



# ISAKOS

**SUMMER 2010**

Volume 14, Issue 2

## INSIDE THIS ISSUE

Editor's Note .....	2
President's Message .....	3
New Members .....	4
ISAKOS Membership Reports .....	9
ISAKOS 2011 Congress Update ..	10
ISAKOS Committees .....	12
ISAKOS in Canada .....	18
ISAKOS in Japan .....	19
2011 Call For Abstracts .....	21
Current Concepts .....	22
ISAKOS Knee Terminology .....	39
ISAKOS Approved Courses in Review .....	39
Upcoming ISAKOS Approved Courses .....	44

## EDITOR

James Lubowitz, USA, Editor,

## EDITORIAL BOARD

Kivanc Atesok, CANADA  
 Nicolas Bonin, France  
 Lucio Ernlund, Brazil  
 Gideon Mann, Israel  
 Robert Marx, USA  
 Masaki Sonoda, Japan  
 Ronald Selby, USA, Past Editor

**International Society of  
 Arthroscopy, Knee Surgery and  
 Orthopaedic Sports Medicine**

2678 Bishop Drive, Suite 250  
 San Ramon, CA 94583 USA

Telephone: +1 (925) 807-1197

Fax: +1 (925) 807-1199

Email: [isakos@isakos.com](mailto:isakos@isakos.com)

[www.isakos.com](http://www.isakos.com)

## join ISAKOS FOR A CARNIVAL OF FUN AND EDUCATION!

**J**oin ISAKOS for the 2011 ISAKOS Congress! The 8th Biennial ISAKOS Congress will be held in Rio de Janeiro, Brazil from May 15-19, 2011.

Known for its extra-ordinary exchange of knowledge and information, the ISAKOS Congress provides a unique opportunity for our members, as well as surgeons from around the world, to meet and interact with international leaders in the fields of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine.

The ISAKOS Program Committee has created an extensive scientific program, including instructional courses, surgical demonstrations, debates, symposia, lectures, paper and e-poster presentations, as well as lunchtime lectures and workshops. A diverse and multi-disciplinary faculty will be present, adding to the high quality of the ISAKOS Congress program.

### NEW FOR THE 2011 ISAKOS CONGRESS!

ISAKOS is excited to announce we are expanding the Congress in many ways. ISAKOS will host three pre-courses on Saturday, May 14, 2011 to include "Olympic Games: From the Basic Science to the Gold Medal", "Biologic Treatment Options for the Knee", and "Spotlight on Top Orthopaedic Procedures in Sports Medicine".

In addition, a physical therapy course will be held concurrently with the ISAKOS Congress.

In true Brazilian fashion, ISAKOS Congress attendees are invited to participate in the many new social events hosted by ISAKOS. In addition to the Welcome Reception, the guest program and tours, ISAKOS has arranged a half day of sports events to include soccer, tennis and golf tournaments. We invite our attendees to take advantage of these great opportunities to experience the fun and excitement that Rio de Janeiro has to offer.

The 2011 ISAKOS Congress will be held at the Rio Centro Convention Center. Located in the thriving Barra da Tijuca district of Rio de Janeiro, Rio Centro is a spacious facility set in the heart of a variety of recreation and entertainment options, including great restaurants and hotels.

ISAKOS members who have not attended a recent ISAKOS Congress are invited to attend the 2011 Congress to experience the vibrant diversity and unique educational experience offered at an ISAKOS Biennial Congress!

### CONGRESS HIGHLIGHTS

- Rotator Cuff Repair: Double vs. Single Row Constructs
- Hip Arthroscopy 2011- An International Perspective
- Extreme Sports
- ACL Reconstruction - Single vs. Double Bundle
- Cartilage Repair Options: Do We Need Cells to Restore Chondral Surface?
- New Horizons in Cartilage Repair - Fact or Fiction?
- Emerging Technology in Clinical Practice for Joint Regeneration
- Failure of ACL Reconstruction: Can We Prevent It?
- Tricks and Pearls on Visualization in Arthroscopy
- Meniscal Transplantation: Allograft vs. Xenograft

### FEATURED SESSIONS

- Scientific Paper Presentations
- Electronic Poster Exhibits
- Socratic Debates
- Surgical Demonstrations
- Instructional Course Lectures
- Partner Society Lectures
- Didactic Lectures
- Hands on Workshops
- Technical Exhibits



## See you in Rio de Janeiro, Brazil

**I love Brazil.** If you visit, you'll probably want to return in the future. I first visited in 2004 for the Sao Paolo ISAKOS Meeting chaired by Moises Cohen.

I returned to Iguacu for SLARD in 2006. The Moises Cohen family daughters are both orthopaedic surgeons.

Every time I've been to Brazil, I've had amazing food and fun. First, let's discuss the fun. We're going to the beach in Rio, and Moises will be hosting us all for football, golf, tennis, and beach, beach, beach. At night we will dance the samba. I don't dance on a regular basis, but when you watch Freddie Fu and the Cohen family lead the double-bundle dance-a-thon, you can't help but join in.

Don't act like a tourist and try to order a Copacabanas cocktail. Locals do not recommend flamingo-pink drinks. Brazilians imbibe caipirinha. LATIMES.COM/FOOD recommends "plenty of Xingu, the dark-as-ink Brazilian beer" and moquecas Capixabas styles of spicy, bubbling fish and seafood stews, and of course Brazilian carved-meat churrascaria restaurants.

I look forward to seeing all of you at the upcoming 2011 ISAKOS Biennial Congress in Rio de Janeiro, Brazil.

**You will love Brazil!!**

**James H. Lubowitz, MD**

ISAKOS Editorial Chair, 2009–2011



Moises Cohen, MD (left) hosts James H. Lubowitz, MD in Sao Paolo, 2004.



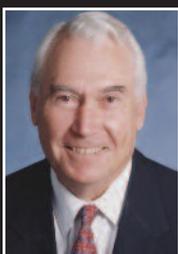
Moises Cohen Family. The daughters (far right, far left) are also arthroscopic, knee and shoulder surgeons, and orthopaedic sports medicine specialists.



Freddie Fu (left) and the Cohen family double-bundle dance-a-thon samba.

## in Memoriam...

### Robert W. Jackson



On January 6<sup>th</sup> of this year we lost a true giant in our field, **Robert W. Jackson**, to pancreatic cancer. Among the many highlights of his legendary career, Dr. Jackson was awarded the Order of Canada, the Order of Olympics, and the Order of Paralympics, which he started in Canada.

Bob is most remembered for his role in arthroscopy. He learned from Professor Watanabe in Tokyo and reintroduced arthroscopy to North America in the late 1960's, and this time it stuck. He traveled worldwide teaching arthroscopy and kept up with the field to the very end. In 1994 *Sports Illustrated* named Bob as "one of the 40 individuals who had most dramatically elevated and altered the games we play and watch by introducing arthroscopic surgery to the western world". Additionally, Bob cherished his role of team physician. He was especially proud of the 27 years that he served in that role for his beloved Toronto Argos.

As great as Bob was in our field, and in these other passions, as a person, he was even better. He was greatly loved and admired for his integrity, decency, humble demeanor and his sharp but gentle wit.



## **Dear Friends in ISAKOS,**

On behalf of the ISAKOS Executive Committee, I thank you for your membership with ISAKOS. I would like to take this opportunity to update you on the recent activities of your ISAKOS Executive Committee.

The ISAKOS Executive Committee met in San Francisco in January 2010 to discuss the future direction of our society. We worked diligently with a society consultant for two days and walked away with new insights into the future of ISAKOS.

Among the first items we discussed was the ISAKOS Mission Statement, or statement of "what we do". It was agreed to keep the Mission Statement as it currently stands...

***Advance the worldwide exchange and dissemination of education, research and patient care in Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine.***

Next, we took the Mission Statement, and moved on to our Vision Statement, or "what we try to become". This proved to be more complicated, but we were able to come to an agreement that ISAKOS strives to become....

***A dynamic international organization that attracts and nurtures outstanding members who are dedicated to our mission of worldwide exchange and dissemination of information.***

We also discussed our ISAKOS Values. What is it about our membership that we value as leaders, and what do our members value about ISAKOS? We agreed that our values are....

***Global Perspective – We respect diversity and lead through action, innovation and mentoring.***

***Excellence – We take pride in ensuring quality.***

***Integrity – We advocate high ethical conduct in all we do.***

***Dedication – We believe in the ISAKOS Mission, its teachings and collaboration with others.***

We took the Mission, Vision and Values statements with us to the recent ISAKOS Committee meetings held during the American Academy of Orthopedic Surgeons meeting held in March in New Orleans, Louisiana, USA. We thank the committees for their hard work during the three days of meetings, and look forward to bringing the projects discussed forward to the membership over the next several months.

An additional frequent topic of conversation during these meetings was the upcoming 8<sup>th</sup> Biennial ISAKOS Congress to be held in Rio de Janeiro, Brazil. We are very excited about this Congress, and look forward to a week of exciting and innovative scientific presentations, as well as the social events, such as the Welcome Reception, and a new addition for Brazil – Sporting Events! We will take a half day on Tuesday, May 17<sup>th</sup> for an afternoon away from the Convention Center for events such as football (soccer), golf, and tennis.

We are confident that the future of ISAKOS is bright! On behalf of the ISAKOS Executive Committee, I would like to take the opportunity to thank the ISAKOS Board of Directors, the Committee Chairs, and the Committee members for their diligent efforts during the first year of their committee term. Additionally, special thanks to the ISAKOS Office for their support and efforts on behalf of our society. Finally, I thank you, the Members, for your membership with ISAKOS– it is our diversity and international perspective that makes ISAKOS great!

**Freddie H. Fu, MD**

ISAKOS President 2009–2011

## **Hiroshi Ikeuchi**



**Dr. Hiroshi Ikeuchi** passed away on April 28<sup>th</sup>, 2010 due to cardiac infarction. Dr. Ikeuchi was a fellow of Dr. Watanabe and contributed significantly to the development of arthroscopic surgical technique and instruments development. He traveled and taught arthroscopy in all around the world and spread the idea of currently established arthroscopic surgery. He taught many Japanese and Asian young fellows with honest and dedicated scientific spirits. We all miss Dr. Ikeuchi deeply and his dedication to arthroscopic surgery will never be forgotten.



# ISAKOS WELCOMES NEW MEMBERS

Rodrigo Calil Teles Abdo, Brazil  
Roberto Abib Jr., Brazil  
Gustavo Coelho Gonçalves Abreu, Brazil  
Marcos Antonio Haro Adad, Brazil  
Adel Hassan Adawy, Egypt  
Paulo Cezar Rodrigues Afonseca, Brazil  
Jose Artur Coelho Aguiar, Brazil  
Rafael Angelini Aguiar, Brazil  
Rodrigo Aidar, Brazil  
Tatsuo Aihara, Brazil  
Wolf Akfilho, Brazil  
Jose Antonio Ustra Zaquia Alam, Brazil  
Mauro Batista Albano, Brazil  
Rodrigo Sattamini P.E Albuquerque, Brazil  
Paulo Gilberto Cimbalista Alencar, Brazil  
José Eduardo Mendonça Alencar Filho, Brazil  
Rodrigo Ilha Algarve, Brazil  
Marcelo Goncalves Almeida, Brazil  
Adriano Marques De Almeida, Brazil  
Luiz Felipe Alvarenga Salles Almeida, Brazil  
Alexandre Almeida, Brazil  
Raul Franklin Carvalho Almeida, Brazil  
Ricardo Augusto Trindade Almeida, Brazil  
Rossana Cavalcante Almeida, Brazil  
Vladimir Almeida, Brazil  
Raymundo Nonato Almeida Jr., Brazil  
Thiago Mont Alverne, Brazil  
Umberto Castro Alves, Brazil  
Eduardo Henrique Lass Alves, Brazil  
Gustavo Luz Alves, Brazil  
Wander Guimaraes Ama, Brazil  
Guilherme H. Albamonte Amaral, Brazil  
Marco Martins Amatuzzi, Brazil  
Eduardo Ambrosini Jr., Brazil  
Rademark Duarte Amorin, Brazil  
Alex Anderson, United Kingdom  
Jorge Avelar De Oliveira Andrade, Brazil  
Andre Luis Lugnani De Andrade, Brazil  
Antonio Carlos Teixeira Andrade, Brazil  
Carlos Vicente Andreoli, Brazil  
Alisson Gomes Andrioli, Brazil  
Fabio Janson Angelini, Brazil  
Maria Thereza Calil Angelini, Brazil  
Kelly Humberto Annichino, Brazil  
Leonardo Cortes Antunes, Brazil  
Ricardo Nacif Antunes, Brazil  
Stella Barros Apostolopoulos, Brazil  
Marcos Amorim Aquino, Brazil  
Jose Paulo Gabbi Aramburu Filho, Brazil  
Celso Okinori Arasake, Brazil  
Lidio Toledo Araujo, Brazil  
Carlo Alba Araujo, Brazil  
Helder Rocha Silva Araujo, Brazil  
Paulo Henrique Mendes Araujo, Brazil  
Ivando Luiz Araujo Jr., Brazil  
Rodrigo Di Mare Arbo, Brazil  
Markus P. Arnold, Switzerland  
Fernando Luis Arruda Arruda, Brazil

Ubaid Aslam, Saudi Arabia  
Daniel Pinho Assis, Brazil  
José Giovanni Parreiras Assis, Brazil  
João Ladislau Assunção, Brazil  
Joao Ladislau Assunção, Brazil  
Waldir Attili Jr., Brazil  
Luciano Taylor Auriglietti, Brazil  
Roger Avakian, Brazil  
Marconi Costa Azevedo, Brazil  
Celso Furtado Azevedo Filho, Brazil  
Gustavo Rabelo Azi, Brazil  
Matheus Lemos Azi, Brazil  
Paulo Roberto Baboni, Brazil  
Lunhao Bai, China  
Jean Christian Yvan Balestro, France  
Craig Michael Ball, New Zealand  
Luiz Fernando Castro Ballao, Brazil  
Bindu Bamrah, USA  
Dimas Alves Banhos, Brazil  
Omar Alberto Baralt, Venezuela  
Gustavo Trajano De Freitas Barão, Brazil  
Leonardo Barbi, Brazil  
Dennis Barbosa, Brazil  
Luis Marcio Barbosa, Brazil  
Alexandre Povoá Barbosa, Brazil  
Jaime Luciano Florencio Barbosa, Brazil  
João Claudio Longo Barbosa, Brazil  
Marcio Alves Barbosa, Brazil  
Murilo Oliveira Barbosa, Brazil  
Paulo Sergio Barone, Brazil  
Zildo Elisio Alecrim Paes Barreto, Brazil  
Joao Mauricio Barretto, Brazil  
Salvio Tadeu Correia Barros, Brazil  
Wagner Luiz Maciel Barros, Brazil  
Rodolfo Chaves Bartoci, Brazil  
Ricardo Pinheiro Bastos Filho, Brazil  
Bruno Bellaguarda Batista, Brazil  
Amaro Niel Bhering Batista, Brazil  
Leopoldo Viana Batista Jr., Brazil  
Joel Bazzo, Brazil  
Semin Becirbegovic, Bosnia And Herzegovina  
Leandro Emmel Becker, Brazil  
Fernando Sequeiros Bejarano, Brazil  
Adriano Ribeiro Benedito, Brazil  
Gustavo Benitez, Argentina  
Ricardo Folador Bergamaschi, Brazil  
Vanderlei Montemor Bernardo, Brazil  
Joao Carlos Carneiro Berthe, Brazil  
Marcelo Jose Cortez Bezerra, Brazil  
Luiz Augusto Raineri Bicudo, Brazil  
Alexandre Carneiro Bitar, Brazil  
Ailton Bonanifreire, Brazil  
Aloisio Fernandes Bonavides, Brazil  
Marcos Cristian Borges, Brazil  
Paulo Sergio Teixeira Boscaroli, Brazil  
Andre Vieira Bousquet, Brazil  
Tulio Taft Bovaretto, Brazil  
Gilberto Ferreira Braga, Brazil  
Luiz Evandro Maranhao Braga, Brazil  
Oswaldo Luis Bragatto Jr., Brazil  
Lawrence Stockler Brandão, Brazil  
Pedro Henrique Henrique De Campos Brandão, Brazil

Pedro Rego Brito Brandão, Brazil  
Mikhail Branquinho, Brazil  
Hugo Machado Castelar Brito, Brazil  
Wander Edney Brito, Brazil  
Joao Jose Silva Brizzi, Brazil  
Wellington José Brum, Brazil  
Diogo Abdalla Buchaul, Brazil  
Erickson Bulisani, Brazil  
Paulo Sergio Burza, Brazil  
Victor Braulio Caiassa, Brazil  
Constantino Jorge Calapodopulos, Brazil  
Massimo Caliman, Brazil  
Luis Felipe Camanho, Brazil  
Luciano Soares Camargo, Brazil  
Nacib Luz Camargo Jr., Brazil  
Rafael Xavier Camargo Jr., Brazil  
Joao Oliveira Camargo Neto, Brazil  
John David Campbell, USA  
Cesar Ricardo Simioni Campello, Brazil  
Wilson Galeco Campos, Brazil  
André Luiz Siqueira Campos, Brazil  
Gustavo Constantino Campos, Brazil  
Osmar Campos Jr., Brazil  
Rafael Rosa Canedo, Brazil  
Jose Amauri Canuto, Brazil  
Paulo Roberto Capelletti, Brazil  
Andre Zeraib Caraviello, Brazil  
Marcos Prado Alves Cardoso, Brazil  
José Fernando Carneiro, Brazil  
Rogerio Teixeira Carvalho, Brazil  
Francisco José Quirino Costa Carvalho, Brazil  
Paulo Cesar Caires Carvalho, Brazil  
Rafael Magalhães Carvalho, Brazil  
Sharbo Martins Casagrande, Brazil  
Igor Cassoni, Brazil  
Luciano Lopes Castanha, Brazil  
Marcello Teixeira Castiglia, Brazil  
Antonio Carlos Castro, Brazil  
Jose Olavo Moretzsohn Castro, Brazil  
Mauricio Barreto Castro, Brazil  
Renato Luiz Bevilacqua Castro, Brazil  
Jose Mauro Pinto Castro Filho, Brazil  
Jose Luiz Castro Jr., Brazil  
Silvio Ricardo Guarnieiri Catarin, Brazil  
Naason Trindade Cavanellas, Brazil  
Hélio Martinez Cebrian, Brazil  
Nelson Baisi Cerqueira, Brazil  
Leonardo Mourao Cerqueira, Brazil  
Luiz Frederico Trabone Cesar, Brazil  
Luís Claudio Chagas, Brazil  
Hakim Chalabi, Qatar  
Jagadeesh Paduvarahalli Chamundaiah, India  
Kok Yu Chan, Malaysia  
Luiz Antonio Chanquete, Brazil  
Moises Cheidde Neto, Brazil  
Guang-Xing Chen, China  
Hong Chen, China  
Fábio Cardoso Chiareli, Brazil  
Francisco Fontes Cintra, Brazil  
Roberto Rodrigues Cisneros, Brazil  
Fernando Armendariz Clemente, Spain  
Hugo Alexandre A. Barros Cobra, Brazil

# ISAKOS WELCOMES NEW MEMBERS

Eduardo Cabral Coelho, Brazil  
Luiz Felipe Albeny Coelho, Brazil  
Sergio Oliveira Colavolpe, Brazil  
Maurício Lebre Colombo, Brazil  
Alexandre Luiz Conti, Brazil  
Fabrício Luis Luis Correa Correa, Brazil  
Dárcio Maurício Correia, Brazil  
Herbert José Cosenza Neto, Brazil  
Roberto Aelvia Costa, Brazil  
Luiz Henrique Barros Costa, Brazil  
Alexandre Azevedo Do Rego Costa, Brazil  
Anderson Antonio Costa, Brazil  
Carlos Alberto Costa, Brazil  
Jose Maria Carvalho Costa, Brazil  
Jose Roberto Costa, Brazil  
Ricardo Pereira Costa, Brazil  
Sandro Cesar Costa, Brazil  
Alberto Costantini, Italy  
Daniel Miranda Cota, Brazil  
Alexandre Paiva Couras, Brazil  
Ricardo Jose Couto, Brazil  
Rodrigo Carmo Couto, Brazil  
Dalton Castro Crisostomo Junior, Brazil  
Elio Jose Cruz Junior, Brazil  
Fabiano Gonçalves Cunha, Brazil  
Paulo Sergio Arre Cunha, Brazil  
Luiz Fernando Barbieri D'Elia, Brazil  
Caio Oliveira D'Elia, Brazil  
Marcelo Kodja Daguer, Brazil  
Vilson Dalmina, Brazil  
Marcello Silva David, Brazil  
George J. Davies, USA  
Jose Wilson De Carvalho Jr, Brazil  
Alexandre Lemos Debs, Brazil  
Katya Delgado, Peru  
Daniel Fausto Dell'Aquila, Brazil  
Silvio Delorenzo, Brazil  
Marcelo Da Silva Scisinio Dias, Brazil  
Luis Fernando Rial Dias, Brazil  
Kandir Genesio Innocenti Dinhane, Brazil  
Jose Henrique Diniz Jr., Brazil  
Ricardo Perez Domingues, Brazil  
Mohy Domit Filho, Brazil  
Francisco Fernandes Donega, Brazil  
Gustavo Araujo Dorea, Brazil  
Mauro Fagundes Dormelles, Brazil  
Mauro Rodrigues Dos Santos, Brazil  
Thiago Ribeiro Dos Santos, Brazil  
Maurício Drummond Jr., Brazil  
Andrey Dydykin, Russia  
Jose Fernando El Murr, Brazil  
Hiroyuki Enomoto, Japan  
André Esmanhotto, Brazil  
Rubens Esperidiao, Brazil  
Rui Fang, China  
Luis Orlando Moraes Faria, Brazil  
Alexandre Coelho Faria, Brazil  
Antonio Alexandre Faria, Brazil  
Fabiano Nunes Faria, Brazil  
Paulo Cesar Zuccon Faria, Brazil  
Gumercino Pinheiro Faria Filho, Brazil  
André Barros De Vilela Farias, Brazil  
Michael Yury Farias De Sá, Brazil

Camdon Fary, Australia  
Edimar Fávoro, Brazil  
Luiz Donato Favero, Brazil  
Jose Vicente Novaes Felici, Brazil  
Alessandro Monteroso Felix, Brazil  
Jorge Fernando Oliveira Felix, Brazil  
Giuliano Ferigotti, Brazil  
Pedro Tadeu Ferraro, Brazil  
Fabio Pacheco Ferreira, Brazil  
Luis Fernando Ferreira, Brazil  
Daniel Rodrigues Gonçalves Ferreira, Brazil  
Márcio Castro Ferreira, Brazil  
Robson Balduino Ferreira, Brazil  
Sérgio Lepore Pinto Ferreira, Brazil  
Francisco Souza Ferreira Filho, Brazil  
Miguel Ferreira Filho, Brazil  
Arnaldo Amado Ferreira Neto, Brazil  
Marcelo Almeida Ferrer, Brazil  
Gustavo Carvalho De Alencar Fialho, Brazil  
Giovannini Cesar A. L. Figueiredo, Brazil  
Alexandre De Figueiredo, Brazil  
Abraham Fiszman, Brazil  
Rodrigo Pereira De Souza Florêncio, Brazil  
Fabricio Fogagnolo, Brazil  
Sergey Fomichev, Russia  
Ernane Avelar Fonseca, Brazil  
Marcio José Alher Fonseca, Brazil  
Cesar Rubens Da Costa Fontenelle, Brazil  
Carlos Eduardo Silveira Franciozi, Brazil  
José Sergio Franco, Brazil  
Alberto Sala Franco, Brazil  
Nelson Franco Filho, Brazil  
Wolfgang Franz, Germany  
Joao Luiz Santos Freire, Brazil  
Sergio Ricardo Goncalves Freire, Brazil  
Ednei Andrade Freitas, Brazil  
Adalto Camargo Freitas, Brazil  
Heleno Alves Freitas, Brazil  
Jose Marcio Alves Freitas, Brazil  
Rafael Lara Freitas, Brazil  
Rubens Goncalves Freitas Filho, Brazil  
Jose Gomes Frota Filho, Brazil  
Renato Frucchi, Brazil  
Carlos Francisco Arguello Frutos, Brazil  
Luis Fernando Zukanovich Funchal, Brazil  
Markus Fürtauer, Norway  
Roberto Assumpcao Gafree, Brazil  
Jackson Ferreira Galeno, Brazil  
Marcelo Gallotti, Brazil  
Rodrigo Vasco Gama Neto, Brazil  
José Rafael Gamboa, Venezuela  
Nelson Hila Garcia, Brazil  
Antonio Guilherme Padovani Garofo, Brazil  
Claudio Gattas, Brazil  
João Ricardo Gaya, Brazil  
Dalvir Giraldi, Brazil  
Marcos Antonio Silva Girao, Brazil  
Ricardo Gomes Gobbi, Brazil  
Ricardo Rocha Gobbo, Brazil  
César Eduardo Giancoli Goes, Brazil  
Rogerio Franco De Araujo Goes, Brazil

