

# ISAKOS

## ISAKOS NEWSLETTER 2019 • VOLUME II

Current Concepts on Arthroscopy, Knee Surgery & Orthopaedic Sports Medicine



### CALL FOR ABSTRACTS

Open September 1

13th Biennial

# ISAKOS CONGRESS 2021

Cape Town, South Africa | May 22 – 26, 2021



- INSIDE 2** ANNOUNCEMENT OF THE 2019–2021 ISAKOS BOARD OF DIRECTORS
- 10** Q & A WITH SUE REIMBOLD, MA, CAE ISAKOS CEO-EXECUTIVE DIRECTOR
- 12** 2019 ISAKOS CONGRESS IN CANCUN – A RECAP
- 22** POSTLESS HIP ARTHROSCOPY
- 25** TECHNICAL TIPS FOR ACL RECONSTRUCTION WITH HTO

# in this issue

|  |    |
|--|----|
| Editor's Message . . . . .                 | 1  |
| Presidents & Board of Directors . . . . .  | 2  |
| 2019–2021 Committees . . . . .             | 5  |
| Q & A:Sue Reibold, MA, CAE . . . . .       | 10 |
| Cancun Congress Recap . . . . .            | 12 |
| Current Concepts . . . . .                 | 22 |
| Committee Update . . . . .                 | 38 |
| Award & Fellowship Reports . . . . .       | 41 |
| Congress Experience . . . . .              | 54 |
| Upcoming ISAKOS Approved Courses . . . . . | 56 |

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## OFFICE MESSAGE

# Another Congress is in the books!

The 12th Biennial ISAKOS Congress, held this past May in Cancun, Mexico, was a great success! We invite you to read more about the ISAKOS Congress on pages 12–21 of this newsletter. A special thank you and congratulations to Stefano Zaffagnini, 2017–2019 ISAKOS Program Chair, Volker Musahl, Program Deputy Chair, and the rest of the Program Committee for their diligent efforts over the past two years. As we close the Cancun chapter, we open another as we look toward the 13th Biennial Congress in Cape Town in 2021. Volker Musahl has stepped up as the 2019–2021 Program Chair, with Mark Clatworthy as Deputy Chair; both are dedicated to providing you with an outstanding program and agenda in Cape Town. Don't forget—the Call for Abstracts and award applications open on September 1, 2019!

During the Congress in Cancun, Marc R. Safran of the United States passed the title of ISAKOS President to Willem M. van der Merwe of South Africa. Willem is the first ISAKOS president to hail from the continent of Africa. Learn more about Dr. van der Merwe, his plans for ISAKOS, and an announcement of the 2019–2021 Board of Directors on page 2. The new committees are also already hard at work, with numerous projects and publications in the works! A complete list of the 2019–2021 ISAKOS Committee members can be found on pages 5–8. Stay tuned for more information on upcoming committee projects—we encourage members to follow ISAKOS on Twitter and Facebook for the latest updates.

Also new this term are a number of special membership offers—don't miss these opportunities! ISAKOS has added complimentary ISAKOS membership for Residents and Fellows, and Program Directors who enroll their Residents or Fellows for membership are eligible for US\$100 off of their annual dues! Is your course an ISAKOS-Approved Course? Approved Courses can now offer all attendees an ISAKOS membership discount. Visit [www.isakos.com/meetings](http://www.isakos.com/meetings) to submit a course for ISAKOS approval. Contact [membership@isakos.com](mailto:membership@isakos.com) to learn more about any of these available offers.

We hope that you enjoy this issue of the ISAKOS Newsletter!



# Giving Back



The first ISAKOS Knee Arthroplasty Fellowship winners were announced at the 12th Biennial ISAKOS Congress in Cancun, Mexico this past May. Congratulations to Bujar Shabani from Albania and Rishi Bisht from Nepal!

The purpose of the ISAKOS Knee Arthroplasty Fellowship is both to improve knee arthroplasty in developing nations and to promote communication and agreement among knee surgeons around the world. This fellowship is awarded to two young orthopaedic surgeons who work in developing countries. They will have the opportunity to travel to different medical sites around the world and learn surgical techniques as well as patient management. The goal is that the fellows will take what they have learned during the fellowship back to the country where they practice.

The 2019 ISAKOS Knee Arthroplasty Fellowship was generously sponsored by the Nicolaas Institute of Constructive Orthopaedic Research & Education Foundation for Arthroplasty & Sports Medicine. Nicolaas C. Budhiparama of Indonesia has been an ISAKOS Member since 2009 and currently serves on the ISAKOS Board of Directors. Dr. Budhiparama was also one of the first ISAKOS Godfathers of the ISAKOS Global Connection. His idea to sponsor the Knee Arthroplasty Fellowship stemmed from a discussion he had with current ISAKOS President, Willem van der Merwe, and current ISAKOS Assistant Secretary, Mark Clatworthy, who wanted to strengthen the Knee Arthroplasty focus of ISAKOS. At the time, only a few 2015 Congress symposia had covered the topic. Dr. Budhiparama saw an opportunity and took action.

Nicolaas decided to donate through his foundation and support both the ISAKOS Paolo Aglietti Award and the Knee Arthroplasty Traveling Fellowship. His aim was to boost knee arthroplasty research and provide opportunities for young surgeons to learn from various experts around the globe. He stated, "I embody its mission and vision to provide learning opportunities to those who live or work in less fortunate economic conditions, who are self-motivated to improve themselves and share the knowledge and experience they learned during their fellowship with others in their community."

Dr. Budhiparama demonstrates how careers can be changed by giving back. Giving back can take on many diverse forms. It can be a financial donation to a professional society such as this, or your own hospital or orthopaedic institute, or another charity that is important to you such as your house of worship, a charity that helps those in need or an educational institution, to name just a few. You may also choose to give your time, such as providing charity care to patients, teaching at conferences or other settings, or travelling to teach or perform surgery in another location or country. As well, teaching local students, including medical students, residents and fellows is part of giving back to our global community and improving care for future patients.

Following the ISAKOS Congress in Cancun, we have asked the ISAKOS Award and Fellowship winners to contribute to the Newsletter and share their experiences. This issue is full of their stories, stories that reinforce and support why giving back is so important. I encourage you to read these contributions and discover the impact that these awards and fellowships have had on the recipients—both personally and professionally. It is clear we can't give back all the time, or in all ways. However, if each of us does our best in our respective professional situations, the international knee surgery and orthopaedic sports medicine world will be a better place.

**Robert G. Marx, MD**

ISAKOS Newsletter Editor 2019–2021



# Greetings from ISAKOS



## Willem M. van der Merwe, MBChB, FCS(SA) Ortho Assumes Position of President of the International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine.

**My mission, coming from a small country and home society, has always been to make sure societies like ours do not get isolated or forgotten. For that to happen, we must continue to involve leaders from around the world in ISAKOS.**

– Willem Mare van der Merwe,  
MBChB, FCS(SA)Ortho

Born in Rustenburg, South Africa, Willem M. van der Merwe MBChB, FCS(SA)Ortho became the first President from Africa for the International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine (ISAKOS). He officially succeeded Marc R. Safran, MD of the United States at the Second Business Meeting held at the 12th Biennial ISAKOS Congress in Cancun, Mexico.

Dr. van der Merwe currently serves as the Head of Orthopaedics at the South African Institute of Sports Science. He received his medical degree from the University of Free State, followed by Post Graduate Honors from the University of Oxford, England. He completed his Fellowship in Orthopaedics at Groote Schuur Hospital University of Cape Town. An athlete all his life, playing cricket, rugby and golf, Dr. van der Merwe still enjoys being active in his free time, spending time with his wife and three children.

Dr. van der Merwe has been an active and dedicated ISAKOS Member since 2005. He has served as the Executive Committee's First Vice President, Second Vice President, Assistant Treasurer and Treasurer, and also served as Chair of the Knee: Arthroplasty Committee. In addition, he is currently a member of the *Journal of ISAKOS* Editorial Board. Dr. van der Merwe chose to join ISAKOS as a way to give back to his profession as a knee surgeon—a chance to educate and provide proper treatment to not only Africans, but people all over the world. In his fourteen years with ISAKOS, his involvement has grown into more than he ever expected. Dr. van der Merwe stated that “ISAKOS is about the people,” and that he owes this personal growth and experience to the ISAKOS family, his mentors, and the friends he has made along the way.



David A. Parker, MBBS,  
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Joining Dr. van der Merwe in new positions on the ISAKOS Executive Committee are David A. Parker MBBS, BMedSc, FRACS of Australia, who was elected as Second Vice President during the 12th Biennial Congress, and David Figueroa MD, Prof. of Chile, who was selected to serve as Secretary for the 2019–2023 Term.



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At the Second Business Meeting of the 12th Biennial ISAKOS Congress, the 2019–2023 Board of Directors Members-at-Large were announced. Gian Luigi Canata, MD, Benno Ejnisman, MD, Jason L. Koh, MD, MBA, Philippe Landreau, MD, Manuel F. Mosquera, MD, Peter Verdonk, MD, PhD and Daniel C. Wascher, MD were voted by the ISAKOS Membership to serve as incoming Members-at-Large.

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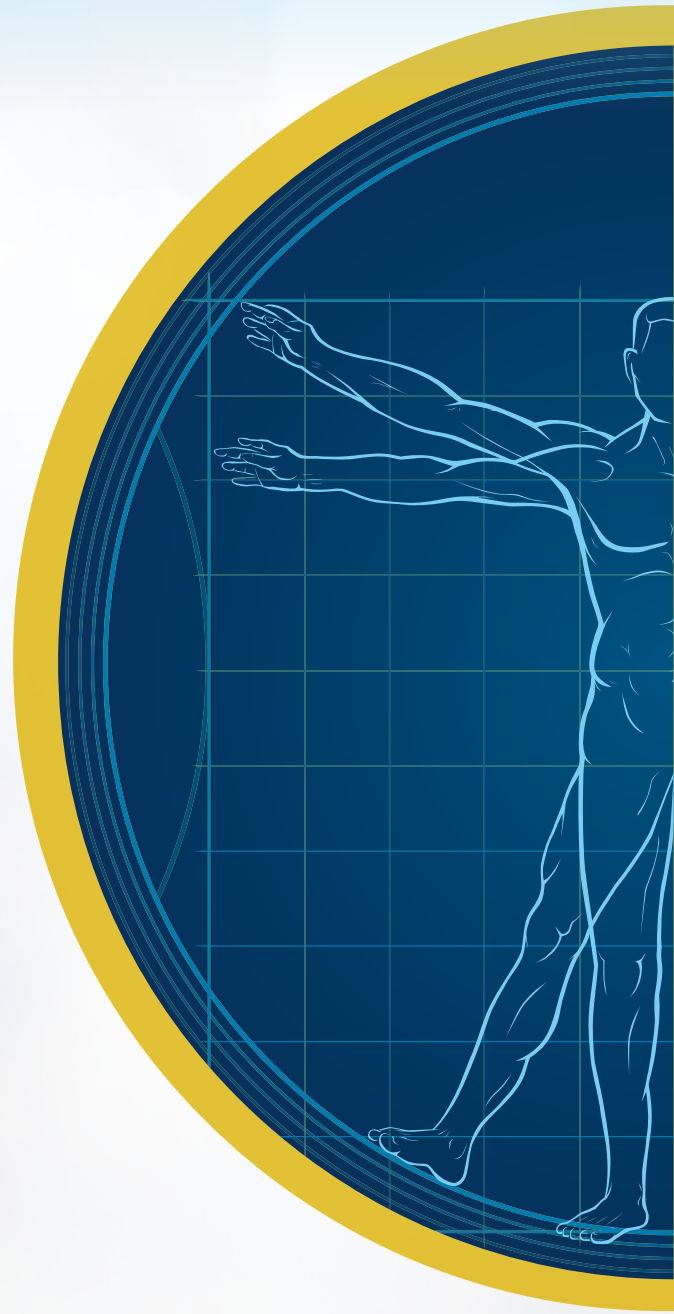
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# ISAKOS

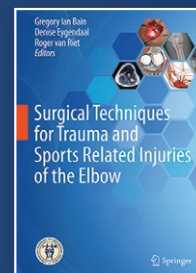
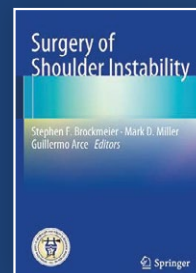
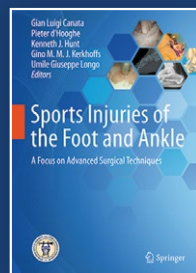
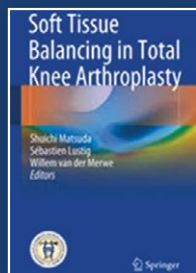
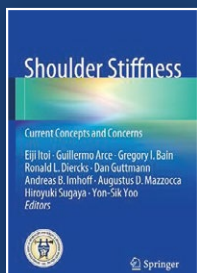
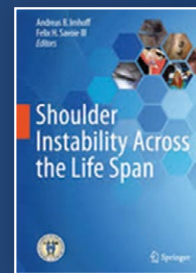
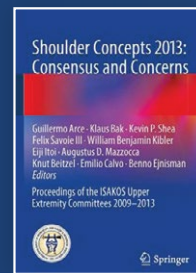
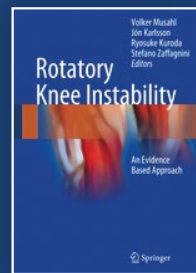
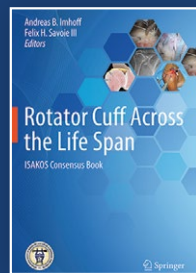
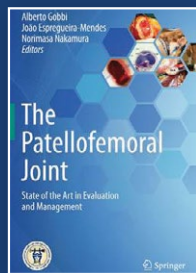
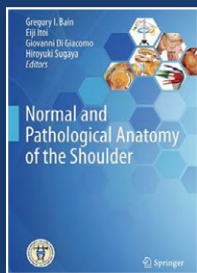
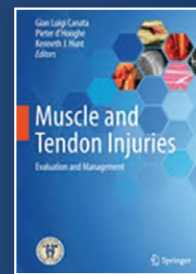
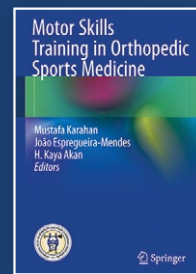
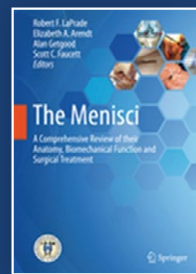
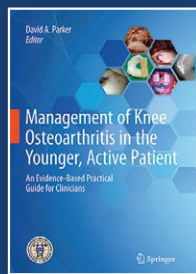
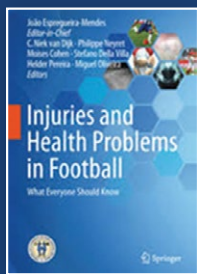
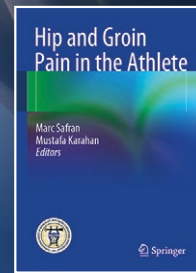
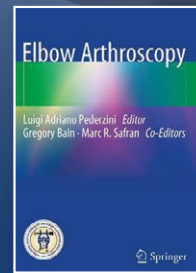
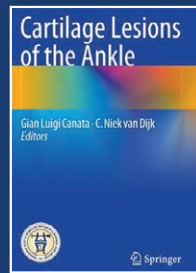
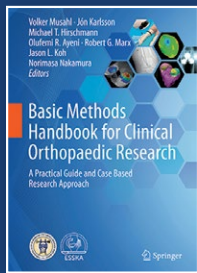
## PUBLICATIONS



Full Access  
in myISAKOS

### New for 2019!

**6** new books added –  
an **\$800+** value, free for members!





# Q&A with Sue Reibold, MA, CAE

I bring to each role my strong curiosity about what we can do to grow the organization, then engage the staff and committees in pursuing innovation that can drive growth.

## What was your career and life like before working with ISAKOS?

I began my career in hospitals and health systems, starting in public relations at an 800-bed teaching hospital that boasted the busiest Level I trauma center in the U.S. Midwest. Throughout 30 years of leading marketing for US health systems and medical societies in the Chicago and Indianapolis markets, my husband, Joe, and I kept busy raising four children who are now all grown.

## Where were you before moving to ISAKOS in California?

Before moving to ISAKOS, I enjoyed five years serving as an executive with the American College of Chest Physicians in Glenview, Illinois, just north of O'Hare International Airport. We lived in Lake County, and spent our weekends boating on the Chain of Lakes.

## What gets you out of bed in the morning?

In my role with ISAKOS, I get out of bed every morning looking forward to heading into the new full-time ISAKOS Office, where I get to lead a dedicated and experienced staff in pursuing opportunities to advance ISAKOS' mission and programs. They are a great team!

## What are your biggest professional challenges?

Since joining ISAKOS, I am focused on connecting with a broader network of medical society executives, particularly at orthopaedic sports medicine associations around the world, as this is a new peer group for me and we can learn so much from each other.

## What's the most interesting thing about you that we wouldn't learn from your resume alone?

If I didn't follow the career path that led me here to ISAKOS, I would have liked to be a meteorologist, studying weather. Now that I'm in California, the weather is pretty consistent every day, but where I grew up the weather could change as often as every few hours. Snowstorms, thunderstorms, and tornadoes were a common occurrence.

## What's your management philosophy?

I had a CEO tell me early in my career that "if you're not growing, your dying." That's something that has stuck with me over the years, so I bring to each role my strong curiosity about what we can do to grow the organization, then engage the staff and committees in pursuing innovation that can drive growth.

## What's your superpower, or what's your spirit animal?

Now if I could fly – and hover above the clouds to study weather, that would be something, so I guess my spirit animal would be a weather balloon! Lacking that superpower, however, I'd say my ability to bring structure and organization to chaos is my superpower.

## When you're having a bad day, what do you do to make yourself feel better?

I go home and do yoga, to clear my head and get centered, which really helps put things in perspective. Typically, when I do yoga in the evening, I never have two bad days in a row.



