

ISAKOS

ISAKOS NEWSLETTER 2020 • VOLUME I

Current Concepts on Arthroscopy, Knee Surgery & Orthopaedic Sports Medicine

ISAKOS - ESSKA
REGIONAL MEETING

GOTHENBURG
SWEDEN
October 15-16
2020
PG. 7

CELEBRATING

25
YEARS
of Excellence in
Education and Research!



- INSIDE**
- 1** ISAKOS CELEBRATES 25 YEARS
 - 2** FAQs ABOUT *JISAKOS* – GET PUBLISHED AND WIN!
 - 16** COLLAGEN MENISCUS IMPLANT (CMI)
 - 22** IS IT NECESSARY TO REPAIR MENISCAL RAMP LESIONS?
 - 30** 2019 GLOBAL TRAVELING FELLOWSHIP REPORT

in this issue

Editor's Message	1
JISAKOS Editor in Chief's Message	2
Memorials	6
ISAKOS-ESSKA Regional Meeting Schedule	8
2021 ISAKOS Congress-Cape Town	12
Current Concepts	16
Fellowship Reports	30
Approved Course Reports	36
Upcoming ISAKOS Approved Courses	46

EDITOR

Robert G. Marx, MD, MSc, FRCSC UNITED STATES

EDITORIAL BOARD

Iftach Hetsroni, MD ISRAEL, Associate Editor
Tahsin Beyzadeoglu, MD, Prof. TURKEY
Raju Easwaran, MS(Orth) INDIA
Joshua D. Harris, MD UNITED STATES
Michail I. Iosifidis, MD, PhD GREECE
Yee-Han Dave Lee, MD, MBBS, FRCS(Orth)
SINGAPORE
Daphne Ling, PhD, MPH UNITED STATES
Halit Pinar, MD, Prof. TURKEY
Dipak Raj, FRCS(Tr&Orth), MCh(Orth), MS(Orth)
UNITED KINGDOM
Sachin R. Tapasvi, MBBS, MS, DNB, FRCS INDIA
Samuel A. Taylor, MD UNITED STATES
Soshi Uchida, MD, PhD JAPAN
Kyoung-Ho Yoon, MD, PhD, Prof.
REPUBLIC OF KOREA
Omer Mei-Dan, MD UNITED STATES, Past Chair



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

2410 Camino Ramon, Suite 215
San Ramon, CA 94583 – 4318 USA
Telephone: +1 925 807 – 1197
Fax: +1 925 807 – 1199
Email: isakos@isakos.com

OFFICE MESSAGE

2020 Marks 25 Years for ISAKOS!

It has been 25 years since the formation of ISAKOS. Since then, ISAKOS has grown into an established society of almost 4,000 members representing more than 90 countries. ISAKOS would like to take this opportunity to thank all of our members and supporters over the years. Approximately two hundred and fifty members have been ISAKOS members for 25 years! To commemorate your loyalty to our society, ISAKOS membership certificates now feature a milestone seal during years five, ten, fifteen, twenty, and twenty-five of your membership. Download your membership certificate at any time in myMembership in myISAKOS (isakos.com/myISAKOS/myMembership).

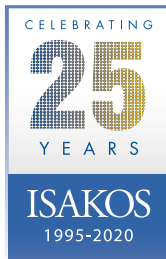
Part of the ISAKOS 25th anniversary celebration is the ISAKOS-ESSKA Regional Meeting in Gothenburg, Sweden in October 2020. Jon Karlsson, Prof. from Sweden will act as the Program Chair in partnership with Magnus Forssblad, MD, PhD of Sweden. These CME-approved regional meetings allow for intimate close-ups with expert faculty in between the educational offerings of ISAKOS Congresses. This two-day meeting will offer insights into clinical challenges and research advancements in the fields of Cartilage & Early Osteoarthritis, Knee, Foot & Ankle, Hip, and Football Injuries. For more information and to register, please visit isakos.com/gothenburg2020.

ISAKOS is also starting off the year with a few new member benefits! ISAKOS has recently partnered with the Arthroscopy Association of America (AANA) to offer ISAKOS members the option to subscribe to online access of *Arthroscopy*. For USD \$65, members interested in adding this subscription can do so in myMembership in myISAKOS. Another benefit recently launched in January was the new ISAKOS Career Center (isakos.com/careercenter)! The online career center is now available to assist those looking to post or search for a job opening, hone their job and/or candidate search skills, identify and work towards career goals, find suitable careers or programs, and boost networking skills in the international orthopaedic community.

Another new initiative that ISAKOS has recently developed is group membership opportunities for regional and national societies. The Colombian Association of Arthroscopic Surgery and Articular Reconstruction (ACCART) has collaborated with ISAKOS to bring nearly 100 new ISAKOS members from Colombia. A big thank you to Dr. Mosquera, ISAKOS BOD Member at Large and ACCART 2nd Vice President, for coordinating this new partnership! ISAKOS hopes to make similar agreements with additional societies in 2020.

Lastly, don't forget to submit your abstracts for the 2021 ISAKOS Congress in Cape Town, South Africa! The deadline to submit abstracts and apply for awards is September 1, 2020. Fellowship applications are also open until July 1, 2020. Don't miss the opportunity to join thousands of colleagues and world-renown faculty at the world's premier orthopaedic meeting.

**We look forward to celebrating our
milestone anniversary with you in 2020!**



Celebrating 25 Years



ISAKOS was started 25 years ago following the fourth and final combined Congress of the International Arthroscopy Association (IAA), headed by Harold Eikelaar, and the International Society of the Knee (ISK), headed by René Marti. That year, the IAA and the ISK were dissolved and ISAKOS was founded under the direction of Peter Fowler. The first meeting of ISAKOS was held in 1997 in Buenos Aires, Argentina. Over the next two years, the first surgical skills workshop was held, the ISAKOS Newsletter was established, and the first Strategic Planning Forum was held, with more than 300 members in attendance. By 2001, the ISAKOS headquarters were established in California, USA. As more funds became available, the ISAKOS Committees began to initiate projects in the early 2000s. Since then, collaborations and committee activities have greatly expanded. These events and other milestones in the history of ISAKOS can be viewed at www.isakos.com/Archives.

To celebrate our 25th anniversary this year, we are holding our first regional, interim meeting in Gothenburg, Sweden, hosted by Jon Karlsson and in partnership with ESSKA. This will be the first meeting in an even-numbered year and promises to be very exciting and highly educational! The meeting will run from October 15-16 and will include symposia, debates and interactive discussions on clinical challenge and research advancements in the fields of Cartilage & Early Osteoarthritis, Knee: ACL, Knee: Meniscus, Knee: Multi Ligament, Foot & Ankle, Hip, and Football Injuries.

With the launch of the *Journal of ISAKOS* in 2016, ISAKOS has broadened its scope even further. *JISAKOS* is holding a “Best Article” competition in honor of the 25th anniversary of ISAKOS. The top articles published are entered to win a \$1000 prize. Articles can be submitted at jisakos.bmj.com.

Finally, it has officially been one year since the ISAKOS office has been “full time!” The office, under the direction of CEO Sue Reimbold, comprises seven employees. Other employees are Hilary Merliner (Director of Leadership & Operations), Kathleen Rankin (Director of Marketing & Communications), Beverlee Galstan (Director of Development), Joy Allen-Joseph (Director of Education & Engagement), and Alexa Schenk (Membership & Office Coordinator), and Sarah Corpuz (Finance Manager). We are very grateful for their work for ISAKOS!

Robert G. Marx, MD

ISAKOS Newsletter Editor 2019–2021

FAQs about JISAKOS

In this first JISAKOS Editor-in-Chief's Message, I shall answer some frequently asked questions.

The *Journal of ISAKOS* was launched in January 2016. Since then, we have published some 170 peer-reviewed articles. Recently, we have had an increase in submissions, mainly of original research articles but also of Current Concepts Reviews and Technical Notes. Our current acceptance rate for original research is 44%, which compares favorably with other journals.

What Can JISAKOS Do That Others Have Not Already Accomplished?

Heineken hinted that their beer included special ingredients and had a famous motto: "Heineken refreshes the parts that other beers cannot reach." That is rather how I see JISAKOS and our special editorial ingredients. Our "State-of-the-Art" articles reveal where we are now: the present state of diagnosis and treatment, the pros and cons of various alternatives, and future possibilities for the field. On the basis of this information, we can predict how the field may develop and, more importantly, where it may need to develop. JISAKOS can perform this task, I firmly believe, because JISAKOS alone has global reach. Each State-of-the-Art article is written by at least three experts in the field, from around the world, to ensure that our content reflects diversity in terms of geographic practice and experience. Our aim is to spread knowledge and research globally and thereby to improve our patients' quality of life.

The "dial" graphic on our cover suggests the global nature of ISAKOS. But it also suggests a compass. ISAKOS is always on the move, and JISAKOS is the both compass for that journey as well as its record. We are fortunate indeed to have an excellent crew: an editorial board of true leaders in the field, Leendert Blankevoort as managing editor, and BMJ as our publisher. The members of our editorial board represent all major geographic regions, thereby reflecting the journal's readership and helping to ensure that the journal receives the highest-quality manuscripts from those regions. The board members also represent a wide range of subspecialties, including degenerative knee, knee, shoulder, orthopaedic sports medicine, arthroscopy, foot and ankle, hip, elbow and wrist, rehabilitation, team coverage, and sports injury prevention. The board members serve as the journal's ambassadors around the world, raise awareness about the journal, solicit quality manuscripts, and welcome and spotlight submissions from around the world.

We are also fortunate to have over 200 excellent reviewers, whose role is to protect the scientific quality of the journal. We are very grateful to them.

Can JISAKOS Keep Me on the Right Track?

This is what we are here to do. Clinical developments in orthopaedics have accelerated in recent years, and there has been a huge increase in publications. As a result, it is difficult to know what to read and how to spend your precious reading time. We try to keep our readers informed of the latest research and evidence-based guidelines. To that end, we solicit articles about the competing approaches to topics in our field (e.g., diagnosis and treatment, rehabilitation and prevention, follow-up and sequelae) and about how the findings can be applied in practice.

In all of our endeavours, we seek to earn our members' trust in their journal so that they will be confident that "this is what my society has selected as important for me to study in my scarce and valuable time."

Will My Article be Registered in PubMed?

The short answer is, "yes!" As soon as JISAKOS is registered with Index Medicus — and we are applying this year — all of our published articles, from 2016 on, will be retrospectively registered.

Apart from our State-of-the-Art reviews, we welcome original research, systematic reviews, current concepts reviews, case reports, and technical notes. We also regularly publish "Classic" articles, each of which describes a major concept or technique that either has become central to orthopaedics or has receded into obscurity. These Classic articles honor some of the giants on whose shoulders we stand.

Is My Case Report Worth Publishing?

A good case report reveals an anomaly and suggests that something is wrong with the current state of the art, something that needs to be corrected. Therefore, a well-written case report should stand alone and should be convincing. Although a case report may focus on a single observation, it should also suggest something more, something larger, that can be stated in abstract terms. For example, the first description of an arthroscopic meniscectomy by Watanabe in 1962 was so convincing that there has never been a randomized clinical trial to compare open versus arthroscopic meniscectomy. Our *JISAKOS* submission guidelines will guide you in the preparation of your case report.

Is My Manuscript Good Enough?

If you are unsure whether your manuscript is worth publishing, please consult me or Leendert Blankevoort. We shall read it and advise you about whether it needs polishing and what you can do to hopefully improve it. We are eager to see original articles, current concept reviews, technical notes, and case reports, and your ideas about "Classic" articles are always welcome.



**Prof. Dr. C. Niek van Dijk,
MD, PhD**

Editor in Chief, *JISAKOS*
c.niekvandijk@jisakos.com

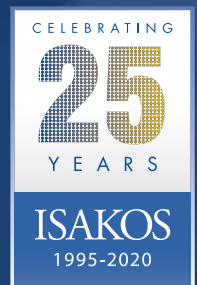
**Get Published and
Be Entered to Win \$1,000**

***JISAKOS* "Best Article" Competition**

In honor of the ISAKOS 25th anniversary celebration, the *Journal of ISAKOS* will be selecting the top articles published since *JISAKOS* was launched in 2016. Several awards are available to win! Winners will be announced in early 2021 and recognized at the 13th Biennial ISAKOS Congress in Cape Town, South Africa.

Submit today at jisakos.bmj.com

Learn more about the awards at bit.ly/2Ox4wWK



2019 ISAKOS by the Numbers

Congress

2019 ISAKOS Congress
in Cancun, Mexico

2,736

Attendees

85

Countries
Represented

33.5

CME Hours

832

Faculty &
Presenters

1,042

Presentations

2,011

Abstracts
Submitted

696

E-Posters

15

Industry Lunch
Time Sessions

48

Exhibits

ISAKOS Publications



187

Authors Published

38

Papers Published



139

Reviewers

47

Original Research
Submissions

10

Books
Produced



ISAKOS
Biannual
Newsletter

11

Current Concepts

1,800

Digital Views

2

Issues

Society



ISAKOS
Membership



ISAKOS Office
Employee Satisfaction

281

New
Members

93%

Member
Retention Rate

2,959

Members

99%

Percentile Among
Like Employers

4.59 / 5

Satisfaction
Rating

ISAKOS Committees



250

Committee
Members

28

Number of
Committees

54

Committee
Meetings Held

Educational Offerings

ISAKOS Global Link

53

Surgical
Videos

1,012

2019 Congress
Media Items

16

Award
Presentations

Awards, Fellowships, & Scholarships



13

Award &
Fellowship
Opportunities

425

Award &
Fellowship
Applicants

Residency & Fellowship Programs

10

Residencies
Listed

92

Fellowships
Listed

25

ISAKOS
Approved
Courses



Research Grants

5 Grants Given

25 Applicants



87

Teaching Centers



International Society of
Arthroscopy, Knee Surgery and
Orthopaedic Sports Medicine

Thank you for helping ISAKOS
continue to provide excellence
in research and education.

www.isakos.com

In memory of their outstanding achievements and contributions to ISAKOS and the field of Orthopaedics.



John A. Feagin, MD 1934–2019

On the first of September, John Autrey Feagin, MD, peacefully passed away in his home in Jackson Hole, Wyoming.

Feagin was born on May 9, 1934. He was a graduate of the U.S. Military Academy at West Point and received his medical degree from Duke University. Feagin was an active ISAKOS Member since the Society's creation in 1995 and became an Honorary Member in 2013. He was also president and founding member of the American Orthopaedic Society for Sports Medicine as well as co-founder of the society's Traveling Fellowship Program. He also founded the ACL Study Group by organizing and motivating a group of interested and eager orthopedic surgeons to collaborate on their research.

Feagin was a remarkable person with much global impact and influence—his personality was characterized by respect for all human beings, and his ethic and modest personality valued a humanistic philosophy. He was a knowledgeable and outstanding leader who often searched for competition and scientific excellence. He valued cooperation and the idea of working

together to find solutions—this was his way of bringing people together. He was skilled at recognizing potential leadership in young men and women and guided and inspired them to strive for successful research and improvements. He looked critically at the outcomes of daily treatments, always aiming to continually improve. Along with his successes as organizer, John was an extraordinary gentleman—teaching and inspiring young sports medicine students and doctors who were eager to learn from his scientific experience and wisdom.

Feagin is an unforgettable person and will live forever in our memories.

Werner Müller, MD SWITZERLAND

ISAKOS Honorary Member and close friend of John Feagin, MD



John B. McGinty, MD 1930–2019

John “Jack” McGinty, MD was a pioneer in the field of arthroscopy. McGinty was born in Jamaica Plains, Massachusetts and graduated from Boston Latin school and Harvard University. He went to medical school at Tufts followed by Yale surgery and Harvard orthopaedic residencies. He also served as chief of orthopaedics in the US Army in the 1960's.

McGinty was the first person to put a video camera on an arthroscope and connect it to a TV for viewing.

His research on partial versus complete meniscectomy's revolutionized the treatment of torn cartilage in the knee. In 1981 he helped establish the Arthroscopy Association of North America (AANA) and became its first president. From 1984 to 1987, McGinty served as President of the International Arthroscopy Association (IAA)—the group that merged with the International Society of the Knee (ISK) to form ISAKOS in 1995. In 1990 he was elected president of the American Academy of Orthopedic Surgery (AAOS) and spearheaded the

development of the Orthopaedic Learning Center in Chicago. He published the first textbook on “Operative Arthroscopy” on all joints in 1991. An Active ISAKOS member since ISAKOS' beginning, McGinty was made an ISAKOS Honorary member in 2001 during the ISAKOS Biennial Congress in Montreux, Switzerland. Known for his “Irish wit”, McGinty loved golf, sailing and spending time with his family. He is survived by his first wife, Beth, and their three children, Kathy, Ellen, and John, as well as his second wife Ro and son, Ryan.

ISAKOS - ESSKA REGIONAL MEETING

GOTHENBURG
SWEDEN
October 15-16
2020

**Cartilage & Early Osteoarthritis | Knee: ACL
Knee: Meniscus | Knee: Multi Ligament
Foot & Ankle | Hip | Football Injuries**

ISAKOS is pleased to invite you to the ISAKOS-ESSKA Regional Meeting in Gothenburg, Sweden. As part of the ISAKOS 25th anniversary celebration, this meeting will provide a more personal opportunity to learn from world-renowned experts. Through symposia, debates and interactive discussion, this course will offer insights into clinical challenges and research advancements in the field of orthopaedics.

Program Chairs:



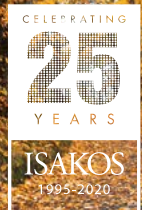
Jon Karlsson, Prof.
SWEDEN



Magnus Forssblad, MD, PhD
SWEDEN

REGISTER TODAY!

ISAKOS.COM/GOTHENBURG2020



08:30 – 09:00 WELCOME

08:30 – 09:00 Welcome from ISAKOS & ESSKA
 Co-Chair: Magnus Forssblad, MD, PhD SWEDEN
 Co-Chair: Jon Karlsson, Prof. SWEDEN
 David H. Dejour, MD FRANCE
 Willem M. van der Merwe, MBChB, FCS(SA)Ortho SOUTH AFRICA

09:00 – 10:30 SESSION I: ACL – WHAT IS NEW?

