Dunn’s survey of orthopedic surgeon members of the American Academy of Orthopedic Surgeons, there was considerable variation in approach for very specific cases. Specifically, there was much less agreement than expected for case examples that were felt to represent patients where surgery was either clearly required, or not. For example, one vignette was: “A 45 year old manual laborer has a medium (2cm), full-thickness RCT after an acute injury 3 months ago that involves his dominant arm with 4/5 ER weakness that is not particularly painful”. This case represents many factors that would suggest surgery is the best option including: 1) a relatively young patient, 2) a traumatic tear that is full thickness, 3) the injury is relatively acute being only three months old, 4) the injury is in the dominant arm of a laborer, and 5) the patient has weakness. For this case, seventy-seven percent of surgeons responded that they would recommend surgery, while twenty-three percent did not.

The converse was illustrated by another one of the vignettes: “An active previously asymptomatic 65 year old female reports a traumatic event one week ago and now can not lift her arm. MRI reveals a large retracted (5 cm) cuff tear with fatty infiltration of the involved cuff muscles”. We believed this was an ideal case for non-operative treatment with watchful waiting initially because: 1) the tear is massive and clearly old based on the MRI findings and 2) since the injury was so recent, the lack of elevation may be due to pain alone and the patient could possibly return to normal function with a



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short course of physical therapy because 3) the MRI appearance of the cuff may have been identical prior to the fall. For this case, the majority agreed that non-operative care was preferred (63%) but thirty-seven percent felt cuff repair was indicated.

There are many potential reasons for this lack of agreement, including the fact that a survey is an artificial setting and the respondents may not have appreciated some of the variables illustrated in the vignette. Nevertheless, there is a general lack of discussion of the indications for surgery, which is particularly important for areas where there are large areas of uncertainty or “grey zones” such as surgical decision making for rotator cuff repair. Specifically, in a review of 86 papers reporting on clinical series of rotator cuff repair published over a recent ten year period, the indications for surgery were poorly described. Limitations in activities of daily living were only discussed in 31% of papers, failure of nonoperative treatment in 52%, duration of nonoperative treatment in 26% and history of nocturnal pain in 16%. These factors are important for most patients to decide if surgery is indicated. As well, it is believed that activity level is an important prognostic variable and it would be valuable to document patients’ activity levels before and after surgery to better understand the potential relationship to outcome.

In a systematic review of the best available literature regarding the indications for rotator cuff repair, Oh et al found that earlier surgical intervention may be needed in the setting of weakness and substantial functional disability. With regard to demographic variables, the evidence remains unclear regarding their association with treatment outcome. However, older chronological age does not seem to be associated with a worse outcome. Lastly, pending worker’s compensation claims also appears to be associated with inferior results after cuff repair.

The lack of natural history data makes it difficult to estimate which tears will enlarge over time, for what reason and over what time frame. There is also limited data on which factors are associated with asymptomatic tears that become symptomatic. Despite this paucity of information to support evidence based decision making, we must still make decisions and care for our patients. In view of this, the role for non-operative treatment remains unclear. We believe that factors that favor an initial non-operative approach for full thickness tears include advanced age, non-dominant shoulder, lack of recent trauma, large tears with fatty infiltration of cuff muscles, low activity level, medical co-morbidities, lack of pain or severe functional impairment and those who have not yet had an attempt at non-operative treatment.

Patients with the opposite characteristics are more likely to benefit from surgery. We tend to recommend surgery for patients who have a recent injury with an associated loss of cuff strength, who are not willing to accept such a limitation and who also have good muscle quality on MRI. Whatever the philosophy and approach, patients usually present with a blend of these characteristics.

In summary, as for many conditions we treat, the indications for rotator cuff repair remain poorly defined. Rather than ignoring this area of uncertainty, more discussion and research should be turned towards defining which patients would benefit most from rotator cuff repair and which ones may benefit from a trial of non-operative care.

*Full article and references also available online at [www.isakos.com](http://www.isakos.com).*

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#### **NEWSLETTER CORRECTION:**

In the ISAKOS Newsletter: Winter 2009 edition, the authors for the Current Concept entitled “History and Current Status of Arthroscopic Knee Ligament Surgery in India” were listed incorrectly. The first author was Dr. David Rajan. The co-authors were Dr. Mandeep Dhillon and Dr. Clement Joseph.