**What are your top 5 goals for ISAKOS to get done before 2021 Congress in Cape Town?**

My top five goals include:

- Complete a survey of the membership and a publishing audit for ISAKOS, to better understand and address member needs, identify additional ways we can engage members and deliver value, and look for new opportunities to grow ISAKOS programs and reach.
- Identify and begin implementing enhanced educational offerings that fit today’s learner, taking advantage of new technology and modes of learning.
- Partner with the Program Committee to bring innovation and exciting new features to the ISAKOS Congress 2021 in Cape Town, resulting in a successful event.
- Implement an Industry Advisory Council, to serve as a forum for industry supporters and ISAKOS to discuss key issues and trends that may impact ISAKOS and industry.
- Update the ISAKOS Strategic Plan for 2020 – 2025, charting out a path for continued growth and success.

**What are the biggest challenges that you are facing being the Executive Director of ISAKOS?**

The biggest challenge is that I have such big shoes to fill, following the retirement of Michele Johnson, who “gave ISAKOS its wings” over the first 20+ years after the organization was formed. Luckily, Michele remains available as a consultant to me and the ISAKOS staff for two more years, so we can turn to her for her experience and advice when we encounter challenges that may be new to me.

**What are some of the best perks of your job?**

We just bought a new home in California, and you really can’t beat the weather or the views of the mountains here, which I can enjoy from both office and home. But what I really look forward to is the opportunity to travel to new places outside the US and connecting with our members and partners, starting with attending ICRS in Vancouver in October, followed by a site visit to Cape Town, South Africa in January 2020, then off to my first ESSKA Congress next March in Milan.

**What is on your wish list for the next 10 years with ISAKOS?**

My wish list begins and ends with growth for ISAKOS, growing the organization’s reach, our programs and membership, and our reputation for being a worldwide leader in delivering much needed medical education around the globe. Along the way, I also want to have a very positive impact on the ISAKOS office and staff, setting the society up for long-term success while helping team members grow as professionals through expanded responsibility and new career opportunities that keep them challenged and engaged.

“ I am excited to have this opportunity and am looking forward to the promising future that lies ahead for ISAKOS. ”



12<sup>TH</sup> Biennial

# ISAKOS CONGRESS 2019

Cancun, Mexico • May 12-16, 2019

## 12th BIENNIAL ISAKOS CONGRESS CANCUN, MEXICO



THE 2019 ISAKOS CONGRESS WAS A  
**GREAT**  
SUCCESS!



## WELCOME RECEPTION

The ISAKOS Congress Welcome Reception was a festive occasion, welcoming all Congress participants and their guests to Cancun—starting with a traditional Mexican Mariachi band! The reception also showcased a local Mayan Craftsmen Pavilion, a cooperative society—purchases provided direct benefits to Mayan communities and helps them keep their traditions alive.



## PRE-COURSES

Three morning and three afternoon pre-courses offered Congress attendees the option to start their Congress experience on Saturday, May 11. Topics ranged from Knee sports and preservation to arthroplasty, shoulder surgery, and treatment of elite athletes—two of the courses were presented exclusively in Spanish.



## EXHIBITS

ISAKOS thanks the ISAKOS Congress Exhibitors for their continued support of our mission of education and improved patient care!



## LUNCH TIME SESSIONS

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



## PRESIDENTIAL MEDALLION PRESENTATION

Dr. Marc Safran of the United States, ISAKOS President 2017–2019, passed the Presidential Medallion to Dr. Willem van der Merwe of South Africa, ISAKOS President 2019–2021.



PLEASE  
**SAVE  
THE DATE**

13th Biennial

**ISAKOS  
CONGRESS 2021**

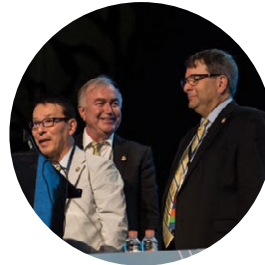
Cape Town, South Africa | May 22 - 26, 2021

[WWW.ISAKOS.COM/2021CONGRESS](http://WWW.ISAKOS.COM/2021CONGRESS)

## CANCUN CONGRESS RECAP

### HONORARY MEMBERS

ISAKOS congratulates five new Honorary Members; Dr. Moises Cohen of Brazil, Dr. Masahiro Kurosaka of Japan, Michele Johnson (former ISAKOS Executive Director) of the United States, Tom Nelson of the United States (not present), and Dr. Giancarlo Puddu of Italy.



### PRESIDENTIAL GUEST LECTURERS

ISAKOS would like to thank **Michael Casale, PhD** of Strivr for presenting “Using Virtual Reality to Improve Surgery, Sports Medicine, and Athletic Performance”, and former Olympian and track and field icon, **Edwin Moses, Sc.D hc** for his fireside chat on “Doping in Athletes: The WADA/USADA Perspective and the Perspective of a Four-Time World Record Holder.”



# THANK YOU

FOR HELPING MAKE THE CONGRESS IN  
CANCUN A SUCCESS!



# CONGRATULATIONS TO THE ISAKOS AWARD & FELLOWSHIP WINNERS

## 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. Joyce then endowed a prize to be awarded at every IAA Congress thereafter. The award was created with the intention to stimulate and reward younger members who contribute high-quality data and presentations.



### 1st Place

Absence of Ligament Progenitor Cells in the Pediatric Knee Anterolateral Complex

**Tomoya Iseki, MD UNITED STATES**



### 2nd Place

Primary Stability of an Acromioclavicular Joint Repair Is Affected by the Type of Additional Reconstruction of the Acromioclavicular Capsule

**Felix Dyrna, MD GERMANY**

## RICHARD B. CASPARI AWARD

Richard B. Caspari was an innovator, teacher and leader in the field of Arthroscopy. Beginning at the 2003 ISAKOS Congress in Auckland, New Zealand, a monetary prize in honor of 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.



### 1st Place

Glenoid Retroversion Is an Important Factor for Humeral Head Centration and the Biomechanics of Posterior Shoulder Stability

**Felix Dyrna, MD GERMANY**



### 2nd Place

Prospective Evaluation of Glenoid Bone Loss After First-Time and Recurrent Anterior Glenohumeral Instability Events

**Sean E. Slaven, MD UNITED STATES**

## AWARD & FELLOWSHIP WINNERS CONTINUED

### JAN I. GILLQUIST SCIENTIFIC RESEARCH AWARD

Jan I. Gillquist was a pioneer in the fields of knee surgery and sports medicine, well known for his dedication to the scientific method, most particularly related to the systematic approach to the entire chain of treatment of knee injuries; a correct diagnosis and pre-operative assessment, surgery and post-operative rehabilitation and the treatment of ACL injuries without surgery but with rehabilitation alone. According to Prof. Gillquist, "Everything was possible and nothing impossible to question." His passion was good science, correct science, and he was never afraid of sharp and critical questions; everything should be questioned and systematically studied.



#### 1st Place

Anterior Cruciate Ligament Reconstruction with or without a Lateral Extra-Articular Tenodesis: Analysis of Complications from the ISAKOS-Sponsored Stability Study  
**Mark A. Heard, MD, FRCS CANADA**

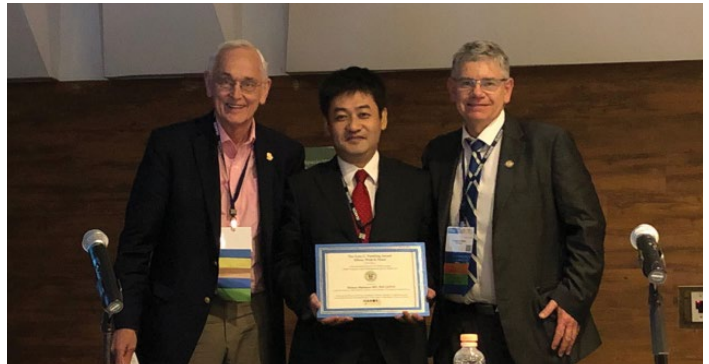


#### 2nd Place

The Effect of Anterolateral Procedures on Contact Pressures in the Lateral Compartment of the Knee  
**Thomas Neri, MD, PhD, Asst. Prof. FRANCE**

### 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.



#### 1st Place

Cumulative Incidence of Osteochondritis Dissecans of the Capitellum in Pre-Adolescent Baseball Players  
**Tetsuya Matsuura, MD, PhD JAPAN**



#### 2nd Place

Cadaveric Analysis of Dynamic Rotational Relationship of Distal Biceps Tendon with Neurovascular Structures and Proximal Radioulnar Space  
**Deepak Bhatia, MS(Orth), DNB(Orth) INDIA**

## PATELLOFEMORAL RESEARCH EXCELLENCE AWARD

*Sponsored by The Patellofemoral Foundation, Inc*

The Patellofemoral Research Excellence Award was conceived in 2005 by the Patellofemoral Foundation and ISAKOS to encourage outstanding research leading to improved understanding, prevention and treatment of patellofemoral pain or instability.



Isolated Medial Patellofemoral Ligament Reconstruction versus Tibial Tuberosity Transfer for Patellar Instability  
**Alessandra Berton, MD ITALY**

## ALBERT TRILLAT YOUNG INVESTIGATOR'S AWARD

*Sponsored by Innovate Orthopaedics Ltd.*

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**Thomas Neri, MD, PhD FRANCE**

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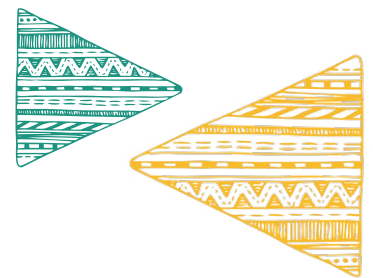
The Achilles Orthopaedic Sports Medicine Research Award was created in 1995 to recognize the researcher(s) who have performed the most outstanding clinical or laboratory research in the field of sports medicine, such as the care and prevention of injuries.



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A Bioactive Scaffold Enhances Articular Cartilage Regeneration after Microfracture in a Rabbit Model  
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The Paolo Aglietti Award for Knee Arthroplasty 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.



#### Winner

Outlier Alignment Does Not Adversely Affect Implant Survival and Function Ten Years After Kinetically Aligned Total Knee Arthroplasty Performed without Restrictions on Preoperative Deformity

**Trevor Shelton, MD, MS UNITED STATES**

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Knee Arthroplasty Fellowships are available every other year to young orthopaedic surgeons interested in the study and advancement of Knee Arthroplasty. The dual purpose of the fellowship is to improve knee arthroplasty in developing nations and to promote better understanding and communication amongst knee surgeons around the world.

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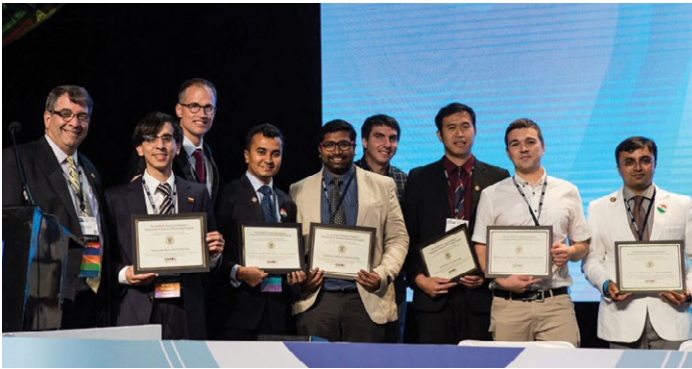
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## Postless Hip Arthroscopy



Joshua D. Harris, MD  
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### Introduction

Arthroscopic hip-preservation surgery continues to rapidly evolve across the globe. Together, sound clinical decision-making and skillful execution of the surgical technique have demonstrated successful outcomes in non-arthritic, non-dysplastic individuals undergoing modern hip arthroscopy. Emphasis is placed on labral preservation, correction of the pathomorphology underlying femoroacetabular impingement syndrome, and patient-specific capsular management. Recent high-quality prospective investigations have demonstrated excellent short and intermediate-term subjective patient-reported and objective clinician-measured outcomes after arthroscopic hip-preservation surgery. Advances in technology have led to significant reductions in postoperative pain, complications, and reoperations. Postless hip arthroscopy is a meaningful innovation that may reduce or eliminate perineal complications (and associated pain) following post-assisted surgery.

### Complications Associated with Perineal Post

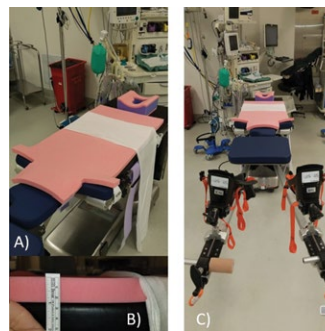
The rate of complications during and following hip arthroscopy is low (<10%), and the majority of these complications are minor and temporary (Table I)<sup>1</sup>. However, the published rate of complications is an underestimation of the true rate secondary to low levels of evidence as well as publication and recall biases. In part, this underestimation applies to the use of the perineal post, with the rate of perioperative post-related complications being as high as 30% to 35%. The rate of urologic or sexual dysfunction is approximately 25%. Post-related complications involving the perineal and groin regions can be categorized as soft-tissue complications and neural complications (Table I). Technical advancements related to the use of a post include increasing the diameter of the post (up to 9 inches), the use of soft and smooth padding, and lateralization of the post to lessen compression of the perineum. Despite these improvements, post-related complications still occur and, despite the largely temporary nature and “low rate” of these complications, they are still quite significant. Any measure that can reduce or eliminate the occurrence of these sensitive iatrogenic complications is certainly a welcome solution to a troublesome problem in arthroscopic hip surgery.

**Table I Complications Secondary to Use of Perineal Post**

| Soft-tissue   | Nerve  |
|---|--|
| <ul style="list-style-type: none"> <li>• Scrotum, penis</li> <li>• Labia, vagina</li> </ul> | <ul style="list-style-type: none"> <li>• Pudendal</li> <li>• Anterior branch obturator</li> <li>• Genitofemoral</li> <li>• Iliohypogastric</li> <li>• Cluneal</li> </ul> |

### Postless Hip Arthroscopy Techniques and Outcomes

Postless hip arthroscopy can be performed with or without the use of Trendelenburg positioning<sup>2</sup>. The use of modest Trendelenburg inclination (10° to 15°) utilizes gravity and the friction of the bed to apply distraction. Friction can be generated with use of any type of durable padded material with a high coefficient of static friction (Fig. 1). The procedure can be performed on any radiolucent bed with hip arthroscopy limb-positioning attachments. If the choice is made to perform the procedure with Trendelenburg positioning, even low degrees of inclination can be disorienting and may require a learning curve until the surgeon becomes accustomed to portal and anchor placement. However, there is a major misconception about the need to use Trendelenburg position during postless arthroscopy; in actuality, such positioning is not a requirement.



01 Left: Photograph illustrating the postless pad setup (A) and the appearance of the pad, which is approximately 2.5 cm thick and is composed of soft, compressible, high-friction material (B). Right: Photograph showing the postless setup with use of a pad on a hip arthroscopy table (C).

Two methods can be used at the commencement of postless surgery to circumvent the use of Trendelenburg positioning. With the first method, the addition of an air (or fluid) arthrogram can break the suction seal of the hip joint, thereby reducing the amount of force necessary for sufficient distraction<sup>3</sup>. This reduction in force has been shown to significantly reduce postoperative pain and opioid medication use. Surgery can then be performed with the bed flat (Fig. 2), without any significant differences in comparison with surgical techniques involving a post. With the second method, Trendelenburg positioning can be temporarily used to achieve distraction and then, once traction is achieved, the bed can be brought back to the flat position and surgery can then commence in a familiar manner. Both methods can easily achieve adequate distraction (>10 to 12 mm).



Upon initiation of traction with either method (using gross or fine distraction), the surgeon must be cognizant of the degree of friction between the lower back and buttocks and the table. With greater force of distraction pull, this friction can lever the pelvis into more anterior tilt (Fig. 3). If this increased tilt is recognized, the buttocks can be gently lifted off the bed and the tilt corrected after distraction is achieved. Otherwise, portal placement may be slightly more proximal than normal. Both methods of distraction permit surgeons to perform surgery without making any changes in their actual surgical techniques, eliminating the learning curve associated with the implementation of the postless system.



02 Lateral view of postless setup for right hip arthroscopy. The blue asterisk indicates the anterior superior iliac spine. In routine hip arthroscopy, the hip is in approximately 0° to 5° flexion, 0° of adduction, and 10° of internal rotation (depending on estimated, or known, femoral version).



03 Upon application of distraction, the degree of anterior pelvic tilt (and concurrent lumbar lordosis) must be recognized and corrected if needed.

The application of traction during procedures involving a postless system (with minor variable degrees of Trendelenburg positioning) has demonstrated safety, without a reduction in venous blood flow (as demonstrated with Doppler ultrasound) or altered nerve function (as indicated by somatosensory evoked potentials and transcranial motor evoked potentials) in the distracted limb<sup>4</sup>. Furthermore, arthroscopy with use of a postless technique has shown that muscle tissue damage (as demonstrated by the levels of creatine phosphokinase [CPK] and D-dimer) is subclinical, transient, and significantly less than that when a post is used. There is currently limited clinical evidence on postoperative outcomes following hip arthroscopy without a perineal post. The seminal publication on outcomes following postless hip arthroscopy demonstrated a 0% rate of groin-related soft-tissue or nerve complications after 1,000 consecutive hip arthroscopy procedures<sup>5</sup>. In addition, there were no complications (e.g., friction burns, blisters, bruises, contusions) secondary to the friction necessary to achieve distraction. However, in that study, the surgeon utilized Trendelenburg positioning (mean and standard deviation, 11° ± 2°).

## Overview

Performing hip arthroscopy without a perineal post has several advantages and few disadvantages. Although early evidence is limited to a few retrospective investigations and technique papers, the outcomes have been excellent. First and foremost, the use of a postless system has demonstrated safety. Additionally, there appears to be a minimal learning curve, with no substantial changes in terms of routine hip arthroscopy techniques. Trendelenburg positioning is not required. Perineal post-related complications are eliminated and pain is significantly reduced in association with postless arthroscopic hip-preservation surgery.