Moderator: Jacques Ménétreay, Prof. SWITZERLAND
 Moderator: Willem M. van der Merwe, MBChB, FCS(SA)Ortho SOUTH AFRICA

09:00 – 09:15 **How to Deal with a Difficult Revision**
 Karl Eriksson, MD, PhD, Asst. Prof. SWEDEN

09:15 – 09:30 **Trends in Registries**
 Magnus Forssblad, MD, PhD SWEDEN

09:30 – 09:45 **Best Technique That Does Not Lead to OA**
 David Figueroa, MD, Prof. CHILE

09:45 – 10:00 **Is Double-Bundle Still the Best Solution?**
 Yuichi Hoshino, MD, PhD JAPAN

10:00 – 10:30 **Discussion**
 Karl Eriksson, MD, PhD, Asst. Prof. SWEDEN
 David Figueroa, MD, Prof. CHILE
 Magnus Forssblad, MD, PhD SWEDEN
 Yuichi Hoshino, MD, PhD JAPAN
 Moderator: Jacques Ménétreay, Prof. SWITZERLAND
 Moderator: Willem M. van der Merwe, MBChB, FCS(SA)Ortho SOUTH AFRICA

10:30 – 11:00 BREAK**11:00 – 12:30 SESSION II: CARTILAGE AND EARLY OA**

Moderator: David H. Dejour, MD FRANCE
 Moderator: Norimasa Nakamura, MD, PhD JAPAN

11:00 – 11:15 **Biology and Biomechanics**
 Laura de Girolamo, PhD ITALY

11:15 – 11:30 **Surgical Methods and Outcomes**
 Stefano Zaffagnini, MD, Prof. ITALY

11:30 – 11:45 **New Meniscus Strategies to Protect Articular Cartilage**
 Christopher C. Kaeding, MD UNITED STATES

11:45 – 12:00 **Cartilage Repair – Long-Term Outcomes**
 Mats G. Brittberg, MD, PhD, Prof. SWEDEN

12:00 – 12:30 **Discussion**
 Mats G. Brittberg, MD, PhD, Prof. SWEDEN
 Laura de Girolamo, PhD ITALY
 Christopher C. Kaeding, MD UNITED STATES
 Stefano Zaffagnini, MD, Prof. ITALY
 Moderator: David H. Dejour, MD FRANCE
 Moderator: Norimasa Nakamura, MD, PhD JAPAN

12:30 – 13:30 LUNCH BREAK**13:30 – 15:00 SESSION III: MULTI-LIGAMENT INJURIES**

Moderator: Lars Engebretsen, MD, PhD NORWAY
 Moderator: David A. Parker, MBBS, BMedSc, FRACS AUSTRALIA

13:30 – 13:45 **Anatomy and Safe Techniques**
 Gilbert Moatshe, MD, PhD NORWAY

13:45 – 14:00 **Surgical Techniques**
 David A. Parker, MBBS, BMedSc, FRACS AUSTRALIA

14:00 – 14:15 **Outcomes from a Large Multi-Center Study; Do We Have All the Answers?**
 Volker Musahl, MD UNITED STATES

14:15 – 14:30 **Rehabilitation of the Multi-Ligament Injured Patient**
 James J. Irrgang, PT, PhD, FAPTA UNITED STATES

14:30 – 15:00 **Discussion**
 James J. Irrgang, PT, PhD, FAPTA UNITED STATES
 Gilbert Moatshe, MD, PhD NORWAY
 Volker Musahl, MD UNITED STATES
 David A. Parker, MBBS, BMedSc, FRACS AUSTRALIA
 Moderator: Lars Engebretsen, MD, PhD NORWAY

15:00 – 16:00 ISAKOS 25TH ANNIVERSARY: THE ROAD TO CREATE ISAKOS 25 YEARS AGO

Moderator: Per A. Renström, MD, PhD SWEDEN
 Moderator: Marc R. Safran, MD, Prof. UNITED STATES

15:00 – 15:05 **Introduction**
 Moderator: Per A. Renström, MD, PhD SWEDEN
 Moderator: Marc R. Safran, MD, Prof. UNITED STATES

15:05 – 15:25 **The Road to the Merger of ISK and IAA**
 Gary G. Poehling, MD UNITED STATES

15:25 – 15:55 **Why we had to Create ISAKOS**
 David James Dandy, MD, FRCS UNITED KINGDOM

15:55 – 16:05 **Discussion**
 David James Dandy, MD, FRCS UNITED KINGDOM
 Gary G. Poehling, MD UNITED STATES
 Moderator: Per A. Renström, MD, PhD SWEDEN
 Moderator: Marc R. Safran, MD, Prof. UNITED STATES

16:00 – 16:30 BREAK

Program and faculty are subject to change.

16:30 – 17:30 SESSION IV: HIP – WHAT IS NEW

Moderator: Per Hölmich, DMSc, Prof. DENMARK
Moderator: Mikael Sansone, MD, PhD SWEDEN

16:30 – 16:45 FAI – What Level 1 Data is Telling Us

Olufemi R. Ayeni, MD, PhD, MSc, FRCSC CANADA

16:45 – 17:00 What Do We Now Know About Hip Microinstability?

Marc R. Safran, MD, Prof. UNITED STATES

17:00 – 17:15 **When to Operate and When Not to**
Per Hölmich, DMSc, Prof. DENMARK

17:15 – 17:30 Discussion

Olufemi R. Ayeni, MD, PhD, MSc, FRCSC CANADA
Per Hölmich, DMSc, Prof. DENMARK
Marc R. Safran, MD, Prof. UNITED STATES
Moderator: Mikael Sansone, MD, PhD SWEDEN

OCTOBER 16, 2020**08:00 – 08:30 HIGHLIGHT LECTURE I: MENISCUS SURGERY IS THE NEW ACL SURGERY**

08:00 – 08:30 **Meniscus Surgery is the New ACL Surgery**
Romain Seil, MD, Prof. LUXEMBOURG

08:30 – 10:00 SESSION V: THE KNEE MENISCUS

Moderator: Roland Becker, MD, PhD, Prof. GERMANY
Moderator: Robert G. Marx, MD, MSc, FRCSC UNITED STATES

08:30 – 08:45 Allografts

Tim Spalding, FRCS(Orth) UNITED KINGDOM

08:45 – 09:00 Meniscus Transplantation

Robert G. Marx, MD, MSc, FRCSC UNITED STATES

09:00 – 09:15 How to Deal with Difficult Lesions

Alan Getgood, MD, FRCS(Tr&Orth), DipSEM CANADA

09:15 – 09:30 Long-Term Outcomes: Is OA Inevitable?

David A. Parker, MBBS, BMedSc, FRACS AUSTRALIA

09:30 – 10:00 Discussion

Alan Getgood, MD, FRCS(Tr&Orth), DipSEM CANADA
Robert G. Marx, MD, MSc, FRCSC UNITED STATES
David A. Parker, MBBS, BMedSc, FRACS AUSTRALIA
Tim Spalding, FRCS(Orth) UNITED KINGDOM
Moderator: Roland Becker, MD, PhD, Prof. GERMANY

10:00 – 10:30 BREAK**10:30 – 12:00 SESSION VI: FOOTBALL INJURIES**

Moderator: Moises Cohen, MD, PhD, Prof. BRAZIL
Moderator: Markus Waldén, MD, PhD SWEDEN

10:30 – 10:44 Are We Improving or Are There Still Too Many Injuries?

Martin Hagglund SWEDEN

10:44 – 10:58 Knee Injuries in Football – What is New?

João Espregueira-Mendes, MD, PhD PORTUGAL

10:58 – 11:12 Are Ankle Injuries Still the Worst Enemy?

Pieter D'Hooghe, MD PhD QATAR

11:12 – 11:26 Medial Collateral Ligament Injuries in Football – Should We Operate?

Moises Cohen, MD, PhD, Prof. BRAZIL

11:26 – 11:40 The UEFA Elite Club Study

Jan Ekstrand, MD, PhD SWEDEN

11:40 – 12:00 Discussion

Moises Cohen, MD, PhD, Prof. BRAZIL
Pieter D'Hooghe, MD PhD QATAR
Jan Ekstrand, MD, PhD SWEDEN
João Espregueira-Mendes, MD, PhD PORTUGAL
Martin Hagglund SWEDEN
Moderator: Markus Waldén, MD, PhD SWEDEN

12:00 – 13:00 SESSION VII: ACL – LARGE STUDIES, WHAT DO THEY GIVE AND LEAD TO?

Moderator: Magnus Forsssblad, MD, PhD SWEDEN

Moderator: Mustafa Karahan, Prof. TURKEY

12:00 – 12:15 Experiences from the UK Registry

Tim Spalding, FRCS(Orth) UNITED KINGDOM

12:15 – 12:30 Stability I and II

Alan Getgood, MD, FRCS(Tr&Orth), DipSEM CANADA

12:30 – 12:45 How to Combine the Registries with Randomized Studies

Lars Engebretsen, MD, PhD NORWAY

12:45 – 13:00 Discussion

Lars Engebretsen, MD, PhD NORWAY
Alan Getgood, MD, FRCS(Tr&Orth), DipSEM CANADA
Tim Spalding, FRCS(Orth) UNITED KINGDOM
Moderator: Magnus Forsssblad, MD, PhD SWEDEN
Moderator: Mustafa Karahan, Prof. TURKEY

13:00 – 14:00 LUNCH BREAK

OCTOBER 16, 2020

**14:00 – 14:30 HIGHLIGHT LECTURE II: FOOT & ANKLE:
WHAT HAS HAPPENED DURING
30 YEARS?**

14:00 – 14:30 **Foot & Ankle: What Has Happened During
30 Years?**

Jon Karlsson, Prof. SWEDEN

14:30 – 16:00 SESSION VIII: ANKLE - WHAT IS NEW?

*Moderator: James D. Calder, MBBS,
MD, PhD, FRCS, FFSEM(UK) UNITED
KINGDOM*

*Moderator: C. Niek van Dijk, MD, PhD
NETHERLANDS*

14:30 – 14:47 **There Is No Simple Ankle Sprain**

*Gino M. M. J. Kerkhoffs, MD, PhD, Prof.
NETHERLANDS*

14:47 – 15:04 **Anatomy: What is New and Relevant?**

Miki Dalmau-Pastor, PhD SPAIN

15:04 – 15:21 **Osteochondral Injury, From Symptoms to
Treatment to Return to Sports**

Kenneth J. Hunt, MD UNITED STATES

15:21 – 15:38 **How to Deal with Tendon Injuries Around
the Ankle**

Gian Luigi Canata, MD ITALY

15:38 – 16:00

Discussion

Gian Luigi Canata, MD ITALY

Miki Dalmau-Pastor, PhD SPAIN

Kenneth J. Hunt, MD UNITED STATES

*Gino M. M. J. Kerkhoffs, MD, PhD, Prof.
NETHERLANDS*

*Moderator: James D. Calder, MBBS, MD,
PhD, FRCS, FFSEM(UK)*

UNITED KINGDOM

*Moderator: C. Niek van Dijk, MD, PhD
NETHERLANDS*

16:00 – 16:10 ADJOURN: CHAIR CLOSING REMARKS

16:00 – 16:10

Closing Remarks

*Co-Chair: Magnus Forssblad, MD, PhD
SWEDEN*

Co-Chair: Jon Karlsson, Prof. SWEDEN

Program and faculty are subject to change.

REGISTER AT
isakos.com/Gothenburg2020



ISAKOS - ESSKA
REGIONAL MEETING

GOTHENBURG
SWEDEN
October 15-16
2020



ISAKOS CONGRESS 2021



Cape Town
South Africa
May 22 - 26



**REGISTRATION OPENS
SEPTEMBER 1, 2020!**

**ABSTRACT SUBMISSION DEADLINE
SEPTEMBER 1, 2020**



#ISAKOS2021

isakos.com/2021congress



WELCOME!

We cordially invite you to the 13th Biennial ISAKOS Congress in Cape Town, South Africa. The ISAKOS Congress continues to be considered the premier international meeting, providing a unique opportunity for attendees to share, discuss and learn the latest advancements in arthroscopy, knee surgery and sports medicine.



The five-day ISAKOS Congress includes a myriad of educational opportunities. The meeting provides a variety of new and cutting edge surgical techniques and approaches to clinical management, combined with overviews of current controversies in orthopaedic practice.

We hope you will plan to participate in the international experience that is the ISAKOS Congress!

Willem Mare van der Merwe,
MBChB FCS SA Ortho
SOUTH AFRICA

President 2019–2021

Volker Musahl, MD
UNITED STATES

Program Chair 2019–2021

Program Committee

Volker Musahl, MD
 UNITED STATES, Chair

Mark Clatworthy, FRACS
 NEW ZEALAND,
 Deputy Chair

Olufemi R. Ayeni, MD, PhD,
 MSc, FRCS CANADA

John A. Bergfeld, MD
 UNITED STATES

Deepak N. Bhatia, MS(Orth),
 DNB(Orth) INDIA

Nicolaas C. Budhiparama,
 MD, FICS, Assoc. Prof.
 INDONESIA

Emilio Calvo, MD, PhD, MBA
 SPAIN

Felipe E. Cámara, MD
 MEXICO

Gian Luigi Canata, MD ITALY

Shiyi Chen, MD, PhD, Prof.
 CHINA

Moises Cohen, MD, PhD,
 Prof. BRAZIL

Myles R. J. Coolican,
 FRACS AUSTRALIA

Leandro Ejnisman, MD, PhD
 BRAZIL

Karl Eriksson, MD, PhD,
 Asst. Prof. SWEDEN

Julian A. Feller, FRACS
 AUSTRALIA

Mario Ferretti, MD, PhD
 BRAZIL

Christopher D. Harner, MD
 UNITED STATES

Iftach Hetsroni, MD ISRAEL

Per Hölmich, DMSc, Prof.
 DENMARK

Kenneth J. Hunt, MD
 UNITED STATES

Mark R. Hutchinson, MD,
 FACSM UNITED STATES

José F. Huylebroek, MD
 BELGIUM

Dimitr A. Jontschew, MD
 GERMANY

Mustafa Karahan, Prof.
 TURKEY

Jon Karlsson, Prof.
 SWEDEN

Jason L. Koh, MD, MBA
 UNITED STATES

Ryosuke Kuroda, MD, PhD
 JAPAN

John G. Lane, MD
 UNITED STATES

Sebastien Lustig, MD, PhD,
 Prof. FRANCE

Stephen L. Lyman, PhD
 UNITED STATES

Robert G. Marx, MD, MSc,
 FRCS UNITED STATES

Augustus D. Mazzocca, MS,
 MD UNITED STATES

Jacques Ménétrety, Prof.
 SWITZERLAND

Norimasa Nakamura, MD,
 PhD JAPAN

Luigi A. Pederzini, MD ITALY

Sérgio R. Piedade, MD,
 MSc, PhD, Assoc. Prof.
 BRAZIL

Ehud Rath, Prof. ISRAEL

Per A. Renström, MD, PhD
 SWEDEN

Felix H. Savoie III, MD
 UNITED STATES

Kevin P. Shea, MD
 UNITED STATES

Daniel A. Slullitel, MD, Prof.
 ARGENTINA

Sachin R. Tapasvi, MBBS,
 MS, DNB, FRCS INDIA

C. Niek van Dijk, MD, PhD
 NETHERLANDS

Joon-Ho Wang, MD, PhD
 REPUBLIC OF KOREA

Stefano Zaffagnini, MD, Prof.
 ITALY, Past Chair



CALL FOR ABSTRACTS



**ISAKOS
CONGRESS
2021**



**Cape Town
South Africa
May 22 - 26**

ONLINE ABSTRACT SUBMISSION INSTRUCTIONS

- 1 Log-in using the Presenting Author's email and password for ISAKOS (If a record does not exist for the Presenting Author, you will be prompted to create a new record).
- 2 Complete contact information for the Presenting and Corresponding authors, including the institution of research. It is helpful to have the ISAKOS ID numbers for as many authors as possible. You may email isakos@isakos.com to obtain an author's ISAKOS ID number—please do not make duplicate records.
- 3 Provide the abstract title in proper title case for publishing.
- 4 Submit the plain abstract text into the provided text box. Please note, graphics and tables are not accepted.
- 5 Complete the Financial Disclosure Statement, American Food and Drug Administration (FDA) Statement, and Copyright License Agreement, on behalf of all authors.
- 6 Author Warranty: Authors must read and abide by the Abstract Submission Guidelines in order to be considered for presentation.



**ABSTRACT SUBMISSION DEADLINE
SEPTEMBER 1, 2020**

isakos.com/2021congress

**REGISTRATION
OPENS**

September 1, 2020!

APPLY FOR AWARDS AND FELLOWSHIPS!

AWARDS

isakos.com/awards

- John J. Joyce Award
- Richard B. Caspari Award
- Jan I. Gillquist Scientific Research Award
- Gary G. Poehling Award
- Albert Trillat Young Investigator's Award
- Achilles Orthopaedic Sports Medicine Research Award
- Paolo Aglietti Award
- Patellofemoral Research Excellence Award

AWARDS



John J. Joyce Award

In 1981, Dr. John J. Joyce, III, offered a monetary prize for the best arthroscopy paper read by an orthopaedic surgery resident or fellow during the Scientific Program of the 4th Congress of the International Arthroscopy Association in Rio de Janeiro. With characteristic generosity, he endowed a prize to be awarded at every IAA Congress thereafter. John Joyce created the award with the intention to stimulate and reward younger members who contribute high-quality data and presentations.



Richard B. Caspari Award

Beginning at the 2003 ISAKOS Congress in Auckland, New Zealand, a monetary prize in honor of Richard B. Caspari was awarded to the best upper extremity paper read at the scientific program of the Congress. The Richard B. Caspari award was established with the intention of stimulating and rewarding upper extremity focused abstracts and presentations.