Marcelo Capela Gomes, Brazil  
Francisco Carlos De Assis Gomes, Brazil  
Mauricio Brum Gomes, Brazil  
Sandro Marcilio Pereira Gomes, Brazil  
Tiago Jacques Gonçalves, Brazil  
Jayme Paula Gonçalves, Brazil  
Julio Luis Gonçalves, Brazil  
Marcelo Carvalho Krause Gonçalves, Brazil  
Matheus Braga Jacques Gonçalves, Brazil  
Murilo Reis Gonçalves, Brazil  
Romeu Krause Gonçalves, Brazil  
Yubau Gong, China  
Vipool K. Goradia, USA  
Dedley Nelson Gorayeb, Brazil  
Carlos Gorios Gorios, Brazil  
Lingyun Gou, China  
Jose Cesar Teixeira Goulart Goulart, Brazil  
Ruy Andrade Gouveia, Brazil  
Jose Luiz F. Gouveia Sobrinho, Brazil  
Luis Antonio Goytia Alfaro, Bolivia  
Arlindo Cesar Granado, Brazil  
Waldomiro Grand Jr., Brazil  
Joao Alves Grangeiro Neto, Brazil  
Dante Giovanni Carminati Grein, Brazil  
Gerd Udo Gromann, Brazil  
Giovanni Cesar Xavier Grossi, Brazil  
Luiz Gabriel Betoni Guclimetti, Brazil  
Alex Guedes, Brazil  
Alexandre Vieira Guedes, Brazil  
Thiago Brustolini Guerra, Brazil  
Juliano Bernadelli Guerra, Brazil  
Marcio Guerra, Brazil  
Jomar Hygino De Moraes Guerra Filho, Brazil  
Alexandre Guilherme, Brazil  
Eduardo Pimenta Guimaraes, Brazil  
Rogerio Antonio Rosa Guimaraes Guimaraes, Brazil  
Ahmet Guney, Turkey  
Ronaldo Marcio Gurevich, Brazil  
Henrique Melo De Campos Gurgel, Brazil  
Roderich Heikenfeld, Germany  
Gustavo Damazio Heluy, Brazil  
Hamilton Cesar Hidalgo, Brazil  
Jaime Hinzpeter, Chile  
Marcelo Issao Hissadomi, Brazil  
Hayden Ronald Hobbs, South Africa  
Esteban Holguin, Ecuador  
João Paris Buarque De Hollanda, Brazil  
Patrick James Horan, USA  
Alberto Hideo Horí, Brazil  
Marcelo Horikawa, Brazil  
Harald Hovind, Norway  
Yong Hu, China  
Jingmin Huang, China  
Maurício Masasi Iamaguchi, Brazil  
Luiz Alberto Nakao Iha, Brazil  
Mauro Mitsuo Inada, Brazil  
Danilo Mendes Incerti, Brazil  
Delano Magela Bitencourt Irias, Brazil  
Tajher Lunes Netto, Brazil  
Korula Mani Jacob, India  
Wahi Jalikjian, Brazil



# ISAKOS WELCOMES NEW MEMBERS (CONT.)

Frederico Carlos Jana Neto, Brazil  
Glaucio Antonio Bezerra Japiassu, Brazil  
Tao Jiang, China  
Marco Antonio Maximo Jones, Brazil  
Carlos Eduardo Lopes Jorge, Brazil  
Fabio Vassimon Ferreira Jorge, Brazil  
Pedro Baches Jorge, Brazil  
Valcir Jorgetti, Brazil  
Edgar Francisco Acero Joya, Brazil  
Marcello Leijoto Carvalho Junqueira, Brazil  
Nilesh Dilip Kamat, India  
Francisco Consoli Karam, Brazil  
Claudio Kawano, Brazil  
Cezar Teruyuki Kawano, Brazil  
Felipe Vieira Kayat, Brazil  
Rodrigo Kaz, USA  
Mauricio Kfuri Jr., Brazil  
Mohamed Abdel-Moniem Khattab, Egypt  
Alexandre Du Yong Kim, Brazil  
Luiz Makoto Kitayama, Brazil  
Daniel Rodrigo Klein, Brazil  
Rafael Eloy Kleinschmidt, Brazil  
Tetsuo Kobayashi, USA  
Bento Koehler Filho, Brazil  
Alexandre Estevao Vamos Kokron, Brazil  
Yogesh V Kolwadkar, India  
Ewerton Renato Konkewicz, Brazil  
Jacob Castro Koury, Brazil  
Paulo Satoshi Koyama, Brazil  
Walter Kenji Tsuchiyama Koyama, Brazil  
Marcelo Seiji Kubota, Brazil  
Andre Kuhn, Brazil  
Edson Shiguelo Kuwano, Brazil  
Marcos Augusto Lage Ladeira, Brazil  
Jose Fabio Santos Duarte Lana, Brazil  
Marcos Henrique Ferreira Laraya, Brazil  
Rodrigo Campos Pace Lasmar, Brazil  
Marcus Frederico Alves Laytynher, Brazil  
Angelo Paulo Lazaroni, Brazil  
Jose Carlos Lazzareschi, Brazil  
Rodrigo Lazzarini, Brazil  
Yee Han Dave Lee, Singapore  
Leonardo Felicissimo De Almeida Leite, Brazil  
Wagner Guimaraes Lemos, Brazil  
Paulo Ernani Greco Lemos, Brazil  
Adriano Barros De Aguiar Leonardi, Brazil  
Rodrigo Rosa Lessa, Brazil  
Bruce A. Levy, USA  
Pei Li, China  
Yong Qiang Li, China  
A Liang, China  
Eduardo Scarsi Librelotto, Brazil  
Michael Christian Liebensteiner, Austria  
Irineu De Aragão Lima, Brazil  
Renato Luciano Lima, Brazil  
Jose Carlos Andrade Lima Filho, Brazil  
Antero Sousa Lima Neto, Brazil  
Chien Chi Lin, Brazil

Adriano Linares, Brazil  
Waldo Lino Jr., Brazil  
Henrique Cambraia Lippelt, Brazil  
Flavio Barbosa Guimaraes Lisboa, Brazil  
Xun Liu, China  
Paulo Lobo, Brazil  
Danilo Silva Lobo, Brazil  
Nicholas John London, United Kingdom  
Luiz Antonio Vianna Lopes, Brazil  
Antonio Issé Dos Santos Lopes, Brazil  
Mario Lopes, Brazil  
Osmar Valadao Lopes Jr., Brazil  
Octacilio Matta Lopes Jr., Brazil  
Darci Duarte Lopes Junior, Brazil  
Rodrigo Lopez, Colombia  
Fabrício Bolpato Loures, Brazil  
Rogério Cabral Duarte Louzada, Brazil  
Roberto Cunha Luciano, Brazil  
Angelo Jose Gurgel Luz, Brazil  
Neri Machado, Brazil  
Francisco Machado, Brazil  
Mauro Pereira Machado, Brazil  
Pedro Robisson De Souza Machado, Brazil  
Flory Machado Sobrinho, Brazil  
Luiz Gustavo Bourguignon Maciel, Brazil  
Reuthema Nn E.T.T.A. Madruga, Brazil  
Agripino Rodrigues Gomes Magalhaes, Brazil  
Afonso Paulo Almeida Magalhaes Neto, Brazil  
Paulo Cesar Magnusson, Brazil  
Phelippe Augusto Valente Maia, Brazil  
Antonio Carlos Maiorano, Brazil  
Hilario Maldonado, Brazil  
Marcio Carpi Malta, Brazil  
Pratip Mandal, India  
Marcelo Mandarino, Brazil  
Oscar Mandim Neto, Brazil  
Konstantinos Dimitrios Manoglou, Greece  
Adriano Marchetto, Brazil  
Frederico Belluzzi Marchioni, Brazil  
Frank Beretta Marcondes, Brazil  
Marcos Henrique Marini, Brazil  
Raynerio Costa Marques, Brazil  
Joaquim Higino Da Silva Marques, Brazil  
Mauro Marquiotti, Brazil  
Mauro Olivio Martinelli, Brazil  
Jose Carlos Ponara Martines, Brazil  
Marcelo Giovanini Martins, Brazil  
Glaucus Martins, Brazil  
Luciano Henrique Martins, Brazil  
Ayrton Rodrigues Martins, Brazil  
Jose Valmar Germano Martins, Brazil  
Rafael Olivio Martins, Brazil  
Luiz Felipe Santos Martins Filho, Brazil  
Bruno Viegas Mascarenhas, Brazil  
Ademir Massanares, Brazil  
Julio Cesar Ranzeiro Mathias, Brazil  
Fernando Nunes Matos, Brazil  
Marcelo Mitsuro Matsuda, Brazil  
Janeilson Roberto Mattos, Brazil  
Mario Motta Mattos, Brazil  
Flávio Mattuela, Brazil

Andre Mauricio, Brazil  
Rogério Siqueira Mauricio, Brazil  
Challali Maxime, France  
Daniel Ricardo Medeiros, Brazil  
Agnelo Sampaio Castelo Branco Medeiros, Brazil  
Jose Geraldo Medeiros, Brazil  
Paulo Roberto Braga Meira, Brazil  
Eduardo Furtado Mendonça, Brazil  
Rafael Gualberto Mendonça, Brazil  
Zartur Barcelos Menegassi, Brazil  
Cristiano Grimm Menegazzo, Brazil  
Adriano Alves Meneses, Brazil  
Marcus Vinicius Correia Menezes, Brazil  
Daniel Ribeiro Mesquita, Brazil  
Luiz Aurelio Mestriner, Brazil  
Mauro Meyer, Brazil  
Marcelo Souza Micelli, Brazil  
Alexandre Froes Michelin, Brazil  
Evandro Miele, Brazil  
Antonio Milani, Brazil  
Mauricio Camargo Milani, Brazil  
Rubens Millman, Brazil  
Elson Sousa Miranda, Brazil  
Joao Batista Miranda, Brazil  
Milon Sousa Miranda, Brazil  
Jose Barbosa Miranda Neto, Brazil  
Go Misonoo, Japan  
Wagner Miyadi, Brazil  
Roberto Ryuiti Mizobuchi, Brazil  
Keniti Mizuno, Brazil  
Julio Mizuta, Jr., Brazil  
Mauricio Sante Bettio Mod, Brazil  
Diego Antico Monteiro, Brazil  
Ciro Silva Monteiro, Brazil  
Paulo Roberto Soares Monteiro, Brazil  
Rafael Ruwer Monteiro, Brazil  
Rodrigo Alves Montiel, Brazil  
Raymond Rocco Monto, USA  
Antonio Aurelio Lordello Moraes, Brazil  
Denys Carlos Aragão Morais, Brazil  
Jandyr Morandini, Brazil  
Carlos Romulo Morano Marques, Brazil  
Sergio Augusto Rezende Moreira, Brazil  
Alexandre Moreira, Brazil  
Flavio Godoy Moreira, Brazil  
Mauro Antonio Moreira, Brazil  
Roberto Godoy Moreira, Brazil  
Marcos Castro Moreirão, Brazil  
Renato Mendes Morelli, Brazil  
Luiz Morgado, Brazil  
Marco Aurelio Goes Moriyama, Brazil  
Ricardo Moro, Brazil  
Antonio Carlos Moscon, Brazil  
Alexandre Souza Mota, Brazil  
Jorge Rafael Da Silveira Paladino Wenke Mota, Brazil  
Henrique Mota Neto, Brazil  
Felipe Barrichello Motta, Brazil  
Luiz Fernando Motta, Brazil  
Luiz Alberto J Motta Filho, Brazil  
Geraldo Rocha Motta Filho, Brazil  
Jose Reinal Seelig Mottini, Brazil  
Silvio Seelig Mottini, Brazil

# ISAKOS WELCOMES NEW MEMBERS

Mohammed Mounes, Egypt  
Eudes Caldas Moura, Brazil  
João Paulo Freire Martins Moura, Brazil  
Alan Paula Mozella, Brazil  
Sergio Swain Muller, Brazil  
Matheus Falcão Muller, Brazil  
Luis Marcelo Müller, Brazil  
Renato Chagas Muniz, Brazil  
Arash Nabavi-Tabizi, Australia  
Raita Nagasawa, Japan  
Rogerio Nakasone, Brazil  
Oswaldo Heitor Nallin Junior, Brazil  
Mario Massatomo Namba, Brazil  
Julio Cesar Carvalho Nardelli, Brazil  
Leandro Vieira Nascimento, Brazil  
Ricardo Dzioli Navarro, Brazil  
Antonio Ronaldo Nazare, Brazil  
Dirk Joubert Nell, South Africa  
Bobby Natanel Nelwan, Indonesia  
Ulisses Nemetz, Brazil  
Wilson Vasconcelos Nerves Filho, Brazil  
Luis Gustavo Giraldi Nery, Brazil  
Waseem Akram Khan Niazi, South Africa  
Alexandre Pedro Nicolini, Brazil  
Makoto Nishimori, Japan  
Ricardo Serro Azul Nobre, Brazil  
Jezimar Figueiredo Nobrega, Brazil  
Reinaldo Couri Nogueira, Brazil  
Breno Nora, Brazil  
Anderson Pimentel Novais, Brazil  
José Nunes, Brazil  
Erick Ferreira Nunes, Brazil  
Marcus Vinicius Faria Nunes, Brazil  
Rodrigo Pereira Da Silva Nunes, Brazil  
Ari Digiacomo Ocampo Moré, Brazil  
Dan Oizerovici, Brazil  
Marcos Antonio Akira Okuma, Brazil  
Yoshiki Okumura, Brazil  
Arivaldir Borges Oliboni, Brazil  
Diogo Cals Oliveira, Brazil  
Marcelo De Oliveira, Brazil  
Luciano Alves Oliveira, Brazil  
Aloir Neri Oliveira, Brazil  
Alysson Andrey Andrade Oliveira, Brazil  
Felipe Burjaili Oliveira, Brazil  
Gleber Fernandes Oliveira, Brazil  
Jose Oliveira, Brazil  
Marcelo Parente Oliveira, Brazil  
Marcus Guilherme Oliveira, Brazil  
Milton Diniz Soares Oliveira, Brazil  
Pablo Guimaraes Oliveira, Brazil  
Walter Oliveira Oliveira Jr., Brazil  
Rogerio Olivi, Brazil  
Nelson Keiske Ono, Brazil  
Rafael Ortiz, Brazil  
Mohamed Bashir Elneser Osman, Brazil  
Alcenil Ferreira Otapiassis, Brazil  
Tadeu Ourivio, Brazil  
Cleber Antonio Jansen Paccola, Brazil  
Alexandre Pagotto Pacheco, Brazil  
Olavo Sanches Padilha, Brazil  
Paulo Roberto Baggi Paes, Brazil  
Luis Antonio Paesano, Venezuela  
Alexandre Felício Pailo, Brazil

Arildo Eustaquio Paim, Brazil  
Carlo Leekninh Paione, Brazil  
Ricardo Moreira Palma, Brazil  
Vivek Pandey, India  
Halley Paranhos Jr., Brazil  
Hyung Bin Park, Korea  
Mario Paschke, Chile  
Denis Pasero, France  
Adriano Menezes Passos, Brazil  
Paul Patino, Bolivia  
Jenel Marian Patrascu, Romania  
Douglas Mello Pavão, Brazil  
Gabriel Abdo Elias Pecchia, Brazil  
Marcio Amaral Camargo Pedro, Brazil  
Plínio Marcos Peloso, Brazil  
Eugene Pelsler, South Africa  
Paulo Cesar Ferreira Penteado, Brazil  
Daniel Barros Pereira, Brazil  
Ricardo Violante Pereira, Brazil  
Hélder Miguel Duarte Pereira, Portugal  
Carlos Carvalho Epitácio Pereira, Brazil  
Marcelo Lobo Pereira, Brazil  
José Luiz Pessoa Perez, Brazil  
Luis Antonio Peroni, Brazil  
Marcelo Toledo Petrilli, Brazil  
Rafael Souto Borges Petros, Brazil  
Claudio Moreira Pillar Filho, Brazil  
Eduardo Ramos Marques Pina, Brazil  
Ilidio Pinheiro, Brazil  
Marcelo Barros Pinheiro, Brazil  
Ibsen Arsioli Pinho, Brazil  
Sergio Martins Pinto, Brazil  
Nilson Tadeu Ribeiro Pinto, Brazil  
Dilamar Moreira Pinto, Brazil  
Jose Leao Machado Pinto, Brazil  
Eduardo Pinto Jr., Brazil  
Julian Ferre Ira Pose, Brazil  
Joao Fernando Argento Pozzi, Brazil  
Rodrigo Kancelakis Prado, Brazil  
Bernardo Arais Pydd, Brazil  
Marcelo Luiz Quarteiro, Brazil  
Alexandre Oliveira Queiroz, Brazil  
Antonio Altenor Bessa Queiroz, Brazil  
Guilherme Raphael De Oliveira Queiroz, Brazil  
Hildemar Domingos Queiroz, Brazil  
Gabriel Silva Quialheiro, Brazil  
Julio Jose Andrade Quialheiro, Brazil  
Sidney Mathias Quintas, Brazil  
Fabio De Castro Jorge Racy, Brazil  
Mohamed Abdo Rahimen, Brazil  
Honorio Neves Ramalho, Brazil  
Carlos Ramirez Lenci, Peru  
Max Rogerio Freitas Ramos, Brazil  
Adelino Jean Viana Ramos, Brazil  
Carlos Eduardo Gomes Sá Quirino Lima Ramos, Brazil  
Marcos Giubert Sucena Rasga, Brazil  
Fabio Ferraz Do Amaral Ravaglia, Brazil  
Leandro José Reckers, Brazil  
Marcelo Cabral Fagundes Rego, Brazil  
Wilson Abou Rejaili, Brazil  
Lefu Ren, China  
Alex Afonso Fernandes Rendeiro, Brazil  
Fabio Restrepo Tello, Colombia

Ivan Eanne Reyes, Venezuela  
Alexandre Silva Rezende, Brazil  
Flávio Moreira Viana Rezende, Brazil  
Hamilton Camargo Ribas Filho, Brazil  
Fernando Ribeiro, Brazil  
Elvio Garcia Ribeiro, Brazil  
Cristiano Hossri Ribeiro, Brazil  
Elton Luis Ribeiro Bueno, Brazil  
Oberdan Rigoti, Brazil  
Carlos Roberto Pinheiro Rihan, Brazil  
Demetrio Araujo Rocha, Brazil  
Leonardo Martins Rocha, Brazil  
Fernando Fanchin Rocha, Brazil  
Francisco Luis Coelho Rocha, Brazil  
Rodrigo Ribeiro Pinho Rodarte, Brazil  
Euler Dos Santos Rodrigues, Brazil  
Leandro Castro Rodrigues, Brazil  
Alexandre Alves Rodrigues, Brazil  
Alexandre Lopes Rodrigues, Brazil  
Marcos Wainberg Rodrigues, Brazil  
Ricardo Lucas Rodrigues, Brazil  
Ary Castro Ferreira Rodrigues Filho, Brazil  
Luis Fernando Rodriguez, Colombia  
Orlando Romano Neto, Brazil  
Vitor Roselis Jr., Brazil  
Andrea Rosenthal, Brazil  
Antonio Carlos Rossetti Rossetti, Brazil  
Jianwei Ruan, China  
Omar Alexander Ruiz Watanabe, Peru  
Jose Luiz Runco, Brazil  
Nickson Russo, Jr., Brazil  
Marcelo Kupkis Saad, Brazil  
Wilfredo Sergio Sandy Saavedra, Brazil  
Sylvio Noronha Sacramento, Brazil  
Jose Idilio Saggin, Brazil  
Paulo Renato Fernandes Saggin, Brazil  
Luciano Aguiar Sales, Brazil  
Orcelio Fernandes Sampaio, Brazil  
Hugo Jesus Sanchez Coello, Venezuela  
Marcelo Sandoval, Chile  
Julio Neves Sant'Anna, Brazil  
Roney Souza Sant'Anna, Brazil  
Delio Camargo Santana, Brazil  
Marcelo Alves Passos Soares Santana, Brazil  
Altamiro Efigenio Santos, Brazil  
Helio Roberto Oliveira Santos, Brazil  
Joao Carlos Alves Santos, Brazil  
Márcio Moura Rocha Santos, Brazil  
Marzo Nunes Santos, Brazil  
Murilo Cesar Santos, Brazil  
Paulo Sergio Santos, Brazil  
Robson Souza Santos, Brazil  
Rodrigo Araujo Góes Santos, Brazil  
Rodrigo Minuano C. Da Rocha Santos, Brazil  
Rogério Luciano Santos, Brazil  
Carlos Eduardo Sardinha, Brazil  
Marcelo Garrido Sarraff, Brazil  
Fábio José Coloço De Mello Sartori, Brazil  
Sandra Umeda Sasaki, Brazil  
Vivek N Savaskar, Oman  
Fellipe Pinheiro Savioli, Brazil



# ISAKOS WELCOMES NEW MEMBERS (CONT.)

Jorge Saym Filho, Brazil  
Sidney Schapiro, Brazil  
Emil Harald Schemitsch, Canada  
Marcelo Erico Gunia Schiavon, Brazil  
Joao Carlos Schleder Schleder, Brazil  
Marcos Renato Scholz, Brazil  
Sergio Schubert, Brazil  
Marco Antonio Schueda, Brazil  
Roberto Luis Schwanke, Brazil  
Luiz Felipe Nunes Scofano, Brazil  
Chang Woo Seok, Korea  
Marcelo Strauch Serafim, Brazil  
Marcello Ganem Serrao, Brazil  
Javier Mauricio Severiche, Bolivia  
Tiago Cesar Dal Rovere Sgarbi, Brazil  
Abdullah Nalakath Shamimudeen, Australia  
Decheng Shao, China  
Neeraj Sharma, India  
Zthan Shen, China  
Cleobery Braga Silva, Brazil  
Jurandy Silva, Brazil  
Daniel Caldas Ramos Silva, Brazil  
Daniel José De Araujo Silva, Brazil  
Diogenes Augusto Archanjo Silva, Brazil  
Caio Guedes Moreira Silva, Brazil  
Giuliano Corrêa Silva, Brazil  
Guilherme Moreira De Abreu Silva, Brazil  
Gustavo Meira Dantas Silva, Brazil  
Joao Luiz Vieira Silva, Brazil  
Joilton Santos Silva, Brazil  
Juliano Voltarelli Franco Silva, Brazil  
Marcelo Soares Silva, Brazil  
Marcelo Vinicius Alves Silva, Brazil  
Rilson Figueiredo Silva, Brazil  
Roberto Antonioli Silva, Brazil  
Robson Rocha Silva, Brazil  
Ronald Bispo Barreto Silva, Brazil  
Volnei Correa Silva, Brazil  
Raimundo Pereira Silva Filho, Brazil  
Nicodemus Vaz Silva Jr., Brazil  
Hilmar Tadeu Silva Jr., Brazil  
Antonio Nery Silva Junior, Brazil  
Celso Ramalho Silva Neto, Brazil  
Joao Luiz Pereira Silva Neto, Brazil  
Sundararajan Silvampatti, India  
Paulo Roberto Almeida Silveira, Brazil  
Bruno Augusto Ana Silveira, Brazil  
Ivan Freitas Silveira, Brazil  
Alexandre Campello Silveira, Brazil  
Geraldo Lopes Silveira, Brazil  
Roberta Ramos Silveira, Brazil  
Odon Luiz Silveira Filho, Brazil  
Jose Antonio Silveira Jr., Brazil  
Ricardo Augusto Silvino, Brazil  
Gobinder Singh, Malaysia  
Luiz Jacintho Siqueira, Brazil  
Dalton Siqueira Filho, Brazil  
Andi Lomata Sitanggang, Indonesia  
Lauro Herculano Rocha Soares, Brazil