**Table II Advantages and Disadvantages of Postless Hip Arthroscopy**

| Advantages  | Disadvantages   |
|---|---|
| <ul style="list-style-type: none"> <li>• No compression on perineum, eliminating soft-tissue and nerve injury due to post</li> <li>• No compression on perineum, with reduced postoperative pain and medication requirements</li> <li>• Permits advanced procedures that may require extended traction times</li> <li>• Permits enhanced trainee education, with less concern about traction-related complications while teaching trainees or surgeons</li> <li>• Can be performed with or without Trendelenburg positioning</li> <li>• No limit on patient height (a perineal post limits taller patients due to post-foot/boot length)</li> <li>• Heavier patients typically easier distraction (including older, stiff males in whom it is usually challenging to obtain sufficient traction)</li> <li>• Greater available range of motion for dynamic examination</li> <li>• Minimal learning curve required</li> </ul> | <ul style="list-style-type: none"> <li>• Setup may require additional operating room staff training</li> <li>• Cost may increase with purchase of new equipment (pad for table surface, new table)</li> <li>• Achievement of distraction in lighter patients may be more difficult than expected (less force on table due to gravity, less friction)</li> <li>• Lack of a post may decrease patient stability on the table, requiring vigilance with dynamic examination and hip motion</li> <li>• Friction between skin and table may induce greater anterior pelvic tilt with traction</li> </ul> |

## Postless Hip Arthroscopy

**Joshua D. Harris, MD**

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### Disclosure

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## Technical Tips for Simultaneous ACL Surgery with HTO



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### Introduction

High tibial osteotomy (HTO) is an effective treatment for medial tibiofemoral osteoarthritis (OA) in the young and active population with varus malalignment. Varus malalignment and increased posterior tibial slope can lead to lengthening of the lateral and posterolateral soft-tissue structures of the knee and may result in varus thrust, double varus, triple varus, increased loads on the anterior cruciate ligament (ACL), and the failure of an ACL reconstruction<sup>1</sup>. Varus malalignment as well as increased posterior tibial slope can be corrected by means of HTO. Combining HTO with ACL reconstruction or revision ACL reconstruction can be the choice of treatment for ACL-deficient knees and failed ACL reconstructions associated with medial OA, varus malalignment, and / or increased posterior tibial slope. In this technical note, we describe our technique for medial opening-wedge HTO combined with ACL reconstruction or revision.

### The Typical Patient

A typical candidate for HTO combined with ACL surgery is a young, active patient with medial knee compartment pain due to medial compartment arthrosis and instability symptoms due to ACL deficiency. The reason for the ACL deficiency may be a neglected and chronic ACL injury or the failure of a previous ACL reconstruction (Fig. 1).

Physical examination reveals pain on palpation that is localized to the medial compartment, and a variety of tests are used to detect instability. ACL injury or failure of reconstruction can be seen on magnetic resonance imaging (MRI), degeneration of the joint can be seen on standing radiographs, and varus malalignment can be seen on standing long-leg radiographs. The amount of correction is a matter of surgeon preference; some surgeons aim for a neutral mechanical axis, whereas others aim for slight overcorrection of the mechanical axis to the Fujisawa point<sup>2</sup>. In general, a neutral mechanical axis may be preferable for younger patients who would like to return to sports.

### Patient Positioning

After the induction of general or regional anesthesia and intravenous administration of prophylactic antibiotics, the patient is placed in supine position on a radiolucent table, with both knees hanging down from the table with the knees flexed at 90°. A tourniquet is placed at the proximal part of the thigh, and a lateral post is placed at thigh level. The C-arm imaging device is placed on the lateral side of the knee because the surgeon will be operating on the medial side during the osteotomy.

### Surgical Steps

- 1 Graft harvest
- 2 Arthroscopy (examination, chondral and meniscal interventions, debridement)
- 3 Femoral tunnel drilling
- 4 Medial opening-wedge osteotomy (with preliminary fixation)
- 5 Tibial tunnel drilling
- 6 Graft passage
- 7 Definitive fixation of osteotomy
- 8 Tensioning and fixation of the graft



01 Anteroposterior radiograph (A), lateral radiograph (B), and sagittal T2-weighted MRI scan (C) of the left knee of 35-year-old patient with an ACL injury that had been neglected for 10 years. Standing long-leg radiograph showing both lower extremities of the same patient (D).

### Technical Tips for Simultaneous ACL Surgery with HTO

#### Graft Harvest

A 3-cm longitudinal incision is made medial to tibial tubercle, midway between the tubercle and the posteromedial cortex of the tibia. The sartorius fascia is incised, and the semitendinosus and gracilis tendons are identified. Only the semitendinosus tendon is harvested with a tendon stripper because an all-inside ACL reconstruction will be performed with a quadrupled tendon. The harvested tendon graft is prepared on the back table by an assistant. A graft diameter of at least 9 mm is expected.

#### Arthroscopy

Arthroscopy is performed through standard anteromedial and anterolateral portals. The medial and lateral compartments, the patellofemoral joint, the suprapatellar region, and the intercondylar notch are examined. Any concomitant chondral or meniscal injury is addressed before femoral tunnel drilling. The remaining femoral and tibial stumps of the ACL are removed, the ACL footprints on either side are marked, and the medial wall of lateral femoral condyle is debrided.

#### Femoral Tunnel

A femoral tunnel guide is placed with its tip on the femoral footprint of the ACL, and a reverse reamer is placed in an outside-in manner until it exits from the medial wall of lateral femoral condyle. Next, a tunnel with a length of 25 mm and the same diameter as the tendon autograft is created with retrograde drilling. A shuttle suture is passed through the tunnel and into the joint and is left in place.

#### Medial Opening-Wedge Tibial Osteotomy

For the osteotomy, the leg is brought into full extension and is put on a Mayo table. The incision that was made for the graft harvest is extended 10 cm distally. The superficial medial collateral ligament (MCL) attachment on the tibia is released subperiosteally to prevent overloading of the medial compartment after osteotomy. Posteromedial soft-tissue structures and the patellar tendon are protected with retractors. A Kirschner wire (K-wire) is advanced from the medial tibial cortex under fluoroscopic guidance, starting 4–5 cm distal to the joint line and aiming for fibular head. A second K-wire is placed 15 mm apart, parallel to the first K-wire. The line connecting the two K-wire insertions on the medial tibial cortex should be parallel to the posterior tibial slope in the sagittal plane. The osteotomy is performed distal to the K-wires, staying parallel to the wires in the coronal and sagittal planes. The osteotomy is started with a thin and wide oscillating saw and is continued with an osteotome. The medial, anterior, and posterior cortices are osteotomized, but the lateral cortex is left intact, with the saw cut stopping 1 cm short from the lateral cortex. A gentle valgus stress is applied to the tibia, using the intact lateral cortex as a hinge.

Stacked osteotomes can be used to gradually open the osteotomy site. Once adequate opening is obtained, a bone spreader is placed into the osteotomy site. The proximal and distal fragments are gradually spread with the bone spreader according to the preoperative plan until the mechanical axis is corrected as desired. To check the alignment, a radiopaque alignment rod is placed over the center of the femoral head and the midpoint of the ankle joint. The position of the rod, and hence the mechanical axis, is checked with the fluoroscope. Once the alignment is correct, a bone wedge allograft is placed into the osteotomy site. This wedge should be placed in the posterior part of the osteotomy site to create a trapezoidal opening (i.e., more opening in the posterior part and less opening in the anterior part). This shape is important in order to avoid increasing the posterior tibial slope, a common occurrence in opening-wedge tibial osteotomies. The bone allograft should fill the osteotomy site but should be below the level of medial cortex so that cortical healing will be possible on the medial side. The bone spreader is removed, and preliminary fixation of the osteotomy site is performed.

We prefer to use a long titanium locking osteotomy plate for fixation. The plate is applied over the medial cortex, with care being taken to leave enough space anterior to the plate for the tibial ACL tunnel. Preliminary fixation is achieved after the placement of all proximal and distal locking screws except for the proximal anterior screw, which will be placed after tibial tunnel drilling.

#### Tibial Tunnel

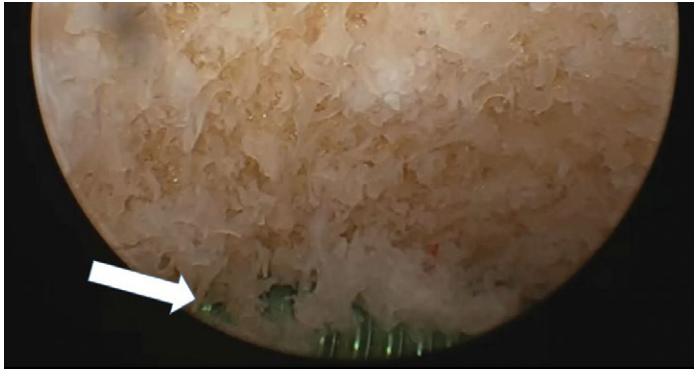
A tibial tunnel guide is placed anterior to the plate on the proximal part of the medial tibial cortex, with its tip exiting in the tibial footprint of ACL. A retrograde tunnel with a length of 25 mm and the same diameter as the tendon autograft is created. A shuttle suture is passed through the tibial tunnel and into the joint and is left in place. In order to prevent convergence of the proximal anterior screw with the tibial tunnel, a drill bit is left in the hole that was drilled for the proximal anterior screw.

#### Graft Passage

The shuttle sutures in the femoral and tibial tunnels are taken out of the joint through the anteromedial portal. The femoral shuttle suture is attached to one of the button fixation devices, which are located on each end of the tendon autograft. The tendon graft is pulled into the joint and femoral tunnel through the anteromedial portal. The adjustable-loop fixation device is tightened and is fixed on the femoral cortex. The suture and button on the distal end of the graft are attached to the tibial shuttle suture, and the graft is pulled into the joint and tibial tunnel.

### Completion of Osteotomy Fixation

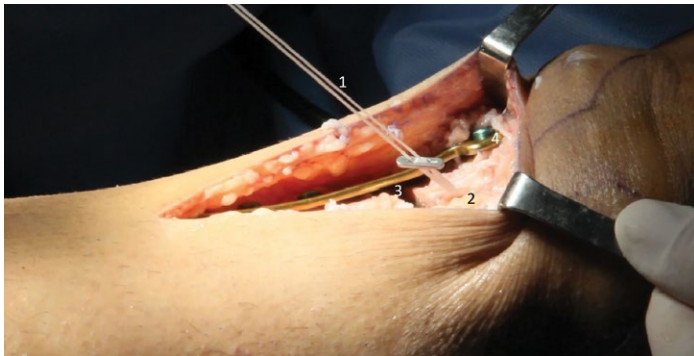
A proximal anterior locking screw is placed, and the fixation is completed. The arthroscope can be used to visualize the tibial tunnel for potential screw penetration (Fig. 2). If the screw interferes with passage of the graft button fixation device, a shorter screw may be selected or the screw may not be placed at all, as the device provides adequate mechanical stability.



02 In case of convergence between the proximal anterior locking screw and the tibial tunnel, the screw can be visualized in the tunnel arthroscopically (white arrow).

### Tensioning and Fixation of the Graft

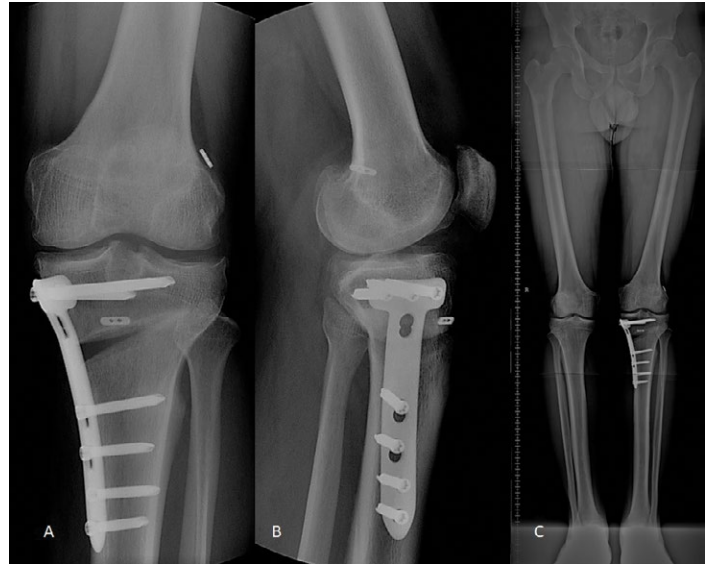
The knee is brought to 30° of flexion, and posterior drawer stress is applied to the tibia. The tibial end of the graft is pulled distally and is tensioned adequately. While the graft is under tension, the tibial adjustable loop is tightened and is fixed on the tibial cortex (Fig. 3).



03 Intraoperative view of the adjustable-loop fixation device (1), the orifice of the tibial tunnel (2), the osteotomy line (3), and the proximal anterior locking screw (4).

### Advantages of HTO Combined with ACL Reconstruction

HTO combined with ACL reconstruction is a safe and effective one-stage procedure that has been associated with satisfactory functional outcomes and postoperative activity level scores when used for the treatment of patients who have symptomatic varus osteoarthritis in combination with anterior knee instability<sup>3</sup>. The procedure improves alignment, restores anterior knee stability, and helps to reduce the progression of OA<sup>4</sup>. As it is a one-stage operation, it has a lower cost compared with staged surgery (Fig. 4).



04 Anteroposterior radiograph (04A), lateral radiograph (04B), and standing long-leg radiograph (04C) made at 3 months after simultaneous ACL reconstruction with HTO.

### Advantages of All-Inside ACL Reconstruction

All-inside ACL reconstruction using only the semitendinosus tendon has several advantages over conventional ACL reconstruction techniques using both the semitendinosus and gracilis tendons. The all-inside technique requires shorter tunnels and preserves proximal tibial bone stock. The short quadrupled graft that is needed for this technique allows harvesting of only one tendon, which causes less harvest-site morbidity and preserves knee flexor strength. The postoperative pain after all-inside ACL reconstruction has been shown to be less than that after conventional ACL reconstruction<sup>5</sup>.

The main advantage of the all-inside technique related to HTO is that the tibial tunnel does not converge with the proximal screws of the HTO fixation plate. In most cases, the proximal anterior screw remains below the 25-mm long tibial tunnel and does not interfere with the graft.

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## Medial Stabilizing Gap Technique with Tibia First Cut in Total Knee Arthroplasty for Varus Knees



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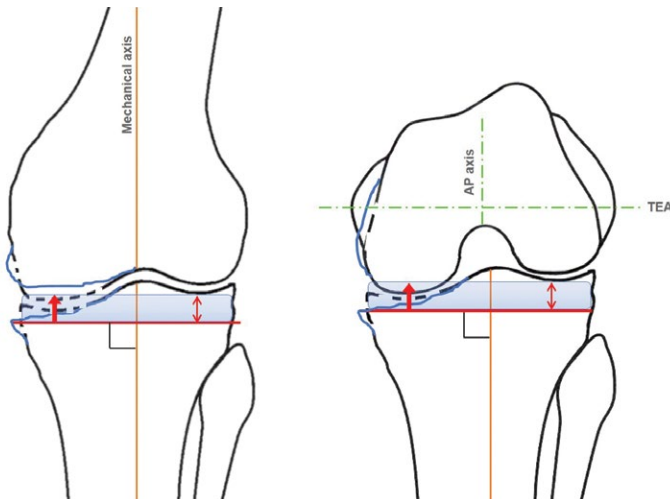
### Rationale for Medial Stability in Total Knee Arthroplasty

Ligament balancing is one of the key challenges for successful total knee arthroplasty (TKA). Preparing symmetrical rectangular gaps between the cut surfaces of the femur and tibia in both extension and flexion is recommended as the ideal goal. However, it can be difficult to balance the soft-tissue tension perfectly, especially in knees with severe coronal plane deformity. Okamoto et al. measured the length of the bone gap on the medial and lateral sides of varus knees and reported that lateral soft-tissue laxity increased with increasing preoperative varus deformity<sup>1</sup>. In contrast, the medial soft tissue did not contract with varus deformity. That study suggested that release of the medial collateral ligament (MCL) is needed in order to adjust its tension to be equal to that of the lateral soft tissue, which is stretched in knees with severe varus deformity. However, extensive medial release carries the risk of loss of medial tension in flexion because selective release in either extension or flexion is difficult. In addition, soft-tissue laxity is known to be greater on the lateral side than on the medial side in normal knees. Therefore, we hypothesized that an additional medial release should be avoided when enough of a gap is prepared for implantation and that residual lateral laxity can be allowed in varus knees rather than pursuing a symmetrical rectangular gap.

Gap balancing also means adjusting the soft-tissue tension to be equal in extension and flexion. Resection of the posterior cruciate ligament (PCL) during posterior-stabilized TKA often results in an enlarged flexion gap. Thus, the gap-balancing ligament-cutting technique, in which the thickness of the bone resection is determined on the basis of the gap length in extension and flexion, has been advocated in order to obtain equal gap lengths. A loose flexion gap can cause instability in flexion, affecting the kinematics of the knee in daily activities. Nakamura et al. reported that knees with loose medial flexion gaps showed nonphysiological anterior translation of the femoral component in deep knee flexion, whereas those with loose lateral flexion gaps did not<sup>2</sup>. Furthermore, several studies have shown that loose medial flexion gaps cause impaired knee function and decreased satisfaction after TKA<sup>3,4</sup>. Therefore, care should be taken to adjust the medial flexion gap to be equal to the medial extension gap by avoiding medial release and leaving lateral laxity in severely varus knees. We advocate a technique that can be used to balance the medial gap between extension and flexion without releasing the MCL to stabilize the medial side of the knee.