## THE MULTILIGAMENT INJURED KNEE: Evidence Based Treatment Strategies

**BRUCE A. LEVY, M.D.**

Department of Orthopedic Surgery  
Mayo Clinic, Rochester, MN

### INTRODUCTION

Treatment of knee dislocations remains controversial. There is a paucity of outcome data in the literature which would suggest optimal strategies with regards to timing of fixation, methods of fixation, types of reconstruction, and postoperative rehabilitation. In fact it is not even clear which injury variants should be operated on in the acute setting. Many authors have reported improved outcomes with early surgical repair/reconstruction of all ligamentous structures.

### INITIAL EVALUATION

#### Neurovascular assessment

It is important to recognize that high-energy knee dislocations are limb threatening injuries with a high risk of popliteal artery injury in approximately 40%, with some reports as high as 59% incidence. Initial assessment when the patients' present to the Emergency Room is a thorough neurovascular exam. From a vascular standpoint, if the patient presents with hard signs of ischemia (pulseless limb, expanding hematoma, audible bruit), for example a cold, pulseless limb, the vascular surgeon will typically either proceed with angiogram if there is some question of the level of the injury or perform immediate exploration and repair versus bypass graft. The authors have previously described treatment algorithms for vascular assessment of such injuries, which includes the use of an ABI (Ankle Brachial Indices). If the ABI is greater than 0.9, it has been shown that the risk of major arterial lesion approaches 0%. If the ABI's are less than 0.9, then patients are at risk for vascular injury and require subsequent vascular assessment with either Duplex ultrasound, conventional or Computer Tomography (CT)-angiogram.



Fig. 1a**1**.

It is the patients with the subtle or so-called soft signs of ischemia, with either cool limbs or faint pulses, that require such a thorough vascular assessment.

Stannard et al. have contended that physical exam alone can be used as a reliable predictor of vascular injury. However, others have shown that physical exam alone is unreliable. Therefore, the authors perform an ABI on all knee dislocations, pre- and post-reduction, and follow the treatment algorithm proposed.(see fig 1 ABI).

### STAGED PROTOCOL

For complex periarticular knee fractures, several authors have noted the benefits of "staged protocols" for fracture management. The first stage is the application of a joint spanning external fixator. The second stage is definitive fixation of the fracture when the soft tissues' swelling has resolved and are felt to be amenable to surgical intervention.

It is now recognized that a significant amount of these complex periarticular fractures are most likely fracture dislocations with both bony and ligamentous disruptions. Gardner et al, found 68% of tibial plateau fractures sustained pathology to the posterolateral corner.

It has also been recognized that some knee dislocations present with associated rim and/or avulsion fractures. Moore, added fracture dislocations as part of a knee dislocation classification.

The same principles of treatment management for complex tibial plateau fractures may have a role in pure knee dislocations. This was the genesis for considering "staged protocols" for knee dislocations.

### STAGE 1

After a knee dislocation is reduced, either spontaneously or by manual closed reduction, a thorough neurovascular assessment is performed based on the guidelines above. An exam under anesthesia within the first 24–48 hours after injury should be undertaken, along with fluoroscopic stress x-rays with comparison stress x-rays and clinical exam of the contralateral knee to determine the extent of ligamentous injury. If indicated, MRI compatible spanning joint external fixator is placed at that time. Postoperatively a MRI of the knee is performed. At this juncture, anticoagulation treatment should include low molecular weight heparin beginning 12 hours after surgery and continued until definitive fixation.

#### Indications for initial spanning external fixation

1. Vascular injury.
2. Gross instability in the anteroposterior (coronal) plane.
3. Inability to tolerate immobilization in a knee brace alone.



## STAGE 2

Definitive fixation is based on ligamentous involvement and timing of fixation is based on the status of the soft tissues. Our current protocol entails definitive repair/reconstruction of all ligamentous structures typically at 3–4 weeks post injury. This allows a time for soft tissue and inflammatory recovery; however is a short enough interval before extensive fibrosis begins. An example of an acute knee dislocation treated with multiligament knee reconstruction is depicted in figures 2a-e.



Fig. 2a.



Fig. 2b.



Fig. 2c.

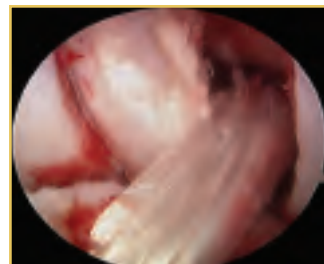


Fig. 2d.



Fig. 2e.