FELLOWSHIPS

isakos.com/fellowships

- ISAKOS Global Traveling Fellowship
- ISAKOS Knee Arthroplasty Traveling Fellowship
- The Patellofemoral Traveling Fellowship
- ISAKOS Young Investigator's Scholarship & Research Mentoring Program



Jan I. Gillquist Scientific Research Award

Beginning at the 2007 ISAKOS Congress in Florence, Italy, a monetary prize was awarded to the best scientific paper presented during the scientific program of the Congress. ISAKOS will remember Jan Gillquist with a Research Award, created with the intention to stimulate and reward abstracts and presentations in the subject of Scientific Research.



Gary G. Poehling Award

Former ISAKOS President, Gary G. Poehling, is an innovator, teacher and leader in the field of Arthroscopy-specializing in the elbow, wrist and hand. Beginning at the 2017 ISAKOS Congress in Shanghai, China, a monetary prize in honor of Dr. Poehling is to be awarded to the best Elbow, Wrist and Hand paper read during the scientific program of the ISAKOS Congress.



Albert Trillat Young Investigator's Award

*SPONSORED BY INNOVATE
ORTHOPAEDICS LTD.*

In 1989, The International Society of the Knee established a Young Investigator's Research Award in memory of Professor Albert Trillat. Past President and founder of the International Society of the Knee, this award provides recognition for a young researcher who has done outstanding clinical laboratory research contributing to the understanding, care or prevention of injuries to the knee.

Achilles Orthopaedic Sports Medicine Research Award

SPONSORED BY DJO, INC.

The Achilles Orthopaedic Sports Medicine Research Award was created in 1995 to recognize researchers who have done outstanding clinical or laboratory research in the field of sports medicine, such as the care and prevention of injuries. A panel composed of members of the ISAKOS Orthopaedic Sports Medicine Committee reviews the award applications and the winning manuscript is presented at the ISAKOS Biennial Congress.



Paolo Aglietti Award

*SPONSORED BY
NICOLAAS C. BUDHIPARAMA, JR.
& INGE WIDJAJA*

*NICOLAAS INSTITUTE OF
CONSTRUCTIVE ORTHOPEDIC
RESEARCH & EDUCATION FOUNDATION FOR
ARTHROPLASTY & SPORTS MEDICINE*

The Aglietti Award provides recognition for outstanding research contributing to the understanding of Knee Arthroplasty. This award is in recognition of Professor Aglietti's numerous contributions to knee surgery as a prolific researcher, teacher and surgeon. Professor Aglietti served as Chairman of the ISAKOS Knee Committee and was ISAKOS President from 2007–2009. The 12TH Biennial ISAKOS Congress will be the first time the Aglietti Award will be presented.

Patellofemoral Research Excellence Award

*SPONSORED BY THE PATELLOFEMORAL
FOUNDATION, INC.*

The Patellofemoral Research Excellence Award was established in 2005 to encourage outstanding research leading to improved understanding, prevention and treatment of patellofemoral pain or instability. A panel composed of representatives from the ISAKOS Knee and Scientific Committees, The International PF Study Group and The Patellofemoral Foundation review the award applications and the winning manuscript is presented at the ISAKOS Biennial Congress.

FELLOWSHIPS

ISAKOS Global Traveling Fellowship

Coordinated by the ISAKOS Traveling Fellowship Committee, the fellowship will provide the opportunity for orthopaedic surgeons from five regions to travel with an ISAKOS Godfather to the region of the 2021 ISAKOS Congress. Fellows will have the opportunity to observe sports orthopaedic surgeries performed by highly respected surgeons, discuss the surgical procedures and all aspects of patient management and to discuss and share research experience.

ISAKOS Knee Arthroplasty Traveling Fellowship

*SPONSORED BY NICOLAAS C. BUDHIPARAMA
& INGE WIDJAJA*

*NICOLAAS INSTITUTE OF CONSTRUCTIVE ORTHOPAEDIC
RESEARCH & EDUCATION FOUNDATION FOR
ARTHROPLASTY & SPORTS MEDICINE*

Coordinated by the ISAKOS Knee Arthroplasty Committee, the fellowship will provide the opportunity for selected young orthopaedic surgeons, currently working in developing countries, to travel to various medical sites around the world to learn more about knee arthroplasty and to be exposed to the techniques of well-respected expert surgeons. At each site, the fellow will participate in knee arthroplasty surgical procedures, patient management or cadaver dissections in order to broaden their knowledge of the procedure.

Patellofemoral Traveling Fellowships

*SPONSORED BY THE PATELLOFEMORAL
FOUNDATION, INC.*

The Patellofemoral Traveling Fellowship was established in 2005 by the Patellofemoral Foundation and ISAKOS to promote better understanding and communication around the world regarding Patellofemoral pain. The Patellofemoral Traveling Fellowship is available on a competitive basis to an orthopaedic surgeon interested in the study and advancement of understanding of the Patellofemoral joint.

ISAKOS Young Investigator's Scholarship and Research Mentoring Program

The ISAKOS Young Investigator's Scholarship and Research Mentoring Program was developed by the ISAKOS Scientific Committee as a mentor-mentee program for young investigators with a specific focus on developing countries. The program seeks to stimulate research and education in developing countries, foster international collaboration, and promote academic excellence in arthroscopy, knee surgery and orthopaedic sports medicine.

Collagen Meniscus Implant (CMI): Features, Techniques, and Clinical Outcomes



Stefano Zaffagnini, MD, Prof.
Il Orthopaedics and Traumatological Unite, IRCCS Rizzoli Orthopaedic Institute, Bologna, Italy; Dipartimento di Scienze Biomediche e Neuromotorie DIBINEM, University of Bologna, ITALY



Giacomo Dal Fabbro, MD
Il Orthopaedics and Traumatological Unite, IRCCS Rizzoli Orthopaedic Institute, Bologna, ITALY



Gian Andrea Lucidi, MD,
Il Orthopaedics and Traumatological Unite, IRCCS Rizzoli Orthopaedic Institute, Bologna, ITALY



Luca Macchiarola, MD ITALY,
Il Orthopaedics and Traumatological Unite, IRCCS Rizzoli Orthopaedic Institute, Bologna, ITALY



Alberto Grass, MD
Il Orthopaedics and Traumatological Unite, IRCCS Rizzoli Orthopaedic Institute, Bologna, ITALY

Introduction

Meniscal tears are among the most common injuries treated by orthopaedic practitioners, and meniscectomy is still commonly performed because of its good short-term results and the severity of meniscal tears. The menisci have multiple functions: they are very important for shock absorption and force transmission during weight-bearing, they help in nutrition and lubrication of the joint, they have some role in proprioception, and they function as secondary stabilizers of the knee.

The loss of meniscal tissue as a result of injury, surgery, or degenerative processes alters the biomechanical function of the knee and has been associated with an increased risk of osteoarthritis over time. Therefore, in the past 30 years, the approach to the treatment of meniscal tears has shifted to meniscus-sparing or replacing strategies involving meniscal suturing, scaffolds, and allograft. The Collagen Meniscus Implant (CMI, Ivy Sports Medicine GmbH, Gräfelfing, Germany) is the first biological scaffold to be used for the treatment of partial meniscal deficiencies. The aim of this Current Concept article is to summarize the characteristics, surgical techniques, clinical results, and the MRI findings associated with the CMI scaffold.

Basic Science and Histological Behavior

The CMI is a highly porous scaffold (not a prosthetic device) that is made up of type-I collagen fiber from purified bovine Achilles tendon. The scaffold is 7.5 cm long and 1 cm wide and is designed to be trimmed and adapted to the meniscal defect during surgery. The CMI was developed with the purpose to develop a tissue-engineered meniscus. Animal studies have provided extensive knowledge about the histological behavior of the CMI implant. The cellular response has been shown to consist of both angiogenic and resorptive levels by 6 weeks that disappeared after a year following scaffold implantation. At 17 months, the implants appeared to have been largely replaced by more organized and integrated tissue resembling native tissue. However, remaining fragments of the scaffold continued along a path of begin incorporation into the surrounding tissue. Therefore, animal studies have demonstrated a correlation between MRI findings and histological observations.

Indication and Surgical Procedures

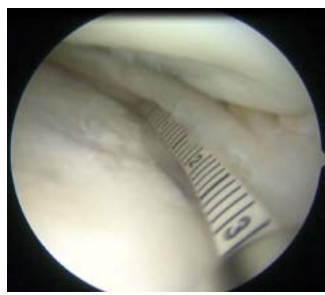
The CMI is indicated for the treatment of irreparable meniscal tears in patients with meniscal tissue loss of >25%, intact anterior and posterior horn attachments, and an intact meniscal rim over the entire circumference of the involved meniscus. Contraindications to the use of the CMI include an age of >55 years, Ahlbäck grade >1 degenerative changes on radiographs, osteonecrosis of the knee, Outerbridge grade-IV chondral lesions, PCL insufficiency, inflammatory arthritis, systemic or local infection, allergies to collagen or bovine products, obesity, and pregnancy. If ACL insufficiency or malalignment of the lower limb are present, concomitant correction of the defect is mandatory.

The scaffold is placed arthroscopically. Anteromedial and anterolateral knee portals are established, and a standard diagnostic arthroscopic procedure is performed. In acute cases, meniscal suture repair should be done whenever possible. If repair is not possible and in cases of chronic tears, debridement of damaged meniscal tissue is performed until healthy tissue is reached. The prepared site should extend into the vascular zone of the meniscus in order to guarantee an adequate blood supply.

A specially designed measuring device is used to determine the defect size, and the scaffold is trimmed accordingly to fill the defect. A probe can be used to manipulate the implant into the correct position. When the scaffold is in place, it is sutured to the remnant of the host meniscus with an all-inside or inside-out technique. We prefer an all-inside suture technique because it is faster and avoids the need for additional approaches to retrieve sutures. In particular, all-inside vertical stitches are placed every 4 to 5 mm to suture the scaffold to the host meniscal remnant along the periphery, and horizontal stitches are used to fix the scaffold to the anterior and posterior border. The anterior and posterior extremities of the scaffold are fixed to the native remnant with horizontal stitches, and vertical stitches are placed every 5 to 10 mm along the scaffold periphery. Following the completion of suturing, scaffold stability is tested with a probe (Figs. 1, 2, and 3).



01 Loss of meniscal tissue in previous lateral meniscectomy.



02 Quantification of the defect size.



03 Fixation of the scaffold with all-inside stitches.



04 Fixation of the scaffold with all-inside stitches.

In the postoperative period, a knee brace, locked in full extension, is applied for 1 month. The patient removes the brace only to perform self-assisted passive range-of-motion (ROM) exercises. ROM is limited to a gradual range of 0° to 90° in the first month. Unlimited ROM, with active and passive exercises, is encouraged after 5 weeks. Weight-bearing is not allowed for 3 weeks. Partial weight-bearing is permitted between 4 and 5 weeks. Full weight-bearing is permitted after 5 weeks. Return to full sport activities is not recommended before 4 to 6 months.

Clinical Results

Medial CMI

Clinical studies on the use of a medial CMI have demonstrated good results, particularly in terms of knee pain and function. The first series of medial meniscus CMI implants was described in the literature in 1997 by Stone et al., who reported no adverse effects and improved clinical scores at the time of the 3-year follow-up. Zaffagnini et al., in a prospective, non-randomized study, showed that a medial CMI provided better subjective outcomes scores and a lower VAS pain score in comparison with the findings in a group of matched controls who were managed with partial medial meniscectomy. Rodkey et al., in a multicenter prospective clinical trial of 311 patients who were managed with either a medial CMI or partial meniscectomy, reported that no significant clinical differences were observed between the groups at the time of the 5-year follow up in the “acute” arm of the study (comprising patients with no previous meniscal procedures) whereas the CMI group demonstrated some improvement in the Tegner index in the “chronic” arm of the study (comprising patients with a history 1 to 3 meniscal procedures). Monllau et al., in a study of 22 patients who were followed for a minimum 10 years after treatment with the CMI, reported significant pain relief and functional improvement. In other studies, medial CMI implantation has been associated with good clinical results in terms of knee function and pain reduction after follow-up periods ranging from 6 months to 10 years, particularly when used for the treatment of chronic partial lesions of the medial meniscus.

Lateral CMI

The accumulated experience with lateral CMI implantation as described in the literature is less than that for medial CMI implantation. However, the clinical results associated with lateral meniscectomy have been worse than those associated with medial meniscectomy because of the challenging biomechanics of the lateral meniscus, including a small contact area, high peak stresses, and extreme mobility. Therefore, a meniscal preservation procedure should be attempted whenever possible, and, in cases of partial meniscal loss, a CMI scaffold represents a viable alternative. Hirschmann et al., in a series of 67 patients, showed significant improvements in terms of subjective and objective outcomes after both lateral CMI implantation (12 patients) and medial CMI implantation (55 patients), with no difference in outcomes between the groups. Zaffagnini et al., in a prospective multicenter study of 43 patients with partial meniscal defects or irreparable meniscal tears, reported that lateral CMI implantation significantly improved knee function and reduced knee pain in the short term. Therefore, despite shorter experience with lateral CMI implantation, the clinical results are similar to those reported in association with the medial scaffold, with satisfactory clinical improvement at 2 years of follow up.

Collagen Meniscus Implant (CMI): Features, Techniques, and Clinical Outcomes

Associated Procedure

Meniscal tears are frequently associated with ACL injuries. In particular, irreparable damage to the posterior horn of the medial meniscus has been observed in association with up to one-third of ACL lesions. It is known that the menisci represent a secondary stabilizer of the knee, and the loss of meniscus has been identified as possible secondary cause of graft failure after ACL reconstruction. Therefore, the combined reconstruction of both structures is recommended. Bulgheroni et al. provided a comparative analysis of patients with combined ACL reconstruction and medial meniscal surgery reporting lesser degree of VAS pain and better control of the anterior tibial displacement at 9.6 year follow up in average in medial CMI group compared with meniscectomy group. These findings demonstrated that the collagen scaffold is a valid option when used in association with ACL reconstruction in patients with a chronic meniscal lesion associated with an ACL injury.

Coronal plane malalignment of the involved knee on preoperative long-leg weight-bearing radiographs should be corrected before or concurrently with CMI implantation. Linke et al., in a study in which the clinical results of combined CMI and HTO were compared with those of HTO alone, reported no significant differences between the two groups at 1 and 2 years of follow-up. These findings call into question the efficacy of CMI in patients with medial compartment overloading due to varus malalignment.

Complications

Relatively low rates of complications (7%) and reoperation (6.8%) have been reported. Although such rates may appear high for meniscal surgery, higher percentages of reoperations have been reported both for meniscal screws and arrows (33% to 68%) and for all-inside suture techniques (13% to 29%). The most frequent complications, especially in long term, have been knee swelling and residual compartmental pain. Other reported complications with a prevalence of <10% have included infection, nerve injuries, deep venous thrombosis, and implant failure. It also should be noted that a high rate of concomitant procedures (48.8%) could partially explain a reasonable number of the complications and reoperations that have occurred. Complications and failures directly related to the scaffold itself and the implantation procedure have been rare, confirming the safety of CMI implantation as reported in each individual study.

MRI Evaluation

MRI represents a non-invasive and well-tolerated method that has been used in large number of studies to evaluate the status of the CMI and the intra-articular behavior of the implant. Genovese et al. introduced a score to allow for the objective evaluation of the size and the signal intensity of the meniscal scaffold in relation to the surrounding native meniscus. The Genovese score considers morphology, size, and signal intensity and includes three grades: type 1 reflects a resorbed CMI with marked hyperintense signal, type 2 represents a small CMI with slightly hyperintense signal, and type 3 represents a CMI that is identical in size and signal intensity to the normal meniscus. However, the Genovese grading scale does not address meniscal extrusion and volume, both of which may influence the onset and progression of OA. Published investigations have shown that the CMI varied in signal and size at different follow-up times. In particular, the CMI appeared hypertrophic in the first year after surgery, with an abnormal, hyperintense, and inhomogeneous signal. These 1-year findings were seen in patients with good clinical results; therefore, it remains unclear what imaging findings should be considered as normal for the CMI. At long-term follow-up, evaluation of the CMI showed higher rates of scaffold with reduced size and with an MRI signal intensity more similar to normal meniscus.

Conclusions

CMI implantation has been shown to be safe for the knee joint. Good clinical results have been reported from 6 months through 10 years of follow-up when all associated pathologies have been adequately addressed. In particular, satisfactory results in terms of knee function and pain have been described in symptomatic patients with a previous meniscectomy. Additional studies are needed to gain more insight into the long-term clinical outcomes and to prove the long-term CMI behavior in terms of reducing degenerative changes.

References

1. Hinarejos P, Erggelet C, Monllau JC. Collagen Meniscus Implant: Basic Science, Technique and Results. In Hulet C, Pereira H, Peretti G, et al. *Surgery of the Meniscus*. Springer. 2016; 509-18.
2. Grassi A, Zaffagnini S, Marcheggiani Muccioli GM, et al. Clinical outcomes and complications of a collagen meniscus implant: a systematic review. *Int Orthop* 2014;38:1945-53.
3. Houck AD, Kraeutler MJ, Belk JW, et al. Similar clinical outcomes following collagen or polyurethane meniscal scaffold implantation: a systematic review. *Knee Surg Sports Traumatol Arthrosc Off J ESSKA* 2018;26:2259-69.
4. Zaffagnini S, Grassi A, Marcheggiani Muccioli GM, et al. MRI evaluation of a collagen meniscus implant: a systematic review. *Knee Surg Sports Traumatol Arthrosc Off J ESSKA* 2015;23:3228-37.
5. Kovacs BK, Huegeli R, Harder D, et al. MRI variability of collagen meniscal implant remodelling in patients with good clinical outcome. *Knee Surg Sports Traumatol Arthrosc Off J ESSKA* 2019; <https://doi.org/10.1007/s00167-019-05715-9>.