### Surgical Technique

When using posterior-stabilized TKA systems in varus knees, we first resect bone with the same thickness as the implant from the proximal part of the tibia. It should be noted that, with this technique, the postoperative joint line will be maintained on the lateral (intact) side whereas it will be raised by 2–3 mm from the original joint line on the medial (arthritic) side. This is because the physiological (medially inclined) joint line will now be perpendicular to the tibial axis so that the medial and lateral sides of the joint line will be at the same level (Fig. 1). This situation necessitates adjustment of the medial flexion gap, which tends to increase after PCL resection for posterior-stabilized TKA. Femoral and tibial osteophytes on the medial side are completely removed, and the release of medial soft tissue is limited to minimal. After that, the gap balance between extension and flexion is evaluated with use of a force-controlled compartment-specific ligament tensioner with a distraction force of 60 N for each compartment or with use of spacer blocks of the same thickness as the tibial implant (Figs. 2-A, 2-B, and 2-C). The surgeon should note the difference between the medial extension gap and the medial flexion gap. Laxity of the lateral flexion gap can be ignored.



01 Illustrations of the knee in extension (left) and flexion (right). The red line shows the level of tibial bone resection. When the bone is resected to the thickness of the implant on both the arthritic (medial) and intact (lateral) sides, the joint line on the medial side rises by 2–3 mm from the original (pre-arthritis) joint line. As the wear of bone and cartilage usually occurs on the medial aspect of the distal part of the femur and not at the posterior aspect of the medial condyle, the elevation of the medial joint line can cause a tight medial flexion gap unless the PCL is resected. The double-headed red arrow represents the width of bone resection at lateral side. The blue rectangular area represents the tibial implant. The dotted line represents the original (pre-arthritis) medial joint line. The single-headed red arrow represents the elevation of the medial joint line. TEA = transepicondylar axis.



02A Force-controlled compartment-specific ligament tensioner.

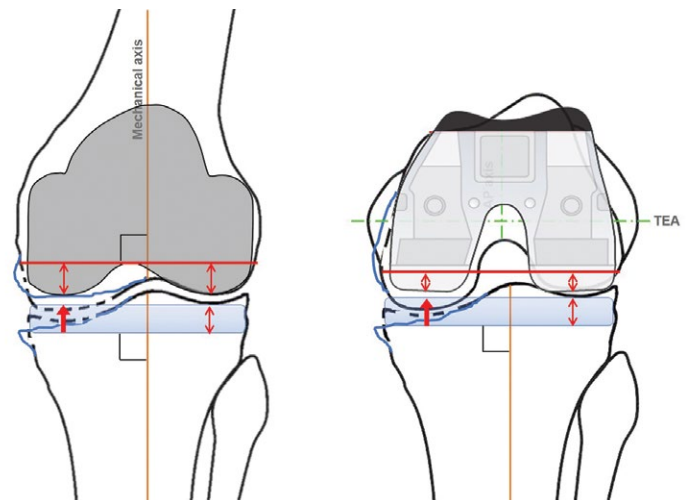


02B Spacer block for tibial thickness (symmetrical type).



02C Spacer block for tibial thickness (asymmetrical type).

In principle, the bone resection level on the distal part of the femur is set so that the thickness of the medial side is equal to that of the implant. Because most varus knees have bone and cartilage wear on the medial side of the distal part of the femur, the medial joint line of the distal part of the femur is raised by 2–3 mm to be at the same level as the lateral side (Fig. 3). In cases in which the medial flexion gap is still larger than the extension gap, the resection level can be set more proximally in order to adjust the gap balance. However, because excessive elevation of the joint line will cause mid-flexion instability, gap differences can be adjusted by resection of the posterior part of the medial femoral condyle. After resection of the distal part of the femur, the extension gap can be assessed with the ligament tensioner or spacer blocks of the same thicknesses as the femoral and tibial components.



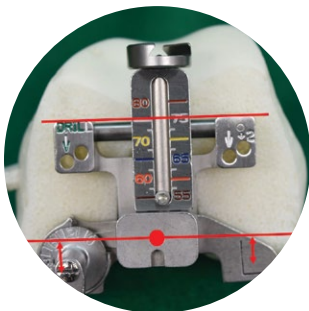
03 Illustrations of the knee in extension (left) and flexion (right). The red line shows the level of femoral bone resection. When this level is set at the same thickness as the implant from the worn medial surface, the joint line on the medial side of distal part of the femur raises 2–3 mm to be at the same level as the lateral side. Elevation of the medial joint line will tighten the medial flexion gap, whereas resection of PCL will broaden the flexion gap; thus, the gap should be assessed before the posterior femoral condylar resection. TEA = transepicondylar axis.

Next, focus should be placed on the resection of the posterior femoral condyles. The rotational alignment of the femur can be determined in relation to either anatomical landmarks, such as the transepicondylar axis or Whiteside axis, or gap balancing. However, the principle of this technique is to obtain a medial flexion gap that is equal to the medial extension gap rather than to obtain a rectangular flexion gap. The lateral flexion gap can be larger than the medial flexion gap; however, it should not be smaller. After deciding on the external rotation angle of the femoral component, attention should be paid to how much of the posterior aspect of the medial femoral condyle should be removed based on the prior medial gap assessment.

## Medial Stabilizing Gap Technique with Tibia First Cut in Total Knee Arthroplasty for Varus Knees

In order to control the resection thickness, the surgeon should note the effect of the rotational center of the femoral sizing guide on the posterior part of the medial femoral condyle. Minoda et al. pointed out that posterior femoral condylar bone resection thickness differed depending on the location of the rotation center of the sizing guide, even if a posterior reference guide is used<sup>5</sup>. With most sizing guides, the rotation center is located at the center of the guide. When such guides are used, 3° of external rotation provides a 1–2-mm-thicker resection of the posterior part of the medial condyle and a 1–2-mm-thinner resection of the posterior part of the lateral condyle. As the rotation angle increases, the difference increases. In contrast, when the procedure is performed with use of a posterior reference guide in which the rotation center is located on the medial side, the amount of resection from the posterior part of the medial femoral condyle is consistent with the thickness of the implant no matter what degree of external rotation is adopted (Figs. 4-A through 5-C). When a posterior reference guide is used, the adjustment of the anterior-posterior position of the guide directly affects the size of the medial posterior gap.

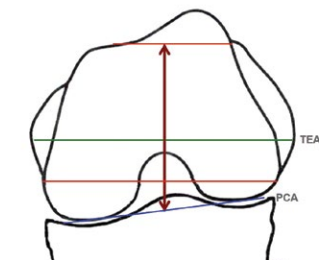
04 A posterior reference guide in which the rotation center is located at the center. The double-ended arrows indicate the resection thickness of the posterior parts of the condyles.



04A Photograph showing the guide set to 3° of external rotation from the posterior condylar line.

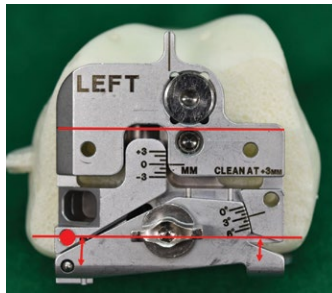


04B Photograph showing the guide set to 6° of external rotation from the posterior condylar line.

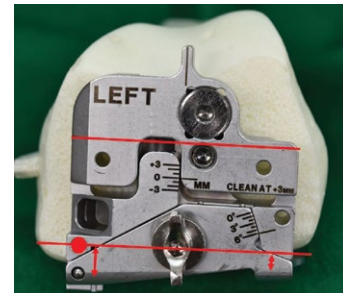


04C **Left:** Illustration depicting the anterior and posterior resection levels (horizontal red lines) as determined with the posterior reference guide. TEA = transepicondylar axis and PCA = posterior condylar axis. **Right:** After the femoral implant was placed to the resection level, there was a difference between the femoral component and the posterior part of the medial femoral condyle (red zone).

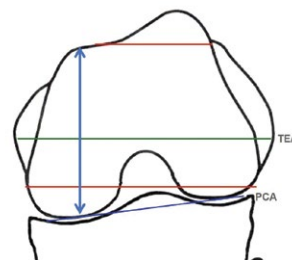
05 A posterior reference guide in which the rotation center is located on the medial side. The double-ended arrows indicate the resection thickness of the posterior parts of the condyles.



05A Photograph showing the guide set to 3° of external rotation from the posterior condylar line.



05B Photograph showing the guide set to 6° of external rotation from the posterior condylar line.



05C **Left:** Illustration depicting the anterior and posterior resection levels (horizontal red lines) as determined with the posterior reference guide. TEA = transepicondylar axis and PCA = posterior condylar axis. **Right:** After the femoral implant was placed at the resection level, the amount of resection from the posterior part of the medial femoral condyle is consistent with the thickness of the implant.

It is very important to know the characteristics of the femoral rotation or sizing guide in order to control the resection thickness from the posterior part of the medial femoral condyle and to control the medial flexion gap. The goal of the procedure is to balance the medial gap between extension and flexion and to provide medial stability throughout the range of motion.

### Results of Our Technique

We assessed 77 knees in 71 patients who underwent TKA with this technique. The mean age of the patients at the time of surgery was 73.3 years (range, 53–86 years). The component gap was measured on the medial and lateral sides in both extension and flexion with use of the tensor device with the femoral trial component in place just before the final implantation. The component gap was defined as the difference between the thickness of the tibial component and insert (in millimeters) and the extension or flexion gap (in millimeters) with the trial femoral component in place. If the thickness of the tibial component and insert was thinner than the medial or lateral gap, the component gap had a positive value. If the component gap in flexion was larger than that in extension, the component gap had a positive value.



We focused on the difference in the medial component gap and grouped the patients into three categories: the loose medial knee group (those with a difference in the medial component gap of  $>3$  mm), the stable medial knee group (those with a difference of between  $\geq 0$  mm and  $\leq 3$  mm), and the tight medial knee group (those with a difference of  $< 0$  mm).

There were no significant differences between the stable medial knee group and the loose medial knee group in terms of preoperative demographic data or postoperative radiographic alignment. The numbers of medially stable knees and medially loose knees were 62 (80.5%) and 15 (19.5%), respectively. There were no knees in tight medial knee group. There were no knees with a negative component gap on either the medial or lateral side in extension or flexion. There were no knees with a smaller lateral component gap than medial component gap in either extension or flexion.

Our technique provided a relatively high proportion of medially stable knees. Generally, the resection level of the distal part of the femur affects the extension gap, whereas that of posterior part of the femur affects the flexion gap. The resection level of the proximal part of the tibia affects both gaps. Our technique can make it easier to balance the medial gap between extension and flexion without ligament release and can better maintain the joint line compared with the conventional measured resection or gap-balancing techniques.

#### Principles of Our Technique

- 1 Maintain the joint line by cutting the tibia first.
- 2 Perform minimal medial releases while leaving lateral laxity.
- 3 Adjust the resection thickness of the distal and posterior aspects of the medial femoral condyle after assessing the medial extension and flexion gaps in order to ensure that they will be equal.

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## In Vitro-Generated Autologous Bone Graft: Progress Toward a Desired Surgical Tool to Assist in Reconstruction and Repair

### A Glimpse Toward the Future



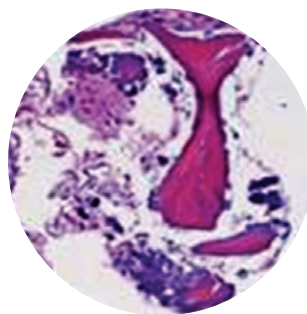
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#### The problem: nonunion and slow healing of bone defects. The solution: a bioengineered bone graft product.

Bone has a high potential to regenerate after damage. However, large defects with inadequately vascularized bone gaps may not achieve satisfactory healing and may progress to nonunion. About 10% of these patients will require implantation of bone grafts<sup>1</sup>. Cumulatively, 500,000 bone-grafting procedures are performed annually in the U.S. alone<sup>2</sup>, and the demand for bone grafts is expected to rise as the population ages and life expectancy increases<sup>1</sup>.

Autologous bone-grafting is the gold standard for the reconstruction of critical bone defects. However, autologous grafts have several disadvantages, such as donor-site morbidity and limited availability. The use of alternatives such as allografts or xenografts is limited because of the risks of rejection, infection, and nonunion. Progress in bone tissue engineering is essential in order to provide an unlimited source of autologous bone for grafting. Fortunately, the method of generating autologous bone-like material, originating from patient-specific osteoblast-like cells grown from bone marrow on a  $\beta$ -tricalcium phosphate-supporting 3-dimensional matrix under optimal biomechanical conditions, already exists<sup>3</sup>. The generated live-bone material might be advantageous over existing inorganic fillers, which have low osteoconductivity and osteoinductivity, as well as over cell-therapy products, which have an uncertain ability to proceed to bone generation after implantation. This newly developed tissue-engineering method showed promising results in initial animal studies (Fig. 1).

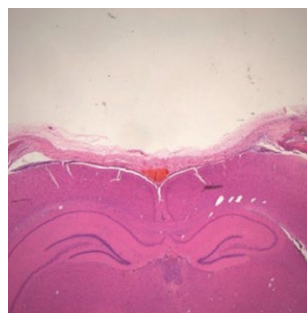
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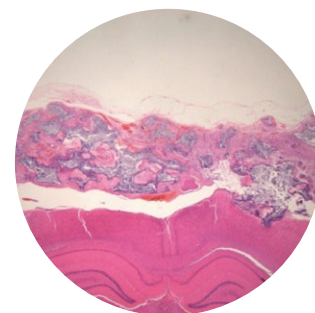
01A Photomicrograph showing the bone spicules generated in vitro, originating from osteoblasts cultured as explant culture from bone marrow (hematoxylin and eosin).



01B Bone-like material generated in vitro.



01C Photomicrograph showing a critical bone gap in rat calvarium, 6 weeks after the creation of the gap (hematoxylin and eosin). No evidence of bone bridging of the gap exists.



01D Photomicrograph showing bridging of the critical bone gap by young woven bone in rat calvarium, 6 weeks after the implantation of in vitro-generated bone.

Thus, the methodology for in vitro live human bone generation already exists, and we should anticipate that this source of autologous bone for grafting, which does not have the disadvantages of surgical morbidity and limitation of the volume of the graft, is ready to be developed for clinical use.

Naturally, the method is expected to fulfill the regulatory requirements, including clinical studies, and this process might take several years. However, on the basis of the promising initial preclinical evidence, the musculoskeletal surgeon community should expect an important breakthrough in bone graft use in the future.

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## Distal Biceps Endoscopy: All-Endoscopic Exploration, Repair, and Reconstruction of Distal Biceps Tears



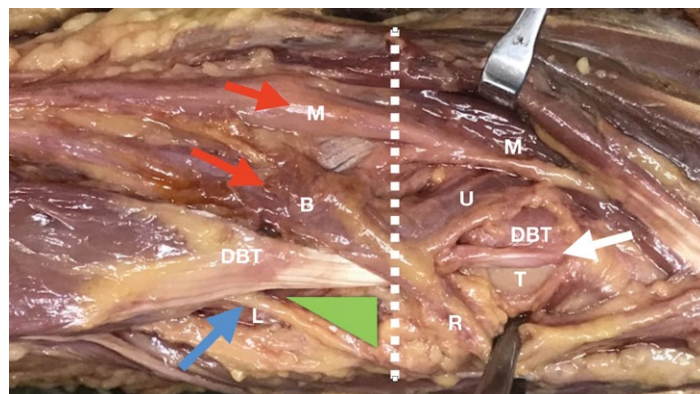
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### Introduction

Distal biceps endoscopy is a minimally invasive diagnostic and therapeutic technique for the management of distal biceps tendon (DBT) pathology. The endoscopic technique has evolved from a single-incision diagnostic technique to an endoscopic-assisted and all-endoscopic technique for DBT repair and reconstruction<sup>1,2</sup>. The advantages and potential pitfalls have been identified in cadaveric and clinical studies<sup>1,2-5</sup>, and knowledge of the principles and technical variations of biceps endoscopy is necessary prior to the transition from open to endoscopic procedures around the distal biceps.

### Surgical Anatomy, Portal Safety, and Technical Feasibility

The neurovascular anatomy of the cubital fossa is variable, and the DBT is closely related to 9 neurovascular structures (cephalic vein, lateral cutaneous nerve, leash of vessels, radial nerve, superficial radial nerve, posterior interosseous nerve, radial artery, brachial artery, and median nerve) along its course from the musculotendinous junction to the tuberosity<sup>4</sup>. In the zone proximal to the elbow crease, the cephalic vein and the lateral cutaneous nerve course along the lateral aspect in close proximity to the DBT. The radial nerve is further lateral and is relatively safe in this zone. On the medial side, the DBT is closely related to the brachial artery and vein as well as the median nerve. As the DBT courses distal to the elbow crease, it passes deep, and in close apposition, to the brachial artery bifurcation and the radial and ulnar arteries. The superficial radial nerve and the posterior interosseous nerve are in close proximity to the lateral aspect of the DBT (Fig. 1). In a recent study, Bhatia et al. evaluated 5 potential portal sites above and below the elbow crease for elbow endoscopy<sup>4</sup>.



01 Cadaveric dissection showing the neurovascular relationships of the distal biceps tendon both proximal (left) and distal (right) to the anterior elbow crease (dotted line). The parabiceps portal is created in the safe zone (green triangle) proximal to the elbow crease. DBT = distal biceps tendon, L = lateral cutaneous nerve, B = brachial vessels, M = median nerve, R = radial artery, U = ulnar artery, and T = tuberosity.

The study showed that the anterior portal placed above the elbow crease ("parabiceps portal") and a posteriorly placed forearm portal were safe, whereas the 3 anterior portals placed at different levels below the elbow crease were significantly closer to neurovascular structures. The parabiceps portal was close to the lateral continuation of the musculocutaneous nerve (mean distance, 5 mm), whereas the cephalic vein (mean distance, 16 mm) and radial nerve (mean distance, 12 mm) were further lateral. During its course into the forearm, the parabiceps portal was close to the recurrent radial leash of vessels (mean distance, 7 mm).

The technical feasibility of the procedure was analyzed in a recent study, which demonstrated that the risk of iatrogenic neurovascular injury was minimal with use of dual suture-anchors and that compartment pressures remained within normal limits<sup>5</sup>.