## SURGICAL INDICATIONS

### *Operative versus Nonoperative Management*

Treatment of knee dislocations in the literature remains controversial. In the last two decades several authors have noted improved outcomes with operative management. Richter et al evaluated the outcomes of 63 surgically treated traumatic knee dislocations compared to 26 treated nonsurgically. The average follow-up in their series was 8.2 years. Lysholm and Tegner scores were significantly improved in the surgical group which led the authors to recommend early surgical management. Dedmond and Almenkinders performed a meta-analysis compared outcomes of operative versus nonoperative treatment of knee dislocations. They concluded that there was no statistically significant difference in either treatment arm with regards to patients' ability to return to pre-injury employment, athletic activity, or degree of instability. They did note, however, that the surgical group had statistically better results with regards to final range of motion and Lysholm score. Wong et al concluded that surgical treatment of knee dislocations showed improved overall knee function, stability, and patient satisfaction.

Current evidence-based medicine (EBM), although limited to a few level III studies, does support operative management.

## SURGICAL TIMING

### *Early Versus Delayed Repair/Reconstruction*

With regards to timing of the surgery several authors have shown improved outcomes with early versus late surgical repair. Liow et al reported improved outcomes in patients treated with early reconstructions (less than two weeks after injury) as it relates to overall knee function, activity levels, and anterior tibial translation. Wang et al evaluated the outcomes of delayed surgical reconstruction (greater than ten months from injury) for combined posterior cruciate ligament and posterolateral corner injuries and found 32% unsatisfactory results. He recommended early surgical reconstruction for this particular injury pattern. Ibrahim conversely reported 87% good and excellent results in a series of 41 traumatic knee dislocations treated acutely with primary reconstruction of the cruciate ligaments and repair of the collateral ligaments. Chhabra et al reported their clinical series of 31 patients, 19 of which were reconstructed acutely (less than three weeks after injury) and 12 patients treated with delayed reconstructions. They found no difference in final knee range of motion between the two groups; however, the group treated acutely had significantly better results with regards to knee stability and subjective scores.

# CURRENT CONCEPTS

## THE MULTILIGAMENT INJURED KNEE: *Evidence Based Treatment Strategies* (cont.)

Current evidence-based medicine (EBM), although limited to a few level III studies, does support early semi-acute surgical management of all damaged ligamentous structures.

### **SURGICAL TECHNIQUE**

#### *Repair versus reconstruct*

A hot topic in the treatment of knee dislocations, several authors have shown improved outcomes with acute reconstructions as opposed to ligament repairs. Stannard et al, reported on 63 knee dislocations followed for 2 years and found significantly better results with the reconstructed group, specific to the posterolateral corner.

Current evidence-based medicine (EBM), although limited to this level II study, does support posterolateral corner (PLC) reconstruction, as opposed to repair, in the setting of multiligament knee surgery.

### **GRAFT SELECTION**

#### *Allograft Versus Autograft Reconstruction*

Stannard et al reported on 15 multiligament knee reconstructions utilizing soft tissue allografts. Fanelli et al reported on a two- to ten-year follow-up of 41 patients utilizing a combination of various allografts and autografts for multiligament knee reconstruction. Talbot et al reported on 21 knee dislocations utilizing all soft tissue allografts.

Satisfactory results have been shown with either allograft and/or autograft reconstructions in this patient population. In an effort to minimize patient morbidity, it is the authors' preference to utilize soft tissue allografts for ACL/PCL/PLC reconstructions and semitendinosus gracilis autograft for MCL reconstruction.

Current evidence-based medicine (EBM), although limited to level IV studies, supports the use of allograft and/or autograft reconstruction, in the setting of multiligament knee surgery.

### **POSTOPERATIVE REHABILITATION**

#### *Standard rehabilitation protocol/role of external fixation*

The postoperative management of knee dislocations remains controversial. Noyes et al, in their prospective study, reported a 0% incidence of permanent arthrofibrosis and a 0.7% incidence of manipulation under anesthesia to regain knee motion after anterior cruciate ligament reconstructions alone (219 knees) or combined with other procedures (224 knees).

The senior author currently follows the rehabilitation protocols used by Edson et al, Giannoulas et al, and Fanelli et al. This rehab protocol recommends maintaining the knee in full extension for three weeks after multi-ligament knee reconstructions and then beginning progressive knee range of motion. Weight bearing typically begins at six weeks postoperatively with return to sports and heavy labor after nine months. The authors recommend hinged knee brace for up to one year after surgery.

There are currently no reports on the use of postoperative non articulating spanning external fixation after multiligament knee reconstruction, nor are there any reports on the use of preoperative spanning external fixation in the setting of acute high energy knee dislocation.