Insertional Achilles Tendinopathy



Gian Luigi Canata, MD
Centre of Sports Traumatology,
Koelliker Hospital, Torino, ITALY



Valentina Casale, MD
Centre of Sports Traumatology,
Koelliker Hospital, Torino, ITALY

Introduction

Insertional Achilles tendinopathy is a painful and debilitating condition, representing approximately one-third of all Achilles tendon abnormalities. Patients of all ages and activity levels may be affected, especially running athletes.

Overuse injuries of the Achilles tendon include both insertional tendinopathies (at the calcaneus-Achilles tendon junction) and non-insertional tendinopathies (2 to 6 cm proximal to the calcaneus-Achilles tendon junction)¹. Among insertional tendinopathies, a clear distinction should be made between Haglund disease and all other insertional pathologies. In fact, the term Haglund exostosis is commonly used to describe a clinical condition characterized by pain and tenderness at the posterolateral side of the calcaneus, where a calcaneal prominence can often be felt¹. This pathology is better classified as a “pre-insertional” tendinopathy and may coexist with insertional affections². (Fig. 1).



01 Radiograph showing a Haglund calcaneal prominence and calcific insertional Achilles tendinopathy.

The etiology of insertional Achilles tendinopathy is multifactorial, and several predisposing factors have been proposed. Intrinsic risk factors include hyperpronation, pes cavus, leg-length discrepancy, limited mobility of the subtalar joint, advancing age, obesity, diabetes, hypertension, and use of steroids, estrogens, and fluoroquinolone antibiotics. Extrinsic predisposing factors include changes in training pattern, footwear, and running on hard, and sloping surfaces³.

According to some authors, the affected site may be defined as “stress-shielded.” When inflammation is prolonged, the bursa may become fibrotic, resulting in a reduction of its lubricating function. Repetitive trauma results in cartilage-like changes within the Achilles tendon, leading to intratendinous bone formation through endochondral ossification⁴.

Insertional Achilles Tendinopathy

Diagnosis and Clinical Presentation

It is widely assumed that insertional Achilles tendinopathy is clinically diagnosed; nevertheless, radiological imaging may be helpful for better defining the clinical findings as well as for preoperative planning if surgery is required. Lateral and axial views may demonstrate calcific tendinopathy as well as an abnormal prominence on the posterosuperior side of the posterior tuberosity of the calcaneus.

Both magnetic resonance imaging (MRI) and ultrasound (US) provide additional information to distinguish the different structural abnormalities at the Achilles tendon insertion. Nevertheless, it must be noted that the extreme sensitivity of MRI may also identify structural abnormalities that are not strictly related to clinical symptoms.

Conservative Management

In the acute phase, an initial period of rest or immobilization, along with modified activity, is advisable. Other conservative options include stretching exercises, extracorporeal shock wave therapy, the use of non-steroidal anti-inflammatory drugs, orthotics, and shoe modification; in particular, heel lifts contribute to a consistent reduction of Achilles tendon tension.

Eccentric training, through which the tendon is lengthened during simultaneous muscular contraction, has not demonstrated significant results when used for the treatment of insertional Achilles tendinopathies, although this option has been proven to be effective in cases of non-insertional pain.

Alternatives to eccentric exercises include infiltrations, electrostimulation, and other options aimed to stimulate the healing process in the degenerated tendon.

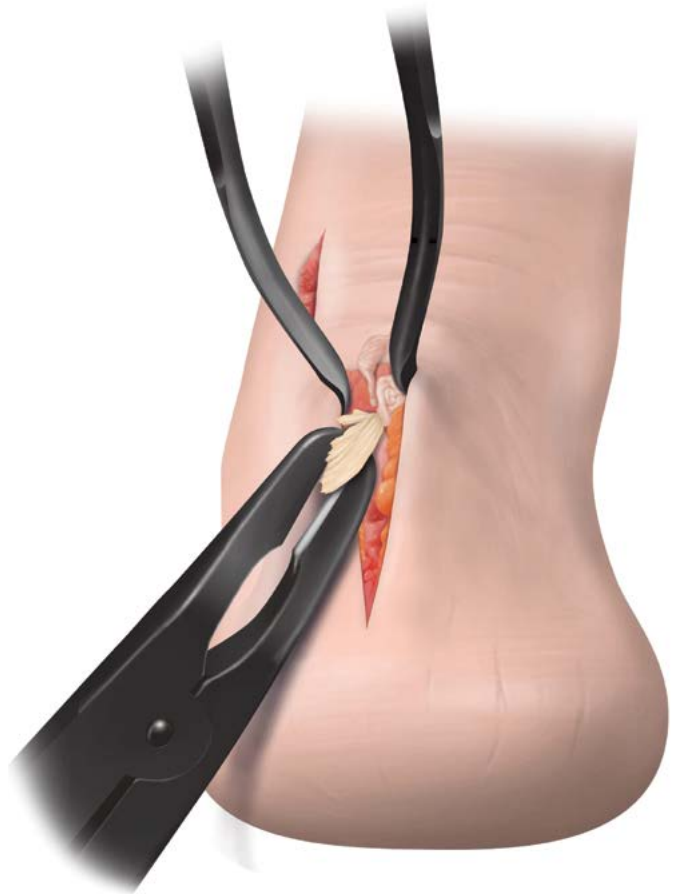
Surgical Treatment

Patients who do not respond to conservative management may require surgery.

Most clinicians wait at least 3 to 6 months before proceeding with surgery. Surgical procedures include tendon debridement, enthesiophyte resection, gastrocnemius elongation, and posterosuperior calcaneal eminence removal in cases of concomitant pre-insertional symptoms.

In a recent review, two main categories of surgical treatment emerged: debridement alone and debridement combined with tendon augmentation in cases of excessive tendon loss.

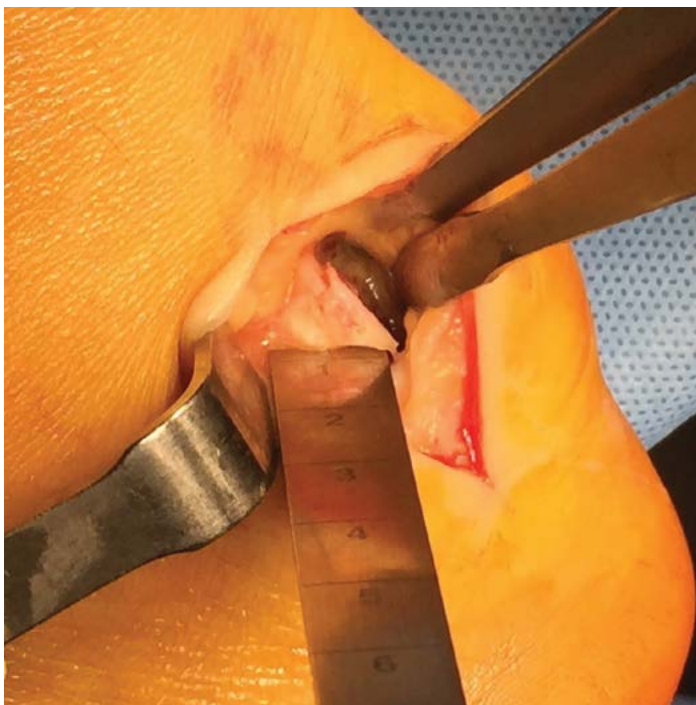
A variety of surgical approaches have been described, including lateral, medial, midline, J-shaped, and central tendon-splitting incisions. The goal is to remove the degenerative tissue (Fig. 2).



02 Illustration showing Achilles tendon splitting and removal of the osseous fragment. At the upper left portion of the illustration, another incision for managing a concomitant Haglund deformity is shown.

However, a central tendon splitting incision is generally preferable. The full extent of calcifications may not be appreciated through medial or lateral approaches because they are located within the middle third of the degenerative tendon insertion in 95% of cases.

If a Haglund deformity is present, the aims are to remove the painful osseous prominence of the posterosuperior corner of the calcaneus; to debride the diseased tendon, if necessary; and to excise the inflamed bursal tissue. The surgeon must take care not to damage the tendon insertion when removing the osseous prominence⁵ (Fig. 3). Recently, the most commonly described approaches have been endoscopic, percutaneous, and mini-open calcaneoplasties^{1,5}.



03 Intraoperative photograph made during mini-invasive calcaneoplasty for the treatment of Haglund deformity.

The postoperative protocol may depend on the physician's confidence in the tendon reattachment as well as on the portion of the tendon removed: if <50% has been excised, early weight-bearing may be allowed. Physical therapy should be focused on gait training, gradual recovery of ankle range of motion, and a progressive gastrocnemius-soleus strengthening program.

A full recovery of the range of motion and muscle strength is usually reached after 6 weeks to 1 year.

Conclusions

Insertional Achilles tendinopathy is a painful and debilitating condition. When necessary, surgical treatment should be carefully planned in order to restore function properly.

Rehabilitation depends on the specific surgical technique performed and on the individual healing time. Less-invasive surgery may allow for an earlier return to desired daily activities and sports.

References

1. van Dijk CN, van Sterkenburg MN, Wiegink JL, et al (2011) Terminology for Achilles tendon related disorders. *Knee Surg Sports Traumatol Arthrosc.* 19(5):835-841.
2. Calder J, Karlsson J, Maffulli N et al (eds) (2012) Disorders of the Achilles tendon insertions—Current concepts in orthopaedics. DJO Publications, Guildford, UK.
3. Li HY, Hua YH (2016) Achilles tendinopathy: current concepts about the basic science and clinical treatments. *Biomed Res Int.* 2016:6492597.
4. Maganaris CN, Narici MV, Maffulli N (2008) Biomechanics of the Achilles tendon. *Disab Rehab.* 30(20-22):1542-1547.
5. Canata GL, Casale V. (2019) Insertional Achilles tendinopathy. In: *Sports injuries of the foot and the ankle.* Canata GL, d'Hooge P, Hunt KJ, et al. (eds.). Springer Ed. 1st ed. pp 349-358.



Dear ISAKOS Members,

ISAKOS Annual Membership fees were due December 31, 2019

In order to avoid disruption of any of your ISAKOS member benefits, including your JISAKOS subscription, please renew your membership at isakos.com/myISAKOS/myMembership. You may also contact the ISAKOS Office for assistance with your renewal.

membership@isakos.com
+1 925-807-1197

THANK YOU
for being a valued member!

Is It Necessary to Repair Meniscal Ramp Lesions?



Nicholas N. DePhillipo, MS,
ATC, OTC
Twin Cities Orthopedics, Edina, MN
Oslo Sports Trauma Research Center,
Oslo, NORWAY



Lars Engebretsen MD, PhD
Oslo Sports Trauma Research Center,
Oslo, NORWAY



Robert F. LaPrade, MD, PhD
Twin Cities Orthopedics, Edina, MN
UNITED STATES

Abstract

Meniscal ramp lesions are commonly associated with ACL tears and are becoming more frequently recognized both preoperatively and intraoperatively. Despite the renewed research interest surrounding this meniscal tear pattern in the past decade, the majority of literature focuses on diagnosis and biomechanical consequences and lacks clinical validation. As a result, the biomechanical evidence has been questioned by clinicians as to whether or not the increased knee kinematics associated with untreated ramp lesions are clinically relevant. This controversy has called into question the necessity of surgical repair of ramp lesions that are identified at the time of ACL reconstruction. Nonetheless, the biomechanical evidence presented by multiple groups has consistently identified increased knee translation and the potential for increased stress within the ACL reconstruction graft if left untreated.

Introduction

In recent years, increased attention has been directed toward the identification and treatment of medial meniscal ramp lesions. Much of the previous literature has focused on improving the diagnosis of ramp lesions because of their potential “hidden” location, with tears lying at the posteromedial capsular meniscal attachment.

The name “ramp” derives from the arthroscopic appearance of a downward “ramp” when viewing the meniscocapsular junction posteromedially. The importance of these lesions stems from their relationship with the anterior cruciate ligament (ACL), and the reported prevalence of these lesions at the time of ACL reconstruction (ACLR) has ranged from 16% to 24%. Biomechanical studies have demonstrated that unaddressed meniscal ramp lesions increase anterior tibial translation and internal rotation in the ACL-deficient knee and place extra stress on the ACLR graft.^{1,2} However, because of a lack of clinical outcomes studies, controversy remains with regard to whether or not it is necessary to repair all of these lesions at the time of ACLR. The purpose of this report is to review the biomechanical literature on meniscal ramp lesions and to describe our preferred repair technique.

Biomechanical Consequences

The medial meniscus has been reported to have an essential role in stabilizing knees with chronic ACL deficiency. Biomechanical studies have demonstrated the interdependence between the medial meniscus and the ACL, specifically with regard to the role of the posterior horn of the medial meniscus (PHMM) as a secondary stabilizer to anterior tibial translation (ATT). Muriuki et al. described changes in tibiofemoral contact pressures after vertical tears of the PHMM as compared with those after radial split tears. The authors concluded that vertical tears of the PHMM increased contact pressure and reduced contact area in the medial and lateral compartments, similar to the findings after total medial meniscectomy. In 2001, Papageorgiou et al. demonstrated the biomechanical interdependence between the ACLR graft and the medial meniscus. The authors reported as much as a 54% increase in force in the ACLR graft after medial meniscectomy, further demonstrating the potential for increased ACLR graft failure in association with medial meniscal deficiency. Recent data have suggested that medial meniscal ramp tears, when left untreated, may predispose the ACL-reconstructed knee to increased ATT and potentially increased strain in the ACLR graft, correlating with graft failure.^{2,3}

The biomechanical functions of the PHMM attachments are essential, with recent investigations demonstrating that meniscal deficiency is the most significant clinical factor predicting ACLR graft failure. In 2018, DePhillipo et al. reported significant increases in ATT at 30° and 90° in ACL-deficient knees in association with the presence of both meniscocapsular and meniscotibial ramp lesions.¹ They also reported significant increases in internal and external rotation and pivot shift in knees with ramp lesions and found that restoration was not achieved with an isolated ACLR but was achieved with a combined ACLR and meniscal ramp repair. Furthermore, these biomechanical consequences of ramp tears have been corroborated by other biomechanical studies.²⁻⁵

The maximum residual differences in knee kinematics in previous biomechanical studies assessing the effects of meniscal ramp lesions are shown in Table I.

When comparing the degree to which knee kinematics are increased, it is important to evaluate the normal amounts of movement in ACL-intact and ACL-deficient knees. For example, previous research has shown that a side-to-side difference of >3 mm with maximum manual force (as applied with KT-1000 arthrometer) is indicative of a completely torn ACL. Therefore, the increases of 1 to 5 mm of ATT in association with the presence of meniscal ramp lesions in an ACL-intact knee that have been reported in the controlled laboratory setting may indeed have clinical implications.

TABLE I. Maximum Residual Differences in Knee Kinematics Among Biomechanical Studies Assessing Meniscal Ramp Lesions*

Study	ATT (mm)	IR (deg)	ER (deg)
Ahn et al. ⁴ (2011)	5.2	2.8	NR
Stephen et al. ³ (2016)	3.0	NR	2.5
Peltier et al. ⁵ (2015) [†]	3.5	2.8	1.7
Edgar et al. ² (2018) [‡]	1.2	NR	NR

*ATT = anterior tibial translation, IR = internal rotation, ER = external rotation, NR = not reported.

[†]Did not repair meniscal ramp lesion. [‡]Did not cut ACL during testing.

The intuitive theories behind inherent knee instability and meniscal ramp lesions are becoming increasingly recognized. Biomechanical data have provided insight into the roles of both the meniscocapsular and meniscotibial attachments of the posterior part of the medial meniscus. Tearing of the superior meniscocapsular joint capsule or the inferior meniscotibial ligament may create further instability, with increased ATT and knee rotation. However, previous anatomical and histological analyses have shown that these two structures share a common PHMM attachment, and thus it has been theorized that the meniscocapsular and meniscotibial attachments may function together as an anatomical unit rather than as two independent structures. Our recent biomechanical study supported the aforementioned theory as the authors reported no significant differences in knee kinematics between meniscocapsular-based tears and meniscotibial-based tears in ACL-deficient and ACL-reconstructed knees.¹ This finding suggests that although ramp lesions may occur in two separate locations instead of only at the meniscocapsular junction of the PHMM as previously described, an inside-out repair of the PHMM may be adequate to address lesions of both structures and restore knee stability.

Surgical Treatment Strategies

Current surgical options for meniscal ramp tears include repair, trephination/rasping, and leaving the tear *in situ*. The chosen treatment depends on the size and stability of the tear as well as on adequate visualization to properly diagnose the ramp-tear variant (e.g., meniscocapsular vs. meniscotibial). Some authors have advocated for the surgical repair of all meniscal ramp lesions at the time of ACLR on the basis of the potential increased risk of persistent instability and reconstruction graft failure when the tear is not treated. However, given the vascularization of the capsule and the red-red zone of the meniscus, some clinical studies have evaluated the potential for these tears to heal without surgical treatment following acute knee injuries.

Liu et al. evaluated the clinical outcomes for patients with ACLR and concomitant stable ramp lesions measuring <1.5 cm in length and reported no significant differences between trephination and meniscal repair after a mean duration of follow-up of 2 years. Those authors theorized that all meniscal ramp lesions measuring <1.5 cm in length were stable and thus may not require surgical repair with a concomitant ACLR. In contrast, Ahn et al. performed a clinical follow-up study with second-look arthroscopy and noted symptomatic and incomplete healing of meniscal tears at the meniscocapsular junction in 15% of patients with untreated ramp tears. As a result, they recommended that peripheral tears of the PHMM measuring >1 cm in length should be repaired during concomitant ACLR to decrease the rate of reintervention surgery and potentially protect the ACLR graft during primary ACLR.