### Indications

Distal biceps endoscopy has both diagnostic and therapeutic applications. Bicipitoradial bursitis can be visualized and debrided, and associated low-grade partial tears can be debrided. High-grade partial DBT tears can be repaired in situ, or they may be converted to a complete tear and reattached<sup>2</sup>. Acute ruptures, both retracted and non-retracted, can be repaired to the tuberosity with use of various fixation devices<sup>2,5</sup>. Chronic ruptures can be mobilized, retrieved, and reattached to the tuberosity under endoscopic vision<sup>3</sup>. Chronic tears with severe adhesions and retraction or musculotendinous tears can be endoscopically reconstructed with use of a tendon autograft or allograft<sup>3</sup>.

## Distal Biceps Endoscopy: All-Endoscopic Exploration, Repair, and Reconstruction of Distal Biceps Tears

### Contraindications

Post-traumatic or iatrogenic alteration in the anatomy of the cubital fossa (e.g., as a result of scarring, heterotopic ossification, or vascular or neurological surgery) is a contraindication to the procedure. Similarly, the procedure should be avoided in patients with vascular anomalies and malunited fractures. Surgeon inexperience is a relative contraindication, and familiarity with the anatomical course of major neurovascular structures is necessary in order to prevent any iatrogenic complications.

### Surgical Technique

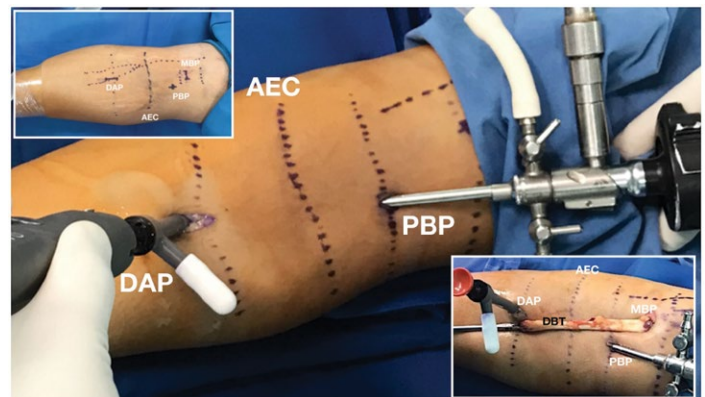
Biceps endoscopy is currently performed with use of 2 different techniques: (1) the single-portal (incision) and endoscopic-assisted technique and (2) the all-endoscopic technique.

*Single portal (incision) and endoscopic-assisted technique:* Eames and Bain were the first to describe an anterior portal using a 2.5-cm incision placed 2 cm distal to the elbow crease for endoscopic visualization of the DBT<sup>6</sup>. The superficial radial nerve and posterior interosseous nerve are at risk of iatrogenic injury with this portal, and retractors used via the same incision significantly decrease the risk of injury to any neurovascular structures<sup>4</sup>. Phadnis and Bain described the current modification of the endoscopic-assisted footprint repair using a 3 to 5-cm midline longitudinal incision approximately two fingerbreadths distal to the elbow crease<sup>1</sup>. Endoscopic magnification via the incision permits clear visualization of the anatomy and optimizes debridement and tendon repair. A disadvantage of the single-portal technique is that the viewing and working area is restricted to the length of the incision, which limits its utility for the treatment of retracted tears.

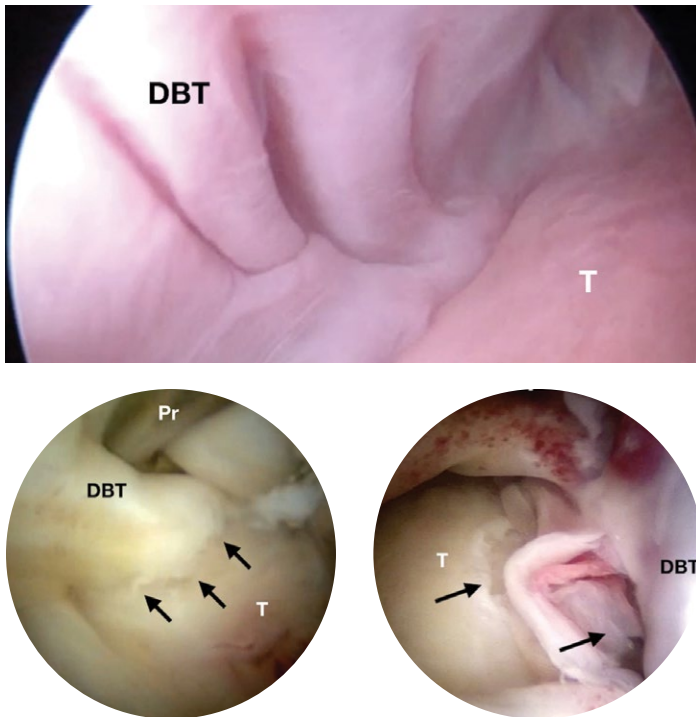
*All-endoscopic technique:* This technique, described by Bhatia et al., involves the use of separate endoscopic portals for visualization and working<sup>2-5</sup>. The “proximal parabiceps portal” is the main viewing portal and is placed above the elbow crease, and an additional working portal is placed at the level of the tuberosity<sup>2</sup>. Fluid insufflation is necessary to create a working space, and cannulas are used to protect soft tissues in the forearm. The all-endoscopic technique can be used with suture anchors, interference screws, or cortical buttons<sup>5</sup>. The technique can be used to repair non-retracted and chronic retracted ruptures, and deficient tendons can be reconstructed endoscopically with use of a graft<sup>3</sup>. Excellent visualization at every step of the procedure eliminates the need to retract tissues or excessively dissect surrounding soft-tissue planes and thereby prevents associated complications such as heterotopic ossification and neurovascular injury.

### Author’s Preferred Technique

The all-endoscopic technique is performed with the patient in the supine position, with the arm placed on an arm table and the elbow in 10° to 20° of flexion. Two portals (the proximal parabiceps portal and the distal anterior portal) are used for partial or non-retracted complete tears, and a third portal (the mid-biceps portal) is necessary for tears that have retracted proximal to the elbow crease (Fig. 2). A 4-mm sheath is used via the parabiceps portal (PBP) placed approximately 2 to 3 cm proximal to the elbow crease and at the lateral aspect of the musculotendinous junction of the DBT<sup>2</sup>. A 2.9-mm arthroscope and gravity fluid inflow are used to distend the bicipitoradial bursa, and the distal biceps insertion is visualized. The distal anterior portal is created at the level of the bicipitoradial tuberosity. Blunt dissection is performed via an 8-mm incision, and the superficial branch of the radial nerve and the radial artery are identified and protected. A 6-mm short cannula is inserted via the distal anterior portal for further instrumentation. The DBT insertion is probed to assess the presence of low or high-grade tears. A high-grade tear is diagnosed if a probe can be passed deep to the DBT insertion along the medial aspect of the tuberosity.

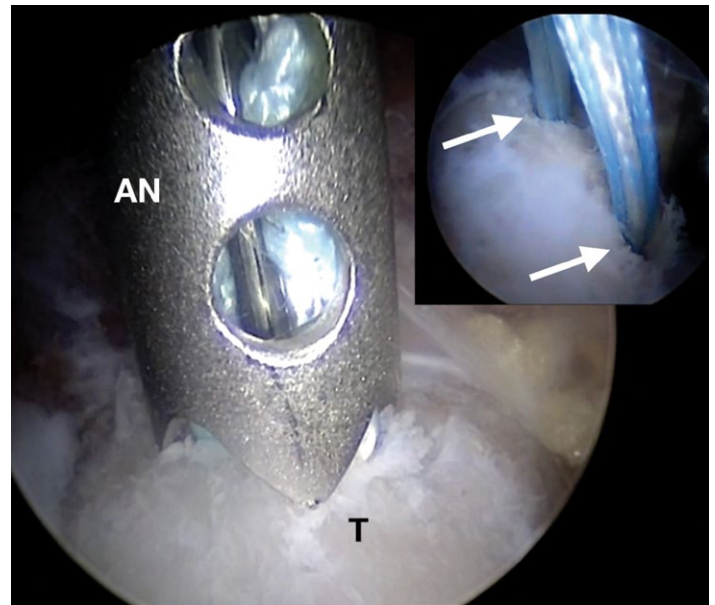


02 Intraoperative photographs showing portal placement in the all-endoscopic distal biceps repair technique. The three portals (including the proximal parabiceps portal [PBP], distal anterior portal [DAP], and mid-biceps portal [MBP]) are shown in relation to the sonographic markings (upper left image). The proximal parabiceps portal is the main visualization portal throughout the procedure, and distal anterior portal is used as a working portal via a cannula (central image). Retracted tendon is retrieved via the mid-biceps portal, and adequate length is demonstrated (lower right image). AEC = anterior elbow crease.



03 Endoscopic images showing a normal DBT (upper image), a partially torn tendon (lower left image) and completely torn non-retracted tendon (lower right image). T = tuberosity, Pr = probe.

Complete tears demonstrate a bare tuberosity, and remnants of the tendon stump may be visualized (Fig. 3). A grasper is used to deliver the proximal end of the non-retracted DBT via the distal anterior portal under endoscopic visualization. DBT tears that have retracted proximal to the elbow crease are explored and retrieved via the mid-biceps portal, which is placed approximately 1 to 2 cm proximal to the proximal parabiceps portal in the midline of the forearm. Chronic retracted tears are released to achieve adequate tendon length; inadequate length, degenerated tendons, or musculotendinous tears are reconstructed with use of hamstring autograft tendon. The tendon is then shuttled across the elbow crease and is retrieved via the distal anterior portal. The bicipital tuberosity is prepared with use of a 3-mm shaver and burr, and two double-loaded all-suture anchors (Suturefix Ultra, 1.9 mm; Smith & Nephew, USA) are passed 1 cm apart (Fig. 4). One suture from each pair is used to whipstitch the tendon, and the other end is pulled to dock the tendon on the tuberosity. Non-sliding knots are used to fix the DBT securely to the tuberosity. Alternately, button devices (Endobutton [Smith & Nephew, USA] or BicepsButton [Arthrex, USA]) may be used for DBT fixation (Fig. 5). Dynamic assessment is used to evaluate tendon-bone contact and fixation.



04 Endoscopic images showing the placement of double-loaded all-suture anchors (AN) into the tuberosity, approximately 1 cm apart (arrows). T = tuberosity.

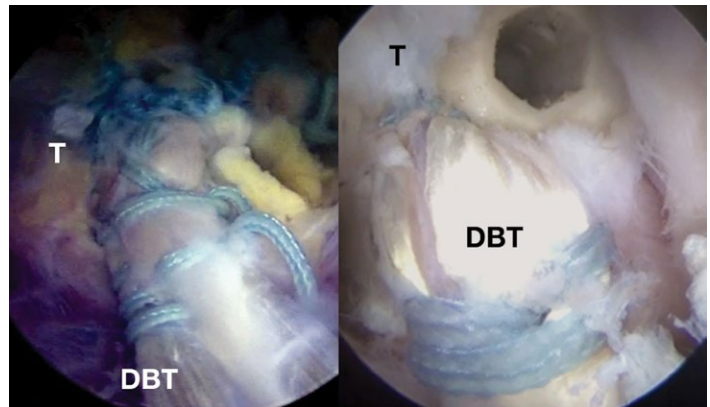
#### Postoperative Rehabilitation

A bulky soft-tissue dressing with the elbow in 90° of flexion is used in the immediate postoperative period, and this dressing is changed to portal dressing on the fourth postoperative day. Sling immobilization is necessary for up to 4 to 6 weeks, depending on the chronicity of the tear. Thereafter, a hinged elbow brace is used for controlled range-of-motion, and active-assisted and active range-of-motion exercises are initiated and continued for 2 to 4 weeks. Next, low-intensity muscle strengthening exercises are started, and the patient is permitted to resume all activities of daily living. Biceps and triceps strengthening is begun at 12 weeks and is progressively increased over the next 3 months. Heavy-lifting work and sports are permitted after 4 to 6 months.

## Distal Biceps Endoscopy: All-Endoscopic Exploration, Repair, and Reconstruction of Distal Biceps Tears

### Key Points and Technical Tips

- Preoperative sonography is performed, and the course of major neurovascular structures, the bicipital tuberosity, and the retracted tendon end are marked<sup>3</sup>.
- The elbow joint is flexed 10° to 20° for initial portal placement, and a support under the distal part of the humerus is used intraoperatively to achieve extension when necessary.
- The “proximal parabiceps portal” is angulated dorsally and toward the sonographically marked tuberosity, and the sheath is advanced approximately 7 cm. The sheath should pass in a smooth passage until the bare tuberosity area is felt<sup>2</sup>.
- The proximal parabiceps portal is adjacent to the lateral cutaneous nerve, and the radial artery is at significant risk of injury when the distal anterior portal is used. The risk is minimized by placing the proximal parabiceps portal just below the musculotendinous junction and in close apposition to the DBT. The distal anterior portal should be placed with open dissection via an 8-mm incision, and the superficial radial nerve and radial artery should be identified and protected.
- The adequacy of tendon length (which usually measures 7 to 8 cm) is judged by the ability to pull the DBT externally to the distal anterior portal<sup>3</sup>.
- The shuttle suture for the passage of the DBT from mid-biceps portal to distal anterior portal follows the track of the proximal parabiceps portal sheath. The suture is passed through this sheath and then is withdrawn into mid-biceps portal. This provides a safe passage of the DBT under the brachial bifurcation and into the distal anterior portal<sup>3</sup>.
- Failure of the sutures to slide within the implants results in suboptimal tendon-bone contact area. The consequent gap formation may result in suboptimal healing and may predispose the DBT to rerupture. Gap formation is possible with any fixation device; however, the dual-anchor technique has shown consistent and optimal tendon-bone contact area<sup>5</sup>.
- The reattachment site on the tuberosity is important. Footprint repair results in better wrapping of the tendon around the medial tuberosity, and probably improves terminal supination strength<sup>1</sup>. However, the proximal radioulnar space reduces significantly from the supinated to the pronated position, and this reduction is most evident in the distal aspect of the tuberosity. Postoperative DBT impingement in the radioulnar space may be prevented by avoiding techniques that increase the thickness of the tendon and by using a reattachment site at the proximal aspect of the tuberosity<sup>7</sup>.



05 Final endoscopic appearance of the repaired DBT following the insertion of dual suture anchors (left) and a cortical button and interference screw (right). T = tuberosity.

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**ISAKOS GLOBAL CONNECTION**

*Education, Research and Collaboration*



## ISAKOS Acknowledges Our Newest Godfathers & Godmothers



**David Figueroa, MD, Prof.**  
**CHILE**



**José F. Huylebroek, MD**  
**BELGIUM**



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



**Sue Reimbold, MA, CAE**  
**UNITED STATES**

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.

## Scientific Committee ISAKOS Research Grant Update



Yuichi Hoshino, Member of Scientific Committee  
*Kobe University, Kobe, JAPAN*



Volker Musahl, Past Chair of Scientific Committee  
*University of Pittsburgh, Pittsburgh, UNITED STATES*



Jason Koh, Chair of Scientific Committee  
*Northwestern University, Evanston, UNITED STATES*



Olufemi R. Ayeni, Deputy Chair of Scientific Committee  
*McMaster University, Hamilton, CANADA*

As part of its mission, ISAKOS supports orthopaedic research and education by funding the highest-quality international research proposals. The Scientific Committee oversees four ISAKOS research grants: (1) the New Researcher Grant, (2) the Osteoarthritis Grant, (3) the Clinical Outcomes Grant, and (4) the Countries with Limited Resources Grant. We are pleased to report on the outstanding progress made by the recipients from 2017 to 2019.

### New Researcher Grant

The New Researcher research grant was awarded to Dr. Trifon Totlis (TheMIS Orthopaedic Center, St. Luke's Hospital, Thessaloniki, Greece) for "Validation of a Computer Tablet Software for Quantification of Scapular Motion During Clinical Assessment of Scapular Dyskinesia." Scapular dyskinesia may dynamically reduce the subacromial space, leading to impingement. Currently, such abnormal scapular movement is qualitatively assessed by subjective visual observation<sup>1</sup>. Motion-tracking systems have been used to quantify this abnormal motion, but their availability is quite limited.

Image analysis of the skin motion around the knee joint has been developed to capture the pivot-shift phenomenon<sup>2</sup>, and the image-analysis methodology was installed as an application on a computer tablet (iPad)<sup>3</sup>. The hypothesis of the study is that this technology might be utilized to evaluate scapular motion as it relates to dyskinesia. Thus, this new research aims to establish an objective and easily applicable method to quantify the scapular motion in patients with scapular dyskinesia. Twenty-five patients with symptomatic unilateral scapular dyskinesia and 19 healthy controls were tested. The scapular movement during arm-lowering was captured with the iPad (Fig. 1). The deviation of the inferior angle from the thoracic wall was calculated with the installed software. This measurement was significantly higher in the dyskinetic scapulae as compared with both the contralateral non-dyskinetic scapulae and normal healthy controls. The data were presented at the 2019 ISAKOS meeting in Cancun, and the manuscript has been submitted to the ISAKOS journal.



01 Image capturing of scapular movement with an iPad.

### Osteoarthritis Grant

The Osteoarthritis research grant was awarded to Dr. Tiago Fernandes (Department of Orthopaedics and Traumatology, University of São Paulo Medical School and Sírio-Libanês Hospital, São Paulo, Brazil) for his proposal on the "Comparison of Tissue-Engineered-Construct (TEC)-Derived of Human Stem Cells From Dental Pulp and Synovia on Articular Cartilage Regeneration." There are numerous treatment options for the treatment of cartilage lesions, but none of them provides complete healing with preinjury hyaline-like structure and function. Mesenchymal stem cell (MSC)-based therapy has the potential to enhance the healing of the damaged cartilage. Dental pulp has been reported to be a useful source of MSCs, but it has not been used for joint cartilage regeneration. On the other hand, the knee fat pad and synovia have been established as a potential source of MSCs.