Nelson Soares, Brazil  
Carlos Geraldo Nunes Soares, Brazil  
Gustavo Sansoni Soares, Brazil  
Helio Sobral, Brazil  
Hireno Guará Sobrinho, Brazil  
Fernando Orioli Guimaraes Sobrinho, Brazil  
Alexandre Takayuki Soejima, Brazil  
Briliantono Munardi Soenarwo, Indonesia  
Jan F A Somers, Belgium  
Andrey Sorrilha, Brazil  
Alcyr Rozante Sotto, Brazil  
Joaquim Grava Sousa, Brazil  
Marco Aurelio Oliveira Sousa, Brazil  
Eduardo Branco Sousa, Brazil  
Carlos Henrique Henrique Borges Sousa, Brazil  
Daphnis Gonçalves Souza, Brazil  
Eli Souza, Brazil  
Gerson Andrade Souza, Brazil  
Getúlio Danival De Moura Souza, Brazil  
Jose Marcio Gonçalves Souza, Brazil  
Marcio Regis Souza, Brazil  
Mauricio Stivieri Souza, Brazil  
Alexandre Bezerra Souza Junior, Brazil  
Antonio Vieira Souza Junior, Brazil  
Artur Da Fonseca De Souza Marques, Brazil  
Cicero Fernando Stahnke, Brazil  
Alfredo Ernesto Stefani, Brazil  
Gilbert Steinbacher, Spain  
Edmar Stieven Filho, Brazil  
Alexandre Santfago Stivanin, Brazil  
Steven Marc Stoller, USA  
Ângelo Luís Stroher, Brazil  
Marcos Suehara, Brazil  
Lei Sun, China  
Luciano Carvalho Suruagy, Brazil  
Goro Tajima, Japan  
Jose Gilberto Terra Talarico, Brazil  
Junichi Tamari, Brazil  
Fabian -Romulus Tatu, Romania  
Antonio Tavares, Brazil  
Fernando Gomes Tavares, Brazil  
Edmundo Medeiros Teixeira, Brazil  
Marcus Vinicius Vieira Teixeira, Brazil  
Otavio Vilhena Reis Teixeira, Brazil  
Arthur Cleber Telini, Brazil  
Muzaffar Tengku, Malaysia  
Daniel Pundek Tenius, Brazil  
Luiz Fernando Teochi, Brazil  
Alexey Tereshin, Russia  
Marcelo Silva Terra, Brazil  
Alexandre Terruggi Junior, Brazil  
Naveen Bashingam Thiyagu, India  
Carlos Antonio Thome, Brazil  
Heberton Timm, Brazil  
Luís Eduardo Passarelli Tírico, Brazil  
Ericson Tognollo, Brazil  
Ricardo Marques Torelli, Brazil  
Marcelo Rodrigues Torres, Brazil  
Roger Katsuyoshi Toshimitsu, Brazil  
Andre Wan Wen Tsai, Brazil  
Takashi Tsukahara, Japan

George Nikolaos Tzoanos, Greece  
Marcia Uchoa De Rezende, Brazil  
Maciej Uchowicz, Poland  
Heraldo Uliana, Brazil  
Gokhan Ragip Ulusoy, Turkey  
Meriç Ünal, Turkey  
Scott Urch, USA  
Ricardo Ribeiro Valle Filho, Brazil  
Rodrigo Vannini, Brazil  
Luiz Philippe Westin C. Vasconcellos, Brazil  
Duarte Herculano Vasconcelos, Brazil  
Lindolfo H. Vasconcelos Filho, Brazil  
Marco Antonio De Castro Veado, Brazil  
Lais Turqueto Veiga, Brazil  
Luiz Fernando Veloso, Brazil  
Alcione Eduardo Vercesi, Brazil  
Paulo Roberto Rostro Vianna, Brazil  
Carlos Humberto Victoria, Brazil  
Leandro Vidigal, Brazil  
Hudson Cezar Jose Vieira, Brazil  
Hugo Santos Vieira, Brazil  
Eduardo Alvaro Vieira, Brazil  
Eduardo Elias Vieira, Brazil  
Mercio Ataide Vieira, Brazil  
Rodrigo Barreiros Vieira, Brazil  
Ciriaco Villardi, Brazil  
Adriano Fonseca Vituri, Brazil  
Richard Peter Von Bormann, South Africa  
Ademir Costa Wanderley, Brazil  
Daniel Whelan, Canada  
Arkadiusz Wiatr, Poland  
Yufeng Wu, China  
Leonardo Oliveira Xerez, Brazil  
Xiaobing Xiang, China  
Gautam Yagnik, USA  
Carlos Alberto Yamada, Brazil  
Victor Kenji Yanagitani, Brazil  
Ricardo Hideki Yanasse, Brazil  
Ibrahim Yanmis, Turkey  
Andre Yanuar, Indonesia  
Shota Yoshimoto, Japan  
Tomokazu Yoshioka, Japan  
Qingwei Yu, China  
Ambrose Wai Yin Yung, Singapore  
Fernando Javier Zabalaga Cespedes, Bolivia  
Celia De Conti Zanellato, Brazil  
Remi Antonio Zardo, Brazil  
Vitaliy Zayats, Russia  
Jean-Marc Zeitoun, France  
Claudino Guerra Zenaide, Brazil  
Mauricio Rodrigues Zenaide, Brazil  
Min Qing Zhan, China  
Jianlin Zhang, China  
Dezhi Zhang, China  
Junhui Zhang, China  
Dr Zhenglin, China  
Flávio Ferreira Zidan, Brazil  
Alessandro Rozim Zorzi, Brazil  
Guilherme Nunes Zuppi, Brazil  
Sergio Roberto Mitidiere Zuppi, Brazil



## 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.

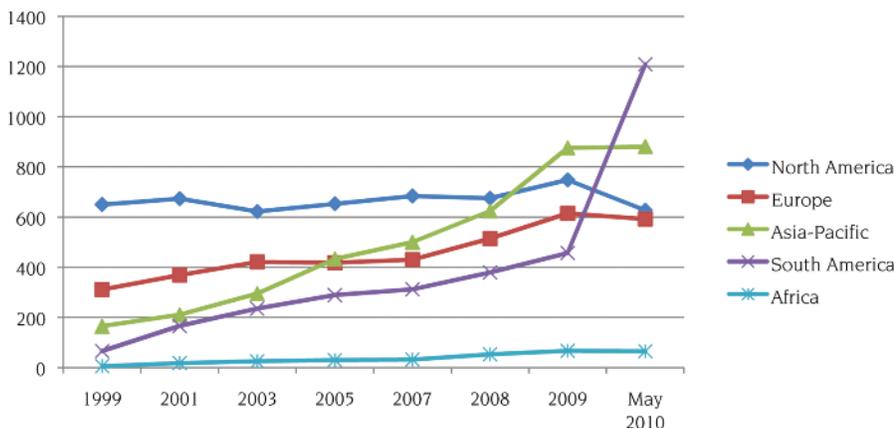
Download an application online at [www.isakos.com](http://www.isakos.com) or contact the ISAKOS office at (925) 807-1197 for a NEW MEMBER Recruit Packet.

## ISAKOS MEMBERSHIP BY CATEGORY

# of Members	Category
1398	Active
16	Affiliate
74	Applicant
861	Associate
830	Corresponding
182	Emeritus
13	Honorary
<b>3374</b>	<b>- Total Count -</b>

## ISAKOS MEMBERSHIP GROWTH BY REGION 1999 TO MAY 2010

Growth by Region	1999	2001	2003	2005	2007	2008	2009	May 2010
North America	650	673	622	653	684	675	748	627
Europe	311	369	421	418	430	514	615	592
Asia-Pacific	165	211	295	433	500	624	876	881
South America	66	166	235	289	312	379	457	1209
Africa	6	18	25	30	32	53	67	65
<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>	<b>3,374</b>



## ISAKOS MEMBERSHIP GROWTH

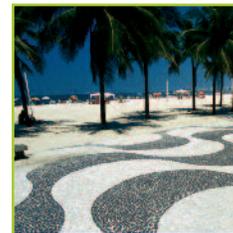
Year	Total Members
1995	1,005
1998	1,141
2000	1,282
2001	1,437
2003	1,598
2005	1,828
2007	1,958
2008	2,231
June 2009	2,763
November 2009	2,809
January 2010*	2,396
May 2010	3,374

## TOTAL MEMBERS



\* ISAKOS frequently suspends members who have failed to pay their ISAKOS Membership Dues.

8<sup>TH</sup> BIENNIAL  
**ISAKOS 2011**  
RIO DE JANEIRO ■ BRAZIL ■ MAY 15–19, 2011  
**CONGRESS**



## AN UPDATE FROM THE PROGRAM COMMITTEE

The ISAKOS Program Committee, under the guidance of Program Chair Andreas Imhoff, and Co-Chair Marc Safran, are hard at work developing another fantastic scientific program for the 8<sup>TH</sup> Biennial ISAKOS Congress, to be held in Rio de Janeiro, Brazil on May 15–19, 2011.

The ISAKOS Program Committee met recently at the ESSKA Congress in Oslo, Norway. The primary areas of discussion at this meeting included the development and organization of the scientific program, which will include 28 instructional course lectures, 29 symposia, and daily surgical demonstrations, as well as debates, lectures, and lunch time workshops and lectures.

**DEADLINE EXTENDED!** The deadline for Abstract Submissions has been extended to **September 1, 2010**. We encourage all ISAKOS members to submit scientific papers to be considered for presentation at the podium in Rio de Janeiro.

The ISAKOS Program Committee is pleased to announce that three pre-courses will be offered on May 14, 2011 immediately preceding the 2011 ISAKOS Congress. *“Olympic Games: From the Basic Science to the Gold Medal”* aims to improve the knowledge of those involved in the professional treatment of athletes, including basic science of the practice of sports medicine, injury prevention, and preparation for athletic competitions.

Famous athletes will be on hand to discuss their experiences in competing for world championships and its relevance to sports medicine. *“Biologic Treatment Options for the Knee”* will focus on growth factors (including PRP), meniscal scaffolds, synthetic ligaments, and tissue culture (including stem cells). *“Spotlight on Top Orthopaedic Procedures in Sports Medicine”* will focus on the most common surgical procedures in the practice of Sports Medicine. Presentations will be technically focused, and include shoulder, knee and other joint topics.

The 2011 ISAKOS Congress will also include an afternoon of sporting activities for Congress participants, including golf, tennis and football/soccer. All Congress registrants are invited to participate in these events!

More information regarding the pre-courses and ISAKOS Congress scientific program content will be available in the ISAKOS Congress Preliminary Program, available in September of 2010. Additional information regarding the Congress is available on the ISAKOS website at [www.isakos.com](http://www.isakos.com).

We hope to see you in Rio de Janeiro on May 15–19, 2011 for another exciting and educational ISAKOS Congress!

## CONGRESS 2011

CONGRESS HIGHLIGHTS	FEATURED SESSIONS
<ul style="list-style-type: none"><li>• Rotator Cuff Repair: Double vs. Single Row Constructs</li><li>• Hip Arthroscopy 2011- An International Perspective</li><li>• Extreme Sports</li><li>• ACL Reconstruction – Single vs. Double Bundle</li><li>• Cartilage Repair Options: Do We Need Cells to Restore Chondral Surface?</li></ul>	<ul style="list-style-type: none"><li>• Scientific Paper Presentations</li><li>• Electronic Poster Exhibits</li><li>• Socratic Debates</li><li>• Surgical Demonstrations</li><li>• Instructional Course Lectures</li><li>• Partner Society Lectures</li><li>• Didactic Lectures</li><li>• Hands on Workshops</li><li>• Technical Exhibits</li></ul>
<ul style="list-style-type: none"><li>• New Horizons in Cartilage Repair- Fact or Fiction?</li><li>• Emerging Technology in Clinical Practice for Joint Regeneration</li><li>• Failure of ACL Reconstruction: Can We Prevent It?</li><li>• Tricks and Pearls on Visualization in Arthroscopy</li><li>• Meniscal Transplantation: Allograft vs. Xenograft</li></ul>	

# ISAKOS 2011 CONGRESS UPDATE

## Online Abstract Submission Instructions

To submit an abstract, visit the 2011 ISAKOS Congress website [www.isakos.com/meetings/2011congress](http://www.isakos.com/meetings/2011congress).

Authors need to have the following information readily available when submitting an abstract:

1. Complete contact information for the Presenting and the Corresponding authors including the institution of research. (It will help to have the ISAKOS ID number readily available for as many authors as possible. If needed, you may contact the ISAKOS Office to obtain an author's ISAKOS ID number.)
2. Provide the abstract title in proper case for publishing.
3. Submit the abstract text as plain text into a text box located in the online application. Please note, graphics and tables are not accepted.
4. Complete the Financial Disclosure Statement, American Food and Drug Administration (FDA) statement, and Copyright License Agreement on behalf of all authors.
5. Author warranty: **authors must read and abide** by the guidelines below in order to be considered for presentation.

## General Guidelines

1. The same First Author may submit a maximum of three abstracts for consideration at the 2011 ISAKOS Congress. Authors **do not** have to be ISAKOS members to submit an abstract.
2. Persons submitting an abstract (Corresponding Author) to ISAKOS do so with the understanding that they and all the authors listed on the abstract will abide by the conditions, deadlines, policies and decisions of the ISAKOS Board of Directors and Program Committee.
3. Abstracts are only accepted for consideration via the online abstract application form. Abstracts submitted to the ISAKOS office in any other fashion will not be considered for presentation at the ISAKOS Congress.
4. The abstract submission system is open. The deadline for submission is September 1, 2010 at 11:59 P.M. Pacific Standard Time. Abstracts will not be accepted after that date.
5. If the abstract is accepted for podium presentation, all presenters must speak in English, and be prepared to answer questions from the audience in English.
6. Please indicate the preference of presentation method for the submitted abstract: paper/podium, poster or electronic poster (e-poster) presentation. The ISAKOS Program Committee will make final decisions on the mode of presentation, however, efforts will be made to comply with the stated preference.
7. All presenters, co-authors, faculty members, etc. who will attend the Congress are expected to register for the meeting and pay all registration and travel costs. No exceptions are made. If attendance is dependent on outside funding, please secure financial assistance before submitting an abstract.
8. Persons submitting an abstract to ISAKOS must complete a Financial Disclosure Statement and an American Food and Drug Administration statement. Although ISAKOS is an international society, it receives continuing medical education accreditation and is planned and implemented with the essential areas and policies of the Accreditation Council for Continuing Medical Education (ACCME). ISAKOS does not view the existence of disclosed interest or investments as necessarily implying bias or decreasing the value of the presentation. These disclosures will not be seen or taken into consideration when the abstract is considered for presentation.
9. Persons submitting an abstract to ISAKOS must complete a Copyright License Agreement so the chosen abstracts can be published in the journal *Arthroscopy: The Journal of Arthroscopic and Related Surgery*; the ISAKOS final program; the ISAKOS Congress proceedings; and on the ISAKOS and *Arthroscopy: The Journal of Arthroscopic and Related Surgery* websites.

Submit your abstract online today!  
Abstract submission deadline: Sept. 1, 2010

## 2011 Congress Awards

### JOHN JOYCE AWARD

*Sponsored by Smith & Nephew, Inc., Endoscopy Division*

A cash prize will be awarded for the best arthroscopy paper presented during the scientific program at the 2011 Congress. All arthroscopy papers presented will automatically be considered for this award. The winners will be announced in Rio de Janeiro, Brazil at the awards ceremony and an honorarium will be awarded. Second and third place prizes will also be granted.

### RICHARD B. CASPARI AWARD

*Sponsored by DePuy Mitek*

The Richard B. Caspari Award was established in 2003 to reward the best upper extremity paper presented during the scientific program of the Congress. A panel comprised of members of the ISAKOS Upper Extremity Committee will select two prize-winning papers in 2011. The winners will be announced and an honorarium will be awarded in Rio de Janeiro, Brazil at the awards ceremony.

### SCIENTIFIC AWARD

The Scientific Award was established in 2007 for the best scientific paper read during the scientific program of the Congress. A panel comprised of members of the ISAKOS Scientific Committee will select the prize-winning paper read at the 2011 Congress. The winners will be announced and an honorarium will be awarded in Rio de Janeiro, Brazil at the awards ceremony.

### ACHILLES ORTHOPAEDIC SPORTS MEDICINE RESEARCH AWARD

*Sponsored by DJO, Inc.*

An honorarium will be awarded to a researcher who has performed the most outstanding clinical or laboratory research in the field of orthopaedic sports medicine. To apply for this award please complete the online application and upload your complete manuscript at [www.isakos.com/awards](http://www.isakos.com/awards). Applications accepted September 2009–October 1, 2010.

### ALBERT TRILLAT YOUNG INVESTIGATOR'S AWARD

*Sponsored by Stryker*

An honorarium will be awarded to a young investigator who has done outstanding clinical or laboratory research contributing to the understanding, care or prevention of injuries to the knee. All applicants must be under 40 years of age at the time of the 2011 Congress. To apply for this award please complete the online application and upload your complete manuscript at [www.isakos.com/awards](http://www.isakos.com/awards). Applications accepted September 2009–October 1, 2010.

### 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. To apply for this award please complete the online application and upload your complete manuscript at [www.isakos.com/awards](http://www.isakos.com/awards). Applications accepted September 2009–October 1, 2010.

# YOUR COMMITTEES AT WORK

## ARTHROSCOPY COMMITTEE



The Arthroscopy Committee met during the AAOS Annual Meeting in March 2010. Committee attendance was excellent with 70% of our members attending the meeting.

Our primary project over the last six years is the ISAKOS/ESSKA Terminology Project. Great progress has been made over the last year with the elbow section completed under the leadership of Greg Bain and the wrist section under Luigi Pederzini. The ankle, knee and shoulder sections are currently available in the Members Only section of the ISAKOS website and we encourage all members to visit this site. The elbow and wrist sections will be added soon while the hip section is nearing completion.

This project is a living document. The next step is to further rationalize the project with a one page document stipulating one terminology for each condition. This has been finalized for the knee and is elaborated in a separate part of this newsletter (please see pg. 39). The wrist has also been completed and will be available shortly.

The natural progression from determining terminology is to rationalize outcome scores. Our aim is for all orthopaedic surgeons around the world to use the same terminology and outcome scores enabling us to collate, compare and contrast our data on various orthopaedic conditions. AOSSM has also put together a working party to gain consensus on outcome scores and we are in the process of creating a combined ISAKOS /AOSSM group working on this project.

Two years ago the Arthroscopy Committee completed a DVD series on the Normal Arthroscopic Anatomy of the Major Joints. This is available on the ISAKOS website Members Only section under "Online Education". The next project is PathoAnatomy of the Major Joints. Each joint will follow the terminology project joint categories and their common diagnoses. This will start with the Knee as the Terminology project is completed for this.

### **Mark Clatworthy**

*Arthroscopy Committee Chairman*

## COMMUNICATIONS COMMITTEE



The Communications Committee members met in New Orleans in March 2010, thank you to all members for all the hard work that has been done over the last year.

The hot topics on the agenda were ISAKOS' new website design, ISAKOS eLearning, and ISAKOS social networking.

Since the 2009 ISAKOS Congress, major steps have been taken to update the ISAKOS website.

Changes include the new "Universal Log In," which enables members to log in once and have access to all pages on the ISAKOS website without having to log in again. Thanks to all the people involved in the project! ISAKOS now has an active modern website being updated regularly.

eLearning is an ambitious project and with the history that ISAKOS has, there is sufficient material for it to be a success. All Current Concept articles ever published in the ISAKOS Newsletter will be made available to the public online. Currently the categorization process is being carried out by this committee and the Education Committee. Additionally, eLearning will include content from the ISAKOS Congress archives, as well as surgical demonstration videos. The ultimate goal is that the ISAKOS eLearning site will be a living, breathing library for our members and surgeons around the world.

ISAKOS is also pleased to announce our involvement in social networking! Members are invited to follow ISAKOS on various social networking sites including Facebook, Twitter and LinkedIn.

To finalize the eLearning categorization, the eLearning Task Force (comprised of members of both the ISAKOS Education and Communications Committees) will meet during the ESSKA Congress in Oslo, Norway in June.

### **Ramon Cugat, MD**

*Communications Committee Chairman*

## FINANCE COMMITTEE

The ISAKOS Finances are discussed 3 to 4 times a year by the Executive Committee, either by conference call or meeting, and are presented to the ISAKOS Board of Directors at least once a year, most recently during the 2010 AAOS Annual Meeting in New Orleans.

The ISAKOS Financial Summary is positive. Due to conservative to moderate investment strategies in 2008 and 2009, ISAKOS has maintained financial stability despite the recent financial crises worldwide. Additionally, profits from the 2009 ISAKOS Congress in Osaka, Japan, have contributed to ISAKOS' sound financial position.

ISAKOS will continue with a conservative investment strategy as we move forward into the 2010 and 2011 fiscal years. The Operating Budget will continue to adjust as new initiatives are introduced in order to accomplish ISAKOS vision and mission. Additionally, the ISAKOS Education Budget for next two years will continue to evolve as new initiatives and opportunities are developed. Educational activities will meet the ISAKOS goals to support innovative and adaptive education to include eLearning, Workshops, Committee Projects, and Fellowships.

### **Philippe Neyret, Treasurer**

**Ned Amendola, Assistant Treasurer**

# YOUR COMMITTEES AT WORK

## KNEE COMMITTEE



The Knee Committee met in New Orleans in March 2010. I welcome the new members of the committee and thank those who have completed their four year term. It is important to maintain a steady turnover of members to not only maintain a fertile ground for new ideas, but also to spread the workload of the committees.

The current work of the ISAKOS Knee Committee includes preparation of two Current Concepts articles for the ISAKOS Newsletter to conclude the Navigation in Knee Surgery Project. This work is being organized by David Parker (Australia), Kelly Vince (USA) and Julian Feller (Australia).

Additionally, the Knee Committee is developing an ISAKOS Pre-Course for the upcoming Congress in Rio de Janeiro entitled "*Biologic Treatment Options for the Knee*". The chairs of the meeting are Tony Miniaci (USA), Martin Lind (Denmark) and Fredrik Almqvist (Belgium). The *Biologic Treatment Options for the Knee* pre-course will be the primary focus of the Knee Committee over the next year.

Two potential future projects are the preparation of knee surgery videos for the website/e-learning program, to be organized by Ned Amendola (USA) and Steve Howell (USA), and a web-based research project to collect data on first time patellar dislocation, headed by Liza Arendt (USA), Willem van der Merwe (South Africa), and Julian Feller (Australia).

As with all projects there is a lot of behind the scenes work to be done before they become a reality. I look forward to continuing to work with the enthusiastic members of the Knee Committee.