### **TAKE HOME POINTS**

At the present time, there is a paucity of evidence-based medicine, and for the most part, treatment of knee dislocations remains controversial. From initial vascular assessment, to surgical indications, surgical timing, surgical technique, graft selection, and postoperative rehabilitation.

It is important to recognize that high-energy knee dislocations are limb threatening injuries with a high risk of popliteal artery injury.

We currently use a "staged protocol" to manage high energy knee dislocations. *Stage 1* consists of initial vascular assessment, examination under anesthesia, and the application of either a spanning joint external fixator or hinged knee brace locked in full extension. Patients are treated with concurrent low molecular weight heparin while awaiting definitive fixation. *Stage 2* consists of definitive ligament reconstructions usually at three to four weeks post injury if the soft tissues allow. All patients then follow a standard postoperative rehabilitation protocol.

Prospective studies are needed to elucidate whether or not the staged protocols are clearly of merit, and what risks exist with this approach.

**Full article and references also available online at [www.isakos.com](http://www.isakos.com).**

## INDICATIONS FOR MPFL RECONSTRUCTION AFTER PATELLAR DISLOCATION

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Recent orthopaedic conferences and journal articles have highlighted reconstruction of the medial patellofemoral ligament (MPFL) as a favoured surgical technique for treatment of recurrent lateral patellar dislocation which has not responded to aggressive and appropriate non-operative management. Anatomical and biomechanical studies have described in detail the form and important restraining function of this ligament. (Arendt et al., 2002)

The MPFL attaches to the femur 10 mm proximal and 2 mm posterior to the medial epicondyle, in the saddle between the medial epicondyle and the adductor tubercle. (Figure 1). Its patellar attachment is approximately at the junction of the upper and middle thirds of the patella, typically at the location where the perimeter of the patella becomes more vertical.

It is the prime soft tissue restraint to lateral patellar displacement in early flexion. It is in early knee flexion that nearly all non-contact lateral patellar dislocations occur.

There are several predisposing factors to lateral patellar dislocation which are summarized in Figure 2.

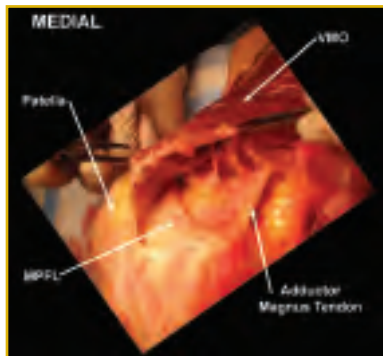


Fig. 1.

The diagnosis of MPFL laxity (increase in lateral patellar translation) must be documented by physical exam and/or stress radiographs and/or arthrometry testing. If the diagnosis is in question, an exam under anesthesia and arthroscopy can be used to document laxity without guarding or apprehension. Physical exam documentation of an increase in passive lateral patellar translation beyond the confines of the trochlear groove is a

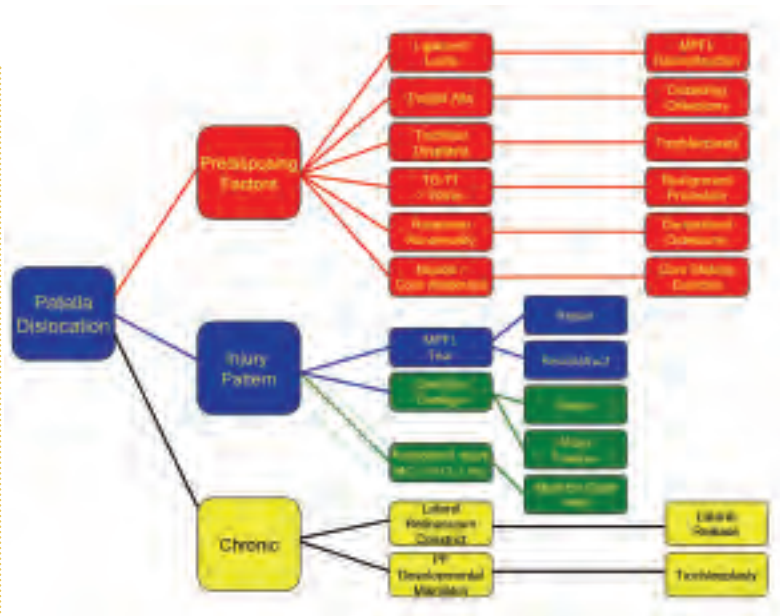


Fig. 2

necessary first step preceding any surgical treatment of medial patellar retinacular laxity. Arthroscopy is most useful for staging cartilage lesions. However, arthroscopy in the face of medial retinacular laxity with the joint distended, typically shows excessive lateral tilt and translation through a passive range of motion.