Therefore, the purpose of this study was to compare hyaline cartilage regeneration following the implantation of a tissue engineering construct (TEC) loaded with dental pulp stem cells (DPSCs) and synovial/fat pad stem cells (FPSCs) in a large-animal (pig) model. The investigators started the experiments in March 2018, and, currently, 70% of their subjects have been enrolled, with recruitment and assessments ongoing. The animal model experiments were completed May 2019. There have been three publications<sup>4-6</sup> and five presentations at national and international conferences related to this grant. The promising results are upcoming and will enhance our understanding of cartilage repair.

### Clinical Outcomes Grant

The Clinical Outcomes research grant was awarded to principal investigator Dr. Robert G. Marx (Hospital for Special Surgery, New York, NY) and colleagues for “Cluster RCT of Implementation Strategies for ACL Injury Prevention.” Despite the development of ACL injury-prevention programs over the last decades, ACL injury rates have not decreased. The reasons for this finding may include a limited understanding of, and poor compliance with, the proper implementation of prevention programs. Therefore, these investigators performed a cluster-randomized controlled trial that compared compliance with ACL injury-prevention programs between the school team coaches who participated in an ACL injury-prevention training workshop and those who did not. Throughout the course of this trial, 40 high school sports coaches and 21 sports teams were enrolled. Blinded data collectors were hired to observe and document compliance with the prevention exercises prior to practices and games throughout the winter and spring sports seasons. This grant will inform practice about the best way to educate coaches about ACL injury-prevention programs to improve compliance.

### Countries with Limited Resources Grant

Last, ISAKOS has developed a unique grant, the ISAKOS Young Investigator’s Scholarship and Research Mentoring Program, for young researchers from countries with limited access to research resources. This program seeks to assist young surgeons to advance their research by awarding a fellowship at an ISAKOS-recognized research facility and funding an ISAKOS-approved mentorship. This program consists of two parts. In Part I, twenty scholarship recipients receive a \$1,500 stipend to support their travel and participation to the Biennial ISAKOS Congress. At the 2019 Congress in Cancun, Mexico, all of the awardees were invited to attend a research symposium at which they received the ISAKOS book entitled *Basic Methods Handbook for Clinical Orthopaedic Research* (Fig. 2). In Part II, four finalists are interviewed by the ISAKOS Scientific Committee at the Congress, and two are awarded a scholarship to complete a research project along with the guidance of a research mentor (determined by the researcher and ISAKOS Scientific Committee).

At the 2017 meeting, Drs. Juan Pablo Martinez (from Columbia) and Saroj Rai (from NEPAL) were awarded this grant. Dr. Martinez participated in a mentorship with Dr. Constance Chu at Stanford University, with a focus on regenerative medicine, and Dr. Rai participated in a mentorship with Drs. Volker Musahl and Freddie H. Fu at the University of Pittsburgh, with a focus on clinical outcomes research. Dr. Rai’s goal is to establish an ACL registry in Nepal. Both awardees seem to have been greatly inspired by their exceptional experiences during the ISAKOS Congress and with their mentors. There is no doubt that these young researchers will contribute to the future development of clinical care and research in the near future.



02 Attendees at the ISAKOS Young Investigator award ceremony during the research symposium at the 2019 ISAKOS Congress in Cancun. The awardees are shown holding the latest ISAKOS book.

The Scientific Committee of ISAKOS has been overseeing the progress of all of the research grant winners. All of the research teams are making steady progress, and we are awaiting more reporting at future ISAKOS meetings and in related publications. Clearly, the ISAKOS grants have been an extremely effective method of supporting research for the further improvement of clinical care. We invite each of you to consider applying for these grants and are eagerly awaiting the next round of research applications.

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13th Biennial

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SEPTEMBER 1, 2020



## JOHN J. JOYCE AWARD WINNER

Tomoya Iseki  
Hyogo College of Medicine  
Nishinomiya, JAPAN

I was very honored to be the first-place winner of the John J. Joyce Award at the 12th Biennial ISAKOS Congress in Cancun, Mexico. The research project that I submitted for the award, entitled "Absence of Ligament Progenitor Cells in the Pediatric Knee Anterolateral Complex," was supervised by Dr. Musahl Volker, Dr. Rocky Tuan, and Dr. Freddie Fu from the University of Pittsburgh, with additional support from Dr. Kevin G. Shea from Stanford University.

There has been much debate regarding the structure and function of the anterolateral capsule (ALC) of the knee, particularly with regard to whether it contains a distinct ligament. On May 14, there was a great discussion related to this topic during a symposium entitled "Facts About ALL Reconstruction." Later, during the award presentation, I had a lively debate with moderators Dr. Mark Clatworthy, Dr. Stefano Zaffagnini, and Dr. Jason Koh, during which I explained that the conclusions of our study suggested that a distinct ligament could not be discerned in the ALC on the basis of histology, immunohistochemistry, or gene-expression analysis. I was very honored that my study was selected as the first-place winner.

I would like to thank ISAKOS for its continuous support and am extremely grateful to Professors Marc R. Safran, Stefano Zaffagnini, and the ISAKOS Education Committee. Please feel free to contact me if you have questions regarding our study.



AWARDS &  
FELLOWSHIPS  
REPORTS



# JAN I. GILLQUIST SCIENTIFIC RESEARCH AWARD

## WINNER

Mark A. Heard MD, FRCS  
*Banff Sport Medicine*  
Canmore, CANADA

The Stability Study Group was recently honored to receive the Jan I. Gillquist award for best Scientific Paper at the 2019 ISAKOS Congress in Cancun, Mexico. The paper was entitled “Anterior Cruciate Ligament Reconstruction With or Without a Lateral Extra-Articular Tenodesis: Analysis of Complications from the ISAKOS-Sponsored Stability Study.” The purpose of this study was to answer the following questions: (1) “In the high-risk ACL patient, does the addition of a lateral extra-articular tenodesis (LET) decrease the rate of re-rupture or clinical failure of a hamstring ACL reconstruction?” and (2) “Are the complications associated with this additional procedure sufficiently frequent or severe to deter a surgeon from performing this additional procedure?” The research did, in fact, show that performing a LET decreased the relative risk of ACL graft rupture by 66%. Furthermore, the complications were not substantial and should not dissuade the surgeon from performing this technique at the time of ACL reconstruction.

This award was earned thanks to the contributions of the entire team of researchers who participated in this 600-patient, multicenter study. Dr. Alan Getgood, along with his research team and colleagues at Fowler Kennedy Sport Medicine in London, are to be applauded for taking the lead on this logistically challenging trial. Surgeons and research staff at Banff Sport Medicine, Fraser Health Authority, University of Calgary, McMaster University, Queens University, and Pan Am Clinic in Canada, as well as at centers in Coventry, U.K., and Antwerp, Belgium, collaborated in the quest to answer these questions. The significant efforts put in by each center of recruitment, from randomization and consistent surgical technique to ensuring that patients returned for follow-up appointments, cannot be overstated. The human and financial resources that are required to perform this type of study are enormous and, in that regard, the support of an ISAKOS grant was greatly appreciated by the Stability Study Group.

Answering these types of questions via robust scientific research can change the practice of surgeons, ultimately improving patient outcomes worldwide. This type of international collaboration is where ISAKOS can play a major role as an incubator, facilitator, supporter, and disseminator of this high-quality research.



There was a time in the not-too-distant-past when many orthopaedic papers were mostly retrospective, had low numbers of patients, and described results that were suspected of being “too good to be true.” Authors were often trying to satisfy publishing obligations, and high-quality study methods were not standard practice. We have evolved to a period in which well scrutinized scientific study is becoming the norm. Study power and recruitment are being statistically driven, and study results are broader in terms of the type and number of outcomes being measured. Collaboration by surgeons with statistical and research specialists in many fields of expertise is now a common and healthy practice. In general, the entire orthopaedic community is realizing and responding to the value of excellent research.

While single-center and single-surgeon studies are valuable to the advancement of orthopaedic knowledge, their results do not always reflect patient outcomes on a global basis. Multicenter studies, especially those with global recruitment, are more likely to reflect comprehensive patient outcomes. As an international society, ISAKOS brings people together to generate truly global perspectives and questions and facilitates prospective and randomized multicenter trials that carry tremendous value for advancing patient care. These studies are also of tremendous value from the perspective of health-care economics through the evaluation of the outcomes of procedures, which is becoming increasingly important and, in fact, is being mandated worldwide as health care spending continues to spiral out of control as a percentage of GDP in many nations.

The Stability Study group gratefully accepts the support of ISAKOS, and we encourage ISAKOS to continue to foster an international environment of collegiality, education, and research and to actively participate in stimulating multicenter and multinational studies.

## PATELLOFEMORAL TRAVELING FELLOWSHIP RECIPIENTS 2017–2019

Sheanna Maine, MD  
*Lady Cilento Children's Hospital*  
Brisbane, AUSTRALIA

Mauro Núñez, MD  
*Hospital del Trauma*  
Cartago, COSTA RICA

Regardless of our background, place of training, or experience, we all have a common goal: to provide our patients with the best care in terms of diagnostic certainty and timely and adequate treatment in order to improve their quality of life. Fellowship programs support this goal by allowing participants to seek expertise in a specific area within our specialty. These programs have shown their value by significantly shortening the learning curve for participants. While this is certainly true for established academic fellowship programs, which usually last for a period of one year, we did not know exactly what to expect from a Traveling Fellowship in terms of its similarities to, and differences from, more traditional academic programs.

### Patellofemoral Traveling Fellowship, 2017–2019

Our itinerary for the Patellofemoral Traveling Fellowship (PFTF) covered 2 continents, 3 countries, and 5 centers, all of which were visited over a period of 4 weeks.

We started with a week-long visit to Minneapolis, Minnesota, where we met with Dr. Elizabeth Arendt, followed by a flight to John Hopkins in Baltimore, where we met with Drs. Andrew Cosgarea and Miho Tanaka. Later that same week, we traveled to our second country, Canada—specifically, to Banff—where we visited Dr. Laurie Hiemstra. Upon our return to the U.S., we spent a week at the Hospital for Special Surgery in New York City, where we were hosted by Drs. Beth Shubin-Stein, Sabrina Strickland, and Daniel Green. A few months later, we started our journey to Asia—specifically, to Kobe, Japan—where we visited Dr. Ryosuke Kuroda.

The opportunity to pause and mull over these learning opportunities gave us much to think about and raised many more questions for us to ask. Ultimately, our perspective on the patellofemoral joint has been considerably broadened by our experience. While we still do not know all the answers, we now have the benefit of many different views that we can draw upon to inform our philosophy on the management of the patellofemoral joint and its associated pathologies.

We believe that the PFTF is a unique experience from an academic point of view and is an exceptional networking resource for any surgeon who wishes to enter this exciting field.

Perhaps part of the success of this program lies in its rigorous selection process, which focuses on candidates with intermediate or even advanced experience, a proven academic background, and a demonstrated interest in the area.

Another advantage of this program is its flexibility, with the selected fellows having the ability to coordinate dates, places, and potential hosts to visit, allowing them to build an experience tailored to their academic needs and interests.

Although a fixed amount of money is provided by the Patellofemoral Foundation, it is common for fellows to incur expenses somewhat higher than the maximum amount granted in order to maximize their own experience.



### ISAKOS 2019, Cancun, Mexico

During the biennial conference recently held in Cancun, Mexico, we closed our PFTF with a presentation highlighting the most relevant academic and social moments of this experience. The main purpose of this presentation was to pay a well-deserved tribute to the various hosts involved in the PFTF, both for their willingness to impart their knowledge on the most relevant concepts in the patellofemoral field as well as for the warm hospitality that they demonstrated at all times.

The academic component of the fellowship was not didactic and did not involve a set of approved learning objectives. Instead, our hosts gathered various clinical cases in order to demonstrate how to extract the most relevant information for clinical decision-making. They openly shared not only their successful cases but also their experience with complications and how they dealt with them. We were able to observe both immediate and long-term follow-up results, helping us to form our personal decision-making algorithms in record time.

The PFTF also gave us the opportunity to be involved with the Patellofemoral Study Group (PFSG), which is dedicated to the clinical investigation of patellofemoral abnormalities in search of improved treatment options.

In conclusion, the PFTF constituted a unique academic, networking, and cultural opportunity. Our genuine interest in deepening our understanding of patellofemoral pathology was mirrored by our hosts, who inspired us to continue investigating this topic while appreciating the diversity of management strategies in our current surgical sphere.

## PAOLO AGLIETTI AWARD WINNER

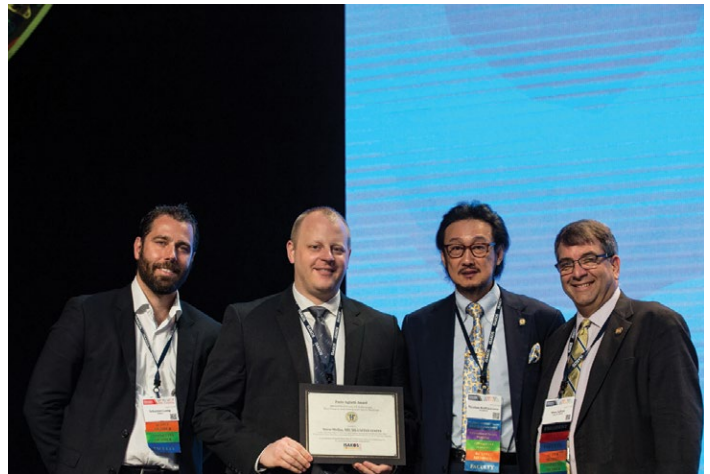
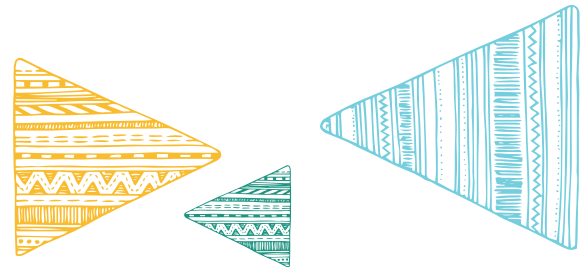
Trevor Shelton, MD, MS  
*University of California, Davis  
California, UNITED STATES*

First, I would like to thank the Arthroplasty Committee for selecting our paper for the inaugural Paolo Aglietti Award. Second, I would like to thank Dr. Stephen Howell for his mentorship with the study and pioneering the way for kinematically aligned total knee arthroplasty. And third, I would like to thank Dr. Nicolaas C. Budhiparama, & Inge Widjaja with the Nicolaas Institute of Constructive Orthopedic Research & Education Foundation for Arthroplasty & Sports Medicine for sponsoring this award. It was an honor to receive this award and attend the 12th Biennial ISAKOS Congress.

As 2019 was the inaugural year for the Paolo Aglietti Award (created to recognize outstanding research contributions to the understanding of knee arthroplasty and is in recognition of Professor Aglietti), you can't help reflect on his numerous contributions to knee surgery as a surgeon, researcher, and teacher. Upon completion of his residency in Italy, Professor Aglietti completed two fellowships at the Hospital of Special Surgery in New York in the 1970s and developed great friendships with Dr. Salvati and Dr. Insall. In 1975 he returned to Italy as an Assistant Professor of Orthopaedics and Traumatology at the University of Perugia and was promoted to Associate Professor of Orthopaedics and Traumatology at the University of Florence in 1979. He became Department Chairman in Orthopedics and built a highly regarded residency program.

Professor Aglietti led a very productive academic career, publishing more than 120 journal articles and was a co-editor of the book, *Surgery of the Knee*. He advanced the fields of joint replacement, ACL reconstruction, and patellofemoral instability and pain, and founded the Italian Society of Knee Surgery and Italian Society of Arthroscopy. The Knee Society awarded him an honorary membership as did the American Orthopaedic Society for Sports Medicine Hall of Fame. Professor Aglietti also served as Chairman of the ISAKOS Knee Committee and was ISAKOS President from 2007–2009.

“Attending the ISAKOS meeting in Cancun was a **formative experience** as a resident”



Attending the ISAKOS meeting in Cancun was a formative experience as a resident. I met many of the leaders in the fields of orthopaedic sports medicine and knee arthroplasty from all over the world. The symposiums, instructional courses, and paper presentations opened my mind to the importance of sharing and learning international orthopaedic points of view. I learned that global collaboration is the foundation for the mission of ISAKOS, which is advancing the worldwide exchange and dissemination of education, research, and patient care in arthroscopy, knee surgery, and orthopaedic sports medicine. To quote Professor Aglietti, “I believe we need to be open to the input of the world, which means to be open to the differences in opinion and experiences. In my mind, knowledge, if not science, comes from comparing different solutions” (President's Message–ISAKOS Newsletter–summer 2007).



## ISAKOS YOUNG INVESTIGATOR'S SCHOLARSHIP & RESEARCH MENTORING PROGRAM WINNER

Theodorakys Marín, MD  
Caracas, VENEZUELA

### Biography

I am Theodorakys Marín, a 30-year-old orthopaedic surgeon from Caracas, Venezuela. Last year, I pursued a fellowship in Sports Medicine and Arthroscopy in Thessaloniki, Greece at the ISAKOS/ICRS Teaching Center, which is located at the Thessaloniki Minimally Invasive Surgery (TheMIS) Orthopaedic Center. I have a special clinical and research interests in orthopaedic sports medicine, arthroscopy, and cartilage-repair procedures.

### ISAKOS: An International Society Supporting New Generations

In 2019, as a recipient of an ISAKOS Young Investigator's Scholarship, I had the opportunity to attend the ISAKOS Congress, the most important congress devoted to arthroscopy, knee surgery, and orthopaedic sports medicine in the world. I felt very fortunate and honored to learn from world-renowned experts, and both the excellent organization of the meeting and the caliber of the accommodations were in keeping with the high quality of the academic and scientific program.

Inclusiveness is clearly a main focus of ISAKOS. The outstanding conferences, pre-courses, and instructional course lectures were led by a diverse group of specialists of all nationalities, ages, and demographics. The initiative to incorporate a pre-course in Spanish, led by a regional faculty, is just one of the many examples that contributed to this sense of inclusiveness. I very much enjoyed listening to the session on "Updating and Upgrading Knee Surgical Techniques" in my native language; even though I feel very confident with my English-language skills, this was a nice surprise.