**Julian Feller,**  
*Knee Committee Chairman*

## MEMBERSHIP COMMITTEE



The ISAKOS Membership Committee would like to increase I S A K O S membership leading up to

the 8th Biennial ISAKOS Congress, to be held Rio de Janeiro in May of 2011. As ISAKOS is the biggest international society for arthroscopic surgery and orthopaedic sports medicine, we are currently hard at work on various projects to increase ISAKOS Membership.

If we analyze the evolution of ISAKOS Membership over the last 15 years; ISAKOS Membership has increased the number of active members from 1,005 in January 1995 to 1,198 in 1999 by adding 193 in four years. The numbers continued to increase from 1995 through June of 2005, when ISAKOS had 1,828 members. Our membership continues to grow daily, with a current ISAKOS membership of 3373 members! A large portion of ISAKOS' strength comes from our diverse membership. Our current membership includes members from more than 87 countries.

ISAKOS has experienced large membership growth in specific areas of the world, especially Asia-Pacific and South America including Japan, China, Australia and Brazil.

The chart below represents ISAKOS membership growth from 1999 through January 2010 per country. These are the Top 20 countries for membership growth, as well as number of members per country.

### ISAKOS Membership Growth from 1999 through January 2010

		From (1999)	To (2010)	Increase
1	USA	621	661	40
2	Brazil	36	292	256
3	Japan	45	262	257
4	Australia	45	118	73
5	China	1	107	106
6	India	23	87	64
7	Chile	15	71	56
8	UK	48	69	21
9	Argentina	13	51	38
10	Korea	18	60	42
11	Poland	1	51	50
12	Germany	27	51	24
13	France	30	48	18
14	Turkey	9	47	38
15	S. Africa	1	46	45
16	Spain	28	44	17
17	Thai	2	38	36
18	Greece	5	38	33
19	Switzerland	13	35	22
20	Malaysia	1	33	32

# YOUR COMMITTEES AT WORK

## MEMBERSHIP COMMITTEE (cont.)

As we've announced in Winter Newsletter, the ISAKOS Office continues to develop new marketing initiatives that are listed below.

- **ISAKOS Marketing Sumo** – The ISAKOS Office has updated the ISAKOS Marketing postcard. These postcards will be sent to upcoming Approved Courses and other marketing opportunities as requested by the membership. If you are holding a course, and would like to display ISAKOS materials, please email the Office at [isakos@isakos.com](mailto:isakos@isakos.com). Materials will be sent to you at no charge.
- **Simplified Membership Application** – The ISAKOS Membership Application has been shortened to only two printed pages. Additionally, the online Membership Application has been simplified, and includes the Online Sponsorship Request System, thereby encouraging current members to visit the ISAKOS website more frequently.
- **ISAKOS Regional Coordinator Marketing** – Dr. Anderson has sent a letter to North American fellowship programs encouraging both the fellowship directors and departing fellows to join ISAKOS. These letters will continue to be sent annually.
- **ISAKOS Approved Course Marketing** – shipments of ISAKOS Marketing Materials (postcards, applications, newsletters, Call for Abstracts, posters, etc) have been sent all over the world, including Slovenia, Serbia, Brazil and China.

Future ISAKOS Membership promotion efforts include the development of a Residents' Scholarship Program for the Congress, as well as the ISAKOS Fellows Membership. Both these projects are currently under development, and more information will be available in the coming months.

### **Mahmut Nedim Doral, MD**

ISAKOS Membership Committee Chairman

### **Mitsuo Ochi, MD, PhD**

ISAKOS Membership Committee Deputy Chairman

### **Allen F. Anderson, MD**

ISAKOS Membership Committee Deputy Chairman

## ORTHOPAEDIC SPORTS MEDICINE COMMITTEE REPORT

The prime focus of the Orthopaedic Sports Medicine Committee is to focus attention on and provide leadership and education for ISAKOS members in sports medicine areas, particularly those not intersecting with the work of the knee, shoulder and arthroscopy committees.

The Committee met in New Orleans prior to the American Academy of Orthopaedic Surgeons Meeting to finalize plans for a closed meeting in Doha, Qatar on the "Art and Science of the Diagnosis and Management of Muscle Injuries." Whilst it is recognised that ISAKOS is an organization predominantly of orthopaedic surgeons and the vast majority of muscle injuries are managed non-surgically, some muscle injuries require surgery. Moreover, many ISAKOS members act as team physicians and need up to date information of the plethora of new (and often untested) treatments available including hyperbaric oxygen, platelet rich plasma, calf blood injections and the use of stem cells. Data from professional sports, particularly Association Football (soccer) suggested muscle injuries produce more game time loss than any other single injury. The pressure from owners and managers of these teams to use untried methods can be immense. We will examine the Science on the Treatment of Muscle Injuries and evaluate the available data. It is our goal to provide our findings for all registrants at the Biennial Meeting in Rio de Janeiro.

Future topics for the Committee to evaluate will include the safe return to sports following injury and surgery, guidelines for team doctors and the media and an evaluation of non operative treatment of common sports injuries.

### **Myles R.J. Coolican**

Orthopaedic Sports Medicine Chairman

## ISAKOS

### **Mission Statement**

**ISAKOS advances the worldwide exchange and dissemination of education, research and patient care in arthroscopy, knee surgery and orthopaedic sports medicine.**

## SCIENTIFIC COMMITTEE

The ISAKOS Scientific Committee met at the recent AAOS Annual Meeting in New Orleans. The Committee continues to balance our administrative tasks (including articles for the ISAKOS Newsletter, and proposals for symposia and ICLs at the biennial meeting), as well as scientific issues. This indicates a major change in the future work of the Scientific Committee.

An update on Scientific Committee Publication, i.e. the "A Practical Guide to Research: Design, Execution, and Publication" was given. The Publication is progressing well, and we hope to have a final version published in time for the 2011 ISAKOS Congress in Rio de Janeiro. The ultimate goal of this upcoming publication is to help authors/scientists to perform conduct better studies and write them up in sound scientific papers.

The Evidence-based series with papers for Arthroscopy is still ongoing and will continue during 2010. Currently two papers are accepted (one is published in the April issue of Arthroscopy) and two more under preparation. It is still possible to add to this series. Proposals from all committee members and several of the committee members are working on evidence-based medicine (EBM) papers for the Arthroscopy Journal.

Finally, the committee discussed the Awards process for the Biennial ISAKOS Congress. It was recommended that all award applications are to be reviewed as abstracts and the top five abstracts are requested to submit further documentation and a manuscript. The finalists will be judged by members of both the Associated Committee and Scientific Committee. Awards and Associated Committees are listed below:

**Albert Trillat Young Investigator's Award**  
(Knee Comm)

**The Patellofemoral Research Excellence Award**  
(Knee Comm)

**Richard B. Caspari Award (Upper Extremity Comm)**

**John J. Joyce Award (Arthroscopy Comm)**

**Nicola's Foundation Young Researcher Award**  
(Scientific Comm.)

**Scientific Award (Scientific Comm.)**

**Achilles Orthopaedic Sports Medicine Research Award (Sports Medicine Comm)**

New members to the committee; **Mohit Bhandari, Constance Chu, Bruce Levy, Stephen Lyman and Rocky Tuan** were welcomed.

**Jon Karlsson**

Scientific Committee Chairman

## UPPER EXTREMITY COMMITTEE



After a successful Committee Meeting in New Orleans, the ISAKOS Upper Extremity Committee is looking forward to the upcoming year.

Previous closed meetings in the Upper Extremity have been dealing with subjects that are controversial in the definition and in the approach of treatment throughout the world. "Partial Cuff Tears". "Biceps from Origin to Insertion". "Shoulder instability". In 2010, the Upper Extremity Committee will take the AC-joint under review. The treatment of acute dislocations varies from country to country, and for both acute repair and late reconstruction many different techniques has been described. New techniques have been developed and both operative and diagnostic approaches are improving. In the Upper Extremity we find that it is the right time to have a discussion on the current knowledge and how we move forward. Conclusions from the meeting will be available to the ISAKOS members on the website and a multicenter study on operative treatment of symptomatic AC-joint instability is under preparation. The upcoming Current Concepts meeting on the AC-joint will take place in Copenhagen from June 6 to June 8. This Current Concept meeting will be held just prior to the ESSKA meeting in Oslo, where the Committee will be running a symposium on AC-joint instability.

The Upper Extremity Travelling Fellowship has to date been successful. 2009 Fellowship winners Hatem Said from Egypt and Sigitas Ryliskis from Lithuania have already completed some of the fellowship and will present their experience in Rio next year. The two Upper Extremity Committee Travelling fellowships for 2011 and 2012 will be announced in the coming months.

The Upper Extremity Committee is also looking forward to next year ISAKOS Congress in Rio de Janerio and we hope the Committee will be able to contribute to an exciting program attracting orthopaedic surgeons from all over the world.

**Klaus Bak**

Upper Extremity Committee Chairman

# YOUR COMMITTEES AT WORK

## STRATEGIC PLANNING COMMITTEE

The Strategic Planning Committee met in New Orleans and reviewed the outcomes of the Strategic Planning Forum held in Osaka during the ISAKOS Congress in 2009.

The 2009-2011 Strategic Plan can be seen below. This plan was developed following last year's Forum, and the Action Plans have been prioritized and will be implemented by the ISAKOS office and relevant ISAKOS Committees in the coming year.

Planning for the next Strategic Planning Forum in Rio de Janeiro will be finalized at the AAOS in San Diego in February next year. In addition to Focus Groups for Education, Membership and Financial Planning there will be a new Focus Group for Research. The Membership Focus Group will look at options for attracting and retaining Young Members.

### EDUCATIONAL GOAL: Promote Education Beyond the Biennial Congresses

Strategy Steps	Action Plans
<b>Increase Online Education</b>	<ul style="list-style-type: none"> <li>Promote Live Interactive Surgery Online</li> <li>Develop Online Library</li> <li>Develop Online Journal Club</li> </ul>
<b>Improve ISAKOS Teaching Center Program</b>	<ul style="list-style-type: none"> <li>Review Existing ISAKOS Teaching Centers</li> <li>Promote New ISAKOS Teaching Centers</li> </ul>
<b>Improve and Increase ISAKOS Courses/Program</b>	<ul style="list-style-type: none"> <li>ISAKOS Level II and Level III Courses</li> <li>Develop a Teacher-to-Teacher Workshops</li> </ul>

### FINANCIAL PLANNING GOAL: Increase Financial Resources for the Future

Strategy Steps	Action Plans
<b>Member Dues</b>	<ul style="list-style-type: none"> <li>Increase Membership</li> <li>Consider Differential Dues for Developed and Developing Country Members</li> </ul>
<b>Investment Income</b>	<ul style="list-style-type: none"> <li>Maintain Present Investment Strategy for Reserve Funds</li> </ul>
<b>Journal of Arthroscopy</b>	<ul style="list-style-type: none"> <li>Continue Agreement with Journal</li> </ul>
<b>Biennial Congress</b>	<ul style="list-style-type: none"> <li>Continue to Budget for Congress Surplus to Provide Revenue</li> </ul>
<b>Pre-Congress Courses</b>	<ul style="list-style-type: none"> <li>Review Pre-Course Revenue and Determine Cost Effectiveness</li> </ul>
<b>Industry Educational Grants</b>	<ul style="list-style-type: none"> <li>Promote Education Resource Development Committee</li> <li>Develop a Return on Investment Report for Industry</li> </ul>

### MEMBERSHIP GOAL: Increase ISAKOS Membership

Strategy Steps	Action Plans
<b>Improve Collaboration between Education and Membership Committees</b>	<ul style="list-style-type: none"> <li>Promote ISAKOS Membership at Educational Activities (Approved Courses, Workshops, etc)</li> <li>Promote Educational Activities to Attract New Members</li> </ul>
<b>Improve Regional and National Membership Coordinator Program</b>	<ul style="list-style-type: none"> <li>Review Existing Program for Regional &amp; National Coordinators (Regional Coordinator Handbook)</li> <li>Provide ISAKOS Certification for Regional &amp; National Coordinators</li> <li>Improve Communication Between Membership Comm. Chair and Regional &amp; National Coordinators</li> <li>Develop Succession Plans for Regional Coordinators</li> <li>Develop Relationships with Larger National Societies</li> </ul>
<b>Promote Membership for Surgeons Under Age 40</b>	<ul style="list-style-type: none"> <li>Focus on Marketing ISAKOS Membership to Residency and Fellowship Programs</li> <li>Provide More Opportunities for Surgeons Under Age 40 to Participate at the Congress (Speakers or Moderators)</li> <li>Promote Membership in Countries with Few ISAKOS Members</li> <li>Identify Regions and Countries with Few Members (eg. Africa, Middle East)</li> </ul>

**Barry Tietjens**  
*Strategic Planning Chair*



# ISAKOS

International Society of Arthroscopy, Knee Surgery  
and Orthopaedic Sports Medicine

## ISAKOS LEADERSHIP... *guiding us into the future*

### BOARD OF DIRECTORS

#### Executive Committee:

Freddie Fu, MD, President  
Moises Cohen, MD, PhD, First Vice President  
Masahiro Kurosaka, MD,  
Second Vice President  
Philippe Neyret, MD, Treasurer  
Annunziato Amendola, MD, Vice Treasurer  
Luis Vargas, MD, PhD, Secretary  
Stephen Burkhart, MD, Assistant Secretary  
Jon Karlsson, MD PhD, Consultant  
Willem van der Merwe, MD, Consultant  
Paolo Aglietti, MD, Past President

#### Members at Large:

James Chow, MD  
Mark Ferguson, MD  
Alberto Gobbi, MD  
Arnaldo Hernandez, MD, PhD  
Anthony Miniaci, MD FRCSC  
Norimasa Nakamura, MD PhD  
Mitsuo Ochi, MD, PhD  
Fernando Radice, MD  
Ronald Selby, MD  
Robert Smigielski, MD  
C. Niek van Dijk, PhD  
Patrick Yung, FRCS (Orth Surgery)

#### Arthroscopy Committee:

Mark Clatworthy, NEW ZEALAND, Chair  
Karl Fredrik Almqvist, BELGIUM,  
Deputy Chair

#### Communications Committee

Ramon Cugat, SPAIN, Chair  
Eric McCarty, USA, Deputy Chair

#### Education Committee

Kevin Plancher, USA, Chair  
Joao Espregueira-Mendes, PORTUGAL,  
Deputy Chair

#### Development Committee

Moises Cohen, BRAZIL, Co-Chair  
Anthony Miniaci, USA, Co-Chair

#### Journal Advisory Committee

Rene Verdonk, BELGIUM, Chair

#### Knee Committee

Julian Feller, AUSTRALIA, Chair  
Allen Anderson, USA, Deputy Chair

#### Membership Committee

M. Nedim Doral, TURKEY, Chair  
Allen Anderson, USA, Deputy Chair  
Mitsuo Ochi, JAPAN, Deputy Chair

#### Newsletter Editorial Board

James Lubowitz, USA, Editor

#### Orthopaedic Sports Medicine Committee

Myles Coolican, AUSTRALIA, Chair  
Francois Kelberine, FRANCE, Deputy Chair

#### Program Committee

Andreas Imhoff, GERMANY, Chair  
Marc Safran, USA, Deputy Chair

#### Scientific Committee

Jon Karlsson, SWEDEN, Chair  
Robert Marx, USA, Deputy Chair  
Norimasa Nakamura, JAPAN, Deputy Chair

#### Site Selection Committee

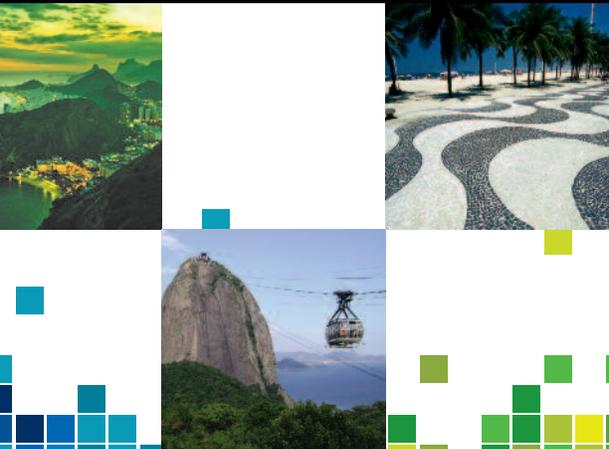
Paolo Aglietti, ITALY, Chair  
Freddie Fu, USA, Deputy Chair

#### Strategic Planning Committee

Barry Tietjens, NEW ZEALAND, Chair  
Per Renström, SWEDEN, Deputy Chair

#### Upper Extremity Committee

Klaus Bak, DENMARK, Chair  
Guillermo Arce, ARGENTINA,  
Deputy Chair



*join us...*

8<sup>TH</sup> BIENNIAL

**ISAKOS 2011**

RIO DE JANEIRO ■ BRAZIL ■ MAY 15-19, 2011

**CONGRESS**

# ISAKOS IN CANADA

## ISAKOS REFLECTIONS FROM CANADA

**Kivanc Atesok, MD, MSc<sup>1</sup>**

**Emil Schemitsch, MD, FRCS(C)**

**Daniel Whelan, MD, FRCS(C)<sup>1</sup>**

**Mohit Bhandari, MD, MSc, FRCS(C)<sup>2</sup>**

<sup>1</sup> University of Toronto, St. Michael's Hospital,  
Division of Orthopaedic Surgery, Toronto, Canada

<sup>2</sup> McMaster University, Division of Orthopaedic Surgery,  
Hamilton, Canada

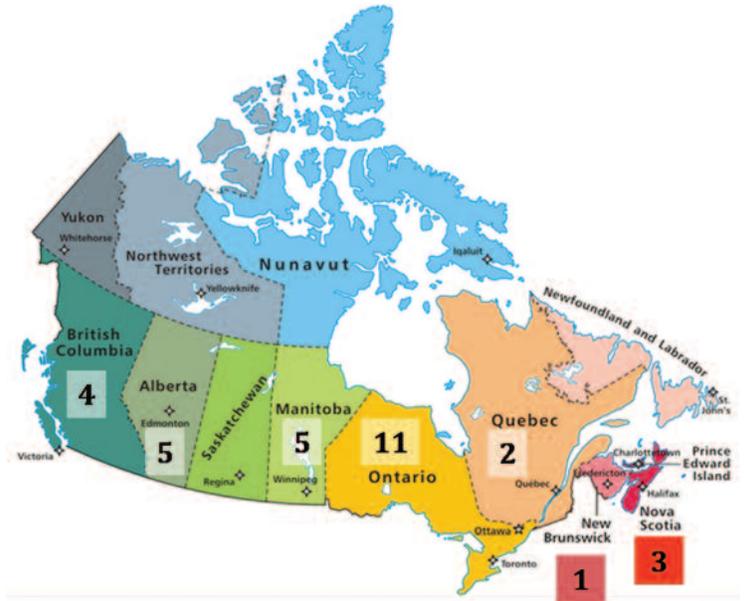
Canada is the world's second largest country by total area occupying most of northern North America.<sup>1</sup> The name Canada comes from a Native American word, kanata, which means "settlement". Canada is a country with plenty of beauty. The most amazing landscapes make the country a special one; the Northern Lights, the Great Lakes, Canadian Rockies, magnificent falls, woods, fauna and many more... Canada's population is approximately 33,930,800 people and 1275 orthopaedic surgeons are actively practicing in the country based on the latest official data.<sup>2,3</sup>

ISAKOS has 31 members in Canada: 19 active, 6 associate, and 6 emeritus according to membership database from year 2009. The number of ISAKOS members from Canada was 21 in year 2001 which means almost 50% increase within 8 years. During the same time period, total number of ISAKOS members all over the world was increased 95% (from 1437 to 2809). However, considering the 16% increase in total number of orthopaedic surgeons in Canada during the last 10 years, we notice that, the increase in number of ISAKOS members is actually a remarkable one.<sup>3</sup> Additionally, ISAKOS membership growth in North America region during this period was 10% (from 673 to 737) (Table 1).

	2001	2003	2005	2007	2008	2009
Canada	21	21	22	29	29	31
North America	673	622	653	684	675	737
Total	1437	1598	1828	1958	2245	2809

**Table 1.**  
Number of ISAKOS members in Canada, North America, and the world (total) from year 1999 to 2009.

Canada is divided into 10 provinces and the distribution of current ISAKOS members according to provinces are as follows: 11 members reside in Ontario, 5 in Manitoba, 5 in Alberta, 4 in British Columbia, 3 in Nova Scotia, 2 in Quebec, and 1 member practices in New Brunswick (Figure 1). Only 2 (6%) of Canadian ISAKOS members are females and both of them are active members of the society.



**Figure 1.**  
Map illustrates the distribution of the ISAKOS members in Canada according to provinces. (Reproduced from "Wikipedia" at [http://en.wikipedia.org/wiki/File:Map\\_Canada\\_political.png](http://en.wikipedia.org/wiki/File:Map_Canada_political.png).)

Today, there are 4 ISAKOS-approved Teaching Centers in Canada. These centers are located in provinces of Ontario, Manitoba, Alberta, and Nova Scotia. Three members from Canada are actively functioning in two different committees of our society. The 2 Canadian members of the Scientific Committee are; Dr. Mohit Bhandari from Hamilton, Ontario and Dr. Nick Mohtadi from Calgary, Alberta. Dr. Kivanc Atesok from Toronto, Ontario takes role in the Editorial Board of the Newsletter. We also would like to take this opportunity to welcome Dr. Emil Schemitsch, -soon to become an active member from Toronto, to the ISAKOS family.

Canadian ISAKOS members are participating in many different projects in collaboration with colleagues from all over the world. One of the recently completed projects is a systematic review on "Arthroscopy Assisted Fracture fixation" which will be available for the readers in near future. Eight authors from 3 countries; Canada, Israel, and Turkey, all of whom are active ISAKOS members, cooperated to prepare a comprehensive review focused on integration of arthroscopically assisted techniques into the practice of trauma surgery and intraarticular fracture fixation.

Hopefully, our collaboration with the other valuable ISAKOS members to make a better input to scientific research and patient care will increase more and more in the coming years.

While we look forward to 8<sup>TH</sup> Biennial ISAKOS Congress in Rio de Janeiro–Brazil, we also feel the joy and privilege of knowing that Canada will be hosting the 9<sup>TH</sup> Biennial Congress in 2013 in Toronto. With our most sincere thanks to each and every one who puts efforts to carry ISAKOS further.

## ACKNOWLEDGEMENT

We gratefully acknowledge the Canadian Institute for Health Information–CIHI, for supplying us with the most recent data. We also would like to thank to Katie Anderson from the ISAKOS Office for her kind assistance with the membership database.

## References:

1. Canada. <http://en.wikipedia.org/wiki/Canada>. Wikipedia.
2. Statistics Canada. [www.statcan.gc.ca](http://www.statcan.gc.ca). Canada's population estimates. The Daily: March 25, 2010.
3. The Canadian Institute for Health Information (CIHI) database. <http://www.cihi.ca>

## Correspondence:

**Kivanc Atesok, MD, MSc**

St. Michael's Hospital, Division of Orthopaedics,  
Musculoskeletal Research Lab,  
30 Bond St, Shuter Wing 5–076  
M5B 1W8 Toronto, ON, Canada  
Email: [kivanc.atesok@utoronto.ca](mailto:kivanc.atesok@utoronto.ca)  
Phone: +416 258 2843  
Fax: +416 359 1601

## ISAKOS IN JAPAN



**Masaki Sonoda, MD, PhD**  
ISAKOS Newsletter  
Editorial Board

The 7th Biennial ISAKOS Congress was held in Osaka on April 5–9, 2009 (Figs. 1 and 2). Over 2,300 participants attended and were undoubtedly able to experience the unique diversity and scientific exchange of knowledge. The

meeting was a huge success and, for certain, beautifully imbedded in the minds of many participants, Dr. Shino, the local host, Dr. Yasuda, the program chairman, Dr. Ochi, the President of JOSKAS (Japanese Orthopaedic Society of Knee, Arthroscopy and Sports Medicine) and other members of the organizing committee should be commended for their hard work. We are also proud to announce that Dr. Kurosaka was selected as the second

Vice President of ISAKOS. Precise information and numerous pictures were printed in the previous ISAKOS newsletter (volume 13, issue 2, 2009).