The MPFL's biomechanical role is to contain the patella when it is subjected to the extremes of motion secondary to a lateralizing force. A MPFL reconstruction is most often used alone without a bony procedure (distal realignment or a trochleoplasty) when the bony anatomy is normal or near normal. Its goal is to restore the loss of the medial soft tissue patellar stabilizer, injured and chronically lax due to recurrent lateral patellar dislocations.

MPFL reconstruction is contra-indicated in isolated PF pain, excessive PF lateral tilt &/or translation without instability, or PF arthritis.

An ideal candidate for an MPFL reconstruction might have the following profile of risk factors.

- Trochlear dysplasia (T.D.) type A or normal trochlea.
- A tubercle-sulcus angle of 0 to 5° valgus / TT-TG < 20mm.
- Patella alta < 1.2 (I / S or C/D ratio)
- Patella tilt < 20 degrees referenced off an axial image using posterior condyles as reference, or some tilt but no lateral tightness on physical exam after patella is relocated.



## INDICATIONS FOR MPFL RECONSTRUCTION AFTER PATELLAR DISLOCATION *(cont.)*

### ACUTE LATERAL PATELLAR DISLOCATION

All patients are initially treated conservatively with a program of rehabilitation that includes VMO activation, Core muscle strengthening, and postural training, as well as controlling local symptoms at the knee level. Most physicians favour some kind of patellar containment in the groove, using a brace or knee sleeve. Crutches are used until quadriceps strength and knee motion are adequate for controlled ambulation. Reported results vary but have been reported to be as high as a 70 to 85 percent success rate.

Early arthroscopic surgical intervention may be warranted to stabilise an osteochondral fracture of either the patella or trochlea. Although there is little evidence to support repair of the MPFL at the same time, some surgeons look for a localized MPFL tear that may be amenable to repair.

There are 3 categories of restoring the function of the MPFL surgically:

1. Acute repair – The literature has shown this to have similar redislocation rates as non-operative management. The reported success rates approach 80%, prompting some surgeons to report “success” with MPFL repair. Two RCTs (Nikku, 2005; Sillanpaa, 2008) and one recent retrospective study (Buchner, 2005) using redislocation rate as an endpoint do not support acute MPFL repair as a best practice option.
2. Delayed tightening of the MPFL – Few Level I and II studies to guide us. A recent RCT (Christiansen, 2008a) randomized delayed MPFL anchoring to the femoral attachment compared to non-operative treatment. Lower redislocation rates were not achieved by surgery.
3. Reconstruction of MPFL with graft – This has shown to produce the most consistent results, even in the present of risk factors.

It should be remembered that MPFL tear is a consequence of patellar dislocation and not a cause. Surgical intervention should be aimed at correcting specific injuries or risk factors. However, current literature does not give clear guidance as to which risk factors or which combination of risk factors need to be corrected.

### MPFL SURGICAL TECHNIQUES AND CLINICAL RESULTS

Several different techniques for MPFL reconstruction have been described. All techniques aim to supply tendon tissue from the medial aspect of the patella to the insertion site of the natural MPFL in the region of the adductor tubercle of the medial femoral condyle in order to reconstruct the ligament. Graft choices are numerous. Early described methods used artificial polyester ligaments. (Ellera Gomes 1992, Nomura et al. 2000). More recently techniques have used semitendinosus, gracilis (autograft or allograft), central quadriceps slip, adductor tendon or a vastus medialis retinaculum autograft. Some techniques use free tendon graft, whereas others keep the pes anserinus attachment.

Numerous graft fixation techniques have been described at both the femur and the patella. Current techniques favour bony fixation on the patella with suture anchors or tunnels (partial or complete). For the femur one can choose a tunnel or a soft tissue fixation using the MCL or adductor magnus tendon. There is currently no consensus regarding which surgical technique provides the best clinical results. Indeed, ***graft and technique choice does not seem to influence the clinical results.***

One predictor of poor outcome is patellofemoral articular cartilage damage observed at the time of surgery (Ellera Gomes 1992, Christiansen et al. 2008b).

Regarding complications, patellar fracture has been described when transverse patellar drill holes are used. In this study a large (7mm) drill canal diameter in the patella with violation of the anterior cortex was thought to be the cause of the patellar fracture (Ellera Gomes 1992).