One of the best experiences during the Congress was the chance to put a face to the names of the authors who have guided me throughout my career. The lectures delivered by these luminaries are moments that I will always treasure. The ISAKOS Research Symposium chaired by Dr. Volker Musahl, for example, was particularly helpful and insightful. As an activity designed for the Young Investigator's Scholarship recipients, the session covered the critical points of research and investigation. Receiving the Basic Methods Handbook for Clinical Orthopaedic Research from one of its authors was an honor. After a quick review, I believe that the book represents a very useful tool for any orthopaedic resident and surgeon wishing to incorporate investigation into his or her practice.



01 Theodorakys Marín, MD, ISAKOS Young Investigator's Scholarship and Research Mentoring Program Winner.

The session entitled *ISAKOS Leadership Symposium: Strategies for Successful Publishing*, chaired by Dr. Niek Van Dijk, included a number of informative presentations focusing on Scientific Publishing 101. It was also a reminder to contribute to the *Journal of ISAKOS*, which is a rapidly emerging publication. As a young investigator, having the support and guidance from such a board during the editorial review process is very encouraging. Pr. Dr. Jon Karlsson's words of motivation to continue to perform investigations in developing countries despite the intrinsic challenges were very moving.

The Congress also clearly demonstrated that ISAKOS is an innovative organization. Every session was full of scientific vanguardism, from orthobiologics to robotic-assisted surgery. A dedication to evidence-based approaches and high-impact investigations was evident throughout the Cancun International Convention Center. This strong commitment to state-of-the-art quality is one of the main features that makes ISAKOS unique.

In addition, I greatly appreciated the team effort that is clearly involved in shaping the ISAKOS Young Investigator Scholarship and Research Mentoring Program and other fellowships and awards. During the ISAKOS Global Connection Reception, I had the opportunity to meet former ISAKOS president Dr. Marc Safran, former Director of Scientific Committee Dr. Volker Musahl, and Education Manager Mrs. Joy Allen-Joseph, all of whom were instrumental in facilitating my travel to Cancun. I would also like to thank every ISAKOS Godfather as well—it is thanks to their support that many of these initiatives came to fruition.

"ISAKOS is an inclusive, youth-inspiring, and innovative society that **every orthopaedic surgeon should join!**"

### ISAKOS YOUNG INVESTIGATOR'S SCHOLARSHIP & RESEARCH MENTORING PROGRAM **WINNER**

On a personal level, my attendance at the conference gave me the opportunity to make friends from all over the world and, as a young member, I was very happy to meet so many of my contemporaries. ISAKOS has made a fantastic effort not only to promote education but to find ways to offer tools and resources to stimulate young investigators from developing countries. ISAKOS is truly a youth-inspiring organization.

Without a doubt, Cancun was an excellent choice. This paradisiac shore was a great combination of beautiful beaches, world-renowned gastronomy, and Mayan culture. I'm sure I'll be astonished the same way in Cape Town, South Africa. I have already saved the date!

To summarize, ISAKOS is an inclusive, youth-inspiring, and innovative society that every orthopaedic surgeon should join!

#### **The ISAKOS Research Mentoring Program**

As a Young Investigator's Scholarship finalist, I had the opportunity to present a project proposal to the Scientific Committee (including Chair Dr. Jason Koh, Deputy Chairs Drs. Olufemi Ayeni and Jacques Ménétrey, and the honorable committee members) in the hopes of being selected for the ISAKOS Research Mentoring Program.



02 ISAKOS/ICRS Teaching Center TheMIS Family Celebrating with Mexican gourmet cuisine dinner at Porfirio's Restaurant, Cancun, Mexico.



This program is designed to help further the research efforts of young investigators from developing countries who have limited access to research resources. Each year, two winners are selected to receive a US \$10,000 stipend to complete a research project along with the guidance of a research mentor.

Prior to the Congress, I worked for several months (along with my Sports Medicine and Arthroscopy Fellowship Professors from TheMIS Orthopaedic Center; the ISAKOS/ICRS Teaching Center in Thessaloniki, Greece; and my former professors from Venezuela) to design a project to help us find an affordable solution for the treatment of acute dislocations of the acromioclavicular joint in patients living under multidimensional poverty. Through biomechanical testing on twelve cadaveric shoulder specimens, we hope to demonstrate if our "bumper technique" results in adequate acromioclavicular joint stability.

I believe that my project was selected as the winner because of its detailed presentation and the genuine motivation for the study. Also, to manage this investigation design within the \$10,000 budget forced me to consider every detail to perform it successfully in the stipulated time. I hope that this project will promote consciousness about the accessibility and costs of arthroscopy around the globe and will help to further the development of arthroscopic supplies and implants made from inexpensive biomaterials for use in developing countries.

I'm very eager to start the Research Mentoring Program. I believe that it will be a life-changing experience and a new chance to meet wonderful professionals that will guide me through a successful path. Already, meeting Dr. Alfonso Barnechea from Perú and Dr. Sebastián Irarrázaval from Chile has motivated me to pursue a career inside the society as a Venezuelan committee member in the future.

Congratulations to my Young Investigator's Scholarship friends—I wish best of luck in your promising careers!



03 Theodorakys Marín with ISAKOS Past President Dr. Marc Safran.



# ISAKOS YOUNG INVESTIGATOR'S SCHOLARSHIP & RESEARCH MENTORING PROGRAM FINALIST

Umesha Chowdaiah, MBBS, DOrtho, DNB(Orth)  
Senior Resident, Department of Orthopaedics,  
Mandya Institute of Medical Sciences  
Mandya, INDIA

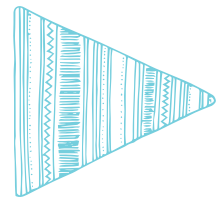
As a Senior Resident in the Department of Orthopaedics at the Mandya Institute of Medical Sciences in Mandya, India, I recently received a Young Investigator Scholarship award that allowed me to attend the ISAKOS 2019 conference in Cancun, Mexico. It was my privilege and honor to represent my country at an international global arthroscopy platform that provided me with the opportunity to learn about the recent advances in the field and to meet the international faculty.

It was a wonderful experience travelling all the way from India to Cancun, where I had a very pleasant stay and an enriching academic feast at ISAKOS 2019. It was an honor to meet the pioneers in the various fields of orthopaedics from India and around the world, and I very much enjoyed the opportunity to share this experience with the other award winners who had also been selected to attend the meeting.



One particularly memorable session was dedicated to providing young orthopaedic investigators with insights into the field of research and publication, with all attendees receiving a book entitled *Basic Methods Handbook for Clinical Orthopaedic Research*.

I am very grateful to have had this opportunity and would like to extend my thanks to the ISAKOS organizing committee, the faculty, the delegates, the fellow young investigators, and, last but not least, my alma mater.



# ISAKOS YOUNG INVESTIGATOR'S SCHOLARSHIP & RESEARCH MENTORING PROGRAM

## FINALIST

Ujival Deliwala, MBBS, MS(Orth),  
Arthroscopy Clinics & Hospital  
Bhavnagar, Gujarat, INDIA

### Introduction

The Young Investigator Program seeks to stimulate research and education in developing countries, foster international collaboration, and promote academic excellence. I'm thankful to the ISAKOS Young Investigator's Research Program for providing me with this great opportunity to update my knowledge and improve my technical skills related to arthroscopy, knee surgery, and orthopaedic sports medicine.

### About me

I am an orthopaedic arthroscopic surgeon from Bhavnagar, Gujarat, India, doing arthroscopic work predominantly related to the knee and shoulder. I am also academically attached to the Government Medical College and Hospital, where I do research and teach postgraduate medical students.

### Experience at the Congress

The academic fiesta started with a precourse on May 11 at the Cancun International Convention Center. A number of outstanding ICL courses were presented by the authors of well-known books and chapters as well as the original developers of a number of techniques that are commonly used in clinical practice. Some particularly memorable presentations included "Understanding the History of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine," by Prof. Puddu, and "Trochleoplasty: Indications," by David Dejour. The ISAKOS welcome reception, held on May 12, was great fun and provided an opportunity to meet with friends, mentors, and colleagues while listening to traditional music (Fig. 1).



01 At the ISAKOS Welcome Reception.

### ISAKOS Part I Young Investigator Scholarship

Twenty young investigators were selected to receive a scholarship to travel to, and present their research at, the 12th Biennial ISAKOS Congress in Cancun, Mexico. The purpose of my project, entitled "Cost-Effective and Potential Use of Platelet Rich Plasma for Arthroscopically Treated Grade II/III Cartilage Lesions of the Knee," is to investigate the cost-effectiveness of orthobiologics for the treatment of these very common problems of the knee in India, a huge country in which most of these lesions are non-sports-related. Each investigator also received a one-year ISAKOS membership, which provides a number of academic benefits, including access (through new ISAKOS Global Link) to previous congress presentations, surgical demonstrations, current concepts articles, and practical tips and tricks to be used in clinical practice.

### ISAKOS Research Symposium

On May 13, we attended a symposium that provided us with an introduction to the ISAKOS Young Investigator's Scholarship and Research Mentoring program. This symposium, which is directed at those beginning a career in orthopaedic research, included a number of valuable sessions focusing on a variety of relevant topics, including instructions on how to write a grant, how to assess outcomes, how to perform basic statistical analysis, how to perform a multicenter research project, and how to write a manuscript. These sessions were followed by an interactive panel discussion, during which we discussed that how to conduct multicentric studies in developing countries with limited resources and funds. The symposium ended with recognition of the Young Investigator Award winners, all of whom were presented with the very informative ISAKOS/ESSKA Research Handbook, which provides a wealth of useful guidelines for upcoming fellows and researchers (Fig. 2).



02 Receiving the Research Handbook at the research symposium.

**ISAKOS Global Connection Reception**

As award finalists, we also received an invitation to attend the Global Connection reception on May 14, where we had a chance to meet the other award and fellowship finalists and winners as well as ISAKOS Godfathers and Mentors from around the world (Fig. 3). A particularly surprising and happy moment for me was the chance to meet up with my previous mentors, Prof. João Espregueira-Mendes from Porto, Portugal, and Prof. Alberto Gobbi from Milan, Italy (Fig. 4). The Global Connection reception also provided a great opportunity to make new connections and share ideas with colleagues from around the world, and it was a great honor to meet Nicolaas Budhiparama, Founding Godfather of ISAKOS Global Connection Campaign board.



03 + 04 At the Global Connection reception.

**Winning the Award:**

On the morning of May 15, I had the great honor of receiving the Young Investigator award from President Marc Safran and Scientific Committee Chairs Volker Musahl and Jason Koh on the ISAKOS main stage (Fig. 5). Later that day, the symposium on “Strategies in Successful Publishing” provided an abundance of great information for those who are interested in reviewing or writing articles for journal publications. Highlights from this session included presentations on “How to Write an Excellent Paper,” by Gary Poehling, “What It Takes to be a Good Reviewer,” by Jon Krisson, and “How Authors Can Promote Their Research Using Social Media,” by Stephen Lyman.

The Presidential Guest Speaker, Michael Casale, presented an extremely impressive address entitled “Using Virtual Reality to Improve Surgery, Sports Medicine, and Athletic Performance.” After hearing his comment that “cells that wire together can fire together,”



05 Receiving the ISAKOS Young investigator award.



06 Hands-on testing of virtual reality.



07 The ISAKOS booth: an ideal place for networking.

I couldn’t resist trying out a virtual reality device during a hands-on visit to the trade exhibit (Fig. 6). Lunchtime sessions combined academics with very tasty meals, and the ISAKOS booth on the top floor provided a perfect spot to network with other young investigators (Fig. 7).

The 2019 ISAKOS Congress in Cancun—a beautiful setting featuring beaches with crystal-clear water, delicious Mexican food, and a party atmosphere—was a truly memorable event.

**Acknowledgements**

I would like to thank the ISAKOS Scientific Committee for this amazing opportunity. This program helped me to grow not only as surgeon but also as researcher, and the lessons that I took with me will definitely make a difference in the quality of my practice, the advancement of my research, and the care of my patients in my hospital and city. I also would like to thank the staff of the Orthopedic Department in the Government Medical College and Hospital, Bhavnagar, as well as the staff at my own hospital. Furthermore, I would like to thank my Indian mentors Dr. Deeapk Goyal, Dr. Sachin Tapasvi, and many others from the Indian Arthroscopy Society (IAS) who are always ready to help and answer any question when asked. Special thanks to Joy Allen Joseph, Education Manager, for hassle-free electronic communication with ISAKOS throughout the entire process. Finally, I would like to thank my family (my parents and my wife Nidhi) for their continuing support.

“This program **helped me to grow** not only as surgeon but also as researcher.”

## 2017 ISAKOS YOUNG INVESTIGATOR'S SCHOLARSHIP & RESEARCH MENTORING PROGRAM **WINNER**



Saroj Rai, MBBS, MS (Ortho), PhD  
*National Academy of  
Medical Sciences  
Kathmandu, NEPAL*

### Mentors:

*Dr. Freddie Fu and Dr. Volker Musahl  
University of Pittsburgh, Pittsburgh, PA, USA*

Following an interview with the Scientific Committee at the 11th Biennial ISAKOS Congress in Shanghai, China, in June 2017, I received an email in January 2018 congratulating me on my selection as one of the winners of an ISAKOS Young Investigator fellowship grant. I also received a second email, from ISAKOS Scientific Chair Dr. Volker Musahl, asking about potential mentors who I had in mind. I immediately replied that I wanted him to be my mentor. Two months later, ISAKOS sent me a confirmation email that my mentors were Dr. Freddie H. Fu and Dr. Volker Musahl of the University Pittsburgh. Receiving that email was one of the happiest moments of my life. After holding several additional conversations via email, we concluded that my 2-week fellowship would run from April 29 through May 12, 2019, ending just before 12th Biennial ISAKOS Congress in Cancun.



01 With Dr. Freddie Fu in his office.



02 With Dr. Volker Musahl and his team in the outpatient clinic at UPMC Freddie Fu Sports Medicine Center.

Right on schedule, I landed in Pittsburgh on Sunday, April 28, 2019. The very next day, I started my fellowship formally. Dr. Musahl welcomed me at the UPMC Montefiore Hospital orthopaedics operating room (OR), where I had the opportunity to observe him perform several procedures, including anterior cruciate ligament (ACL) reconstruction with quadriceps tendon, meniscal repair with orthobiologic enhancement, and rotator cuff repair. I was impressed by his techniques and in-depth knowledge of sports medicine.



03 With Dr. Freddie Fu in the OR at UPMC Montefiore Hospital.

On Tuesday, I attended an early-morning grand rounds conference in the department of orthopaedics, during which a number of fellows reported on their ongoing research and described outcomes that were beyond the imagination of someone like me from a developing country such as Nepal. Dr. Fu also invited me to attend an ACL meeting in his office, during which I was introduced to a diverse group of professors, doctors, and fellows from around the world. Following the ACL meeting, I spent the entire afternoon with Dr. Musahl in the outpatient clinic at UPMC Freddie Fu Sports Medicine Center, where I had the opportunity to see a wide variety of sports-related injuries in both professional and amateur athletes. I still remember a middle-aged mountaineer who was planning to visit Nepal soon and who underwent a successful torn root repair the next week.

On Wednesday morning, I followed Dr. Fu in the outpatient clinic and was fascinated by his love and care for the patients. That afternoon, I was taken to the orthopaedic robotic laboratory, where I was able to learn about simulated pivot-shift testing and the generation of data from the cadaveric knee. On Thursday, I followed Dr. Fu in OR, where I was fascinated to watch him perform an ACL reconstruction in a young female athlete with use of a hamstring graft. His teaching in OR was very inspiring. The same routine was repeated the next week, during which I also visited UPMC Children's North Hospital, where I observed Dr. Musahl perform ACL and shoulder surgery. During the weekend, I had the opportunity to explore the beautiful city of Pittsburgh. I enjoyed every moment during my stay.



06 With Dr. Freddie Fu and Dr. Volker Musahl in the 12th Biennial ISAKOS Congress, Cancun, Mexico.

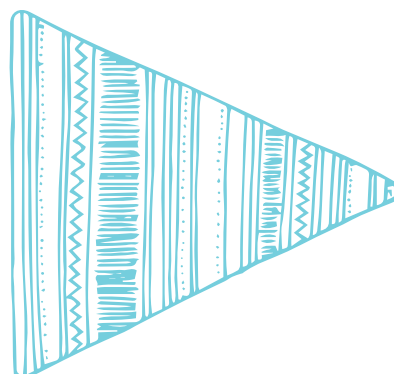
In conclusion, ISAKOS provided me with a once-in-a-lifetime opportunity to enhance my clinical and research expertise and to learn from renowned experts who have pioneered the field of arthroscopy and orthopaedic sports medicine. Their kindness and encouraging words were greatly appreciated and provided me with the utmost inspiration to make my professional dreams come true. I learned not only about sports-related injuries and their management but also about time management, discipline, and how orthopaedics and sports medicine doctors should be. I heartily thank my mentors, Dr. Fu and Dr. Musahl, for this opportunity. My sincere gratitude goes to Kathy (Kathleen M. Price) for excellent communication throughout the year and a half that it took to set up my visit to UPMC. I also wish to thank Drs. Theresa, Kevin, Ben, Sara, Elan, Jared, Kyohei Nishida, and all the other fellows and residents for making my life easier at UPMC. Last but not least, I would like to thank ISAKOS and the entire team, including Joy and Sarah, for providing me with the grant to visit Dr. Freddie Fu and Dr. Musahl at the University of Pittsburgh and also for sponsoring my trip to attend 12th Biennial ISAKOS Congress in Cancun, Mexico.