**Figure 1.**

Japan consists of four main islands and lies in the far east of Asia. Over 60 percent of the land is precipitous mountains covered with forests; meanwhile, the flat areas, including the open country and mountain valleys where people can live, amount to only 25 percent. The country is blessed with beautiful mountains and lush greenery; however, the population density on the land that is habitable is among the highest in the world. With a height of 3,776 meters, Mt. Fuji is Japan's highest mountain and the symbol of Japan (Fig. 3). It's almost perfect cone shape is breathtakingly beautiful and is acclaimed worldwide.



**Figure 2.**

# ISAKOS IN JAPAN

## ISAKOS IN JAPAN (cont.)



**Figure 3.**

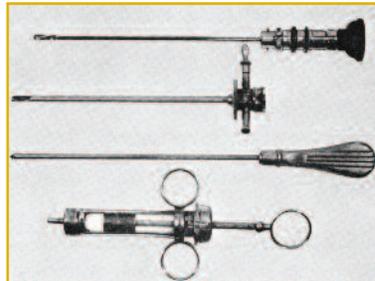
Baseball is a very popular sport in Japan, and the national team is a two-time champion of the World Baseball Classic Championships, in 2006 and 2009. Judo, Gymnastics, Figure skating and Swimming are also popular in Japan, and Japan has even produced several Olympic medalists. Although achievements in these sports are high, the traditional Japanese-style wrestling, Sumo, is still the all-time favorite. Judo developed as a form of unarmed self-defense, which combines the skillful use of balance and timing to turn an opponent's strength against him or her. Contrastingly, Sumo is aggressive. Two wrestlers (rikishi) are matched against one another in a ring; the rikishi loses if he is forced out of the ring, or if any part of his body other than the soles of his feet touches the ground. Yokozuna is the grand champion sumo wrestler, but with a history of more than two hundred years, only 69 wrestlers having been promoted to yokozuna (Fig. 4). The yokozuna selection committee consists of prestigious and very select group of members, to which Dr. Moriya, an honorary member of ISAKOS, has been selected to (Fig. 5).



**Figure 4.**



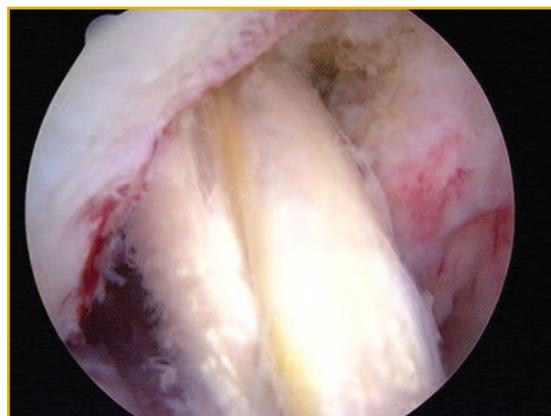
**Figure 5.**



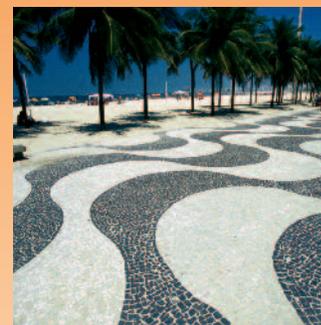
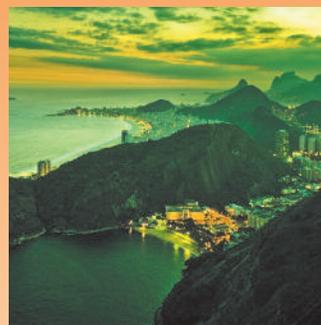
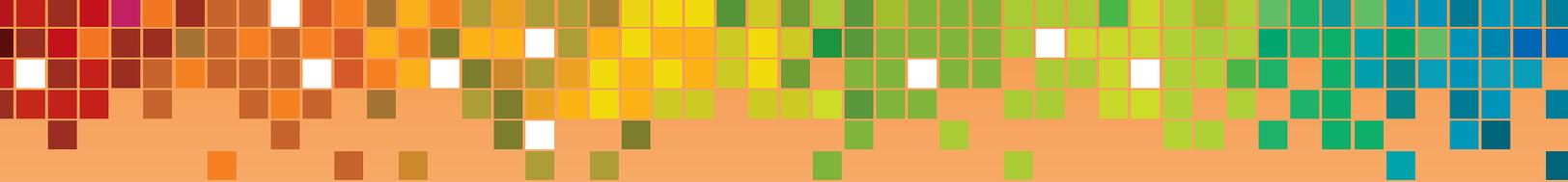
**Figure 6.**

As many members of ISAKOS already know, Japan is the birthplace of Arthroscopy. In 1931, Dr. Takagi succeeded in visualizing the knee joint using the Takagi No.1 arthroscope (Fig 6). At the Japanese Orthopaedic Association Congress in 1938, the results of arthroscopic investigations were presented as case studies regarding tuberculosis of the knee and hip, osteoarthritis of the knee, and rheumatoid arthritis. "Atlas of Arthroscopy" was published in 1957, Dr. Watanabe improved the arthroscopy system and color pictures were taken and presented by the Watanabe No.21 arthroscope in 1959. "Atlas of arthroscopy, second edition" including numerous color pictures was published in 1969 and the technique and procedures of arthroscopy spread worldwide. The first Congress of the IAA (International Arthroscopy Association), with President Dr. Watanabe, was held in 1974.

A major scientific concern of ISAKOS has been the anterior cruciate ligament (ACL) reconstruction of the knee. In recent years, reconstruction of both anteromedial bundle and posterolateral bundle through use of the hamstring tendons have become more practiced since it allows reproduction of the anatomical profile and biomechanical function of the ACL (Fig. 7). Several scientific studies from Japan demonstrated that the double bundle reconstruction biomechanically produces better anterior-posterior stability and better rotational stability, also clinically achieves better knee function and patient's satisfaction.



**Figure 7.**



8<sup>TH</sup> BIENNIAL  
**ISAKOS 2011**  
 RIO DE JANEIRO ■ BRAZIL ■ MAY 15-19, 2011  
**CONGRESS**

*Call for Abstracts*

ISAKOS is pleased to announce it is accepting abstract submissions for the 2011 ISAKOS Congress. Please submit your abstract online today at [www.isakos.com](http://www.isakos.com)

**CONGRESS CONTENT:**

- Five Meeting Days with 300 Scientific Papers
- Symposia
- Instructional Course Lectures
- Panel Discussions, Debates and Lectures
- Surgical Demonstrations
- Hands on Workshops
- Technical Exhibits
- Congress Awards
- Social Events and Spouse Program
- CME Accreditation

**BECOME A MEMBER OF ISAKOS:**

ISAKOS is an international society of surgeons established to advance the worldwide exchange and dissemination of education, research and patient care in arthroscopy, knee surgery and orthopaedic sports medicine. Please visit the ISAKOS website at [www.isakos.com](http://www.isakos.com) to apply for ISAKOS membership online.

**Abstract Submission Deadline Extended:  
 September 1, 2010**



**International Society of  
 Arthroscopy, Knee Surgery and  
 Orthopaedic Sports Medicine**

2678 Bishop Drive, Suite 250  
 San Ramon, CA 94583 USA  
 Telephone: +1 (925) 807-1197  
 Fax: +1 (925) 807-1199

[www.isakos.com](http://www.isakos.com)

## MEDIAL COLLATERAL LIGAMENT RECONSTRUCTION USING ACHILLES TENDON ALLOGRAFT

### **Iftach Hetsroni, MD**

Department of Orthopedic Surgery,  
Meir General Hospital, Sackler Faculty of Medicine,  
Tel Aviv University, Tel Aviv, Israel.

### **Robert G. Marx, MD, MSc, FRCSC**

Hospital for Special Surgery, Weill Medical College of Cornell  
University, New York, New York, U.S.A

The medial collateral ligament (MCL) is the primary restraint to valgus stability of the knee. At 25 degrees flexion it provides approximately 80% of the restraining force, while at full extension it provides approximately 60% of the restraining force, with the posteromedial capsule, posterior oblique ligament, and ACL providing the remaining restraint. The superficial part of the MCL originates on an average of 3.2 mm proximal and 4.8 mm posterior to the medial epicondyle and inserts on the proximal tibia, just anterior to the postero-medial crest of the tibia, and posterior to the pes anserinus insertion. The deep part of the MCL originates inferior to the medial epicondyle and inserts 1 cm below the joint line on the tibia.

Non operative treatment of MCL injuries usually results in a satisfactory outcome. When MCL tears fail to heal, surgical reconstruction may be advised to address chronic instability of the knee, or to prevent valgus overload on a reconstructed cruciate ligament.

We present here a technique that uses Achilles tendon allograft with anatomic insertions on the femur and tibia to obtain an isometric graft. We believe this technique is simple, reproducible, and adds the advantage of avoiding extensive soft tissue dissection on the medial aspect of the knee, thereby decreasing the risk of postoperative stiffness.

After confirming valgus laxity of the knee under anesthesia, as well as opening of 1cm or more between the medial tibial plateau and the medial femoral condyle under valgus stress during arthroscopy, we fix ACL or PCL reconstruction on the femoral side. We then perform the MCL reconstruction as follows (pictures 1-5). We defer tibial fixation of the MCL until the PCL and subsequently ACL are fixed on the tibial side, respectively.

1. The Achilles allograft for the MCL is prepared on a side table, creating a 9mm diameter and 18mm long bone plug (picture 1).



**Picture 1**

2. A three centimeter longitudinal skin incision is performed over the medial femoral epicondyle.
3. A guide pin is inserted 3–5mm proximal and 3–5mm posterior to the medial femoral epicondyle, parallel to the joint line from medial to lateral, and in 15 degrees anterior direction to avoid the inter-condylar notch. Location of the guide pin is confirmed with fluoroscopy (picture 2).



**Picture 2**

4. The skin is undermined with the index finger and Metzenbaum scissors from the femoral guide pin to the anatomic MCL insertion on the tibia, creating a tunnel for the MCL graft under the subcutaneous fat (picture 3).
5. Nonabsorbable suture loop is placed around the femoral guide pin and brought distally under the skin in the tunnel just created.



**Picture 3**

6. The distal tip of the suture loop is firmly held against the tibia at the estimated anatomic insertion point, just posterior to the pes anserinus insertion. Isometricity of the suture loop is checked through knee motion from 0-90 degrees. In case isometricity is not obtained, the tibial insertion point is changed until the loop is isometric.
7. The isometric point is marked on the tibia.
8. The soft tissue around the femur guide pin is debrided to allow for the future insertion of the Achilles bone plug.
9. A 9mm reaming is performed over the femur guide pin to a depth of 20mm.
10. The Achilles allograft bone plug is inserted into the femoral tunnel and fixed with a 7mm by 20mm interference screw.
11. The Achilles tendon tissue is passed under the skin and brought to the point of the previously marked tibial insertion for the MCL.
12. The cruciate grafts are tensioned and fixed on the tibia.
13. The knee is then brought to 20 degrees of flexion and varus stress is applied. The MCL graft is then tensioned distally and fixed on the tibia with a spiked screw and washer (picture 4).



14. The reconstructed MCL graft is appreciated and tightness is confirmed (picture 5).



**Picture 5**

15. Subcutaneous tissue and skin are closed.  
Post-operative protocol:

If the PCL is reconstructed also, the post-operative protocol should follow PCL post-operative protocol guidelines. If the ACL is reconstructed but not the PCL, then the following post-operative guidelines are recommended:

- Immediate post-op: toe touch is allowed with a knee brace locked in extension for 2 weeks.
- At 2 weeks post-op: knee motion in the brace is allowed from 0 to 60 degrees.
- At 4 weeks post-op: knee motion is expected to reach 60 degrees flexion. Full weight bearing is allowed and knee flexion is allowed beyond 60 degrees to reach 90 degrees.
- At 6 weeks: brace removal is allowed and the patient is progressed to full range of motion.
- Crutches are used until gait is normal.

## DISCUSSION

Several procedures have been described in the literature to reconstruct the MCL. Some of these used semitendinosus autograft with preservation of the tibial insertion. Others used allografts and double bundle reconstructions to recreate a limb for the posterior oblique ligament, requiring across the joint long incisions at the medial aspect of the knee. The current described technique is unique since it is performed with minimal skin incisions, creates an isometric reconstruction, avoids the need for extensive soft tissue dissection across the medial aspect of the joint, relatively simple and reproducible in surgical terms, and has provided excellent stability in our initial experience. We are currently in process of reviewing our results at minimum 2 year follow up.

# CURRENT CONCEPTS

## MEDIAL COLLATERAL LIGAMENT RECONSTRUCTION USING ACHILLES TENDON ALLOGRAFT

(cont.)

### CONCLUSION

The technique described is relatively simple technically in our opinion, and utilizes the advantage of a wide and strong allograft tissue with bone to bone healing at the femoral attachment. Our preliminary results indicate that this MCL reconstruction provides good stability, including cases that involve MCL reconstruction in conjunction with revision ACLR. In a small minority of our cases, an additional medial procedure such as posteromedial capsular plication may be performed for cases of extreme laxity, and each case should be evaluated individually.

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



# 2015

## 10<sup>TH</sup> BIENNIAL ISAKOS CONGRESS – 2015 *Request for Proposal*

**DEADLINE: November 1, 2010**

Proposals are now being accepted for the Tenth Biennial ISAKOS Congress in 2015.

Currently, the ISAKOS **Site Selection Committee** is reviewing proposals for the 2015 ISAKOS Congress.

ISAKOS members are invited to submit a proposal to host the 2015 ISAKOS Biennial Congress. A document with specific congress requirements (dates, meeting space, hotel rooms, catering and events) is available upon request from the ISAKOS office. If you would like your city or region to be considered by the Congress **Site Selection Committee**, please make your proposal request early to allow time for a comprehensive submission to ISAKOS.

**The deadline for submission is November 1, 2010**

# POST ARTHROSCOPIC OSTEONECROSIS OF THE KNEE

**Joseph Lowe, MD**  
**Gershon Chaimsky, MD**  
**Ido Zion, MD**  
**Adi Friedman, MD**

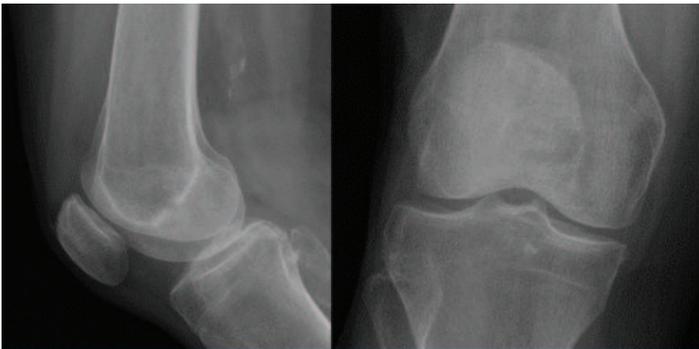
Arthroscopy and Sport Injury Unit  
 Dept. of Orthopaedic Surgery  
 Hadassah Medical Center, Jerusalem, Israel

## CASE PRESENTATION

An 82 year old lady presented with persistent medially located pain on the joint line of her right knee, following a minor rotator injury. Treatment with rest, anti inflammatory medication, and physiotherapy for a prolonged period did not alleviate her pain.

The initial knee radiograph from 21.02.2007 showed normal bony anatomy (Fig 1). The MRI study showed a degenerative tear of the posterior horn of the medial meniscus with no additional findings (Fig 1). At arthroscopy mild degenerative changes were noted in the hyaline cartilage surfaces of the medial compartment, and the degenerative tear of the medial meniscus was debrided (Fig2).

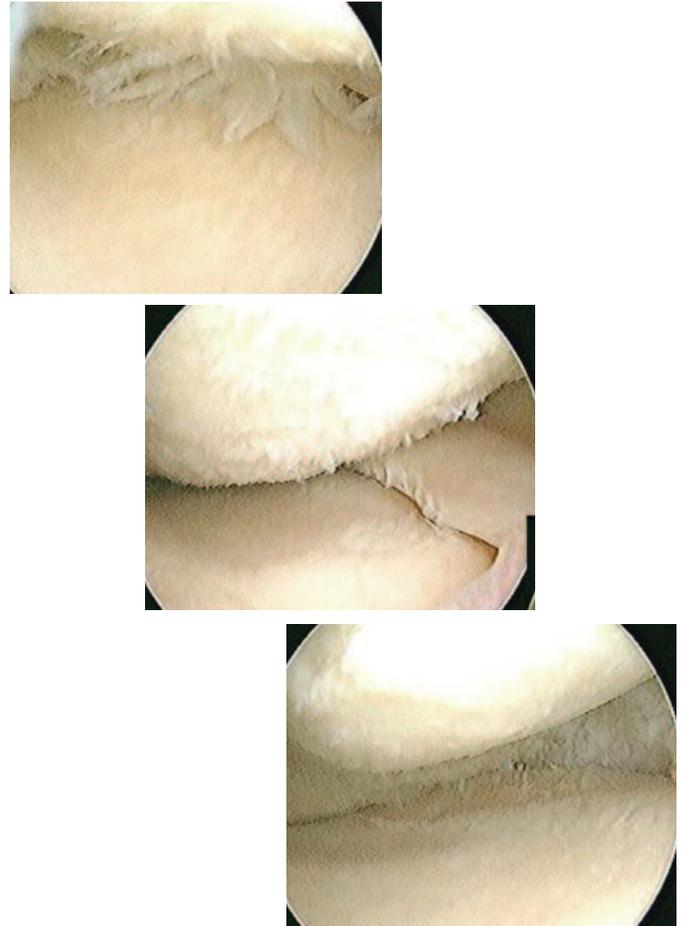
**Fig. 1**  
*Preoperative Radiography showing very mild degenerative changes in medial compartment.*



*Preoperative MRI study showing tear of the medial meniscus, and no bone pathology.*



**Fig. 2**  
*Arthroscopic appearance showing degenerative tear of the medial meniscus pre and post meniscectomy, and chondromalacia of medial compartment hyaline cartilage.*



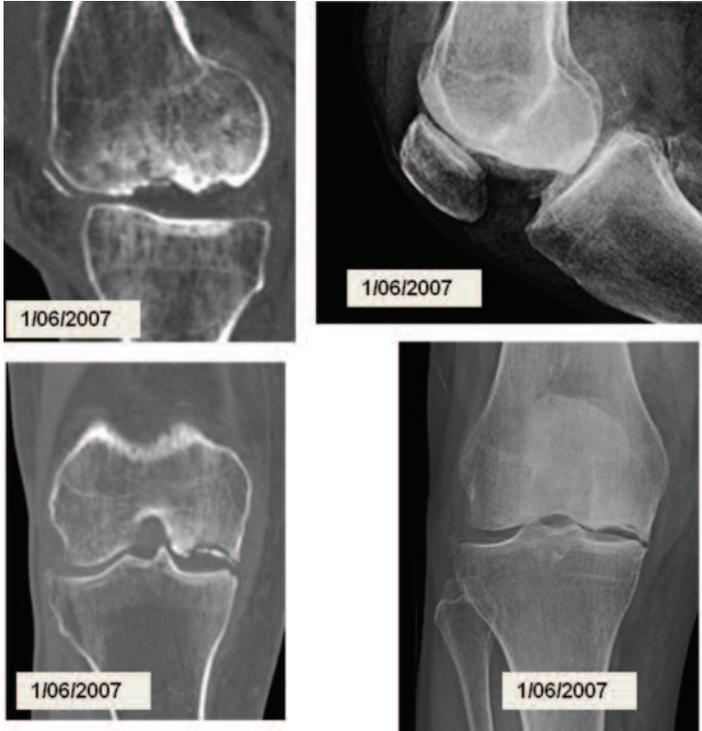
Post operatively, the relief of medial joint pain was partial and temporary, and exacerbation occurred progressively. Rest, non steroidal anti inflammatory medication, intra articular steroids and physiotherapy did not improve the situation. The differential diagnosis was that of progressive degenerative arthritis, or residual medial meniscus tear. Repeat arthroscopy was planned. The follow up imaging study carried out three months after the initial surgery indicated however that osteonecrosis had occurred of the medial femoral condyle (Fig 3). The extent of the damage was apparent at subsequent total knee replacement (Fig 4) (Fig 5).

The case presented is that of a previously asymptomatic knee in an elderly lady, who underwent arthroscopic debridement of a degenerative medial meniscus. The clinical presentation was that of progressive exacerbation of pain in a post arthroscopy arthritic knee, after apparently adequate resection of a torn part of a degenerative meniscus.

## POST ARTHROSCOPIC OSTEONECROSIS OF THE KNEE (cont.)

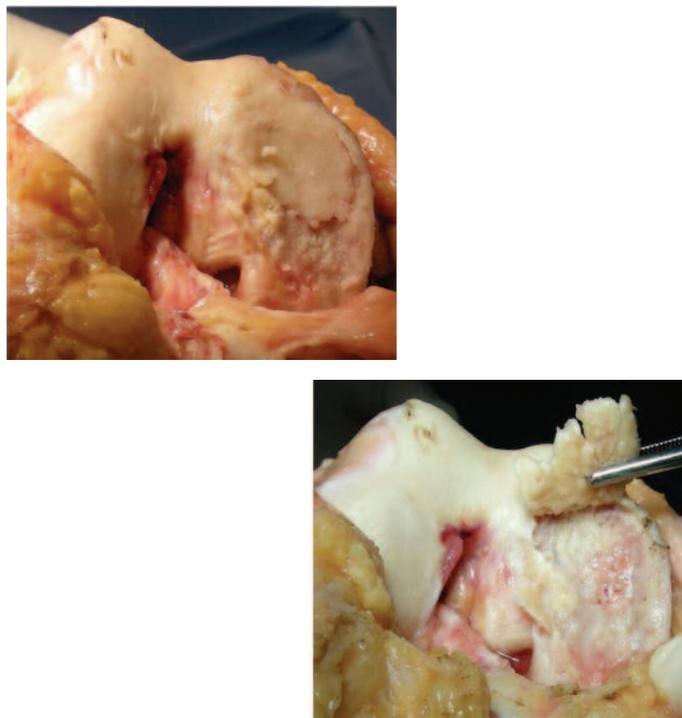
**Fig. 3**

Radiographic and MRI images three months post arthroscopy showing osteonecrosis of the medial femoral condyle.



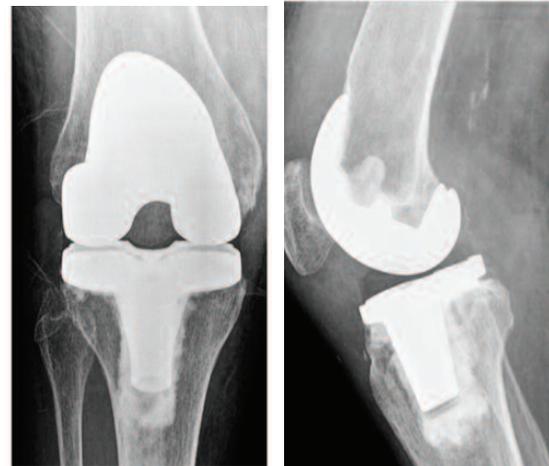
**Fig. 4**

Extent of the damage to the medial femoral condyle at exposure for total knee replacement.



**Fig. 5**

Total knee replacement.



Based on the assumption that the clinical picture was of rapidly progressive degenerative joint disease, or a residual tear of the medial meniscus, the treatment strategy included intra articular steroid injection and second look arthroscopy. The final diagnosis was post arthroscopic osteonecrosis of the knee, and total knee replacement was the only recourse.