Continued surgical challenges include: identifying the appropriate fixation site on femur and patella, the degree of knee flexion and graft tensioning at the time of fixation, and the spectrum of patient profiles that will be helped by this MPFL reconstruction.

In general MPFL reconstruction achieves good postoperative patellar stability with redislocation rates usually less than 4% (Table 1). This must be considered very successful in comparison to other patellar stabilizing surgical procedures where redislocation rates from 10 to 35% are reported (Davis and Fithian 2002). Functional outcomes based clinical scoring instruments are generally also high with Kujala scores (maximum of 100) in the eighties and nineties.

## CONCLUSION

Published studies of MPFL reconstruction generally demonstrate good clinical results. There are however no long term studies of this procedure at this time. There is some concern about possible long term consequences of medial patellar facet overload and subsequent PF arthritis. Randomized studies are needed to compare

the efficacy of MPFL reconstruction with proximal alignment techniques and tibial tuberosity transfers. The value of combined procedures such as lateral release and medial and distal tibial tuberosity transfer also needs to be determined.

Full article and references also available online at [www.isakos.com](http://www.isakos.com).

**Table 1: Results from clinical studies with MPFL reconstruction**

Author reference	Technique Graft	Fixation Methods	N	Follow-up	Redislocations	Clinical Score
(Ellera Gomes 1992)	Artificial ligament	Patella: Bone tunnel Femur: Metal screw	30	39 m	0	Crosby Insall 84% Good/excl Cartilage damage poor results
(Nomura and Inoue 2003)	Artificial ligament	Patella: Bone tunnel Femur : Staple	27	5–9 years	4%	Crosby Insall 96% Good/excl
(Deie et al. 2005)	Semi-T TT-Transfer Lat release VMO adv	Patella: Sutures Femur: Sutures	39	5 years	0%	Kujala 92
(Steiner et al. 2006)	Adductor autograft	Patella: Bone tunnel Femur: Sutures	34	2–10 years	0	Kujala 90
(Mikashima et al. 2006)	Semi-T	Patella: Suture/bone tunnels Femur Screw	24	2 years	0	No difference between suture and tunnel fixation at the patella
(Watanabe et al. 2008)	Semi-T +/- TT Transfer	Patella: Sutures Femur Endobutton	42	4.3 years	Not indicated	Lysholm 92 (-TTT) 90 (+TTT)
(Christiansen et al. 2008b)	Gracilis	Patella: Bone Tunnels Femur IF screw	45	2 years	2%	Kujala 86



# ISAKOS APPROVED COURSES IN REVIEW

## I INTERNATIONAL CONGRESS OF SPORT TRAUMATOLOGY AND ARTHROSCOPY FOR CENTRAL-EASTERN EUROPE



Fig. 1 Warsaw—Palace of Culture and Science

The I International Congress of Sport Traumatology and Arthroscopy for Central-Eastern Europe was held in Warsaw, Poland on June 12–13, 2009.

It was the first International Congress where Eastern and Western European doctors could meet and discuss without any borders, thanks to simultaneous English-Russian translation. The Congress Centre was located in a historical building in a centre of Warsaw—Palace of Culture and Science. The Congress had a Patronage of a city of Warsaw and Carolina Medical Center.

Great Speakers from Europe, North America, Asia, Africa and Australia participated and gave a global perspective of many different topics, including: ACL reconstruction, PCL and multi-ligament knee injuries problems, advance cartilage repair techniques, meniscal surgery and replacements, shoulder instabilities, rotator cuff problems, fractures, ankle joint pathologies, Achilles tendon injuries, muscle injuries and treatment, football medicine, elbow and wrist problems and many others.

There were 723 participants (orthopaedic surgeons, team physicians, physiotherapists and nurses) from almost all Central-Eastern European countries and also other parts of the world: Australia, Austria, Belgium, Belarus, Bulgaria, Croatia, Estonia, Finland, Greece, Spain, Hong-Kong, India, Iran, Israel, Japan, Lithuania, Latvia, Macedonia, Moldavia, Germany, Poland, Portugal, Russia, Slovenia, Swiss, Turkey, Ukraine, United States, Hungary, Great Britain, Italy and United Emirates.

Beside great lectures there were also 44 free papers and 28 posters and among them three great Awards were given. There were also many different workshops, symposia and lunch sessions, also in English and Russian.

I believe, that such meetings are necessary, and both East and West may highly benefit from that. We may learn from each other. And to support that I'm going to give you only one example: one of the hottest topics in orthopedic

surgery is double bundle ACL reconstruction and during that meeting we had a chance to listen to a great speech of 25 years of experience (!) in that technique from Moldavia.