04 With Dr. Freddie Fu at UPMC Freddie Fu Sports Medicine Center.



05 Dr. Saroj Rai in front of UPMC Freddie Fu Sports Medicine Center.



## 2019 ISAKOS-ISMF CONFERENCE SCHOLARSHIP RECIPIENT: A VALUABLE AND EDUCATIONALLY-ENRICHING EXPERIENCE



Rakesh John, MBBS, MS, DNB,  
MRCS(Eng), Dip SICOT, MNAMS  
*Arthroscopy, Sports Medicine & Joint  
Preservation Fellow*  
*Dalhousie University*  
*Halifax, NS, CANADA*

Being selected for the prestigious ISAKOS-ISMF scholarship for the year 2019 was an absolute honor and rates high in my brief list of accomplishments so far. The 19th edition of the ISMF (International Sports Medicine Fellows) conference more than exceeded my expectations and turned out to be an intense learning experience—both academically and in terms of hands-on skills training.

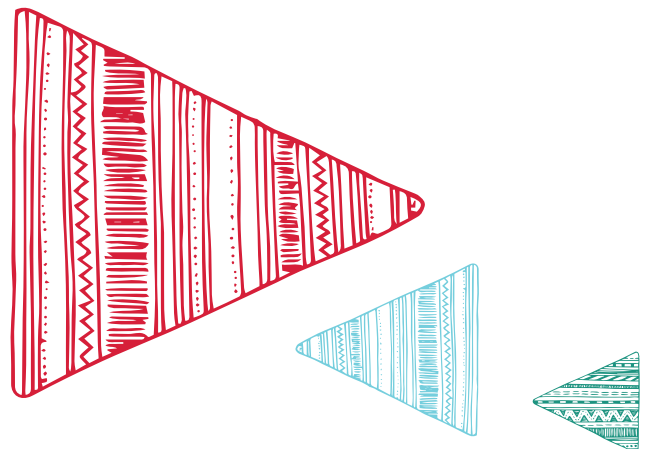
I journeyed from Halifax, Nova Scotia, Canada to Carlsbad, California for this meeting, which started on January 18, 2019. I was both thrilled and awed to be surrounded by an elite faculty comprising a Who's Who in sports medicine and arthroscopy surgery. The faculty included expert senior surgeons and great teachers such as Dr. John Fulkerson, Dr. Jack Farr, Dr. Bert Mandelbaum, Dr. Tom Minas, Dr. Brian Cole, and Dr. Christian Lattermann, to name a few. The members of this illustrious faculty are responsible for most of the sports-medicine literature that has appeared in journals and textbooks over the last few decades!

The first session focused on patellofemoral joint disorders and included an excellent hands-on cadaveric workshop, during which I had the opportunity to perform a MPFL reconstruction, lateral retinacular lengthening procedure, and tibial tubercle osteotomy under the guidance of Dr. John Fulkerson (who originally described the osteotomy) and Dr. Marc Tompkins. This session was followed by a cadaveric workshop on ultrasound-guided hip, knee, and shoulder injections, during which we had a chance to brush up on our ultrasound skills under expert guidance. The afternoon and evening sessions focused on cartilage-repair techniques and brilliantly summarized the latest developments and current treatment algorithms for cartilage defects. Interactions with exhibitors during breaks brought us up-to-date with the latest technology available in the market. The first day concluded with a pleasant welcome reception cocktail hour and dinner.

The second day kicked off with an entertaining, interactive session during which both fellows and faculty presented interesting cases along with their respective plans of action. The next two sessions focused on detailed descriptions of different surgical techniques and their respective outcomes as reported in the literature. Dr. Tom Minas, Professor Emeritus at Harvard University, delivered an excellent keynote oration on the evolution of the ACI (autologous chondrocyte implantation) procedure, which was received with great appreciation from the audience. The afternoon session included surgical demonstrations of meniscal root repair, meniscal transplantation, HTO (high tibial osteotomy), MACI (matrix-induced autologous chondrocyte implantation), OATS (osteoarticular transfer system), and TTO (tibial tubercle osteotomy) procedures; what's more, we could practice what we saw in these surgical demonstrations during the concluding cadaveric knee workshop session!

It was a pleasure interacting with my co-scholars, including Dr. Jaime Palos (Mexico), Dr. Radoslaw Grabowski (Poland), and Dr. Weili Fu (China); I hope to strengthen bonds with, and continue to learn from, these bright surgeons in the future! I sincerely thank the ISAKOS committee and the organizing team of the ISMF conference for considering me for this scholarship. Special thanks to Ms. Hilary Merliner for all the cooperation and timely correspondence, which ensured a pleasant stay in Carlsbad. I will strive to utilize all of the new knowledge that I acquired during this meeting and build on this experience throughout my career. Someday, I hope to be on the podium presenting my own experience at a future ISAKOS meeting so that I can pass along this knowledge to other surgeons!

"I hope to **strengthen bonds** with, and **continue to learn** from, these bright surgeons in the future!"



## 2019 ISAKOS-ISMF CONFERENCE SCHOLARSHIP RECIPIENT



Jaime Palos, MD, MMSc  
*Arthroscopy and Sports  
Medicine Fellow  
National Institute of Rehabilitation  
Mexico City, MEXICO*

When I first heard that the 2019 ISAKOS-ISMF Conference was to be held in Carlsbad, California, I was very excited to find out how many “masters” would be together in the same place at the same time. It did not take me long to realize that I wanted to be there, to learn from them, and, of course, to share this experience with my colleagues in Mexico upon my return. It was quite an honor to be selected by the Committee, and it was a true pleasure to listen to, learn from, and share my experiences with all of those who attended this great conference.

I left with great enthusiasm from Mexico City, where I am currently doing a fellowship in Arthroscopy and Sports Medicine. Arriving in Carlsbad was fascinating and exciting, not only because of the beauty of California but also because the wait was finally over. I would soon start the most important course of the year for all of us who are fellows.

There was no better way to start this course than with lectures about the patellofemoral joint given by faculty such as John Fulkerson (yes, the one who invented the famous osteotomy), Jack Farr, Christian Lattermann, and an enthusiastic Seth Sherman. It was an incredible experience to realize how much knowledge and experience these surgeons have with knee problems and to learn how they solve these problems in an evidence-based fashion. That day in the workshop, I could not believe that I was learning to do an osteotomy directly from John Fulkerson or a medial patellofemoral ligament reconstruction from Christian Lattermann. Listening to how they perform these procedures will be something that I will never forget, and of course their advice is something I will absolutely put into practice. The session was worth every minute.

As if that were not enough, the next part the session featured the cartilage experts. It was truly amazing to learn directly from surgeons who have inspired me throughout my own career, including such luminaries as Tom Minas, Ken Zaslav, Bert Mandelbaum, Brian Cole, Ralph Gambardella, Aaron Krych. What more could a fellow in Sports Medicine ask for?

That day could not finish any better than with a dinner where I could share my experiences with my co-scholars, Radoslaw Grabowski from Poland, Weili Fu from China, and Rakesh John from Canada. I learned a great deal from them and from the way they work at their hospitals, and I am lucky to be say that we are no longer just colleagues, but friends.



The second day was very interactive, starting with case presentations and finishing with demonstrations. There is no better way to learn than watching what the big guys do. That day was also special because I met again with Prof. Verdonk, whom I consider a mentor and who has supported me throughout my career. The opportunity to share some words with him and to hear his advice is always extremely enriching.

In closing, I would like to thank the entire Committee and Faculty for taking the time to motivate us and teach us with their talks—all are excellent surgeons and extraordinary human beings. I would also like to extend a special thanks to Ms. Hilary Merliner, who was always in contact with us and supported us, enabling us to enjoy an excellent trip.

This entire experience was extremely enriching and motivating, and I was very excited to take this great learning with me back to Mexico. I hope to continue to see all of the great people I met so that we can continue strengthening our friendship.

“This entire experience was **extremely enriching and motivating**”

2017

11<sup>TH</sup> BIENNIAL

# ISAKOS CONGRESS

JUNE 4-8, 2017 | SHANGHAI, CHINA

FELLOWS EXPERIENCE

## CONGRESS FLASHBACK



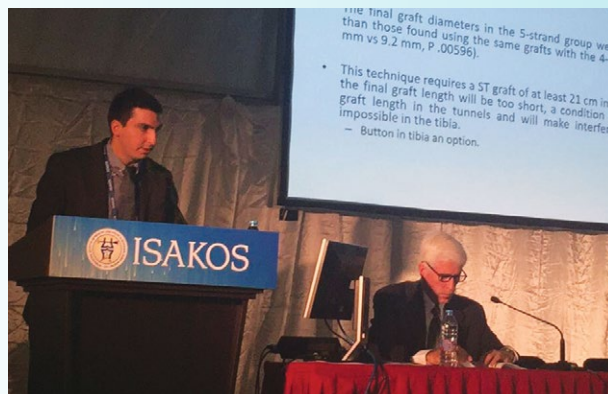
### MY 2017 ISAKOS CONGRESS EXPERIENCE

Francisco Figueroa, MD  
Clinica Alemana – Universidad del Desarrollo  
Santiago, CHILE

At the time of the 2017 ISAKOS Congress in Shanghai, I was living in Australia as part of the Sydney Orthopaedic Research Institute's Knee Fellowship program along with David Parker (ISAKOS Assistant Secretary), Myles Coolican (ISAKOS Knee Arthroplasty Deputy Chair), and Brett Fritsch (ISAKOS Knee Sports & Preservation Committee member). Luckily for me, the flight from Sydney wasn't incredibly long (only 10 hours, compared with days from my native country of Chile) and the time change was only a few hours.

After arriving in Shanghai, I was immediately impressed by this enormous and chaotic city, with its huge urban skyline, its variety of dynamic neighborhoods, and its beautiful "French Quarter" with its beautiful classic European-style buildings. I could write volumes about the many wonders of this city, so I am simply going to summarize Shanghai with a single word: "Amazing."

The congress was, as usual, one of the best meetings of the year. ISAKOS includes some of the most important orthopaedic surgeons from around the world, and having these individuals together at one meeting ensures the quality of the event.



The pre-courses and ICLs exposed attendees to an incredible combination of knowledge and experience from different perspectives, and the individual sessions, with their focus on case-based discussions, ensured that the topics were centered on relevant, real-life problems.

As I was living outside of my own country at the time, the meeting provided a welcome opportunity for me to meet up with friends and colleagues from home. I was also able to see my parents as my father (David Figueroa, ISAKOS Consultant) was at the Congress as well.

This was my second ISAKOS Congress, having attended my first one 2 years previously in Lyon. I'm currently writing these words from my hotel room in Cancun, meaning that I'm about to start my third ISAKOS Congress in a row. Once you start attending these outstanding meetings, you definitely can't stop.

I want to thank ISAKOS for all of the opportunities that it provides for fellows, residents, and young surgeons to attend these meetings. Finally, the circle has closed: after all of these amazing experiences, I myself have become an ISAKOS member. Based on my own experience, I believe that encouraging and helping trainees and young surgeons to attend these kinds of meetings is an excellent way to ensure loyalty to the society. I congratulate the ISAKOS Education Committee for pursuing this wise strategy.





# 12<sup>TH</sup> Biennial **ISAKOS** **CONGRESS** 2019

Cancun, Mexico • May 12–16, 2019

## FELLOWS EXPERIENCE **CANCUN CONGRESS**

### **MY IMPRESSION OF THE 2019 ISAKOS CONGRESS IN CANCUN**

Zhixue Lim, MBChB  
Changi General Hospital  
SINGAPORE

As a Junior Resident from Singapore, it was my privilege to be given an opportunity to attend ISAKOS Cancun 2019. Before the meeting, I was honored to learn that my e-poster on “Return to Sport after ACL Reconstruction” had been accepted for presentation. This opportunity gave me the chance to share what we have learned from our ACL patients after surgery in Singapore and also allowed me to learn what others have proposed on this keenly debated topic.

At ISAKOS 2019, the symposia and instructional course lectures, all of which were conducted by international subject matter experts, provided new perspectives on sports injuries and procedures. The knowledge was presented in a succinct manner, and participants were encouraged to pose questions and share opinions. The surgical demonstrations at the exhibit booths allowed key opinion leaders to demonstrate surgical techniques and technical tips and gave participants the chance to handle new surgical devices. Attending ISAKOS 2019 provided me with extraordinary opportunities to learn and to foster new relationships in the field of sports surgery.

Thanks to the meticulous planning of ISAKOS conference organizers, the entire experience was a success—from the pre-conference communication regarding abstract submission and acceptance, to the hotel accommodations and transfers, to the smooth execution of the actual meeting. This attention to detail made it easy for participants to focus on learning about key issues related to orthopaedic sports surgery during the outstanding and informative sessions.

As a junior surgeon, I had limited prior experience at international meetings, and ISAKOS Cancun 2019 helped me to understand how to approach sports surgery in the era of evidence-based medicine. For example, while the indications for ACL reconstruction are generally agreed upon, there remains significant variability worldwide in terms of surgical technique, rehabilitation timeframes, and the timing of return to sports. This variability stimulates spirited debate and heralds exciting times as surgeons from around the world try to improve the care of patients with sports injuries. With this in mind, I am very much looking forward to the next ISAKOS meeting in Cape Town 2021.



## UPCOMING ISAKOS APPROVED COURSES

The 3rd Congress and 7th Annual Meeting of Indonesian Orthopedic Society for Sports Medicine and Arthroscopy (IOSSMA)  
Ritz-Carlton Mega Kuningan Jakarta  
Jakarta Pusat, INDONESIA

**September 3, 2019**

Chair(s): Isa An Nagib

**For further information, please contact:**

Damar Prastowo  
Tel: +62217254424  
Fax: +62217396261  
[www.ioSSMA.org](http://www.ioSSMA.org)

Instability: Current Concepts and New Frontiers

Research Center Codivilla Putti, Rizzoli  
Orthopaedic Institute  
Bologna, ITALY

**September 10, 2019**

Chair(s): Roberto Rotini, MD

**For further information, please contact:**

Alessandro Marinelli  
Tel: +393881805617  
Fax: +3905119936170  
[www.adarteventi.com/ELBOW2019](http://www.adarteventi.com/ELBOW2019)

2nd Patras International Sports Medicine Fellowship

University Hospital of Patras  
Patras, GREECE

**September 11–13, 2019**

Chair(s): Andreas Panagopoulos

**For further information, please contact:**

Andreas Panagopoulos  
Tel: +306944363624  
Fax: +302613603551  
[www.patrasfellowship.com](http://www.patrasfellowship.com)

Lyon Hip Arthroplasty 2019  
LYON, FRANCE

**September 12–13, 2019**

Chair(s): <https://www.lyon-hip-arthroplasty.com/fr/programme/programme-scientifique/25>

**For further information, please contact:**

LHA Partnership  
Tel: 33 (0) 4 81 88 02 92  
Fax: 33 (0) 4 81 88 02 92  
[www.lyon-hip-arthroplasty.com/](http://www.lyon-hip-arthroplasty.com/)

The 5th Annual MENA International Orthopaedics Congress  
Millennium Airport Hotel, Dubai,  
UAE Dubai, UNITED ARAB EMIRATES  
**September 19–21, 2019**

Chair(s): Zaid Al-Aubaidi, MD, MBChB, RDBO, MC-EPOS, FRCPSO, Consultant Paediatric Orthopaedic and Paediatric Spine Surgeon, Al Zahra Hosp

**For further information, please contact:**

Hadir  
Tel: +971 4 361 9616  
Fax: +971 4 361 4375  
[www.menaorthopaedicscongress.com](http://www.menaorthopaedicscongress.com)

International Ankle Symposium  
Hotel Casa  
Amsterdam, NETHERLANDS

**October 3–4, 2019**

Chair(s): Evert Verhagen

**For further information, please contact:**

Gwendolyn Vuurberg  
Tel: +31638406046  
Fax: +316566911  
[www.ias2019.amsterdam/](http://www.ias2019.amsterdam/)

ICRS 2019–15th World Congress  
Hyatt Regency Vancouver  
Vancouver, CANADA

**October 5–8, 2019**

Chair(s): Alan Getgood & Lucienne Vonk

**For further information, please contact:**

Melanie Twerenbold  
Tel: 0041445037373  
Fax: 0041445037372  
[www.cartilage.org](http://www.cartilage.org)

Amstel Course  
Amsterdam Skills Center  
Amsterdam, NETHERLANDS

**November 21–22, 2019**

Chair(s): Prof. dr. D. Eygendaal

**For further information, please contact:**

Gwendolyn Vuurberg  
Tel: +31205662474  
Fax: N/A  
[www.acesamsterdam.nl/amstel](http://www.acesamsterdam.nl/amstel)

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Current Concepts on Knee OA: From the Cell to the Metal  
Auditorium Paganini-Paganini  
Congressi–Spazi Ipogei  
Parma, ITALY

**November 28–29, 2019**

Chair(s): Paolo Adravanti

**For further information, please contact:**

Nives Sagramola  
Tel: 003933838337991  
Fax: 0039055 4641490  
[www.sigascot.com](http://www.sigascot.com)

AnklePlatform Foot and Ankle Course in Shanghai

Huashan Hospital Pudong, Department of Sports Medicine Fudan University  
Shanghai, CHINA

**December 4–6, 2019**

Chair(s): Prof. Niek Van Dijk

**For further information, please contact:**

M. Jose Castell  
Tel: +34 963 734 690  
Fax: +34 963 734 690  
[www.shanghaifootandankle.com/](http://www.shanghaifootandankle.com/)

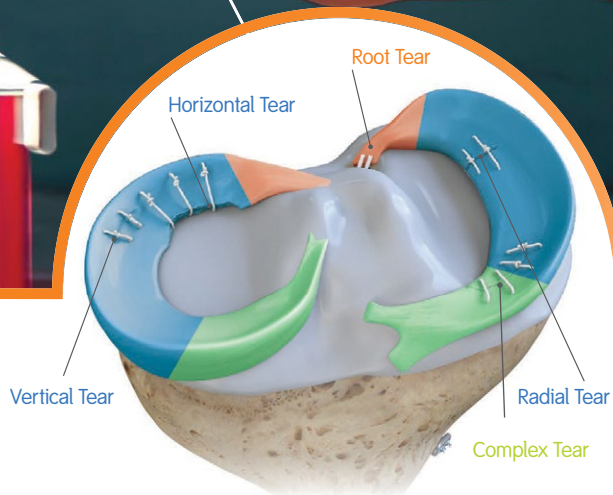
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