### DISCUSSION

Arthroscopic debridement of a torn degenerative meniscus in an elderly arthritic patient may not only be of no benefit, but may make the patient much worse.

The clinical combination of early onset osteonecrosis and an adjacent torn meniscus remains an unsolved dilemma for the arthroscopic surgeon, and poses many questions:

**Is osteonecrosis a predictable and preventable outcome of arthroscopic debridement of a torn degenerative meniscus in an arthritic knee?**

**Is the osteonecrosis the main and pre existing pathology, and the torn meniscus an incidental finding?**

**Is the torn meniscus the main pathology, and the osteonecrosis a consequence of weight bearing on the torn meniscus?**

**Is the osteonecrosis a complication of the arthroscopic surgical technique itself?**

**Will removal of the torn meniscus in the presence of the osteonecrosis in any way improve the dismal predictable outcome of a non intervention strategy?**

**What is the recommended treatment strategy, and what treatment plans should be avoided?**

Pape et al, in their landmark paper on post arthroscopic osteonecrosis of the knee in 2007, emphasized the similarities and differences between post arthroscopic knee osteonecrosis, and arthroscopy carried out in the presence of early onset preexisting undiagnosed spontaneous onset knee osteonecrosis, and highlighted the diagnostic pitfalls and medico legal implications.

They noted the rarity of this complication of arthroscopy, citing only 47 cases in 9 studies in the published literature at the time (Table 1). However, with the rapid increase in the aging athlete population undergoing arthroscopy, and an increased awareness of this scenario, it is our impression that the incidence may in fact be much higher.

**Table 1.**  
*Post Arthroscopic Osteonecrosis of the Knee: Epidemiological data from published studies.*

Author	Patients	Type of Study	Gender (M/F)	Mean age (yr) (range)	Meniscal tears at original arthroscopy (Med/Lat)
Brahme 1991	7	Retrospective case report	4/3	60.5(42-72)	7(6/1)
Prues-Latour 1998	9	Retrospective case series	4/5	69(58-82)	9(8/1)
Santori 1995	2	Retrospective case report	1/1	34(21-47)	2(2/0)
DeFalco 2003	1	Retrospective case report	1/0	48	1(1/0)
Kusayama 2003	2	Retrospective case report	2/0	52	2(2/0)
Al-Kaar 1997	10	Retrospective case report	5/5	69(55-81)	10(9/1)
Faletti 2002	1	Retrospective case report	1/0	66	1(1/0)
Muscolo 2006	8	Retrospective series	3/5	65(54-75)	4(4/0)
Johnson 2003	7	Retrospective case report	3/4	60(41-79)	7(4/3)
<b>Total</b>	<b>47</b>		<b>24/23</b>	<b>58 (mean)</b>	<b>47(41/6)</b>

There was a wide age distribution ranging from 21 to 82 years in the post arthroscopic population, whereas spontaneous onset osteonecrosis is a condition of females in the 65 year old range. All the cases of post arthroscopy osteonecrosis were associated with chondral and meniscal, mainly medial meniscal pathology.

The etiology of post arthroscopy osteonecrosis remains conjectural. According to Prues-Latour et al,<sup>4</sup> increased permeability of damaged cartilage leads to arthroscopic fluid leak leading to subchondral bone edema and subsequent osteonecrosis. Fukuda et al, cited altered knee mechanics post meniscectomy as leading to subchondral stress fractures and intraosseous synovial fluid penetration as the cause of osteonecrosis. Other factors implicated have been the use of various instrumental devices for chondral debridement, irrigation pumps, tourniquet time, and intra articular local anaesthetics.

In order to diagnose post arthroscopy osteonecrosis of the knee, the typical post operative imaging study appearance (X ray, CT scan or MRI) is required, together with a preoperative study which excludes early onset spontaneous osteonecrosis. Spontaneous onset osteonecrosis is diagnosed by 3 phase Spect scintigraphy or MRI. The MRI becomes positive for osteonecrosis at a time interval after its onset (6 to 8 week "window"), whereas the scintigraphy has no window period. However scintigraphy is not specific for osteonecrosis.

Although spontaneous onset osteonecrosis and post arthroscopic osteonecrosis appear to have many clinical similarities, review of the published cases showed some significant differences. Both conditions have similar symptoms, signs and imaging studies, as well as similar outcomes ie resolution if treated correctly in the early stage, and salvage surgery in the late stage. The staging has been classified by Soucacos (Table 2). The differences include gender distribution, equal male vs. female in the post arthroscopic population, compared to the higher prevalence in females of spontaneous onset osteonecrosis.

**Table 2.**  
*Modified Classification of Spontaneous Onset Osteonecrosis – Soucacos<sup>(2,3)</sup>.*

STAGE	X RAY FINDINGS	IMAGING METHOD	TIME INTERVAL (MO) FROM ONSET OF SYMPTOMS	PROGRESSION	TREATMENT
I	MAY LOOK NORMAL	•MRI •BONE SCAN	1-2	REVERSIBLE	CONSERVATIVE
II	FLATTENING OF CONDYLE	MRI	2-4	REVERSIBLE	ARTHROSCOPIC DEBRIDEMENT
III	CRESCENT SIGN	X RAY	3-6	IRREVERSIBLE	SALVAGE SURGERY
IV	COLLAPSE SUBCHONDRAL BONE WITH ARTICULAR CARTILAGE	X RAY	9-12	IRREVERSIBLE	SALVAGE SURGERY

## POST ARTHROSCOPIC OSTEONECROSIS OF THE KNEE (cont.)

The implication is therefore that an elderly patient with a painful gonarthrosis scheduled for meniscal surgery who has not undergone preoperative 3-phase spect scintigraphy or MRI, may be facing arthroscopic surgery with an undiagnosed early onset spontaneous osteonecrosis of the knee. The routine use of preoperative imaging to exclude spontaneous onset osteonecrosis in this patient population could be a valid preoperative preventative strategy in some cases in this patient group, however this is not cost effective and may not be common practice in many centers. The diagnosis of post arthroscopic osteonecrosis would then be one made in retrospect only, ie the presence of post operative osteonecrosis with the absence of osteonecrosis in the pre arthroscopic imaging studies.

No evidence based criteria appear to exist so far enabling the arthroscopic surgeon to reliably predict or prevent true post arthroscopic knee osteonecrosis. However it is prudent to be aware of this rare complication of arthroscopic surgery in the elderly knee patient, and to make it a routine part of the preoperative discussion with these patients.

The treatment options in the event of increased awareness leading to early diagnosis of post arthroscopic osteonecrosis in stage I or II, include prolonged non weight bearing and standard analgesics. The use of NSAID's and intra articular steroids are contra indicated as they could make matters worse. Second look arthroscopy should be avoided. In late stage III and IV, salvage surgery (TKR) is the only recourse.

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

## A-C JOINT INJURIES

**W. Ben Kibler, MD**

**Aaron Sciascia, MS, ATC, NASM-PES, NS**

**David Dome, MD, ATC**

### BIOMECHANICS OF THE A-C JOINT

When the acromioclavicular (AC) joint is intact, the following biomechanical motions of the clavicle occur with arm movement: elevation/depression, protraction/retraction, and long axis rotation. During arm elevation, clavicular rotation of 40-50 degrees occurs as a result of rotation around a long axis which occurs in synchrony with scapular motion. Only 5-8 degrees of motion actually occur at the AC joint.

The AC ligaments attach 5-8mm from the distal end of the clavicle. When high loads are applied to the arm, the static AC ligaments serve to restrain superior and posterior translation of the clavicle with 89% of the resistance applied posteriorly and 68% applied superiorly. During lower loads, the AC ligaments continue to resist posterior translation while one of the coracoclavicular (CC) ligaments, the conoid ligament, primarily resists superior translation while.

The 2 CC ligaments, the conoid and trapezoid, mainly stabilize the clavicle in both superior and inferior directions with the trapezoid ligament serving as the primary compression restraint. As the arm is elevated above 90 degrees, load bearing increases across the CC ligaments as a result of the ligaments trying to help maintain the AC joint articulation during scapulohumeral rhythm. In cases where the clavicle has become shortened >8mm, either through injury or excessive distal clavicle resection, increased motion and subsequently increased forces can occur at the AC joint, resulting in dysfunctional movement and/or pain to occur.

### WHAT IS THE ROLE OF THE CLAVICLE/ A-C JOINT?

The clavicle largely exists to assist the scapula in shoulder function by helping maintain optimal scapular position during arm motion. In this manner, it acts as a strut for the shoulder as it attaches the arm to the axial skeleton via the AC and SC (sternoclavicular) joints. Scapular kinematics are a composite of 3 motions – upward/downward rotation around a horizontal axis perpendicular to the plane of the scapula, internal/external rotation around a vertical axis through the plane of the scapula, and anterior/posterior tilt around a horizontal axis in the plane of the scapula. Two translations occur as well – upward/downward translation on the thoracic wall and retraction/protraction around the rounded thorax. The scapula relies on bony and soft tissue structures for stability. An uncompromised clavicle and AC joint are imperative components to maintaining scapular integrity. Injury to any of the static restraints can cause the scapula to become unstable which in turn will negatively affect arm function.

**JOIN ISAKOS TODAY!**

**APPLY ONLINE  
OR  
MEMBERSHIP APPLICATIONS  
AVAILABLE ONLINE**

ISAKOS Members can refer friends and colleagues to apply online for ISAKOS membership at [www.isakos.com](http://www.isakos.com)

## AC JOINT INJURY

The bony components of the shoulder must be intact in order for optimal function to occur. AC joint arthrosis with instability or high grade AC separations alters the strut function of the clavicle on the scapula and changes the biomechanical screw axis of SHR, allowing excessive scapular protraction when the arm is elevated. This is known as the “3rd translation” of the scapula and allows the scapula to move in an inferior-medial manner, in relation to the clavicle which is most often seen when high grade separations occur. The protracted scapular position creates many of the dysfunctional problems associated with chronic AC separations, including impingement and decreased demonstrated rotator cuff strength.

## CLAVICLE FRACTURES

Fractures of the clavicle, with either non-union or shortened rotated mal-union, also alter the strut function and can result in poor functional patient outcomes. The functional deficiencies most often seen in association with low scores on the outcomes measures in mal-union and/or non-union of clavicle fractures are muscle weakness and/or loss of range of motion. The altered strut function of the clavicle allows excessive protraction of the scapula, which has been shown to be a position which limits rotator cuff function and the humerus’ capability of fully elevating. Assessment of scapular position in patients with an acute or chronic fracture of the clavicle can help determine if surgery is indicated to realign the clavicular body and restore the ability of the clavicle to serve as a strut.

## AC SEPARATIONS

Injuries to the stabilizing ligaments of the acromioclavicular joint are quite common. Fortunately most of the injuries can be managed without operative intervention. The higher grade injuries typically involve damage to both the acromioclavicular ligaments and the coracoclavicular ligaments. Many surgical options have been advocated in the past with varying success of the surgical treatment. The surgical resection of the distal clavicle as part of the treatment for restoring the stability of the acromioclavicular joint is not biomechanically based and may actually further destabilize the AC joint if an excessive amount is resected.

The deformity that occurs as a result of acromioclavicular joint subluxation or dislocation results from the dissociation of the scapula from the supporting strut of the clavicle. Gravity displaces the scapula downward and there is a concomitant scapular protraction and internal rotation such that the scapula is displaced medial to the acromioclavicular joint creating the “3rd translation”. With the displacement of the scapula there are significant functional consequences the biomechanics of the shoulder. There is an uncoupling of the scapulohumeral complex such that the scapular stabilizing muscles are not able to maintain appropriate positioning of the glenohumeral and acromioclavicular joints. There is a subsequent loss of rotator cuff strength and function that can only be restored by retraction of the scapula and restoring the pivot point of the AC joint. The malposition of the scapula also leads to impingement of the rotator cuff. As the arm is elevated the orientation of the acromion remains in anterior

tilted position relative to the humerus. In the acute injury there is inhibition of shoulder function due to pain, however as the acute symptoms resolve there is continued dysfunction of the shoulder. This is due to the loss of the strut function of the clavicle and loss of appropriate scapulohumeral orientation. This results in pain at the A-C joint, external impingement, and loss of function during work and recreational activities that require forward elevation. The loss of the ability to adequately retract the scapula leads to an apparent loss of rotator cuff strength and loss of cocking or the ability to appropriately position the arm for athletic and work activities.

Examination of scapular positioning following A-C separation leads to further understanding of loss of control of scapular retraction. Although the distal clavicle is excessively prominent further inspection reveals the abnormal scapular positioning. The dissociation of the acromioclavicular may be reducible with assisted scapular retraction and minimal downward pressure on the distal clavicle. Once the AC joint is reduced there is increased elevation of the shoulder as there is decreased extrinsic compression of the rotator cuff and there is improved strength to manual muscle testing of the rotator cuff.

## RECOMMENDATIONS FOR OPERATIVE INTERVENTION AC INJURIES

Most AC joint injuries can be successfully treated with nonoperative management restoring range of motion and strength with physiotherapy. The indications for surgical intervention of AC joint injuries are the dominant or loaded arm during athletic or work activities. Persistent AC joint instability will limit or inhibit repetitive forward elevation particularly with a load such as lifting or transferring in front of the body at or above chest height. Athletes will experience difficulty throwing as well. There is often a progressive loss of these functions over time and ultimately require surgical stabilization following chronic AC joint instability. Improvement or resolution of these deficits with scapular retraction or stabilization with scapular assistance or scapular retraction will further guide the decision to proceed with operative stabilization of the AC joint.

## TREATMENT GOALS

The goal of surgical treatment is to restore the strut stabilization of the scapula. This is accomplished by restoring the AC joint alignment, maximizing the clavicle length, and restoring the ligamentous stability of the coracoclavicular ligaments and the AC ligaments. The posterior and superior ligaments provide most restraint to excessive AC translation and surgical repair should emphasize repairing these ligaments with graft augmentation as necessary. More than a few millimeter resection of the distal clavicle will disrupt the AC ligament insertions and prevent anatomic repair of the ligaments.

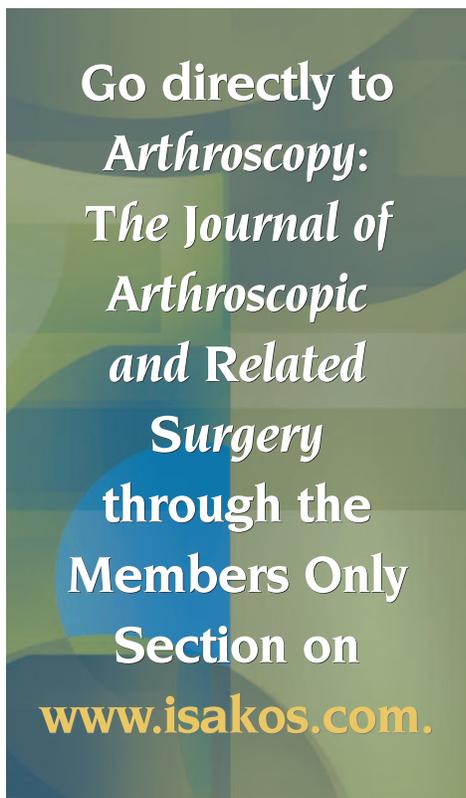
The emphasis is restoring the anatomical insertions of the ligament attachments to the clavicle. The coracoclavicular ligaments are usually reconstructed with a tendon graft through drill holes placed through the clavicle at the anatomic attachment sites.

## A-C JOINT INJURIES (cont.)

### SUMMARY

Disruption of the AC joint through injury has been shown to be detrimental to the function of the scapula and arm. Injury to the clavicle and/or AC joint can lead to scapular dysfunction, shoulder impingement, and other biomechanical alterations about the shoulder. Treatment options should focus on restoration of the bony and ligamentous anatomy in order to properly restore the strut function of the clavicle and stabilization function of the static restraints. Once these components of AC stability have been corrected and scapular stabilization has been restored, arm function can return due to correction of the compromised shoulder girdle anatomy.

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



## AVASCULAR NECROSIS OF THE KNEE AND HYPERBARIC OXYGEN THERAPY

**Dror Fuchs, MD**

*Bnei Zion Hospital,  
Haifa, Israel*

Hyperbaric oxygen (HBO) therapy is a method gaining popularity for treatment of avascular necrosis (AVN) of the femoral head, also termed osteonecrosis of the femoral head (ONFH).

Primary AVN of the femoral head is a frequent cause of disability in young active adults. Secondary AVN could affect the femoral head as well as the knee. The etiology of these conditions is probably different. It has been assumed that in both SONK, and ONFH, the pathology process evenly involves the osseous circulation with resultant necrosis of osseous tissue.

AVN of the knee has been divided into two separate entities: Spontaneous osteonecrosis of the knee (SONK), which in contrast to ONFH is commonly seen in elderly women with osteoporosis and Secondary AVN which, the same as in the femoral head, could affect corticosteroids users, alcohol abusers, sickle cell disease, systemic lupus erythmatosus, Caisson disease (barotrauma) and Gaucher disease, causing bone infraction.

Despite the differences in age and gender concerning primary ONFH and SONK, in both the conditions etiology suggested is of microtrauma causing bone marrow edema, leading to increased intra marrow cavity pressure, ischemia and eventual bone necrosis. Stress micro-fractures causing elevated intraosseous pressure due to bone edema and ischemia is thus the mechanism suggested for primary AVN of the femoral head in young hard working men and in osteopenic elderly women.

MRI (Magnetic Resonance Imaging) has been proven to be the method of choice in staging the disease and in following up the healing process.

MRI may also help in distinguishing between the early stage of the disease in which only a subchondral fracture is noted and the advanced stages were distal to the area of the fracture, there are lesions of osteonecrosis with poor healing capacity. Reis et al and others, using Steinberg MRI classification for AVN, found Hyperbaric Oxygen (HBO) to be effective in the treatment of stage I AVN of the head of the femur.

HBO has also been found to have a role in preventing the surface collapse seen in the advanced stage of the disease, when used as part of a "cocktail therapy" together with extracorporeal shock wave treatment and alendronate.

Unfortunately just too often a patient seeking help at the clinic or the emergency room because of SONK is in great agony. As a result the patient may prefer surgery rather than consent to lengthy non operative treatment during which he would not be allowed to bare weight on the diseased leg. If HBO would be proven to be successful in shortening the convalescence period in nonoperative treatment, it could change the natural history of the disease. Thus, the insurance companies may be interested to take part in supporting the HBO treatment for SONK, rather than accepting the hazards of surgical treatment.

The role of HBO in SONK, though, has not yet been proven, and further controlled research would be needed before final conclusion would be drawn.

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

## DEEP VEIN THROMBOSIS AND THROMBOEMBOLIC COMPLICATIONS AFTER KNEE ARTHROSCOPY

Gidon Mann<sup>1,2</sup>  
Iftach Hetsroni<sup>1,2</sup>  
Omer Meidan<sup>1</sup>  
Shay Shabbat<sup>1</sup>  
Vidal Barchilon<sup>1</sup>  
Ayala Mannv  
Meir Niska<sup>1</sup>

<sup>1</sup> Department of Orthopedic Surgery, Meir General Hospital, Kfar Saba, Israel

<sup>2</sup> Ribstein Centre for Research and Sports Medicine, Wingate Institute, Netanya, Israel

### ABSTRACT

Thromboembolism, occurring post-routine knee arthroscopy, is a potentially fatal complication. This type of post-surgery complication often raises the question of the advisability of combining anticoagulants during surgery, to prevent deep vein clotting (DVT).

The goal of the present review is to examine existing literature and determine if prophylactic use of anticoagulants is justified in all knee arthroscopies. To this aim, the literature on knee arthroscopy and complications of knee arthroscopy was reviewed. Also reviewed was online literature on deep vein thrombosis.

The review shows that thromboembolism with clinical significance – i.e. pulmonary embolism resulting from deep vein thrombosis and causing clinical symptoms in the patient – is extremely rare, ranging between 1:2000 and 1:5000. The rate of deep vein thrombosis in asymptomatic cases is higher and located within a range of 0.6%-18%. The majority of the literature reports an incidence of 5%-10%, while cases are located not due to any clinical disturbance, but in a prospective manner, using venography and the Doppler effect.

Retrospective studies have shown an incidence of approximately one in a thousand. About one tenth of DVT occurs in the proximal veins, and thus has the potential to cause pulmonary embolism. Even so, anticoagulants cause various complications, at a reported rate of up to 8% – significantly higher than the clinical risk for symptomatic DVT.

join us...



8<sup>TH</sup> BIENNIAL  
**ISAKOS  
CONGRESS**

RIO DE JANEIRO, BRAZIL  
MAY 15 – 19, 2011

# ISAKOS

## DEEP VEIN THROMBOSIS AND THROMBOEMBOLIC COMPLICATIONS AFTER KNEE ARTHROSCOPY (cont.)

In conclusion, the development of thromboembolic complications with clinical significance after knee arthroscopy is extremely rare, and probably does not justify the risk of administering routinely prophylactic anticoagulants. As a rule, instructions should request early post-surgical mobilization, initiated as early as possible. With the occurrence of risk factors, such as advanced age, obesity, heart failure, malignancy, varicosities, previous venous surgery, previous orthopedic surgery or chronic edema of the lower extremities, one must consider mechanical, or pharmacological, prophylactic treatment for DVT. Patients with a history of DVT or history of pulmonary embolism would require full prophylactic measures, including anticoagulants, as with other orthopedic surgeries.

Key words: knee arthroscopy; pulmonary embolism; deep vein thrombosis; prophylactic treatment; venography.

### INTRODUCTION

The present review discusses the problem of thromboembolic complications (deep vein thrombosis and pulmonary embolism) during knee arthroscopy. The review evaluates the risk, and the need for taking prophylactic measures.

### RISK LEVEL

Thromboembolic complications rarely occur in knee arthroscopy. In 1992 Savares et. al. reviewed 2,200 cases and noted that the risk is mainly above age 40. In 1993 Poulson et. al. exhibited four cases out of 8,500 arthroscopic surgeries (three with pulmonary embolism, all non-fatal), i.e. one out of every 2,000 arthroscopic surgical procedures. In 1995 Williams identified three out of 85 cases, all asymptomatic. In the reconstruction of the anterior cruciate ligament, Cullison et. al. identified one case in 67 patients, and recommended not administering prophylactic treatment in patients less than 40 years old. In 1998 Demers et. al. exhibited an occurrence of 18%, mainly when arterial occlusion had been performed for longer than one hour (33/184), and without any cases of pulmonary embolism. In September 2004 Geerts et. al. published a review of deep vein thrombosis and resulting thromboembolism. The review summarized a conference held on the prevention and treatment of deep vein thrombosis. The authors reviewed the works of Dahl et. al, who demonstrated deep vein thrombosis (DVT) in diagnostic arthroscopy in 0.6% of 1,355 patients who underwent arthroscopy of the knee, while only one case showed proximal deep vein thrombosis (the main potential cause of embolism). Stringer et. al. used venography to demonstrate DVT in 4% of patients who underwent knee arthroscopy, in comparison to 56% of

patients who underwent knee replacement surgery. One study, which also used venography, showed a DVT rate of only 3% in 170 patients. A third study used venography to show a DVT rate of 18% out of 184 cases, including proximal DVT. None of these studies showed an occurrence of clinical signs of thromboembolism. A fourth study used Ultrasound Doppler on 239 patients to show asymptomatic DVT in 2% of cases – ten times more than symptomatic DVT.

Geerts et. al. concluded that DVT was identified in 2%-18% of patients who underwent arthroscopy, according to nine prospective studies. These authors reviewed six studies inclusive of 600 patients, which showed DVT demonstrated by Ultrasound Doppler in 5% of patients, with 0.6% proximal DVT.

Ilahi et. al. conducted a meta-analysis of 6 studies, with a total of 684 patients. The occurrence of DVT was 3.1%–17.9% and proximal DVT at a rate of 0%-4%. An adjusted average of these studies exhibited a DVT rate of 9.9%, with 2.1% proximal DVT. None of the patients experienced pulmonary embolism.