It was a great honor for me to be a President of that meeting.

I would like to express my special thanks to all of the faculty and participants who made this meeting successful. Additionally, the organizers are grateful to ISAKOS for their active support of the meeting.

We are also very grateful to all our sponsors who made this Congress possible. Thanks to their great support the Congress fee was only 50 Euros, without that, for many of Eastern European doctors it would be impossible to come.

Please visit [www.congress2009.pl](http://www.congress2009.pl) to see all pictures.

I do hope you will join us during II International Congress of Sport Traumatology and Arthroscopy for Central-Eastern Europe, which will take place in Warsaw on June 10–11, 2011 (visit: [www.congress2011.pl](http://www.congress2011.pl) for more information).

**Robert Śmigielski, MD**

Warsaw, Poland



Fig. 2 Conference Room



Fig. 3 Audience during one of the lectures with simultaneous English-Russian translation

# ISAKOS APPROVED COURSES IN REVIEW

## SEVERANCE ARTHROSCOPY FRESH CADAVER WORKSHOPS

### MARCH 2009

The 39<sup>th</sup> (Knee) and 40<sup>th</sup> (Shoulder) Severance Arthroscopy fresh cadaver workshops were held on March 21<sup>st</sup> and 28<sup>th</sup>, 2009.

The workshops have been held at Yonsei University Health System in Seoul, Korea for 38 times since July 7<sup>th</sup>, 2001, and have got ISAKOS Approved Courses since 11<sup>th</sup> workshop on November 1<sup>st</sup>, 2003.

The lecture for anatomy and portals in classroom preceded the demonstration and practice. During the workshop, many participants observed demonstrations by Professor Sung-Jae Kim, course chairman of the workshop and other instructors, and then went into practical training by themselves under the guidance of professor and table instructors. Participants were able to train themselves for various operative techniques and had opportunities to discuss with the instructor about his technical tips. Additionally elbow and ankle arthroscopy were also demonstrated by professor Sung-Jae Kim.

After practice, they dissected the cadavers to get more information about surgical anatomy of the shoulder and knee joint.

The workshops were very useful educational programs for the participants interested in the shoulder and knee arthroscopy.

Professor Sung-Jae Kim plans to hold advanced course in the next workshop.

### Course Chairman

Prof. Sung-Jae Kim MD, PhD.

### LAB INSTRUCTORS

#### 39<sup>th</sup> Knee Workshop:

Nam-Hong Choi MD  
Jae-Hun Jeong MD  
Jong-Min Kim MD  
Jong-Hun Ji MD  
Yong-Min Chun MD  
Seung-Bae Cho MD  
Beom-Young Jeong MD  
Praveen Kumar KS

#### 40<sup>th</sup> Shoulder Workshop:

Chang-Hyuk Choi MD  
Yon-Sik Yoo MD  
Yong-Min Chun MD  
Sang-Wook Ryu MD  
Beom-Young Jeong MD  
Praveen Kumar KS

### 39<sup>th</sup> Fresh Cadaver Knee Workshop



### 40<sup>th</sup> Fresh Cadaver Shoulder Workshop



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Creta Maris Hotel and Congress Center  
Heraclion, GREECE  
June 25–28, 2009

**For further information, please contact:**

Christos K. Yiannakopoulos  
Tel: +30-697-2099911  
Fax: +30-210-3636181  
[www.eae2009.gr](http://www.eae2009.gr)

### 11TH KOREA UNIVERSITY ARTHROSCOPY CADAVER WORKSHOP

Korea University Anatomy Department  
Seoul, SOUTH KOREA  
July 19, 2009

**For further information, please contact:**

Yong Seuk Lee  
Tel: 82-31-421-5040  
Fax: 82-31-421-4095

### THE LIGAMENT RECONSTRUCTION SEMINAR & LIVE SURGERY

The Hokkaido University Faculty House  
"Enreisou"  
Sapporo, JAPAN  
July 23–24, 2009

**For further information, please contact:**

Eiji Kondo  
Tel: 81-11-706-7211  
Fax: 81-11-707-7822

### 3RD INTERNATIONAL LIVE ARTHROSCOPY FESTIVAL

Kempinski Palace Hotel  
Portorose, SLOVENIA  
September 9–12, 2009

**For further information, please contact:**

Mohsen Hussein  
Tel: 00386-40-300124  
Fax: 00386-1-5102342  
[www.arthroscopy-festival.com](http://www.arthroscopy-festival.com)