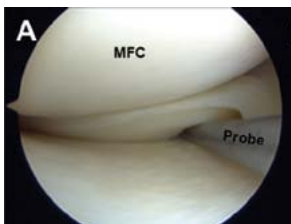
There are two main reported techniques for repairing meniscal ramp lesions: (1) all-inside repair and (2) inside-out repair. Previous studies have demonstrated satisfactory clinical outcomes at a minimum of 2 years after combined ACLR and all-inside ramp repair. Sonnery-Cottet et al. reported an overall meniscal repair failure rate of 11% in patients who underwent combined ACLR and all-inside ramp repair via an accessory posteromedial portal. The proposed advantages of all-inside repair include no additional large incisions or the use of a single posteromedial portal, improved visualization of the PHMM when utilizing an accessory posteromedial portal, and potentially quicker surgical repair time. However, one disadvantage of all-inside repair via an accessory posteromedial portal is the inability to access tears involving the meniscotibial attachment or undersurface tears of the PHMM. Other disadvantages include the use of fewer sutures (resulting in a weaker repair), the risk of saphenous nerve and vein injury in association with the use of a posteromedial portal, and deployment of a surgical implant into the meniscus. Deployment of a surgical implant into the meniscus can be a major problem because it can cause further tearing of the meniscus and/or iatrogenic cartilage damage during or after deployment of the implant.

Is It Necessary to Repair Meniscal Ramp Lesions?

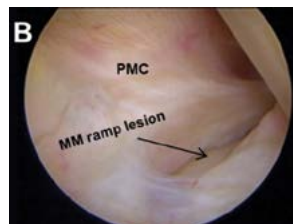
Inside-out repair techniques have been reported to increase the strength of the repair construct through the use of an increased number of sutures. Although inside-out techniques are technically demanding, their advantages include the versatility of suture placement and the anatomical repair of the meniscus to the posterior part of the capsule. The disadvantages of inside-out repair techniques include the need for additional incisions, the risk of neurovascular injuries in association with the surgical approach, and the extended surgical time needed for the meniscus repair. With the relatively high reported failure rate (11%) following all-inside meniscal ramp repair, future clinical studies are necessary to assess patient outcomes following inside-out ramp-repair techniques.

Authors' Preferred Technique: ACLR with Inside-Out Ramp Repair

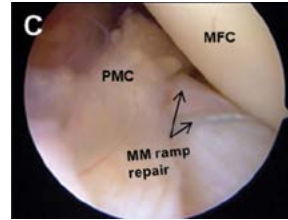
An examination is performed with the patient under anesthesia to assess for ACL instability, as Mouton et al. reported that grade-III Lachman and pivot-shift tests are associated with combined ACL tears and meniscal ramp lesions. The ACL femoral tunnel is reamed first, and then attention is directed toward the medial compartment. The posteromedial aspect of the knee is evaluated directly with use of the modified Gillquist view, with the arthroscope passing medial to the posterior cruciate ligament. A 70° arthroscope can be used to improve visualization of the posteromedial part of the capsule. Once the ramp tear is confirmed, a posteromedial incision is made posterior to the medial collateral ligament and a retractor is placed to protect the neurovascular structures. Four to six inside-out meniscal sutures are then placed in a vertical mattress fashion to ensure that both meniscocapsular and meniscotibial attachments are reduced. The sutures are then tied under direct visualization via the modified Gillquist view, and the repair is reassessed to confirm stability (Figure 1). The ACL tibial tunnel is then reamed, and the ACLR graft is passed and fixed in the femur and tibia.



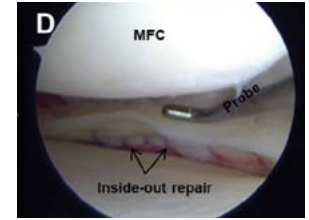
01A Meniscal ramp lesion with increased anterior translation on probing.



01B Ramp lesion seen with a modified Gillquist view.



01C Inside-out repair of a ramp lesion under direct visualization.



01D Vertical mattress repair with stability confirmed on probing.

Figs. 1-A through 1-D Arthroscopic images made during inside-out medial meniscus ramp repair. MFC: medial femoral condyle, PMC: posteromedial capsule, MM: medial meniscus.

Summary

There is biomechanical evidence to support the repair of meniscal ramp lesions at the time of ACLR. Both all-inside and inside-out repair techniques have been described, but both methods still lack sufficient clinical validation. Future studies of meniscal ramp lesions should focus on clinical outcomes following combined ACLR and meniscal ramp repair.

References

1. DePhillipo NN, Moatshe G, Brady A, et al. Effect of Meniscocapsular and Meniscotibial Lesions in ACL-Deficient and ACL-Reconstructed Knees: A Biomechanical Study. *The American journal of sports medicine* 2018;363546518774315. doi: 10.1177/0363546518774315
2. Edgar C, Kumar N, Ware JK, et al. Incidence of Posteromedial Meniscocapsular Separation and the Biomechanical Implications on the Anterior Cruciate Ligament. *The Journal of the American Academy of Orthopaedic Surgeons* 2018 doi: 10.5435/JAAOS-D-17-00327
3. Stephen JM, Halewood C, Kittl C, et al. Posteromedial Meniscocapsular Lesions Increase Tibiofemoral Joint Laxity With Anterior Cruciate Ligament Deficiency, and Their Repair Reduces Laxity. *The American journal of sports medicine* 2016;44(2):400-8. doi: 10.1177/036354651561745
4. Ahn JH, Bae TS, Kang KS, et al. Longitudinal tear of the medial meniscus posterior horn in the anterior cruciate ligament-deficient knee significantly influences anterior stability. *The American journal of sports medicine* 2011;39(10):2187-93. doi: 10.1177/0363546511416597
5. Peltier A, Lording T, Maubisson L, et al. The role of the meniscotibial ligament in posteromedial rotational knee stability. *Knee surgery, sports traumatology, arthroscopy : official journal of the ESSKA* 2015;23(10):2967-73. doi: 10.1007/s00167-015-3751-0

CONGRATULATIONS

to the sports medicine fellows who received the scholarship and attended the 2020 ISMF Conference in Carlsbad, California

INTERNATIONAL
SPORTS MEDICINE
FELLOWS CONFERENCE

Ignacio Garcia-Mansilla, MD
ARGENTINA

**Harry Krishnan, FRCS(Tr&Orth),
MEd(ULT), MBBS, BSc(Hons)**
UNITED KINGDOM

This scholarship is intended to promote better understanding and communication regarding injuries or conditions as related to sports medicine. Learn more at isakos.com/Awards/ISMFScholarship

CONGRATULATIONS to the 2019–2021 ISAKOS Research Grant Winners!

The purpose of the ISAKOS Research Grants program is to provide ISAKOS members with a resource for funding the highest quality international research in arthroscopy, knee surgery and orthopaedic sports medicine.

Osteoarthritis

Early Signs of Osteoarthritis After ACL-Rupture;
A Window of Opportunity For Osteoarthritis Prevention

**Duncan E. Meuffels,
MD, PhD** NETHERLANDS

Clinical Outcomes

Operative vs. Non-operative Management of Posterior-medial Meniscal Root Tears: A Randomized Multicenter International Trial

Jorge Chahla, MD, PhD
UNITED STATES

Countries with Limited Resources

Correlation Between Knee Functional Scores and Pivot Shift Test Measurements In Anterior Cruciate Ligament Deficient

Paulo H. M. Araujo, MD, PhD BRAZIL

New Researcher

Hamstring Tendon Autograft versus Quadriceps Tendon Autograft for Anterior Cruciate Ligament Reconstruction: A Randomised Controlled Trial

Ross Radic, MBBS FRACS (Ortho) FAOrthA
AUSTRALIA

Learn more at isakos.com/ResearchGrants

State of the Art for Injections in Orthopaedics



Ignacio Dallo, MD
O.A.S.I Bioresearch Foundation Gobbi
Onlus, Milano, ITALY
Email: info@drignaciodallo.com.ar



Eleonora Irlandini
O.A.S.I Bioresearch Foundation Gobbi
Onlus, Milano, ITALY
Email: e.irlandini@gmail.com



Vetri Kumar, MS
O.A.S.I Bioresearch Foundation Gobbi
Onlus, Milano, ITALY
Email: fellow@oasiortopedia.it

Abstract

There is a growing interest in orthopaedics and sports medicine in non-surgical treatment with the advent of injectable therapies, such as viscosupplementation, injections using endogenous growth factors and cells directly into the tissue to facilitate healing, decrease inflammation and subsequently provoke an analgesic effect after an injury or illness. Injections have the advantage of being “minimally invasive” with relatively low risk of complications. Commonly used biological approaches include platelet-rich plasma (PRP), bone marrow aspirate concentrate (BMAC), adipose tissue, and allogenic amniotic fluid. These injectable treatments may contribute to a regenerative microenvironment with the potential to improve healing rates and function in patients with musculoskeletal problems; however to date, only symptomatic improvements have been reported clinically. The American Academy of Orthopaedic Surgeons (AAOS) defined these biological as substances that can be found naturally in the body that aid in injury healing. Several clinical trials are currently being performed evaluating these non-invasive therapies despite limited understanding of the underlying pathologic basis of the disease and without a complete characterization of their components.

Additional studies are needed to identify optimal formulations and in defining the ideal dose and timing of injections for various orthopaedic conditions. In this state of the art article, you will find a critical review of the latest high-level evidence-based medicine for the clinical use of injections in orthopaedics.

Injections for Osteoarthritis (OA)

Corticosteroids

Corticosteroids have been reported to be more effective than placebo in pain reduction and clinical scores until three weeks post-injection. However, after one-month post-injection, there were no significant differences when compared to placebo. There are some patient factors, such as obesity and OA severity, that affects its effectiveness. Due to the lack of long-term benefit, patients often request multiple injections. The AAOS clinical practice guidelines for non-surgical management of knee OA updated in 2013 was unable to recommend for or against its use for knee OA. Thus, evidence of using corticosteroids for the treatment of symptomatic knee OA was determined to be inconclusive.

Hyaluronic Acid (HA)

HA has been shown to reduce the symptoms of OA and provide a superior safety profile when compared to the use of NSAIDs. It has also been shown to postpone the time of knee arthroplasty from the diagnosis of OA. Recent OARSI guidelines for the treatment of osteoarthritis suggest “good” level of evidence for the treatment of symptomatic mild to moderate OA of the knee with intra-articular HA. The European Viscosupplementation Consensus Group recommended the use of HA injections in young patients at high risk of progression of OA and competitive athletes in an attempt to slow the progression of OA. Recently, a new type of HA has been brought in to the market. It consists of a mixture of two hyaluronates, one of medium molecular weight (1200-1500 kDa), which promotes viscosupplementation, the other of low molecular weight (200-400 kDa), which contributes to the resolution of OA articular damages. The main innovation is the excipient, trehalose, a sugar that seems to act as a protector of HA, delaying the degradation from hyaluronidases. Pre-clinical studies demonstrated that this new formulation lasts longer than three months, and a new clinical trial is in progress to analyze the effect in patients suffering from OA.

Platelet Rich Plasma (PRP)

PRP has been the center of attention regarding non-surgical injectable therapies. It is known to contain a high concentration of α -granules with growth factors and anti-inflammatory cytokines such as insulin-like growth factor 1 (IGF-1), IGF-2, vascular endothelial growth factor (VEGF), transforming growth factor- β (TGF- β), fibroblast growth factor (FGF), endothelial growth factor, and platelet-derived growth factors (PDGF).

PRP can be obtained from the patient on the same day as the injection is given and is processed through minimal steps, making it both cost-effective and convenient for treatment in patients with OA. To date, randomized controlled trials have demonstrated safety and superior efficacy of PRP than HA in knee osteoarthritis at 12 months.^{1,2} Better outcomes have been reported in younger patients or with mild to moderate OA without malalignment, smokers, or obesity. Initial research suggests that leukocyte-poor platelet-rich plasma (LP-PRP) may have stronger efficacy for intra-articular application. PRP has been shown to provide relief from pain and inflammation associated with OA, making it a viable treatment in the management of OA.¹

Some new studies suggest that the combined application of PRP with HA could have a synergistic effect on treatment for OA.

Cell Based Therapies

Bone Marrow Aspirate Concentrate (BMAC)

Bone marrow aspirate concentrate is classified through the US Food and Drug Administration (FDA) as a 361 product and, hence, it is not subject to premarket review and approval. BMAC has progenitor cells and growth factors with reparative, homing, and trophic properties causing cellular migration to areas of damage. Numerous factors are released that can help in healing and inflammation modulation. BMAC has recently been shown to have an increased concentration of Interleukin 1 Receptor Antagonist (IL-1RA), which, in combination with the other constituents, may provide anti-inflammatory and immunomodulatory effects. Few studies (underpowered) have demonstrated patient safety and improved clinical outcomes after BMAC treatment for OA; however, there is a paucity of high-level studies or randomized trials with joint osteoarthritis.

Adipose-derived Stromal Cell

Adipose-derived stromal cell therapy (ASC), also known as adipose stromal vascular fraction (SVF) therapy, has gained recent popularity as a treatment. Compared with BMAC, adipose tissue has been reported to have larger quantities of progenitor cells. Previous literature demonstrated significant reduction in Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), an improvement in Lysholm score, and significant pain reduction (VAS). Improvements in MRI scores were also reported. Although promising, these studies have been insufficient to conclude the efficacy of ASC therapy to adopt it into standard practices.

Amniotic Tissue

An emerging new allogenic orthobiologic option, amniotic tissue, has also been shown to be a source of bioactive components. Amnion, chorion, amniotic fluid, and the umbilical cord are distinct placental tissues that have been investigated. They are reported to contain growth factors, cytokines, and vasoactive peptides that modulate inflammation.

In addition, they contain amniotic epithelial cells and amniotic mononuclear undifferentiated stromal cells, which have chondrogenic and osteogenic differentiation capacity. Amnions (AM) are also a rich source of hyaluronic acid and proteoglycans, which could play a role in the potential therapeutic relief of OA. Currently, there are several commercially available formulations of AM that differ based on content as well as how they were preserved. Current literature contains evidence that is insufficient to conclude the efficacy of this treatment.

Injections for Muscle Injuries

Platelet Rich Plasma (PRP) and Platelet Poor Plasma (PPP)

The increase of activation of satellite cells improving the muscle fiber's diameter and the enhancement of the myogenesis are some of the mechanisms of PRP from fibroblast growth factor (FGF-2) and transforming growth factor- β 1 (TGF- β 1) to stimulate the healing response. There are conflicting reports in the literature. Some randomized controlled trials (RCTs) showed no difference for acute hamstring muscle injuries treated with PRP vs physical therapy on time to return to play and the re-injury rate. One RCT showed a shorter time to return to play in the PRP group compared to a control group with no injection but comparable re-injury rates. Another study using PRP under ultrasound guidance, in professional football players with hamstring injuries (grade 2 in MRI classification) demonstrated a smaller scar and excellent repair tissue with a mean follow-up of 36.6 months but no difference in return to play. New preclinical studies are showing better healing with less fibrotic tissue using a low concentration of platelet (less than 2X) platelet-poor plasma (PPP)³ or losartan that inhibits the effects of TGF- β 1, a critical factor in the development of scar tissue. PRP could be an adjuvant therapy if we find the right preparation.

Injections for Tendon Injuries

Corticosteroids

When considering corticosteroid injections for tendinopathies, the risk of possible medium-term harm must be weighed up against any short-term efficacy.

Platelet Rich Plasma (PRP)

Rotator Cuff

Randomized Controlled Trials (RCTs) studies comparing PRP with placebo or corticosteroid injection demonstrated early improvement in pain relief and functional outcome scores for a period of 6-month follow-up. PRP injection was not more effective than placebo at 1-year follow-up, in pain, improving quality of life, disability, and shoulder range of motion in patients with chronic rotator cuff tears who were treated with an exercise program.

State of the Art for Injections in Orthopaedics

However, good results were seen in association with the use of gel PRP matrix, the application of PRP at the tendon-bone interface, the use of PRP for double-row repairs, and the use of PRP for small or medium-sized rotator cuff tears.⁴

Epicondylitis

PRP injections have reported good results in the treatment of the lateral epicondylitis, in cases where physiotherapy has been unsuccessful. A multicenter, double-blinded, randomized controlled trial reported increased pain relief and diminished elbow tenderness at 24 weeks suggesting that Leukocyte-rich Platelet-Rich Plasma (LR-PRP) may have beneficial long-term effects for treating lateral epicondylitis compared to steroid.⁵

Achilles Tendon

No difference was found in clinical outcome scores, pain relief, or neovascularization of tendon tissue with PRP compared to placebo injection with saline in a double-blind, randomized controlled trial of 54 patients with 1-year follow-up. Even after acute tendon rupture, PRP administration at the time of surgical repair has not been proven to be efficacious.

Patellar Tendon

Some studies that evaluated the injection of leukocyte-rich PRP compared with dry needling in the treatment of refractory patellar tendinopathy plus standardized eccentric exercises showed significantly more clinical improvement in the group of PRP at 12 weeks but not at 26 weeks. A systematic review of eleven studies reported the beneficial effects of PRP injection for treating patellar tendinopathy to be inconclusive and inconsistent in comparative studies. Load-based rehabilitation remains the cornerstone of tendinopathy management.

Cell Based Therapies

In the setting of rotator cuff repair, there are few studies using bone marrow cells (BMAC) to augment the healing rate. One case-control study using BMAC sourced from posterior iliac crest showed significant improvement in healing outcomes and reduced number of re-tears determined by ultrasound and MRI at ten years follow up. However, another study showed no significant difference in clinical scores at six months using BMAC sourced from the ipsilateral humeral head.⁶

Injections for Meniscus Tears

Platelet Rich Plasma (PRP)

PRP contains several bioactive agents that can mediate the tissue healing process after an injury through both the inflammatory and remodeling phases. Platelets are involved in homeostasis, aggregation and clot formation steps, which finally leads to the scaffold formation, necessary to enhance meniscus healing.

However, only few clinical studies have demonstrated slightly improved clinical outcomes and good rates of meniscal healing.

Cell Based Therapies

Clinical studies using cellular therapies for meniscal repair are currently limited. A RCT, found statistically significant meniscus growth on MRI at 24 weeks post-injection, as well as better functional and clinical outcomes using expanded autologous bone marrow mesenchymal stem cells injected percutaneously in knees.⁷ A clinical study reported the repair of a grade II meniscal tear following a percutaneous injection of autologous adipose stem cell (ASCs) along with PRP, hyaluronic acid, and CaCl₂. One randomized, double-blind, controlled study, reported evidence of meniscus regeneration and an improvement in knee pain.