Geerts et. al. reviewed two studies which attempted to prevent DVT in knee arthroscopy, reducing the DVT rate in one study from 4% to 1%, and in the other from 16% to 2%. These studies did not exhibit any case of proximal DVT, and no significant cases of bleeding were caused by the prophylactic treatment.

Small and Malek authored the chapter on arthroscopic complications in Epps's book on complications of orthopedic surgery. The authors quoted Small in his 1982 article, which disclosed, in a retrospective, multicenter study, 162 complications out of 8,791 arthroscopies of the knee, i.e. a rate of 1.8%. Of these, 6.9% were thromboembolic complications, i.e. 11 cases out of 8,791 arthroscopies of the knee, or 0.125%. In this regard, complications were significantly higher in more complex surgeries in comparison to simple or more routine procedures.

Gross and Finerman wrote the chapter on thromboembolic complications in knee arthroscopy in Sprague's book on arthroscopic complications. The authors mentioned several studies that are not uniform in their quoted numbers regarding DVT and pulmonary embolism. These rates range from 0.1% to 3.2% occurrences of DVT in arthroscopic surgeries, with a 0.02% - 4.5% occurrence rate of pulmonary embolism. The Arthroscopy Association of North America reviewed 118,590 patients: 0.12% developed DVT (137 patients) and 0.026% developed pulmonary embolism, causing four cases of mortality.

Ramos et. al. analyzed medical literature in a review published in the Cochrane Database. Based on 527 patients mentioned in four articles, they concluded that the clinical occurrence of DVT in arthroscopy reaches a rate of 0.6%, while the occurrence of DVT proven by venography reaches a rate of 17.9%. All cases were distal DVT, excluding one case who suffered pulmonary embolism in a group which was given Low Molecular Weight Heparin (LMWH) as prophylactic treatment. The risk of DVT in the treatment group was 0.20 vs. the placebo. Even so, the relative risk of bleeding in the treatment group was 2.41. Seventeen patients needed to receive treatment in order to prevent one occurrence of DVT, while 20 patients needed to receive treatment for one complication to occur. The authors concluded that no difference was identified between the groups regarding DVT with clinical relevance, and suggested avoiding prophylactic treatment in arthroscopic surgeries, when patients do not have any risk factors.

Hoppener et. al. conducted a prospective study of 335 patients who underwent surgery, using Ultrasound Doppler as the diagnostic modality for DVT. They identified a 5.7% occurrence of DVT (19 patients), two of whom were symptomatic, including one with non-fatal pulmonary embolism. The authors concluded that prophylactic treatment for DVT in knee arthroscopy is not justified.

In another article the same authors asked the patient or the family physician to complete a retrospective questionnaire. With a response rate of 91%, 3.7% reported DVT, without any verification of the diagnosis.

Ettema et. al. performed venography in a prospective review of 242 patients who underwent surgery, of whom 69 participated in the study. DVT was found to occur in 5.8% of the cases, of which two patients had proximal DVT and one had non-fatal pulmonary embolism. The authors concluded that pharmacological prophylactic treatment is not justified as routine treatment for patients planned for arthroscopic surgery. Examined the occurrence of DVT post arthroscopy in 84 patients, while using Ultrasound Doppler prior to, and post, surgery. A total of 90 surgeries were included in the study. Only one patient developed distal DVT. The authors concluded that DVT in knee arthroscopy is rare.

Medical literature dealing with the prevention of DVT includes several detailed publications. Recommendations of the Association of Peri Operative Registered Nurses (AORN), based on professional literature in this field, concluded in 2007: Up to 80% of patients undergoing orthopedic surgery develop DVT. Of these 4%-10% develop pulmonary embolism. Pulmonary embolism is the cause of 10%-25% of all in-hospital fatalities, causing the death of 1% of all hospitalized patients. Eighty percent of DVT cases are silent, but this does not prevent pulmonary embolism. Even so, "minor surgery" before age 40 in patients without risk factors does not require prophylactic treatment other than early mobilization. These recommendations do not mention arthroscopy in particular.

Similar recommendations were published by Samana et. al, proposing the avoidance of LMWH in arthroscopy, including anterior cruciate ligament reconstructive surgery, unless risk factors for DVT exist.

Zurawska et. al. published similar guidelines in 2007, stating the reduced risk of DVT when using a spinal or epidural block. They quoted the requirement of the American College of Chest Physicians regarding "minor surgery" before age 40, stating that no other prophylactic treatment is required other than early mobilization, without referring to knee arthroscopy in particular.

Kobayashi et. al. discussed in 2006 the prevention of DVT in Japan. In light of the finding that occurrences of DVT in Japan were less frequent than in the West, they required only early mobilization in low-risk surgery and only mechanical measures in medium-risk cases. Pharmacological treatment was administered only in high-risk surgery. The authors did not discuss arthroscopy as a separate surgical procedure.

Risk factors are key causes in individual patients who developed thromboembolic disease post-arthroscopy. The most significant risk factor is a history of past DVT or pulmonary embolism. Other risk factors are advanced age, obesity, heart failure, malignancy, varicosities, previous venous surgery, previous orthopedic surgery, chronic edema of the lower extremities, fixation of the limb or significant loss of blood. Contraceptives might raise the risk by a factor of 4 to 6.

## MEDICINAL PROPHYLACTIC TREATMENT

Administering of anticoagulants as prophylactic treatment carries a certain risk of bleeding, stroke or hematoma (during regional anesthesia). Administering anticoagulants for a period of three months carries a mortality risk of 0.2%–0.5% and a risk of significant bleeding of 0.2%–1.5%. Complications related to bleeding were reported in 8% of patients who received prophylactic treatment of Dextran 40 (LMWH) and other complications were reported, including edema on the surgical wound, heart failure and an anaphylactic reaction to the medication.

In two studies that included the prevention of bleeding with anticoagulants during arthroscopy, no significant complications were observed originating from bleeding. On the other hand, the study of Ramos et. al., published in the Cochrane Data Base, presented a risk of 2.41 for bleeding following LMWH, with complications occurring in 1 of every 20 patients, and a risk of 2.11 for side effects.

In 2006 Nutescu et. al reviewed the various medications intended to prevent DVT. They noted the occurrence of major bleeding following LMWH at a rate of 1%–4%, with the development of a hematoma, or infection of the hematoma in 2%–3% of cases.

For the abovementioned reasons, the approach in knee arthroscopy should be to avoid taking pharmacological prophylactic measures, such as administering anticoagulants, except in cases where the patient has clear risk factors. In the case of risk factors that do not include prior thromboembolic illness, it may be argued that aspirin is a sufficient and safe prophylactic measure, in comparison to other options, though there is not clear evidence to support this option.

## DEEP VEIN THROMBOSIS AND THROMBOEMBOLIC COMPLICATIONS AFTER KNEE ARTHROSCOPY (cont.)

In 2004 Geerts et. al. published recommendations for preventing DVT, following the seventh conference of the American College of Chest Physicians (ACCP). They recommended not using aspirin as the sole treatment.

Lotke and Lonner, concerning knee replacement surgery, did not agree with this conclusion. In 2006 they published the results of their comprehensive work regarding administering of aspirin as a preventative treatment in 3,473 knee replacement surgeries. The authors noted major bleeding in 2%-5.2% of patients administered LMWH, in comparison to 0.4% of patients treated with aspirin alone. The occurrence of fatal pulmonary embolism during LMWH treatment was observed, according to reports in the literature, in 0.1%-0.15% of patients who underwent surgery, while the summary of the three articles on the use of aspirin showed an occurrence of 0%-0.1% only. Of 3,473 patients who underwent knee replacement surgery and were treated with aspirin, 9 died, two due to pulmonary embolism. It seems that the study of Lotke and Lonner may justify the possibility of using aspirin as a preventative treatment instead of LMWH, at least in some orthopedic surgical procedures.

In the absence of risk factors, it seems that we must accept the opinion of Geerts et. al from 2004. According to the authors, pharmacological prophylactic treatment must not be administered to patients undergoing arthroscopic surgery, and an instruction for early mobilization is sufficient.

In conclusion, thromboembolic complications after knee arthroscopic procedures are rare. Despite the fact that prospective studies have found up to an 18% rate of DVT, these are generally asymptomatic and do not have any clinical expression. As opposed to prospective studies, retrospective studies exhibit an occurrence of DVT in about one of every thousand patients, with thromboembolic events occurring in about two of every ten thousand arthroscopic surgeries. This generally occurs in older patients and is connected to other existing risk factors: First, history of a thromboembolic illness, and other risk factors, as advanced age, obesity, heart failure, malignancy, varicosities, previous venous surgery, edema of the extremity for other reasons, heavy smoking or use of contraceptive pills. In any case, it is recommended not to administer preventative medication, unless the patient exhibits clear risk factors. In this case, the medical professional must consider the relatively high risk of administering anticoagulants vs. the very low risk of DVT accompanied by pulmonary embolism with clinical significance. In the absence of a history of thromboembolic illness and in the presence of other risk factors, it may be argued that aspirin is a correct and sufficient preventative medication. In the absence of risk factors, early mobilization should be the sole preventive intervention.

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

## BONE DEFECTS



**Vicente Gutiérrez, MD**  
Head Shoulder Team  
Department of Orthopaedics  
and Traumatology  
Clinica Las Condes, Santiago, Chile

### INTRODUCTION:

Instability is one of the most common conditions that are diagnosed and treated in the shoulder. Surgical treatment for traumatic anterior shoulder instability improve patients quality of life and allow them to return to sports. Overall recurrence of instability after surgery range between 8% and 18% in large series, and the presence of both glenoid and humeral bone loss can increase the risk of failure. The diagnosis and treatment of bone deficiencies associated with anterior shoulder instability has been a challenge for orthopaedic surgeons, and this article reviews the information regarding the evaluation and management of patients resulting with bone defects of the humeral head and glenoid from traumatic anterior shoulder instability.

### BONE LOSS:

Bone loss of the glenoid and/or humeral head is a common consequence of traumatic anterior shoulder instability, and can cause more recurrence of instability after a Bankart repair. Size and location of the bone lesion is important when planning treatment. Bony defects of the glenoid are reported in 8%–90% of cases of traumatic anterior shoulder instability. Humeral head defects (Hill-Sachs lesion) occur in 65%–71% of shoulders with first time dislocation and 93% of shoulders with recurrent dislocations.

### HUMERAL HEAD:

Humeral head bone loss was first described by Malgaigne in 1847 and then by Hill and Sachs in 1940. A compression fracture of the posterosuperior aspect of the humeral head with the anterior glenoid is observed in patients with recurrent shoulder dislocation, and this can occur in cases

with an acute first time shoulder dislocation. (Figure 1)



Figure 1

The size, orientation and location of the defect affect the contribution of the Hill-Sachs to glenohumeral stability. The presence of a defect in the humeral head, produces an articular arc deficit that allows the engagement of the head on the anterior glenoid rim when the arm is externally rotated. The term engaging Hill-Sachs lesion was first used by Burkhart and De Beer. For every Hill-Sachs lesion there is a position of the shoulder at which the humeral bone defect will engage the anterior glenoid, but when the engagement is produced in functional position the consequence is the instability (engaging Hill-Sachs). If an engaging Hill-Sachs lesion is recognized, the surgeon must address not only the Bankart lesion but also take additional steps to treat the Hill-Sachs lesion in order to be sure that the articular arc between the glenoid and the humerus is adequate in the patient's functional range.

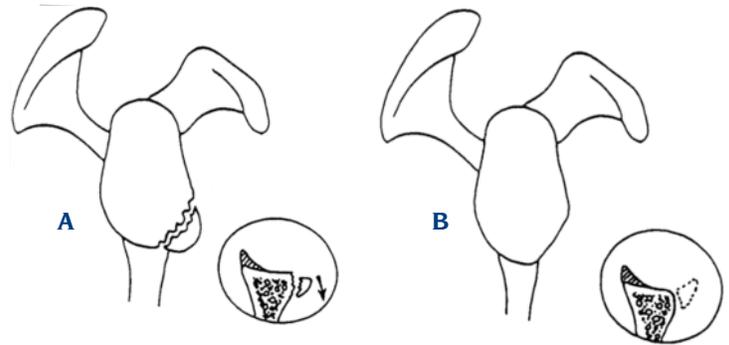
#### **GLENOID:**

The anterior inferior glenoid deficiency has had lots of attention in recent literature. Loss of part of anterior glenoid concavity reduces the effectiveness of the concavity-compression mechanism in stabilizing the shoulder against translation. Glenoid bone loss is more frequent than suspected. Sugaya studied 100 unstable shoulders by 3D-CT and monitored by arthroscopy, to determine only 10% of normal shoulders, 40% with erosion compression of the glenoid rim and 50% with Bony Bankart. According to Itoi an anteroinferior glenoid defect greater than 21% significantly reduce the force to produce a dislocation, and increasing size of the defect decrease stability. Moreover the Bankart repair performed in a glenoid with bone defect limit external rotation. Biomechanical studies show that lesions of 21% of glenoid length decrease intrinsic stability by 50%, and bone grafting is able to increase stability. The contact pressure across the remaining glenoid can increase nearly 100% with a 30% of glenoid bone loss, whereas the mean contact area decrease by 41%.

Burkhart and De Beer in a review of 194 arthroscopic Bankart repair had a recurrence of instability in 14 cases (67%) when a of bone defect is present, and 11 of the 14 patients had an inverted pear defect of the glenoid, it means a 25% to 27% loss of the entire width of inferior glenoid. Recurrence of the cases without bone defect was a 4%.

Boileau in 91 arthroscopic fixation of recurrent anterior instability found 49% bony glenoid lesions. Two types of glenoid rim fractures should be differentiated (Figure 2): separation fractures with avulsion of a bone fragment (A) and compression fractures without any bone fragment (B). Separation fracture is of good prognosis while compression fracture is of poor prognosis in case of arthroscopic Bankart repair.

Bigliani divided glenoid defects into 3 groups: type I - a displaced avulsion fracture, type II - a malunited avulsion fracture, and type III - an erosion of the glenoid rim. Type III can be subdivided according the size of bone erosion into type III A - less than 25% glenoid bone loss, and type I B - more than 25% bone loss.



**Figure 2**

## **CLINICAL EVALUATION**

#### **HISTORY:**

Bone defects are more frequent in patients with recurrent dislocations. First time shoulder dislocation may produce a bone lesion but it is less common. Traumatic instability can be associated with fracture of the glenoid, humeral head or both. This dislocation may require manipulation to obtain reduction. Patients with bone defects of the glenoid or humeral head may complain of pain and mechanical symptoms like catching, crepitation or important instability.

The frequency, difficulty of reduction, history of self-reduction, associated neurological or vascular problems associated to dislocations should be noted. Any prior image studies and specific surgical or nonoperative management are important. Factors that can increase the risk of recurrence like, competition and collision sports, seizures, drug or alcohol abuse, hyperlaxity, activities with the shoulder in abduction and external rotation are also important.

#### **PHYSICAL EXAMINATION:**

Clinical findings are usually consistent with shoulder instability. The position of the shoulder during initial traumatic event and for subsequent events of instability should be asked to the patient. Stress in abduction and external rotation generally produces apprehension; in cases of large engaging Hill Sachs lesions apprehension may occur at lower degrees of external rotation.

#### **IMAGING:**

##### **STANDARD RADIOGRAPHS:**

Standars radiographs studies can underestimate the size of bone lesions. A true anteroposterior (AP) and axillary view are helpful for the diagnosis glenoid bone loss (Figure 3). True AP can show a loss of anterior cortical margin, and axillary view loss of anterior cortical margin. True AP view in neutral, external rotation and internal rotation are helpful to evaluate Hill-Sachs lesions. The presence of the lesion in external rotation is related to higher risk of recurrence.

## BONE DEFECTS (cont.)



Figure 3

### SPECIAL VIEWS:

Apical oblique (Garth) axillary view is useful for the evaluation of posterolateral humeral head impression fractures and anterior glenoid deficiency. West Point axillary view provides good visualization of the anteroinferior glenoid rim. Stryker notch view evaluate presence, size and orientation of a Hill-Sachs lesion. Bernageau axillary view, evaluate glenoid loss. Walch classified glenoid loss in 3 forms: bony Bankart, bone loss with loss of anteroinferior angle (Cliff sign) and bone loss with rounding compression of glenoid rim (blunted angle).

### COMPUTED TOMOGRAPHY:

CT Scan Evaluation can be helpful when significant bone loss is suspected on standard radiograph studies. Axial CT images are useful in planning treatment of glenoid bone loss or humeral head defects. (Figure 4) The exact location, orientation and size of the Hill-Sachs can be determined. Volumetric studies of the humeral head defect can be performed and its utility is promising. (Figure 5) 3D CT scans with humeral head digitally subtracted is the gold standard to assess glenoid bone loss. (Figure 6)

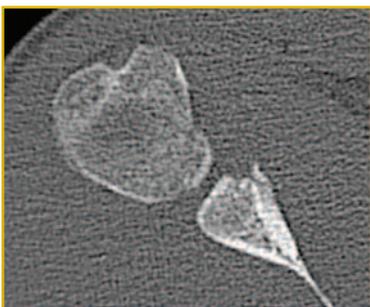


Figure 4



Figure 5



Figure 6

### MAGNETIC RESONANCE IMAGING:

Magnetic Resonance Imaging (MRI) can also be helpful. (Figure 7) Willems has proposed recently their utility in measuring glenoid bone loss.

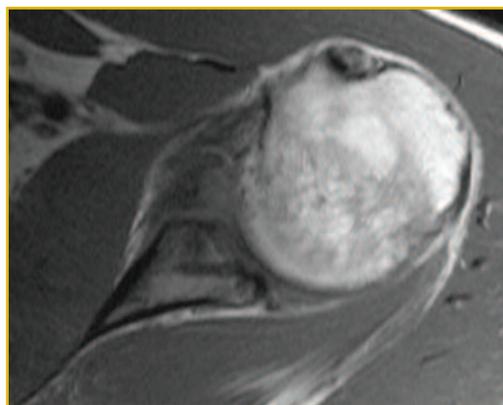


Figure 7

### TREATMENT:

The decision of the treatment for a patient with a recurrent anterior shoulder instability associated with a bone defect: glenoid bone lesion and/or engaging Hill-Sachs is challenging, especially if we are dealing with an athlete that is willing to return to sports.

There are different treatment alternatives, and it must be considered not only the mechanical problems of recurrent instability but also assess carefully the patient and any comorbid conditions, all of them can affect whether the patient should be considered a surgical candidate.

Voluntary instability, multidirectional instability in patients with generalized ligament laxity, instability associated with neurological deficit of deltoid or rotator cuff and patients with uncontrolled seizures are poor candidates for surgical treatment because the limited success of the alternatives available.

The patient, surgeon and family should discuss the alternatives of treatment according functional requirements.

Injury related factors, such as defect size and location of the bone defect, will influence the surgical option selection.

## **NONOPERATIVE TREATMENT:**

Non operative treatment is indicated in patient with unacceptably high medical risk, patients with uncontrollable epilepsy, or patients unable (physically or mentally) to comply with post operative instruction or rehabilitation.

Non operative treatment is also indicated for bone lesions associated with recurrent anterior instability in low-demand or elderly patients with Hill Sachs defects <20% articular surface of humeral head, and/or glenoid defects of <20% of anteroinferior glenoid who are able to perform activities of daily living.

Non operative treatment may include limitation of activities, non-narcotic pain control medication, a short period of immobilization followed by supervised therapy based on the nature of the bone loss.

For the patient unable or unwilling to go to surgery it must be discussed thoroughly with the patient and family the prognosis, functional limitations particularly positions to be avoided, and the rehabilitation plan.

## **OPERATIVE TREATMENT:**

Surgery is indicated in patients with recurrent anterior instability that does not respond to nonoperative treatment. The surgeon should determine whether a soft tissue procedure or a surgery to address bone loss of the glenoid or humeral head may be necessary.

Many factors influence the selection of the procedure to manage bone loss associated with anterior shoulder instability. The size and location of the Hill-Sachs lesion, and the ability to engage; and on the other hand, the size of the glenoid rim fracture, or the degree of bone loss are injury related factors that influence the surgical decision. Patient factors like dominance, functional capacity, previous surgery to the shoulder and ability to comply with postoperative instructions and rehabilitation should be considered.

Soft tissue procedures, such as Bankart repair, without associated bone reconstruction can be used to manage small (<20%) Hill-Sachs lesion or anteroinferior glenoid rim fracture or deficiency of less than 20%. In the past most shoulder surgeons have addressed bony defects with soft tissue procedures.

The estimation of the size of humeral or glenoid bone loss determine the reconstructive procedure to be performed. The degree of humeral articular involvement is calculated as percentage of articular involvement in axillary radiograph or axial CT images, and anteroinferior glenoid bone loss can be estimated on axillary special views or axial CT images.

Hill-Sachs: lesions with 20%–30% articular involvement is treated with anterior stabilization with infraspinatus transfer and bone grafting of the defect. Hill-Sachs with 30%-45% articular involvement is treated with anterior stabilization with disimpaction and bone graft or osteochondral graft or humeral rotational osteotomy. In the presence of a for Hill-Sachs greater than 45% articular involvement or severe cartilage damage, the prosthetic replacement should be considered.

Glenoid bone loss: 20%-30% - if a large fragment is present open reduction and internal fixation; for bone defects a coracoid transfer: Latarjet or Bristow, or structural bone graft is the choice. Lesion greater than 30% -if a large fragment is present open reduction and internal fixation, or a structural bone graft for treatment of bone defects.

## **ARTHROSCOPY:**

In cases of anterior shoulder dislocation associated with Hill-Sachs lesions of less than 20% of articular surface or glenoid bone loss less than 20%, a capsulolabral reconstruction (Bankart repair) could be sufficient to restore shoulder stability and surgery to restore bone defects is probably not necessary. (Figure 8)



**Figure 8**

The best indication of arthroscopy is the surgical repair of bony Bankart (small fracture of glenoid lip). The incorporation of the bony Bankart into the repair with the use of suture anchors allows the healing of the fragment and excellent clinical results according to Porcellini and Mologne.

## BONE DEFECTS (cont.)

Arthroscopy is not recommended for significant glenoid loss in patients with recurrent instability following prior Bankart repair. The presence of significant bone deficit (engaging Hill-Sachs lesion or inverted pear glenoid) is a relative contraindication to arthroscopic repair.

### BONE GRAFTING:

Bone grafting may be indicated in Hill-Sachs defects that are 20% to 45% of the articular surface or in cases of glenoid bone loss more than 20%.

Glenoid bone grafting may be performed with coracoid transfer; as in the Latarjet or Bristow procedures; contoured iliac autograft or allograft, and recently the use of fresh osteochondral distal tibia.

Bone grafting of the humeral defect may be performed with structural allograft or associated with disimpaction of the Hill-Sachs lesion.

### TECHNIQUES FOR DEFICIENT GLENOID:

#### Free Iliac Bone Graft

A free corticocancellous iliac crest bone graft is then fixed to the anterior glenoid neck with screws. This procedure is known as Eden-Hybbinete.

Free iliac bone graft has proven to be effective to compensate for glenoid bone loss. One problem with this technique is the morbidity related to the donor site. At 30 years of follow-up Rahme found 47% of osteoarthritis but clinically the loss of the external rotation was the main complaint.

### LATARJET PROCEDURE:

Described by Latarjet in 1954, four years later Helfet (1958) described a similar technique of Bristow his mentor. In Latarjet procedure large piece of the coracoids process (2-3 cms) is transferred to the anteroinferior glenoid and fixed with 2 screws. Bone graft restores bone stock and stability, extending glenoid arc and avoiding engagement when glenoid defect associated with Hill-Sachs. Biomechanically outperforms the free bone graft in reducing translation in anteroinferior bone defect. Both Lafosse and Boileau have proposed to perform the Bristow-Latarjet procedure under arthroscopy. The early results are promising

### BRISTOW PROCEDURE:

The tip of coracoid and conjoined tendon are transplanted to the anteroinferior glenoid rim. The coracoid provides a bone block that can be utilized to fill an existing glenoid defect. The conjoined tendon acts as an anterior buttress in abduction external rotation. Hovelius with 118 patients followed at 15 years, had a recurrence of 13.6% and a 40% of osteoarthritis.