### 41ST SHOULDER SEVERANCE ARTHROSCOPY FRESH CADAVER WORKSHOPS

Yonsei University Anatomy Department  
Seoul, SOUTH KOREA  
September 12, 2009

**For further information, please contact:**

In-Kee Cho  
Tel: 82-2-2228-5679  
Fax: 82-2-363-6248  
[www.severanscopy.com](http://www.severanscopy.com)

### THE PRAGUE ARTHROSCOPY SYMPOSIUM ON CARTILAGE SURGERY

Town Hall of Prague  
Prague, CZECH REPUBLIC  
September 17–19, 2009

**For further information, please contact:**

Milan Handl  
Tel: 420-602-238 530  
Fax: 420-257-720 510  
[www.prague2009.asc.cz](http://www.prague2009.asc.cz)

### 1ST INTERNATIONAL SYMPOSIUM OF CLINICAL AND APPLIED ANATOMY

"Park" Hotel–Congress Centre  
Novi Sad, SERBIA & MONTENEGRO  
September 17–19, 2009

**For further information, please contact:**

Dragan Krivokuca  
Tel: +381-21-6615751  
Fax: +381-21-6615751  
[www.iscaa2009.com](http://www.iscaa2009.com)

### 42ND KNEE SEVERANCE ARTHROSCOPY FRESH CADAVER WORKSHOPS

Yonsei University Anatomy Department  
Seoul, SOUTH KOREA  
September 19, 2009

**For further information, please contact:**

In-Kee Cho  
Tel: 82-2-2228-5679  
Fax: 82-2-363-6248  
[www.severanscopy.com](http://www.severanscopy.com)

### 2009 KOREA ARTHROSCOPY SOCIETY ANNUAL MEETING WITH ARTHROSCOPY MASTER OF ASIA

Konkuk University Hospital Auditorium  
Seoul, SOUTH KOREA  
October 9, 2009

**For further information, please contact:**

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Fax: +82-2-964-3865  
[www.korarthro.com](http://www.korarthro.com)

### ORTHOPEDIC SURGERY CONTROVERSIES NAPA 2009

Silverado  
Napa, California, USA  
November 5–7, 2009

**For further information, please contact:**

Paige Ballus  
Tel: +1 (336) 287–9895  
Fax: +1 (336) 766–0318  
[www.orthopedicsurgerycontroversies.com](http://www.orthopedicsurgerycontroversies.com)

### GRONINGEN CADAVER COURSE: APPROACHES IN THE UPPER EXTREMITY

Groningen University Medical Center  
Groningen, NETHERLANDS  
December 10–11, 2009

**For further information, please contact:**

Ronald L Diercks  
Tel: 31-50-3612802  
Fax: 31-50-3611770  
[www.wenkebach.nl](http://www.wenkebach.nl)

### 12TH KOREA UNIVERSITY ARTHROSCOPY CADAVER WORKSHOP

Korea University Anatomy Department  
Seoul, SOUTH KOREA  
December 13, 2009

**For further information, please contact:**

Yong Seuk Lee  
Tel: 82-31-421-5040  
Fax: 82-2-421-9502  
[www.KOA.or.kr](http://www.KOA.or.kr)

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Handelsbeurs  
Ghent, BELGIUM  
February 4–6, 2010

**For further information, please contact:**

René Vedonk  
Tel: 32-9-332 22 48  
Fax: 32-9-332 49 75  
[www.meniscus2010.be](http://www.meniscus2010.be)

### INDIAN ARTHROSCOPY SOCIETY ANNUAL CONFERENCE 2010

GRT Bay Hotel  
Chennai, INDIA  
September 24–27, 2010

**For further information, please contact:**

Dr Leonard Ponraj  
Tel: 0091-44-9444027223  
Fax: 0091-44-26422223  
[www.IAS.com](http://www.IAS.com)

### 4TH ADVANCED COURSE ON KNEE ARTHROPLASTY– 14ÈMES JOURNÉES LYONNAISES DE CHIRURGIE DU GENOU

Centre de Congrès  
Lyon, FRANCE  
October 7–9, 2010

**For further information, please contact:**

Florence Bondoux  
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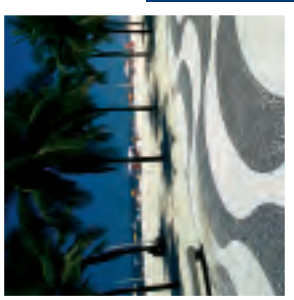
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