The use of mesenchymal stem cells seems to stimulate the regeneration of meniscal tissue and it appears to be a promising approach to restore as much meniscal tissue as possible. However, these regenerative technologies still need to be optimized. Further studies are also needed in this field to support its use.

Summary

Level 1 of evidence.

- OA: Clinical use of LP-PRP for the treatment of symptomatic mild to moderate knee OA is strongly supported in the literature.
- Tendinopathy: LR-PRP is recommended for the treatment of lateral elbow tendinopathy.
- Meniscus: Meniscal regeneration was reported in a therapeutic level 1 study with the use of injectable expanded autologous bone marrow mesenchymal stem cells but needed further study.
- Muscle: PPP should be used to stimulate myoblast differentiation, which is necessary for skeletal muscle regeneration, but stronger research is needed.
- ACL: BMAC and PRP are safe and showed good long-term results as a coadjuvant for partial tears of the ACL in a level 4 of evidence study. May be used assuming minimal risk to the patient, but future higher-quality research is recommended to create a more definitive recommendation.

Legends



01 Injections of Platelet Rich Plasma (PRP) and bone marrow aspirate concentrate (BMAC) prepared for use in orthopaedic conditions.



02 Image showing a meniscus tear infiltration with bone marrow aspirate concentrate (BMAC) under arthroscopy visualization.



03 Image of the process of homogenising leukocyte-poor platelet-rich plasma (LP-PRP) and hyaluronic acid (HA) for the treatment of knee osteoarthritis (OA).



04 Picture showing an infiltration of leukocyte-rich platelet-rich plasma (LR-PRP) for lateral epicondylitis.

References

1. Cole BJ, Karas V, Hussey K, Pilz K, Fortier LA. Hyaluronic Acid Versus Platelet-Rich Plasma: A Prospective, Double-Blind Randomized Controlled Trial Comparing Clinical Outcomes and Effects on Intra-articular Biology for the Treatment of Knee Osteoarthritis. *Am J Sports Med.* 2017;45(2):339-346.
2. Dai WL, Zhou AG, Zhang H, Zhang J. Efficacy of Platelet-Rich Plasma in the Treatment of Knee Osteoarthritis: A Meta-analysis of Randomized Controlled Trials. *Arthroscopy.* 2017;33(3):659-670.e651.
3. Miroshnychenko O, Chang WT, Dragoo JL. The Use of Platelet-Rich and Platelet-Poor Plasma to Enhance Differentiation of Skeletal Myoblasts: Implications for the Use of Autologous Blood Products for Muscle Regeneration. *Am J Sports Med.* 2017;45(4):945-953.
4. Saltzman BM, Jain A, Campbell KA, et al. Does the Use of Platelet-Rich Plasma at the Time of Surgery Improve Clinical Outcomes in Arthroscopic Rotator Cuff Repair When Compared With Control Cohorts? A Systematic Review of Meta-analyses. *Arthroscopy.* 2016;32(5):906-918.
5. Mishra AK, Skrepnik NV, Edwards SG, et al. Efficacy of platelet-rich plasma for chronic tennis elbow: a double-blind, prospective, multicenter, randomized controlled trial of 230 patients. *Am J Sports Med.* 2014;42(2):463-471.
6. Gobbi A, Whyte GP. Long-term Clinical Outcomes of One-Stage Cartilage Repair in the Knee With Hyaluronic Acid-Based Scaffold Embedded With Mesenchymal Stem Cells Sourced From Bone Marrow Aspirate Concentrate. *Am J Sports Med.* 2019;47(7):1621-1628.
7. Vangsness CT, Jr., Farr J, 2nd, Boyd J, Dellaero DT, Mills CR, LeRoux-Williams M. Adult human mesenchymal stem cells delivered via intra-articular injection to the knee following partial medial meniscectomy: a randomized, double-blind, controlled study. *J Bone Joint Surg Am.* 2014;96(2):90-98.

2019 ISAKOS Global Traveling Fellowship

First Stop: Buenos Aires, Argentina

2019 Winners:

**Taofeek Adeyemi, MD, MBA,
Dip Orth, FMC(Orth) NIGERIA**

Paulo Araujo, MD, PhD BRAZIL

Gilbert Moatshe, MD, PhD NORWAY

Brian Rebolledo, MD UNITED STATES

We arrived in the beautiful city of Buenos Aires on April 28, 2019. Transportation was arranged from the airport to the hotel, which was situated in a very nice neighborhood of Palermo. That evening, our Godfather, Dr. David Figueroa, arranged a dinner and get-together at a nearby restaurant that served amazing food.

On Monday, April 29, we were picked up from the hotel by our hosts and spent the day at Instituto Argentino de Diagnósticos y Tratamiento (IADT), where we were hosted by Drs. Guillermo Arce, Eduardo Abalo, and Tomas Vilaseca. We observed several surgical procedures, including total knee arthroplasty, ACL reconstruction, reverse total shoulder arthroplasty, and hip arthroscopy for FAI. It was a great learning atmosphere from experienced surgeons, and we had time to discuss cases.

In the evening, we attended a meeting with the Asociación Argentina de Artroscopia, where Dr. Taofeek Adeyemi presented on “The Role of Hyaluronic Acid-Based Therapy in Knee Osteoarthritis,” Dr. Paulo H. Araujo presented on “What is New in the Pivot Shift Analysis”, Dr. Brian Rebolledo presented on “The Emergence of Artificial Intelligence in Orthopaedics,” and Dr. Gilbert Moatshe presented on “Epidemiology and Outcomes After Knee Dislocations” The day ended with dinner with the Board of the Asociación Argentina de Artroscopia (Drs. Horacio Rivarola, Rodrigo Maestu, Juan Pablo Previgliano, and Facundo Gigante). The next day was spent at the Hospital Italiano, where we were hosted by Drs. Matias Costa Paz and Carlos Yacuzzi. During the morning, we attended procedures with Drs. Maximiliano Ranalletta, Ignacio Tanoira, and Dr. Lisandro Carbó. After lunch, we had some interesting presentations from Drs. Matias Costa Paz and Carlos Yacuzzi, followed by case presentations.

The last day was spent on sightseeing, the weather was great and there was not much traffic because of the holidays. We were able to appreciate the beauty of Buenos Aires and enjoy good Argentinian steak before heading off to our next destination. Our hosts were incredible, and we learned a lot from spending time with our colleagues and friends in Argentina. The hospitality here is amazing, and yes, it is true that the steak in Argentina is incredible! Muchas gracias!



Second Stop: Santiago, Chile

Santiago, a gorgeous city hugged by both the Andes mountains and the Pacific Ocean, was, without a doubt, one of the true highlights of the trip. Our Godfather, Dr. David Figueroa, had planned an incredible itinerary that enabled us to fully experience the culture of this remarkable city.

From the moment we arrived, we were made to feel very much at home. After landing in the late afternoon, we made our way to the hotel to shower and take a moment to decompress. We then made our way over to a beautiful penthouse restaurant overlooking the city. David and his wonderful wife, Loli, joined us for an exquisite culinary experience that was accompanied by one of the most incredible sunsets in memory, capping off a perfect evening that set the tone for this leg of the trip.

The next morning, we got up early and set out for the famous Clinica Alemana, a beautiful state-of-the-art facility in Vitacura, situated on the outskirts of Santiago. We started the day with a fantastic conference organized by the orthopaedic surgery residents, who quickly demonstrated why they are members of the top residency program in the country. Following presentations of a set of complex cases and a discussion of contemporary techniques for various knee pathologies, we were able to tour the grounds. As part of the tour, we found ourselves walking through a beautifully designed physical therapy and rehabilitation center. Featuring a large glass wall designed to allow ample ambient light to shine in, this stunning building also included a video analysis center for patients to review their progress. All of us left just a bit envious of the magnificent facilities at the Clinica Alemana.

After lunch, we headed to the center of the city to visit the public Hospital Mutual de Seguridad. Drs. Xabier Carredano and Maria Jesus Tuca de Diego presented a hospital environment that operates as a very high-volume Level-1 center that cares for many of the city's inhabitants. After that, we reviewed the cases of some incredibly difficult knee dislocations that had recently been treated at the hospital. It was a truly enriching educational experience to learn how the hospital systematically manages so many difficult trauma cases.

Next, we had the opportunity to attend the meeting of the Sociedad Chilena de Cirugia de Rodilla, hosted by Dr. Daniel Apablaza, during which each of us were able to share a presentation on various topics in Sports Medicine. In addition, we were able to meet and converse with many of the top sports medicine and knee surgeons from the area.

If we thought that we couldn't fit any more into one day, we still had one of the real high points of the entire journey ahead of us. David and his wife Loli hosted us at their house for one of the best dinners of the trip. Loli had put together an amazing spread for all of us, and David, the wine connoisseur, introduced us to many wonderful Chilean varieties. The fantastic discussion was also coupled with lots of laughter that continued well into the night.

The next morning, we set off for Pontificia Universidad Católica de Chile, a distinguished university dedicated to educating the next generation of top undergraduate and medical students in the country. First, we toured an enormous lab dedicated to simulation and were able to join the medical students in the cadaver lab as well. After that, we made our way to a small conference room, where Dr. Sebastian Irrazaval treated us to one of the very best lectures that any of us had ever seen. In his presentation, which was worthy of being delivered as a TED talk, Dr. Irrazaval described an awe-inspiring journey to the top of Mount Everest. In describing his role as the physician on a Chilean climbing team, he essentially took us to the mountainside where he had helped climbers from succumbing to the harsh world up in the sky. The video that he shared as he reached the summit gave us all chills as we experienced that moment with him.

Next, we made our way out into the city center, where we enjoyed an organized walking tour through the neighborhoods and bazaars of Santiago, ending with a fantastic lunch of delicious seafood. After we had had our fill, we made our way over to Clinica de Medicina Deportiva de Chile, where Dr. Cristian Fontbote showed us around the ultramodern clinic that cares for many elite athletes. We also toured a cutting-edge biomechanics laboratory that was working on quantifying the pivot shift. Our Godfather, Dr. David Figueroa, told us of a previous knee injury of his own, and we were able to test his knee in the lab with some of the contemporary equipment. While we decided that getting him back in the game was paramount, we ultimately decided to treat him nonoperatively. Sorry, David.

During our trip to Santiago, there were plenty of moments that brought both clarity and growth. My clinical care practice, research trajectory, and, most importantly, personal connections were all well served by this wonderful excursion, during which I learned that we have more similarities than differences in how we approach our patients and our practice. The trip to Santiago was a tremendous experience that we all will remember fondly for many years to come.

Third Stop: Sao Paulo, Brazil

We arrived in Sao Paulo on May 4, a Saturday night. There was only enough time for a casual dinner in the hotel area. Fortunately, our local host, Prof. Moises Cohen, had arranged for us to stay in a very cozy neighborhood, “Jardins,” which was full of restaurants located steps away from our hotel. Some *caipirinhas* later, it was time to get some sleep!

On Sunday, the plan was to immerse ourselves in the local culture, and we took the opportunity to enjoy some typical Brazilian family activities. In the morning, we took a walk through the Ibirapuera Park, Sao Paulo’s equivalent of Central Park, which was full of people playing sports, cycling, running, or just strolling around. The brilliant blue sky and a demonstration of Capoeira, a Brazilian martial art, were the highlights of the morning. For lunch, Dr. Gustavo Arliani took us to the “Fogo de Chão,” a Brazilian barbecue restaurant. After lunch, we attended a Brazilian soccer match at Morumbi stadium between two of the most popular and winning teams in Brazil: São Paulo and Flamengo. The crowd and the fans’ hymns were incredible. The game ended tied 1-1, but we had enjoyed a completely winning day!

On Monday, we headed over to Albert Einstein hospital, the biggest private hospital in Latin America, where Dr. Cohen and his team performed a number of very interesting procedures, including MPFL reconstruction, tibial tubercle medialization, and patellar OAT. After surgery, Dr. Mario Ferretti took us to a hospital tour and lunch. In the afternoon, we went to the Cohen Institute, a complete sports-medicine facility packed with pictures and gifts from sports celebrities. Impressive! On the way back to the hotel, we had time for a walk through Paulista avenue, the financial heart of Brazil, as well as the “Jardins” neighborhood, where we enjoyed some refreshing Brazilian fruit juices. For dinner, we headed to an Italian restaurant with Dr. Moises Cohen, Camila Cohen Kaleca, and Gustavo Arliani.

Tuesday morning was dedicated to the Escola Paulista de Medicina orthopaedic department grand rounds. A very complex pediatric orthopedic case was presented and discussed. Then, the global Traveling Fellows and our Godfather presented lectures to the audience, followed by good discussions. It was then time to pack and head to the airport.

In short, this stop featured lots of Brazilian culture, lots of learning, and many new friends. A perfect combination!



Fourth Stop: Bogota, Colombia

We arrived in Bogota late Tuesday evening and Dr. Manuel Mosquera received us at the airport and took us out for dinner at a trendy restaurant near our hotel. Dr. Mosquera has a great sense of humor, and I took an immediate liking to him.

Early the next morning, we headed to Clinica Reina Sofia and made some presentations before observing surgery with Dr. Luis Alfredo Moreno. Next, we joined our host, Fabio Restrepo, as well as other members of ACCART at a nice meeting that was held in our honor, where we made presentations and engaged in interesting discussions.

Later in the day, we enjoyed an amazing visit to a world-class Colombian wonder: the Zipaquira Salt Cathedral, a majestic cathedral built 180 m underground inside the depths of the world's largest salt rock reserve. During our visit, we marveled at the engineering prowess while taking an extraordinary journey through tunnels and vaults of enormous sizes.



During our tour of the city, we also had the opportunity to visit the Botero museum. Although I had never heard of Fernando Botero, I recognized his highly distinctive paintings of oversized characters, featuring the chubby faces and chubby animals that are his trademark. I was amazed that the famous artist had donated these paintings, worth millions, to the museum. Being an art lover myself, I was in a state of artistic euphoria.

Another memorable stop was the neighborhood of La Candelaria at the center of Bogota, where we tasted traditional Colombian confections as we walked through the historical colonial building and neoclassical palaces. The scenery was absolutely breath-taking.

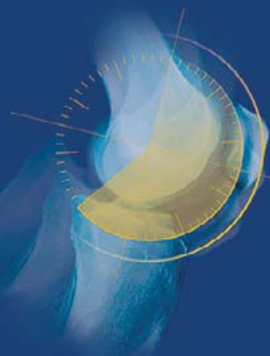
On our third day in Bogota, we visited the posh hospital, Clinica Los Nogales, where we joined Dr. Paula Andrea Sarmiento in theater and observed her performing an ACL reconstruction with use of a BPB graft. Her technique is truly impressive, and we carefully noted her tricks and tips for getting the job done.

On our last night in Bogota, we dined at Andres Carne de Res, a restaurant that is famous for its fun atmosphere, stellar Colombian food, and all-night alcohol-fueled benders. The experience exceeded my expectations, and we all enjoyed the opportunity to unwind at this awesome location. There wasn't a single one of us who didn't get on the dance floor, where we danced to the invigorating sounds of popular Colombian music. Indeed, our stay in Bogota was exhilarating till the end. I couldn't think of a better way to end the extremely rewarding life-changing experience that we all shared during the ISAKOS Traveling Fellowship.



JOURNAL OF ISAKOS

Joint Disorders & Orthopaedic Sports Medicine



An Official Publication of the
International Society of Arthroscopy,
Knee Surgery and Orthopaedic Sports Medicine

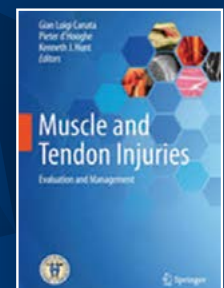
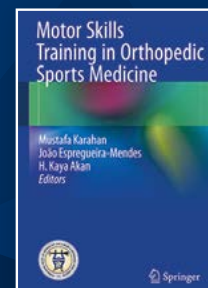
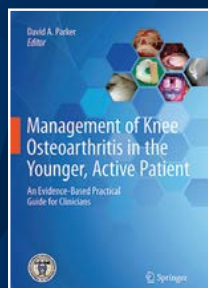
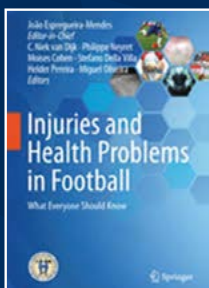
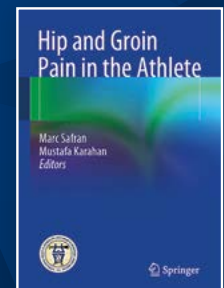
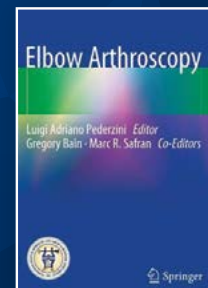
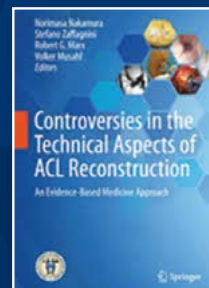
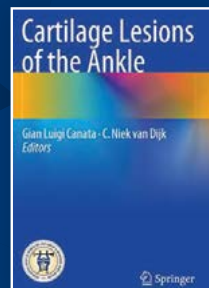
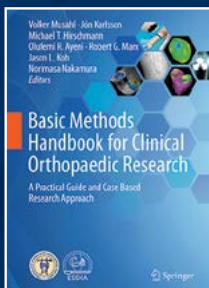
BMJ

isakos.bmj.com

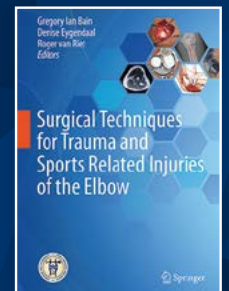
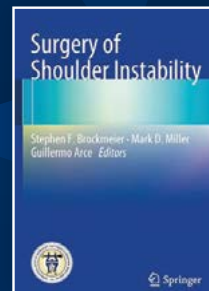
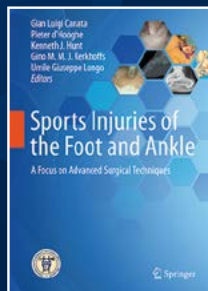
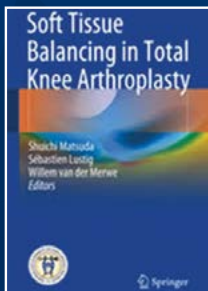
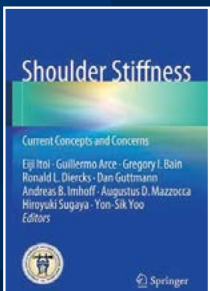
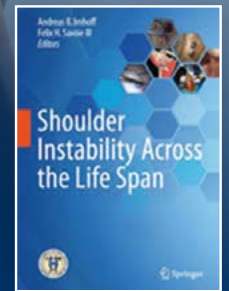
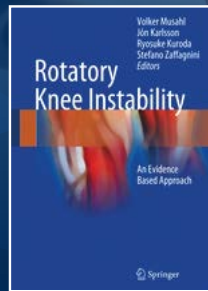
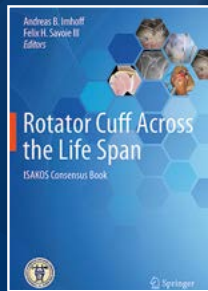
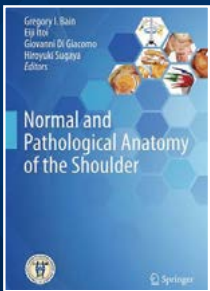
ISAKOS PUBLICATIONS



Free Access
for ISAKOS Members



isakos.com/books



Second Patras Live-Surgery Fellowship Course

The second live-surgery Fellowship organized by the Sports Medicine Department of Patras University Hospital under the patronage of ISAKOS was held on September 11-13, 2019. The 3 fellows hailed from different countries (Greece, UK, and Iraq) and had different levels of expertise. On the first day, the fellows were introduced to the other members of the Department and participated in the morning conference. We started our training in the theater with 2 sessions demonstrating mainly shoulder and knee cases. The fellows observed 2 ACL repairs performed with hamstring autograft and 4 shoulder procedures (including rotator cuff repair, impingement release, and reverse shoulder arthroplasty). Every case was presented thoroughly, with a review radiological imaging findings, symptoms, and clinical and arthroscopic examination findings. The fellows also had the opportunity to actively participate in the procedures and assist the surgeons.