### TECHNIQUES FOR HUMERAL HEAD DEFECTS:

#### Remplissage

The arthroscopic filling of Hill-Sachs defect with infraspinatus tendon is called remplissage. Transposition of the infraspinatus tendon can be performed as an open or arthroscopic technique. This is an alternative treatment for large engaging Hill-Sachs lesions. Results of this technique are promising and remplissage is performed as an additional procedure after a Bankart repair for patients with a large posterolateral humeral head defect.

### STRUCTURAL ALLOGRAFT:

Gerber described in 1997 the use of structural osteochondral allograft for the reconstruction of large Hill-Sachs lesions (20% to 45%). An allograft wedge is impacted within the defect and secured with 1 or 2 countersunk cancellous lag screws. The advantage of this technique is the ability to create a congruent, mechanically stable joint without significantly altering surrounding anatomy.

### HUMERAL OSTEOTOMY:

Weber described a rotational humeral osteotomy as an option to treat large defects of the posterolateral humeral head associated with recurrent anterior instability. The osteotomy of the proximal humeral shaft increase the retroversion of the proximal humerus decreasing the likelihood of recurrent instability by directing the posterolateral defect more posteriorly. In this way the anterior undisturbed humeral head is articulating with the glenoid, avoiding engagement of the defect.

### DISIMPACTION AND BONE GRAFTING:

In this procedure the depressed articular surface of the posterosuperior humeral head is disimpacted through a 1 cm cortical window in the lesser tuberosity (opposite side of the defect), using a bone tamp. The subchondral void is then filled with graft, using either allograft cancellous bone or autogenous iliac crest. To buttress the disimpacted defect 2 countersunk cancellous screws are placed into the greater tuberosity. This technique is recommended for defects less than 3 weeks old involving less than 45% of articular surface with structurally good articular cartilage.

### SHOULDER ARTHROPLASTY:

Partial shoulder replacement should be performed in patients with posterolateral defects greater than 45% of the articular surface and in patients with significant articular cartilage degeneration. When degenerative changes are present in the glenoid or there is glenoid erosion contributing to the instability, resurfacing of the glenoid should be added to the proximal humerus replacement, having in this case a total shoulder arthroplasty.

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

## STREAMLINING KNEE TERMINOLOGY

ISAKOS and ESSKA have collaborated to produce a document on Standard Terminology, Definitions, Classification and Scoring Systems for Arthroscopy. This document is available for the Knee, Ankle & Shoulder on the ISAKOS website in the Members only section.

This is an excellent very comprehensive document which covers the ten most common diagnoses in each joint then for each the following are defined:

1. A definition
2. Symptoms and signs: clinical classifications system
3. Pathology: X-ray classification and staging systems
4. Findings at arthroscopy: classification and staging systems
5. Outcome measures
6. Documentation sheet

This is a living document. The Arthroscopy Committee of ISAKOS believed the next step was to create a simplified one page document stipulating one terminology for each condition.

The rationale for this is the need to create a global consensus enabling surgeons from around the world to collate, compare and contrast their outcome data.

After consultation with many surgeons and bodies from around the world we have suggested that the following terminology be used for the evaluation of knee conditions:

Ligaments – IKDC

Menisci – ISAKOS system

Articular Cartilage & OCD – ICRS

Radiographic Knee Evaluation – Kelgreen Lawrence.

We encourage all knee surgeons and researchers globally to adopt this terminology for the evaluation of their patients.

We are currently working on the Shoulder, Ankle, Hip, Elbow & Wrist and plan to have these available soon.

**Mark Clatworthy**

*Chairman ISAKOS Arthroscopy Committee*

## **2010 International Summit Forum on Orthopedic Sports Medicine and Arthroscopy Surgery**

May 13–15, 2010 • Shanghai, China

“It’s unequalled meeting and the highest level international forum and educational course in orthopaedic sports medicine and arthroscopy surgery in China!” Prof. TL Yang, an honorable Chairman of Chinese Society of Sports Medicine (CSSM) and IOC Medical Committee member concluded after attending “2010 International Summit Forum on Orthopaedic Sports Medicine & Arthroscopy Surgery” which was held on May 13–15, 2010 during the World Expo 2010 in Shanghai, China.

This international summit forum was organized by ISAKOS, CSSM and COA (Chinese Orthopaedic Association). The Course was cosponsored by the Asia-Pacific Orthopaedic Society for Sports Medicine (APOSSM), Arthroscopy Association of North American (AANA), and *Arthroscopy: The Journal of Arthroscopic and Related Surgery*. The Course, hosted by Fudan University Sports Medicine Center and Huashan Hospital, had a total of 630 orthopaedic surgeons attended including 26 international faculties, 12 Chinese faculties, 550 national surgeons and 22 international attendees.

On the opening ceremony, Mr. Liu Yanfei, the general secretary and executive president of the Chinese Medical Association, presented his best blessing on behalf of CMA on the forum. The former President of the United States of America, George HW Bush, sent his best wishes for a successful Forum. Famous Chinese athlete, Mr. Liu Xiang, a former Olympic champion and world-record holder of men’s 110-metre hurdles, also presented during the Opening Ceremony together with his coach, Mr. Sun Haiping.

The evening Welcome Dinner was a wonderful social activity for all attendees after Prof. Gu Xiaoping, the general secretary of Fudan University Huashan Hospital, sent the welcome address. Mr. Teng Junjie, very famous Chinese TV director and general director of Shanghai EXPO opening ceremony, showed the excellent ceremony video of EXPO to all the delegates. The welcoming banquet was highlighted by Karaoke in self-amusement, leading by Prof. KM Chan, the President of APOSSM (Asia-Pacific Orthopaedic Society for Sports Medicine). The Welcoming Banquet was highlighted by karaoke, led by Prof. KM Chan, President of APOSSM. Faculty from other regions and countries also provided karaoke entertainment – a great time was had by all!

During the three days meeting, a total of 38 invited speakers gave 96 wonderful lectures and surgical demonstration videos on different topics, including hot issues and advanced developments in the areas of orthopaedic sports medicine and arthroscopy. The ISAKOS hands-on cadaver workshops on knee and shoulder were highlights of the meeting. A total of 200 doctors received instruction on surgical techniques on the fresh cadaver directed by skillful international instructors.

**ISAKOS NEWSLETTER • SUMMER 2010 • 39**

# ISAKOS APPROVED COURSES IN REVIEW

## 2010 International Summit Forum on Orthopedic Sports Medicine and Arthroscopy Surgery (cont.)

To help more Chinese doctors to publish their work, Prof Gary G. Poehling, the chief editor of *Arthroscopy: The Journal of Arthroscopic and Related Surgery*, and Dr. James Lubowitz, the co-editor of the Journal, gave lectures including tips for preparing a manuscript.

There were four characteristics made this forum successful.

1. All the international faculties represented current top surgeons and leadership in the areas of orthopaedic sports medicine and arthroscopy. They came not only from the world leading associations (ISAKOS, AANA, APOSSM, CMA), but also from the world famous universities hospitals, such as Massachusetts General Hospital of Harvard University, Hospital for Special Surgery of Connell University, Stanford University, Johns Hopkins University, Duke University, Steadman Clinic, University of New South Wales of Australia, Cambridge of UK, Carolina Medical Center of Warsaw University, Poland, Beijing University, QingHua University, Fudan University and General Army Hospital of China, et al.
2. All the Chinese attendees were experienced orthopaedic surgeons from 26 provinces all over the country, including Hong Kong and Taiwan. The course has won a very good reputation and feedback from Chinese orthopaedic sports medicine surgeons since the first meeting in 2008, with highly praised of excellent organizing in academic level, logistic arrangement and society activities. The attendees benefited and were satisfied with the ISAKOS course.
3. Multiple academic formats and abundant content has been blended in this forum, including the international master lectures, current concept, debate and controversy, surgical demonstration video by special invited masters, satellite meeting, instrument exhibition and hand-on fresh cadaver workshop. A total of 48 stations of fresh cadaver workshop were used successfully in this ISAKOS instructional course. The ISAKOS membership promotion program developed for Chinese surgeons have recruited 20 more new members. How to Prepare and Submit a Manuscript to the Journal of Arthroscopy reinforced the course content. "The workload of this meeting is much more complicated and difficult than that to organize a thousand attendees conference with only lectures" evaluated CMA representatives.

4. This meeting was an example of successful multi-association collaboration between ISAKOS, other international societies and the Chinese Medical Association. The forum strongly pushed the development of clinical technique and research in the fields of sports medicine and arthroscopy in China. The attendees were also impressed by the excellent organization on the forum. All the international faculties evaluated the forum as "very successful not only in the education but also in the social activity." Almost all of Chinese attendees regarded the forum as the best course they have ever attended and concluded this summit forum to be "really a World EXPO for international orthopaedic sports medicine & arthroscopy surgery in Shanghai, China". They hope there would be similar high level course held in Huashan hospital every year.

Before we celebrate the success of the meeting, I would like to thank to my colleagues who perfectly completed the majority organizing work of the Forum as a dedicated team with a high degree of cohesion. Also I would like to thank all the academic organizations, and domestic and foreign counterparts that contributed to this Forum, all of their help contributed to the success of the Forum. At last, I would like to thanks to all the sponsors—the forum could not get such a success without their support!

### **Professor Shi Yi Chen, MD, PhD**

*Executive President, 2010 International Summit Forum on Orthopaedic Sports Medicine & Arthroscopy Surgery  
Chairman, Fudan University Sports Medicine Center, Orthopaedic Sports Medicine of Huashan Hospital, Shanghai, China*



# ISAKOS APPROVED COURSES IN REVIEW

2010 INTERNATIONAL SUMMIT FORUM ON ORTHOPEDIC SPORTS MEDICINE AND ARTHROSCOPY SURGERY



# ISAKOS APPROVED COURSES IN REVIEW

## 1<sup>st</sup> INTERNATIONAL CONGRESS OF IRANIAN SOCIETY OF KNEE, ARTHROSCOPY & SPORTS TRAUMATOLOGY (ISKAST)

The 1st International Congress of Iranian Society of Knee, Arthroscopy & Sports Traumatology was held on January 19–22, 2010 on Kish Island. Kish Island was a unique and beautiful location for this course, and provided great recreational activities and nice tropical climate in the middle of winter .

This course was the first time that an ISAKOS Approved Course with an excellent and high standard scientific level in the field of knee surgery, arthroscopy & sports traumatology has been held in Iran. More than 30 invited speakers, including members of ISAKOS, and ISAKOS partner societies ESSKA and APOSSM, were participated in the course. Great speakers in each topic gave the most updated presentations. In addition, Iranian lecturers were able to show their capabilities in presenting their lectures in a high level international congress .

Presentation topics included primary & revision Total knee arthroplasty, ACL & PCL and multi-ligament reconstruction, advanced meniscal surgery, patellofemoral disorders, advanced cartilage repair techniques, osteotomies around the knee, shoulder instability, rotator cuff problems, ankle instability, Achilles tendon and muscle injuries, sports problems and hip arthroscopy.

Special thanks to lecturers Prof. Enjar Eriksson (Sweden), Dr S. Hoffman (Austria), Dr Javad Parvizi (USA), Prof C. Gerber (Switzerland), Prof Nedim Doral (Turkey), Prof Jin Hwan Ahn (South Korea), Giovanni DiGiacomo (Italy), Dr. P. Sancheti (India), Dr J. Young Bok (South Korea), Dr Hasan Sadri (Switzerland), Prof. C Pascal (France), Dr Havlas Vojtech (Czech Republic), Prof. Nicola Mafulli (UK), Dr R. Smigielski (Poland), Dr Bruno Toussaint (France), Dr Deepak Goyal (India) and the other international faculties who participated in the meeting.

There were more than 220 participants mostly from Iran who were interested in making link to international societies Such as ISAKOS. ISAKOS promotional materials were presented in the ISAKOS desk in front of the Main room & many of local participants expressed interest in ISAKOS. Special thanks to Dr Freddie Fu & Dr Kevin Plancher for approving our congress as an ISAKOS Approved Course.

We believe we have established a good link for future cooperation between ISKAST and ISAKOS . There has been a great interest from ISKAST members to get more involved in the arthroscopy, knee surgery and sports traumatology in the upcoming years and, we believe, we may have recruited some new members for ISAKOS at the occasion of this event.



We are at the beginning and we believe that ISKAST has the potential to perform much more advanced courses in cooperation with ISAKOS in this part of the world and represents the Iranian orthopaedic surgeons tendencies to become active in international scientific programs in all around the world specially at middle east.



We hope the 2nd International ISKAST Congress which is going to be held in 8-11 February 2012 will gather more arthroscopic surgeons from all the local countries of Persian Gulf, Middle East & Asian countries to share their experiences in regards to their abilities and their facilities and problems .

If you are interested in more information on the sessions and workshops of the course, all sessions were recorded onto DVD and are available by emailing [info@iskast.net](mailto:info@iskast.net) or [Soheil\\_mehdipoor@hotmail.com](mailto:Soheil_mehdipoor@hotmail.com).

**Mohammad Razi, MD**  
**Soheil Mehdipoor, MD**  
**Mahmood Jabal ameli, MD**  
**Sohrab Keyhani, MD**

# ISAKOS APPROVED COURSES IN REVIEW

## **PANARAB Orthopaedic Association (PAOA)**

May 19–22, 2010 • Morocco

On behalf of ISAKOS, I attend the 15th annual meeting of PANARAB Orthopaedic Association (PAOA) which was held on May 19-22, 2010 in Morocco and combined with 28th SMACOT (Moroccans Society of Orthopaedic Surgery and Traumatology).

The meeting was held in the beautiful city of Marrakech, site of the first PANARAB meeting held 15 years ago. It was a good opportunity to see the huge developments that have happened in the city in recent years.

The PAOA Meeting included more than 700 participants from 19 Arab countries, as well as 20 other countries from all around the world: Argentina, Austria, Belgium, Benin, Canada, Colombia, France, Iran, Germany, Mali, Malta, Nigeria, Senegal, Slovenia, Spain, Switzerland, Chad, Togo, UK and USA.

There were many symposiums, round tables, workshops, 55 lectures presented by renowned Arab and international orthopaedic surgeons, 126 free papers and 97 posters.

The Leadership of PAOA endeavored and succeeded to bring excellent speakers from all corners of the world and they promoted the exchange of new ideas and facilitated interaction between the local and international orthopaedic surgeons.

Many members of ISAKOS attended the meeting. We were very active during the scientific sessions and social events. During the course of the meeting, we shared our experience in the fields of arthroscopy surgery and sports medicine with local orthopaedic surgeons who were very interested.

ISAKOS was kindly welcomed by the organizers of the meeting, and well received by all participants in Marrakech. Many times the organizers thanked ISAKOS for help, especially at the opening ceremony and Gala dinner when they gave ISAKOS special recognition and medal.

The PAOA and local societies are very interested to have more cooperation with ISAKOS. Individuals are interested to join us in ISAKOS, so I suggest for ISAKOS members to attend the next PANARAB meeting which will be held in Tunis in May of 2011.

Special thanks for good support and help that we got from ISAKOS President, Dr. Freddie Fu, and the ISAKOS offices who support us with excellent materials.

**Mohsen Hussein**

ISAKOS Membership Committee



# UPCOMING ISAKOS APPROVED COURSES



## ADVANCED INSTRUCTIONAL COURSE ON ARTHROSCOPY OF THE SHOULDER, ELBOW AND KNEE

University Medical Centre  
Utrecht, NETHERLANDS  
July 5–8, 2010

**For additional information, please contact:**

Ton vanLoon  
vanloon.ton@wxs.nl  
Tel: +31 73 699 2000  
Fax: +31 73 699 8655  
www.shoulder-elbow-knee.nl

## THE LIGAMENT RECONSTRUCTION SEMINAR & LIVE SURGERY IN SAPPORO

Faculty house "Enreisou"  
Sapporo, JAPAN  
July 29–30, 2010

**For additional information, please contact:**

Eiji Kondo  
eijik@med.hokudai.ac.jp  
Tel: +81 11 706 7211  
Fax: +81 11 707 7822

## THE 2ND BIENNIAL ASIA ARTHROSCOPY CONGRESS

China National Convention Center  
Beijing, CHINA  
September 10–12, 2010

**For additional information, please contact:**

AO Ying-Fang  
yingfang.ao@vip.sina.com  
Tel: +86 10 8226 7390  
Fax: +86 10 6201 0440  
www.aac2010beijing.org

## 45TH KNEE SEVERANCE ARTHROSCOPY FRESH CADEVER WORKSHOPS

Surgical Anatomy Education Center;  
Yonsei University Anatomy Department  
Seoul, SOUTH KOREA  
September 18, 2010

**For additional information, please contact:**

Byoung-Yoon Hwang  
severanscopy@yuhs.ac  
Tel: +82 2 22285679  
Fax: +82 2 3636248  
www.severanscopy.com

## INDIAN ARTHROSCOPY SOCIETY ANNUAL CONFERENCE 2010

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

**For additional information, please contact:**

Dr Leonard Ponraj  
glp22@hotmail.com  
Tel: +0091 44 9444027223  
Fax: +0091 44 26422223  
www.IAS.com

## 2010 KOREA ARTHROSCOPY SOCIETY ANNUAL MEETING WITH ARTHROSCOPY MASTER OF ASIA

Konkuk University Hospital Auditorium  
Seoul, KOREA  
October 1–2, 2010

**For additional information, please contact:**

Kyoung-Ho Yoon  
kyoungho@khmc.or.kr  
www.korarthro.com

## 46TH SHOULDER SEVERANCE ARTHROSCOPY FRESH CADEVER WORKSHOPS

Surgical Anatomy Education Center;  
Yonsei University Anatomy Department  
Seoul, SOUTH KOREA  
October 2, 2010

**For additional information, please contact:**

Byoung-Yoon Hwang  
severanscopy@yuhs.ac  
Tel: +82 2 22285679  
Fax: +82 2 3636248  
www.severanscopy.com

## UKRAINIAN CONGRESS OF ARTHROSCOPY, KNEE SURGERY AND SPORT TRAUMA

Hospital "Feofan"  
Kiev, UKRAINE  
October 7–8, 2010

**For additional information, please contact:**

Igor Zazirnyi  
zazirnyi@ukr.net  
Tel: +380 44 2596768  
Fax: +380 44 2596768  
www.uastka.org

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

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

**For additional information, please contact:**

Florence BONDOUX  
flo.bondoux@orange.fr  
Tel: +33 4 72 07 62 22  
Fax: +33 4 72 07 06 66  
http://www.lyon-genou.com

## 10TH TURKISH SPORTS TRAUMATOLOGY, ARTHROSCOPY AND KNEE SURGERY CONGRESS

Gloria Hotels and Resorts  
Antalya, TURKEY  
October 12–16, 2010

**For additional information, please contact:**

Banu Adiguzel Ucar  
banuadiguzel@figur.net  
Tel: +0090 212 5335905525  
Fax: +0090 212 2586078  
http://www.tusyad2010.org/eng

## ORTHOPEDIC SURGERY CONTROVERSIES 2010

Silverado Resort  
Napa, CA, USA  
October 14–16, 2010

**For additional information, please contact:**

Paige Ballus  
pballus@triad.rr.com  
Tel: +1 336 287 9895  
Fax: +1 336 766 0318  
www.orthopedicsurgerycontroversies.com

## 6TH MEETING OF THE EUROPEAN FEDERATION OF NATIONAL ASSOCIATIONS OF ORTHOPAEDIC SPORTS

Dolce La Hulpe  
Brussels, BELGIUM  
November 25–27, 2010

**For additional information, please contact:**

Claudine Thoma  
info@efost2010.com  
Tel: +0031 184 496999  
Fax: +0031 184 496995  
www.efost2010.com

# UPCOMING ISAKOS APPROVED COURSES

## **SFA ANNUAL CONGRESS**

Grand Theatre de Provence  
Aix en Provence, FRANCE  
December 1–4, 2010

**For additional information, please contact:**

Corine Bensimon  
corine.bensimon@bch.aphp.fr  
Tel: +33 1 40 25 74 01  
Fax: +33 1 42 29 06 88  
<http://www.sofarthro.org>

## **BASIC & ADVANCED KNEE ARTHROSCOPY**

Learning Resource Centre,  
Cairo University  
Cairo, EGYPT  
December 2–3, 2010

**For additional information, please contact:**

Mohamed El Masry  
drmedoelmasry@yahoo.co.uk  
Tel: +002 011 0305000  
Fax: +002 02 33360035  
[www.lrc.edu.eg](http://www.lrc.edu.eg)

## **BASIC SHOULDER ARTHROSCOPY**

Learning Resource Centre,  
Cairo University  
Cairo, EGYPT  
December 4, 2010

**For additional information, please contact:**

Mohamed El Masry  
drmedoelmasry@yahoo.co.uk  
Tel: +002 011 0305000  
Fax: +002 02 33360035  
[www.lrc.edu.eg](http://www.lrc.edu.eg)

## **ISAKOS APPROVED COURSE & TEACHING CENTER APPLICATIONS now available online!**

Applications for ISAKOS Approved Courses and Teaching Centers may now be completed online at [www.isakos.com](http://www.isakos.com).

**Apply today!**

*Apply today!*



# ISAKOS



TRUKOR<sup>®</sup>  
Depth Gauge

## Give your patients a custom-fit ACL.



**TRUKOR<sup>®</sup>**  
Depth Gauge

Easily estimates the native dimensions of the ACL for tunnel sizing.



**ACUFEX<sup>®</sup>**  
**DIRECTOR ELITE**  
Anatomic ACL Guide System

A precise system for restoring the ACL's anatomic footprint for double-bundle reconstruction.



**BIOSURE<sup>®</sup> HA**  
**BIOSURE PK**  
Interference Screw

Our most multi-functional family of interference screws ever, for all graft fixation needs.



**BIOSURE<sup>®</sup> SYNC**  
Tibial Fixation Device

Intra-tunnel fixation device offers greater tendon-to-bone contact for enhanced pullout strength.



Tailor-made solutions for anatomic ACL reconstruction.



**CLANCY<sup>®</sup> ANATOMIC CRUCIATE GUIDE**

Flexible Drill System

Eliminates the need to hyperflex the knee while drilling to visualize the anatomic insertion sites.



**ENDOBUTTON<sup>®</sup>**

Family of Femoral Fixation Devices

The trusted device and technique for a broad range of femoral fixation needs.



**GRAFTMASTER<sup>®</sup> III**

Graft Preparation System

The one board for all your ACL repairs, including single-bundle, double-bundle, and BTB.



**Anatomic ACL Reconstruction**

Repair Portfolio

This is just a sampling of what we offer for anatomic ACL reconstruction. To learn more about our complete lineup, contact your local Smith & Nephew sales representative or call +1 978 749 1000.



*International Society of Arthroscopy,  
Knee Surgery and Orthopaedic Sports Medicine*  
2678 Bishop Drive, Suite 250  
San Ramon, CA 94583 USA

Telephone: +1 (925) 807-1197  
Fax: +1 (925) 807-1199  
isakos@isakos.com  
www.isakos.com



**DON'T FORGET  
TO SUBMIT  
YOUR ABSTRACT!**

8<sup>TH</sup> BIENNIAL

# ISAKOS 2011

RIO DE JANEIRO ■ BRAZIL ■ MAY 15-19, 2011

# CONGRESS

*Call for Abstracts*

**Call for abstracts online at [www.isakos.com](http://www.isakos.com)**

**Abstract Submission Deadline Extended:  
September 1, 2010**