In the evening, we enjoyed a nice dinner by the sea, during which we had time to get to know each other better, discuss the morning cases, and enjoy some wine or beer.



On the second day, we had only 1 session, which included an ACL reconstruction with quadriceps graft and Lemaire augmentation, a massive rotator cuff repair, and a release of shoulder impingement; during the latter procedure, one of the fellows successfully performed the acromioplasty. Again, the cases were presented thoroughly and discussed with the fellows.

After the operations, we had light lunch and a short academic session in the conference room, during which 3 lectures were presented by the instructors: (1) complications of ACL surgery (A. Kouzelis), (2) dynamic MPFL reconstruction with semitendinosus rerouting (A. Panagopoulos), and (3) techniques of rotator cuff repair (Z. Kokkalis).

On the last day, we again had 2 sessions, during which the fellows had the opportunity to observe and participate in 4 ACL cases, a massive rotator cuff repair, a dynamic MPFL reconstruction, and an open Latarjet procedure.

Overall, during the 3-day course, the participants had the opportunity to actively participate in 16 cases and to discuss several surgical options and techniques with the instructors. They seemed very enthusiastic at the end, and all stated that we had fulfilled their expectations.

We thank ISAKOS again for approving the course, and we hopefully look forward to the next course in 2020.

Andreas Panagopoulos, MD, PhD

Assistant Professor in Orthopaedics



XVII Congress of the Argentine Association of Sports Traumatology “El Deporte y sus Ciencias”

This unique scientific event focusing on sports traumatology was held at the Argentine Catholic University in Buenos Aires, Argentina, on April 11 and 12, 2019, and was attended by 915 registered participants (including doctors, kinesiologists, physical trainers, and other professionals linked to physical activity and sports). During this multidisciplinary meeting, 96 national and international speakers discussed the latest topics and new trends in traumatology, rehabilitation, cardiology, sports medicine, psychology, biomechanics, applied technology, physical training, and neurosciences, with an emphasis on enhancing specific technical knowledge in sports and developing interdisciplinary work. Attendees and speakers included such prestigious professionals such as Drs. Espragueira Mendes, Ramon Cugat, Pablo Gelber, Ferran Abat, Zbinden Foncea, Lopez Chicharro, Luis Vargas and Guillermo Arce, among others. The Congress was sponsored by multiple sports and scientific societies. Program sessions were carried out simultaneously in 4 classrooms, with the faculties presenting pearls and technical obstacles, new and emerging research, and future trends. Lunch sessions were also included.

Various themes included:

- Sports trauma and the return to competition
- The specificity of injuries according to sport (football, rugby, tennis, basketball, volleyball, and hockey)
- The child athlete
- Strength and sports training
- Running
- Overweight in sports

Mario Daniel Stumbo, MD

President of the Congress



DISCOUNTED Arthroscopy Subscription for Members!

Through a strategic partnership with AANA, ISAKOS members are now able to purchase an annual, online *Arthroscopy* subscription for only USD \$65.

Log in to myISAKOS to add the online *Arthroscopy* subscription to your ISAKOS membership:
**[isakos.com/myISAKOS/
myPublications](https://isakos.com/myISAKOS/myPublications)**

ISAKOS is committed to providing easier access to journals, publications, and industry updates. We encourage you to take advantage of this added opportunity and member benefit, as well as the opportunity to purchase a discounted online KSSTA subscription for 2020.

New! ISAKOS Career Center



**Calling all job seekers
and employers!**

The ISAKOS Career Center is now available online to assist those looking to hone their job and/or candidate search skills, identify and work towards career goals, find suitable careers or programs, and boost networking skills in the international orthopaedic community.



Learn more at
isakos.com/CareerCenter



ISAKOS

International Society of Arthroscopy,
Knee Surgery and Orthopaedic Sports Medicine

APOA Sports Meeting 2019 Incorporating Orthopaedic Research

Kuala Lumpur, Malaysia

The APOA Sports Meeting 2019 incorporating Orthopaedic Research was held at the Hilton Hotel in Kuala Lumpur, Malaysia, on April 3 to 6, 2019. The meeting was superbly organized by Dr. Charanjeet Singh, Chairman of the Asia-Pacific Orthopaedic Association (APOA) Sports Injury Section, and his international and national organizing committee, including Dr. Sachin Tapasvi, Adj. Asst. Prof. Dr. Poh Seng Yew, Prof. Dr. A. Merter Ozenci, Dr. Anant Joshi, Assoc. Prof. Dr. Chanakarn Phornphutkul, Dr. Dave Lee Yee Han, Dr. Enrique Leonardo C. Pasion, Prof. Dr Hermawan Nagar Rasyid, Dr. Umer Butt, and Dato' Dr. Badrul Akmal Hisham.

This meeting was a breakthrough meeting for Asia, welcoming more than 497 delegates from Australia, Bangladesh, Brunei, Cambodia, China, Germany, Hong Kong, India, Indonesia, Italy, Japan, Korea South, Mexico, Nepal, New Zealand, Oman, Pakistan, Philippines, Saudi Arabia, Singapore, Solomon Islands, Sri Lanka, Taiwan, Turkey, and Vietnam. Fifty-eight world-renowned sports surgeon faculty members, led by Dr. Robert John Barlett, Prof. Dr. Freddie Fu, Dr. Jaap (W.J.) Willems, Prof. Dr. Michael J. Strobel, Prof. Teruhisa Mihata, Asst. Prof. Dr. Alan Getgood, and Prof. Dr. Park Jin-Young, among many others, provided highly valuable and instructive scientific sessions. The meeting was enriched with a total of 10 live cadaveric demonstrations and also saw the launch of the inaugural JB Excellence in Sports Surgery Award, created and named in honor of Dr. Robert John Barlett.

During his opening speech, Dr. Charanjeet acknowledged that the support and endorsement by ISAKOS was a huge motivating factor in attracting more delegates to the meeting. The registration fees were intentionally kept as reasonable as possible in order to allow younger sports surgeons and those with keen interest in sports surgery to attend a world-class sports meeting in our own region. The success of this meeting demonstrates that sports surgery is only in the budding stages in Asia but that there is hunger for education in this field in our region.

On behalf of the Organizing Committee, we would like to thank all of the faculty, delegates, industry, orthopaedic associations, and teams that worked behind the scenes to make this meeting a success.



Third Athens Shoulder Course

The Orthopaedic Department of Hygeia Hospital, in collaboration with the Italian Society of Arthroscopy (Società Italiana di Artroscofia [SIA]) and the French Arthroscopic Society (Société Francophone d' Arthroscopie [SFA]) organized the Third Athens Shoulder Course, which was held from February 7-9, 2019, in Athens, Greece. The conference, which was attended by over 90 faculty members and over 250 participants, featured theoretical, practical, and physiotherapist-focused sessions. The theoretical sessions took place at the Royal Olympic Hotel, and the cadaveric sessions took place at the Laboratory of Anatomy, Medical School University of Athens.

The main goal of the course was to allow orthopaedic surgeons and physiotherapists, from both Greece and abroad, to exchange information and know-how on current methods and trends focused on shoulder pathologies. Our course comprised lectures from renowned Greek, European, and American shoulder surgeons that pinpointed all matters related to shoulder disorders. At the same time, 4 live surgical procedures were broadcast in the main hall, showcasing the difficulties faced by the surgeon at the operating table. An extended course on cadavers with current arthroscopic and open techniques took place on the second and third days of the course. Finally, for the first time, the meeting featured a special course for physiotherapists, with a focus on exchanging opinions on the day-to-day practice and handling of patients with shoulder disorders.

The course was held under the auspices of ISAKOS, ESSKA, the SECEC-ESSSE, the Hellenic Association of Orthopaedic Surgery and Traumatology, the Hellenic Arthroscopic Association, and the Hellenic College of Orthopaedic Surgeons.

ISAKOS Members Receive Full Access to OrthoEvidence

OrthoEvidence's database has thousands of evidence-based summaries from journals of the highest-quality research in orthopaedics.

1

Log in to myISAKOS at isakos.com/myISAKOS

myISAKOS

2

Click on myPublications



3

Click "Access" the ISAKOS/OrthoEvidence Portal

Access

OE ORTHOEVIDENCE⁺

in partnership with



**New &
Improved
Look!**

THE NEW

^ ISAKOS

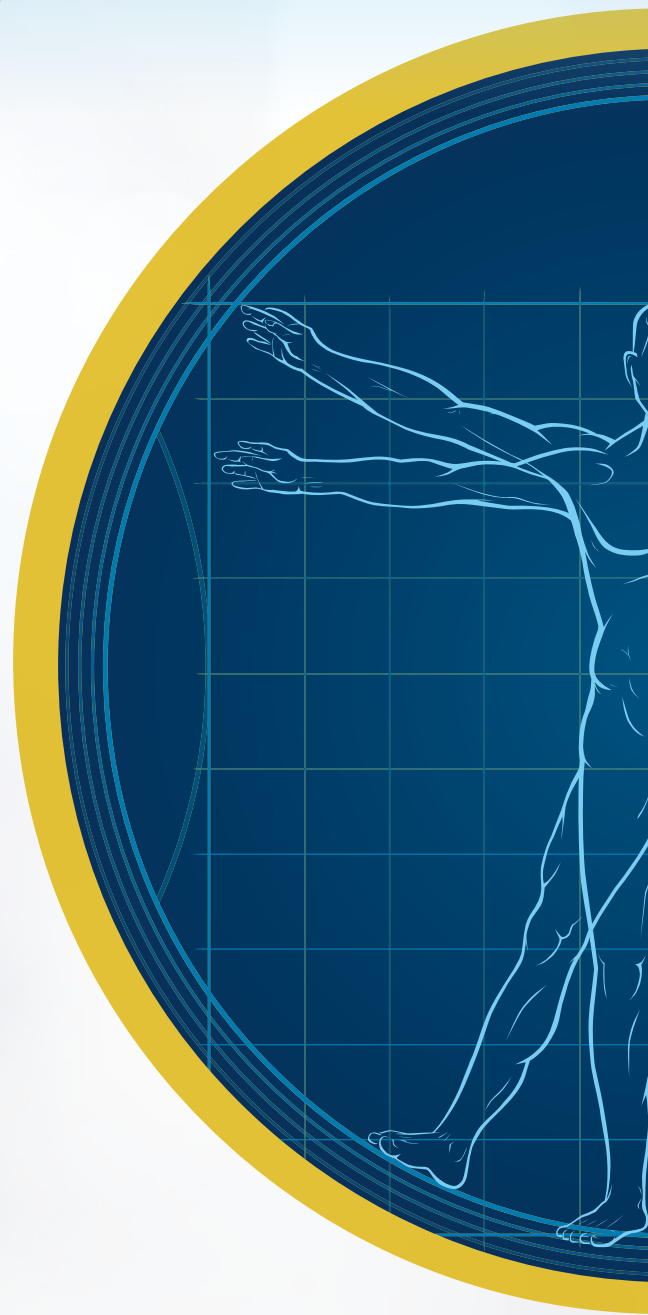
global link

Access 3,000+ Congress presentations, surgical demonstrations & courses, committee projects, current concept articles... and more!

isakos.com/GlobalLink

New & Improved Features

- More User- and Mobile-Friendly
- Featured “Top Rated” Content
- More Powerful Search Tool
- Anatomic Location Navigation
- Sports Medicine Category Navigation
- Collection Navigation
- Search & Sort Functions
- Filter by Rating, Date, Format, etc.
- “Tagged” Categories
- 5-Star Rating Feature
- *More to Come!*



**2019 Congress
Presentations
Available!**

PLEASE

SAVE THE DATE



ISAKOS
CONGRESS
2021



Cape Town
South Africa
May 22 - 26



REGISTRATION OPENS
SEPTEMBER 1, 2020!

WWW.ISAKOS.COM/2021CONGRESS

Second FAST (Foot and Ankle Arthroscopy Sports Traumatology) Course

The second FAST Course was held on May 27-28, 2019, in the new and innovative Amsterdam Skills Center, an annex to the Amsterdam University Medical Center, location AMC. This annual course is organized by the Academic Center for Evidence-based Sports medicine (ACES), with faculty from orthopaedic surgery, radiology, sports medicine, and physical therapy. The course is approved by ISAKOS and ESSKA.

The program featured extensive arthroscopic and open laboratory hands-on practical sessions, lectures, case discussions, and live surgical procedures. The course, which was attended by 28 participants from all over the world, was intentionally kept small scale in order to allow ample time for each participant to practice various surgical procedures.

In the laboratory hands-on sessions, anterior and posterior arthroscopic procedures and open surgical procedures were practiced on cadaveric preparations. One workstation and one instructor per two participants, combined with sufficient time, allowed for effective hands-on training.

The anterior arthroscopic procedures included portal placement, synovectomy, removal of osteophytes or osseous impingement, microfracture of an introduced osteochondral talar defect, lateral ligament reconstruction, sinus tarsi arthroscopy, and tendoscopy. The posterior procedures covered portal placement, release of the sheath of the flexor hallucis longus tendon, removal of the hypertrophic posterior process of talus or of the os trigonum, ankle joint inspection, subtalar debridement and fusion, treatment of retrocalcaneal bursitis, and removal of Haglund's exostosis.

The open procedures that were practised were stabilization of the tibiofibular syndesmosis, reconstruction of the anterior talofibular ligament, medial malleolar osteotomy for accessing the talar dome, and the lift-drill-fill-fix (LDFF) technique for treating an osteochondral defect.

The lectures covered surgical anatomy, complications and salvage procedures, indications for and outcomes of ankle arthrodesis versus total ankle replacement, osteotomy procedures around the ankle, injection therapies, special sports injury cases, and innovations in ankle surgery. All lectures included lively discussions with the participants. The special flavor was the emphasis on teamwork for the diagnosis and treatment of sports injuries of foot and ankle.

The participants felt that the second FAST course was an excellent learning experience and that the brand new Amsterdam Skills Center was an awesome venue. The arthroscopic and practical hands-on sessions and live-surgery sessions scored a median rating of 3.9 of 4. Each participant was awarded 13 CME credits.

Eighth International Ankle Symposium

The Eighth International Ankle Symposium, organized by the International Ankle Consortium, was held on October 3-4, 2019, in Amsterdam. This intensive and interactive multidisciplinary event was attended by 256 participants from 27 countries. Attendees represented 13 different backgrounds, including physiotherapists, manual therapists, sports physicians, orthopaedic surgeons, and researchers. The event was accredited with 12 CME points by the EACCME, 12 points by the KNGF, and 12 NE by Pro-Q-Kine per event day.

Prof. Verhagen kicked off the event by welcoming everyone to the symposium, describing the different aspects of the program, and introducing the keynote speakers. Following a short overview of the history of the International Ankle Consortium and the International Ankle Symposium, during which all attendees were invited to participate in the consortium and its decision-making, Dr. Hertel gave the first keynote lecture.

Next, a series of interesting symposia, workshops, and podium presentations updated attendees on the latest evidence on ankle injuries (such as ankle sprains, instability and osteochondral defects), diagnostics, treatment, and prevention. One of the workshops even included an active example of what a treatment and prevention program could look like, with attendees being placed on balance boards. The impact of the injuries was extensively discussed during the symposium, which included athletes as speakers and experts.

The event was extensively evaluated and received high scores on the quality of symposia (4.0 of 5), the overall event (program, 4.2; organization, 4.6), the variety of the event (keynotes, 4.3; paper sessions, 3.7; symposia, 4.2; workshops, 3.8), educational objectives (4.3) and evidence-based aspects (4.5). Overall, 88% of the participants indicated that the content addressed during the event was useful and could be implemented in the attendees' clinical practice to some degree. The interactive aspects and the diversity of topics and speakers were rated highest. On the basis of the feedback received, areas for improvement in the future include the translation of some symposia and paper sessions to clinical practice and allowing more time for participants to ask questions.

Overall, we regard this symposium as a great success. We hope to see everyone back in Japan in two years to share new knowledge and update our research findings.



Santander Hip Meeting

The Tenth International Santander Hip Meeting and Fifth Course Video Technique GIPCA group, which took place on February 14-15, 2019, in Santander, Spain, brought together world-renowned experts in hip surgery for a 2-day conference featuring presentations and video techniques on the most advanced care for patients with hip pathology. The meeting had 185 participants (164 registrants and 21 distinguished speakers). The extensive program covered all aspects of hip surgery, including recent advances and controversies in the important areas of hip preservation and hip replacement.

International experts travelled from Brazil, Colombia, the US, many countries throughout Europe (Ireland, UK, France, Belgium, Germany, Portugal, and Spain) to present their experience to the delegates, which included orthopaedic surgeons, sports medicine doctors, and health-care professionals.

Day 1 began with the opening address from the chairman and organizer Dr. Luis Perez Carro, which was followed by concise review of the important basic principles of anatomy, examination, and imaging of hip pathology by Dr. Luis Cerezal and Dr. Moises Hernando. Femoroacetabular impingement (FAI) syndrome was main topic of the morning, with many experts, including Dr. Michael Dienst, presenting videos demonstrating techniques of osseous deformity correction and methods of repair for the labrum and the hip capsule. Discussions included the latest peer-reviewed publications on the evidence behind treatment methods and outcomes and included a presentation on the recent UK FASHIoN randomized controlled FAI study by Prof. Damian Griffin. The pathogenesis and clinical presentation of sports-related femoroacetabular impingement (SRFAI) in symptomatic athletes were presented by Dr. Patrick Carlton.

Successful meetings require the support of our industry partners, and an excellent “pit stop” session following lunch featured a short presentation on the latest developments of material and tools from each of the industry partners associated with the meeting.

The afternoon session focused on extra-articular, deep gluteal, and peritrochanteric conditions and treatment. The combined experience of both our national experts in Spain and Portugal (Dr. Luis Perez Carro, Dr. Rafael Arriaza, and Pedro Dantas), along with Dr. Juan Gómez de Hoyos (Colombia) and Dr. Hal Martin (USA), delivered an incredible session covering the basic science, diagnosis, and treatment of these difficult conditions.

On Day 2, the morning sessions focused on some of the most controversial areas in hip preservation surgery, including femoral torsion, acetabular version, and hip instability, with several experts (Dr. Raul Torres, Dr. Jesús Mas, and Dr. Marc Tey) presenting the relevant basic science and up-to-date diagnosis and treatment options for a variety of associated hip conditions.

The afternoon sessions focused on complex morphological hip conditions, with hip dysplasia taking center stage; the roles of both arthroscopy and open preservation techniques were presented and discussed comprehensively, with experts Dr. Dean Matsuda (USA) and Dr. Paulo Rego (Portugal) offering their professional experience and surgical techniques.

A final session on recent advances in hip arthroplasty included wide-ranging presentations and much discussion on a wide range of topics, including the anterior approach and rapid recovery following total hip arthroplasty (Dr. Nicholas Bonin [France]), hemi-resurfacing for AVN (Dr. Lafayette Lage [Brazil]), the use of short stems (Dr. Boris García [Spain]), and the findings of an international consensus on the diagnosis, investigation, and management of periprosthetic infection (Dr. Oliver Marin [Spain]).

The Tenth International Santander Hip Meeting was an outstanding success. The wealth of knowledge, the quality of the presentations, the focus on video techniques, and the enthusiasm of the expert faculty delivered a captivating program for all of the delegates and provided a wonderful opportunity for the faculty to present the results of their results and to catch up with friends and colleagues. We are already looking forward to the next edition of this Santander Hip Meeting.

Ninth Pune Knee Course

The Ninth Pune Knee Course, held on April 25-27, 2019 in Pune, India, was a grand success, with about 1,200 delegates and 32 faculty members (including 13 international faculty and 19 national faculty). More than 100 postgraduate students and interns were given free registrations by the Tapasvi Charitable and Medical Centre to enhance the cause of education for which it stands. The conference included themes central to arthroscopic surgery of knee, from basic to more complex topics, and also touched on the most recent advances in arthroscopy. This course provided an excellent opportunity for the delegates to learn the nuances of surgical techniques and interact with masters in the field from across the globe. The course was approved and supported by ISAKOS as well as by national and regional academic bodies in India. This year, the focus was on newer advances as well as on joint preservation procedures and minimally invasive techniques for meniscal injuries. The scientific program reflected the nuances of surgical techniques, current developments, and newer technologies and innovations of knee surgery.

Day 1 featured the Pune Knee Rehabilitation Course. In keeping with tradition, the Presidential Oration was delivered that evening by Dr. Sachin Tapasvi and Dr. Parag Sancheti during the opening ceremony. On Days 2 and 3, concurrent breakfast scientific sessions were held in four halls before the main scientific program began. These sessions, held from 7 to 9 a.m., provided ample scope for one-on-one interaction between the delegates and faculty members. The main scientific academic sessions commenced at 9 a.m.

The balance of Days 2 and 3 featured the keynote address by Prof. Dr. Frank Noyes, complex case discussions, live surgical procedures by panel experts, lectures by renowned Indian and foreign faculty, and lively debates, which were the scientific highlights of PKC 2019. The lectures were didactic in nature but also allowed for interactions between the delegates and faculty. In addition, the lectures covered a wide spectrum of topics, including the latest developments in arthroscopic surgery, which helped delegates to quench their thirst for knowledge and broadened their horizons by adding new dimensions to their practices. A discussion on the diagnosis and management of ligamentous and meniscal injuries was particularly interesting. A special feature of this course was the inclusion of live surgical procedures and demonstrations, which were performed at ONP PRIME hospital, Pune, and were telecast live in the main hall at the conference venue. A demonstration of clinical examination skills was very helpful to the delegates, and the surgical procedures were moderated by experienced surgeons.

On the evening of Day 2, a social program and gala dinner was held for the honorable guests as well as participants. This event included a Sand Animation Art program delivering a social message as well as a felicitation program honoring Paralympic Athletes. The valedictory ceremony, held on Day 3, was hosted by Dr. Sachin Tapasvi and Dr. Parag Sancheti.

One of the main endeavors of the Pune Knee Course has been to educate and train fellow arthroscopic and knee surgeons and budding surgeons in the field of arthroscopic surgery via an international platform. The Ninth Pune Knee Course ushered in the era of live conferences as it was telecast live worldwide, which was beneficial for those who could not attend in person. The complete conference was streamed for online viewing. More than 1,000 enthusiasts logged on to the website for the live webcast.

The Ninth Pune Knee Course delivered content that stimulated debate and reflection on current issues in knee surgery that orthopaedic surgeons face every day in their current practices and as well as on topics that they may encounter in the future. The meeting had world-renowned speakers, international faculty, and an extremely high-caliber audience, making for a remarkable event. Sincere thanks to Dr. Nilesh Kamat and Dr. Parag Sancheti (Organizing Chairs), Dr. Charlie Brown and Dr. Alan Getgood (Scientific Chairs), and the entire team of PKC for giving up their time and earning capacity to share their learned skills with others, and great appreciation to all the sponsors for their valuable support to the PKC meeting and helping in making this meeting a resounding success.

Dr. Sachin Tapasvi

Organising Chairman
PKC, 2019

UPCOMING ISAKOS APPROVED COURSES

31st Severance Arthroscopy Symposium: Knee
Severance Hospital Eunmyung Auditorium
Seoul, KOREA

March 8, 2020

Chair(s): Sung-Jae Kim; Department of Orthopaedic Surgery, Severance Hospital, Yonsei University College of Medicine

For further information, please contact:

Tel: 82-2-2228-5679
Fax: 82-2-363-6248
www.severanscopy.com

Principles of Knee Arthroscopy Course
Mater Misericordiae Hospital
Nairobi, KENYA

March 19-21, 2020

Chair(s): Dr. Samuel Okoth Owinga

For further information, please contact:

Tel: +2540203741059
Fax: +254 020 3741059

Principles of Knee Arthroscopy Course
Mater Misericordiae Hospital
Nairobi, KENYA

March 19-21, 2020

Chair(s): Dr. Samuel Okoth Owinga

For further information, please contact:

Tel: +254 020 3741059
Fax: +254 020 3741059

SRATS Congress 2020
Willbrook Platinum – Business & Convention Center
Bucharest, ROMANIA

April 2-4, 2020

Chair(s): Assoc. Prof. Rodica Marinescu

For further information, please contact:

Tel: +40744 837 040
www.conrges-srats.ro

10th Pune Knee Course, 2020
Hotel J.W. Marriott
Pune, INDIA

April 23-25, 2020

Chair(s): Sachin Tapasvi

For further information, please contact:

Tel: +91 9822018871
punekneecourse.com

Seoul Advanced Elbow Course 2020
Asan Medical Center
Seoul, KOREA

April 25, 2020

Chair(s): In-Ho Jeon, MD, PhD

For further information, please contact:

Tel: 010-9569-2265
sites.google.com/view/saec2020/home

New York at Rome Special Shoulder Surgery
"What's NEW in Shoulder Pathology"
Auditorium del Seraphicum
Rome, ITALY

May 8-9, 2020

Chair(s): Giovanni DI Giacomo, MD & David D. Dines, MD

For further information, please contact:

Tel: +39065126439
Fax: +39065136655
spalla.it

2020 NAEON International Shoulder and Elbow Course
Maksoud Plaza
Sao Paulo, BRAZIL

May 14-16, 2020

Chair(s): Jose Carlos Garcia Jr.

For further information, please contact:

Tel: +55 11 947933028
Ombro2020.com.br

6th ICRS Summit- Joint Preservation – Where We Are in 2020
Doral National Miami
Miami, UNITED STATES

May 21-23, 2020

Chair(s): Tom Minas

For further information, please contact:

Tel: +41445037371
www.cartilage.org

Foot and ankle Arthroscopy Sports Traumatology course (FAST)
Amsterdam Skills Centre
Amsterdam, NETHERLANDS

May 25 - 26, 2020

Chair(s): G.M.M.J. Kerkhoffs

For further information, please contact:

Tel: +31 20 566 6419
acesamsterdam.nl/fast

Nice Shoulder Course
Hyatt Regency Nice Palais de la Méditerranée
Nice, FRANCE

June 4-6, 2020

Chair(s): Pr Boileau Pascal

For further information, please contact:

Tel: +33 4 92 07 35 76
Fax: +33 4 92 07 35 76
nice-shoulder-course.com

San Diego Shoulder Institute 37th Annual Course: Arthroscopy, Arthroplasty, and Fractures

San Diego Hilton Bayfront
San Diego, UNITED STATES

June 17-20, 2020

Chair(s): Patrick J. Denard, MD

For further information, please contact:

Tel: 760-445-2874
Fax: 951-695-6801
www.shoulder.com



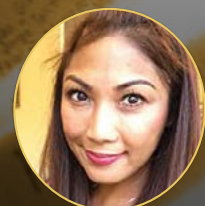
ISAKOS Acknowledges Our Newest Godfather & Godmother

The ISAKOS Godfather Initiative was created to provide high-quality, educational programs and resources to deserving individuals worldwide. If an individual donates \$5,000 or more to Global Connection and designates this money to the Godfather Initiative, a portion of that donation will be allocated toward an ISAKOS membership scholarship for individuals 45 years of age or under.

isakos.com/godfathers



Tabane Moagi, MB CHB
Natal FCS (SA) (ORTH)
CHILE



Sarah Corpuz, CMA
UNITED STATES

12th International Meeting of
Arthroscopic Surgery
Los Delfines Hotel
Lima, PERU

June 25–26, 2020

Chair(s): Dr. Luis Zagal, MD

For further information, please contact:

Tel: +51997635502

www.alfonsobarnechea.com

Emerging Biologic Techniques &
Cartilage Repair in Sports Medicine
Palais Rouge Convention Center
Buenos Aires, ARGENTINA

June 26–27, 2020

Chair(s): Ezequiel Santa Coloma,
Hernan Giuria, and Ignacio Dallo

For further information, please contact:

Tel: +54 – 11 4801 2320 | Interno 321

Fax: +54 – 11 4804 2975

www.aatd.org.ar

The Combined Meeting of
TOSSM & APKASS 2020
Pattaya Exhibition and Convention Hall–PEACH
Cholburi, THAILAND

July 9–11, 2020

Chair(s): Chanakarn Phornphutkul

For further information, please contact:

Tel: (+662) 7165437

Fax: (+662) 7165440

thaisportsmed.org

7th International Arthroscopy Academy
Grand Hyatt Hotel Mumbai
Mumbai, INDIA

July 24–26, 2020

Chair(s): Dr. Nicolas Antao

For further information, please contact:

Tel: +919820050701

www.arthroscopyacademy.com

IS YOUR COURSE AN...



ISAKOS APPROVED COURSE



www.isakos.com/meetings

Hip & Knee Summit 2020 “Delivering Better
Outcomes for Our Patients”

Bali International Convention Center (BICC)

Bali, INDONESIA

August 18–22, 2020

Chair(s): Nicolaas C. Budhiparama

For further information, please contact:

Tel: +6281324247007

Fax: +6221.52920303

2020.ihksevent.com

19èmes Journées Lyonnaises de Chirurgie du
Genou–Isolated femorotibial osteoarthritis

Convention Centre

Lyon, FRANCE

September 24–26, 2020

Chair(s): Professor Sébastien Lustig

For further information, please contact:

Tel: 0632071990

www.lyon-knee-congress.com

14th International Live Surgery Congress
Shoulder

Hanover Messe (NORD/LB Forum)

Hanover, GERMANY

November 5–6, 2020

Chair(s): PD Dr. J. Agneskirchner, Prof. H. Lill,
Prof. P. Lobenhoffer

For further information, please contact:

Tel: +49 761 69699 240

www.international-live-surgery-congress.com

Join the ISAKOS Global Conversation!

Tweeting About ISAKOS?

Include hashtag #ISAKOS in your Tweets
to join the global conversation!



ISAKOS THANKS

our industry partners
for their educational
grant support

Smith+Nephew



ISAKOS GRATEFULLY ACKNOWLEDGES the generous support of our Annual Fund donors*

Taiceer Abdulwahab, MD UNITED ARAB EMIRATES
David Figueroa, MD CHILE
Marcelo S. Filardi, MD BRAZIL
Freddie H. Fu, MD UNITED STATES
Robert Phillip Mack, MD UNITED STATES
Rodica Marinescu, MD ROMANIA
Eduardo Mori, MD BRAZIL
Andrew Ramoroa Morule, MD SOUTH AFRICA
Raj Kumar J. Mukhi, MD INDIA
Michael Van Niekerk, MD NEW ZEALAND

Martin Jervis Nsubuga, MD NORWAY
Andreas Panagopoulos, MD GREECE
Andrew Porteous, MD UNITED KINGDOM
David V. Rajan, MD INDIA
Thomas P. San Giovanni, MD UNITED STATES
Robert A. Stanton, MD UNITED STATES
Rene E. Verdonk, MD BELGIUM
David Alexander Young, MD AUSTRALIA

*October 1, 2019-February 1, 2020

Annual Fund support ensures that the Society is able to fund and implement education and research initiatives created to support the needs of our membership worldwide. Gifts to the Annual Fund make an instant impact on the Society's ability to carry out our mission, help us plan for the future of the Society and ensure that ISAKOS strategic initiatives become a reality.

**To learn more about the Annual Fund, or to make a donation,
go to isakos.com/Global-Connection/Annual-Fund**



+ All tears all repairs

**Meniscal repair solutions,
we've got you covered**

Regardless of a surgeon's preferred approach, the location, or type of operable meniscal tear, Smith+Nephew has a solution. Our mission is to repair the meniscus and get patients back to leading a Life Unlimited. Learn how to repair more and resect less now at AllTearsAllRepairs.com.

Smith+Nephew

Root Repair

FIRSTPASS[◊] MINI
Family of Suture Passers



MENISCAL ROOT
Repair System



NOVOSTITCH[◊] PRO
Meniscal Repair System



All-Inside Repair

ULTRA FAST-FIX[◊]
Meniscal Repair System



FAST-FIX[◊] 360
Meniscal Repair System



NOVOSTITCH PRO
Meniscal Repair System



Outside-In Repair

**MENISCUS
MENDER II**
Repair System



Inside-Out Repair

**MENISCAL
STITCHER**
Repair System



*Available with size 2-0 & 0 suture cartridges **Passes #2 ULTRABRAID[◊] Suture or ULTRATAPE Suture NOVOSTITCH PRO Meniscal Repair System is 510(k) cleared. Products may not be available in all markets because product availability is subject to the regulatory and/or medical practices in individual markets. Please contact your Smith+Nephew representative if you have questions about the availability of Smith+Nephew products in your area. The NOVOSTITCH PRO Meniscal Repair System is manufactured by Ceterix Orthopaedics, Inc., 6500 Kaiser Drive, Suite 120, Fremont, CA 94555, USA. Smith & Nephew, Inc. 150 Minuteman Road Andover, MA 01810, www.smith-nephew.com, US Customer Service: +1 800 343 5717 [◊]Trademark of Smith & Nephew. ©2020 Smith & Nephew. All rights reserved. Printed in USA. 17530 V3 01/20



International Society of Arthroscopy,
Knee Surgery and Orthopaedic Sports Medicine
2410 Camino Ramon, Suite 215
San Ramon, CA 94583-4318 USA

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



ISAKOS
CONGRESS
2021



Cape Town
South Africa
May 22 - 26

CALL FOR ABSTRACTS
SUBMIT TODAY!

ISAKOS.COM/2021CONGRESS

SUBMISSION DEADLINE
SEPTEMBER 1, 2020

