AOSPINE

60 YEARS | AO Foundation
Transforming surgery, changing lives

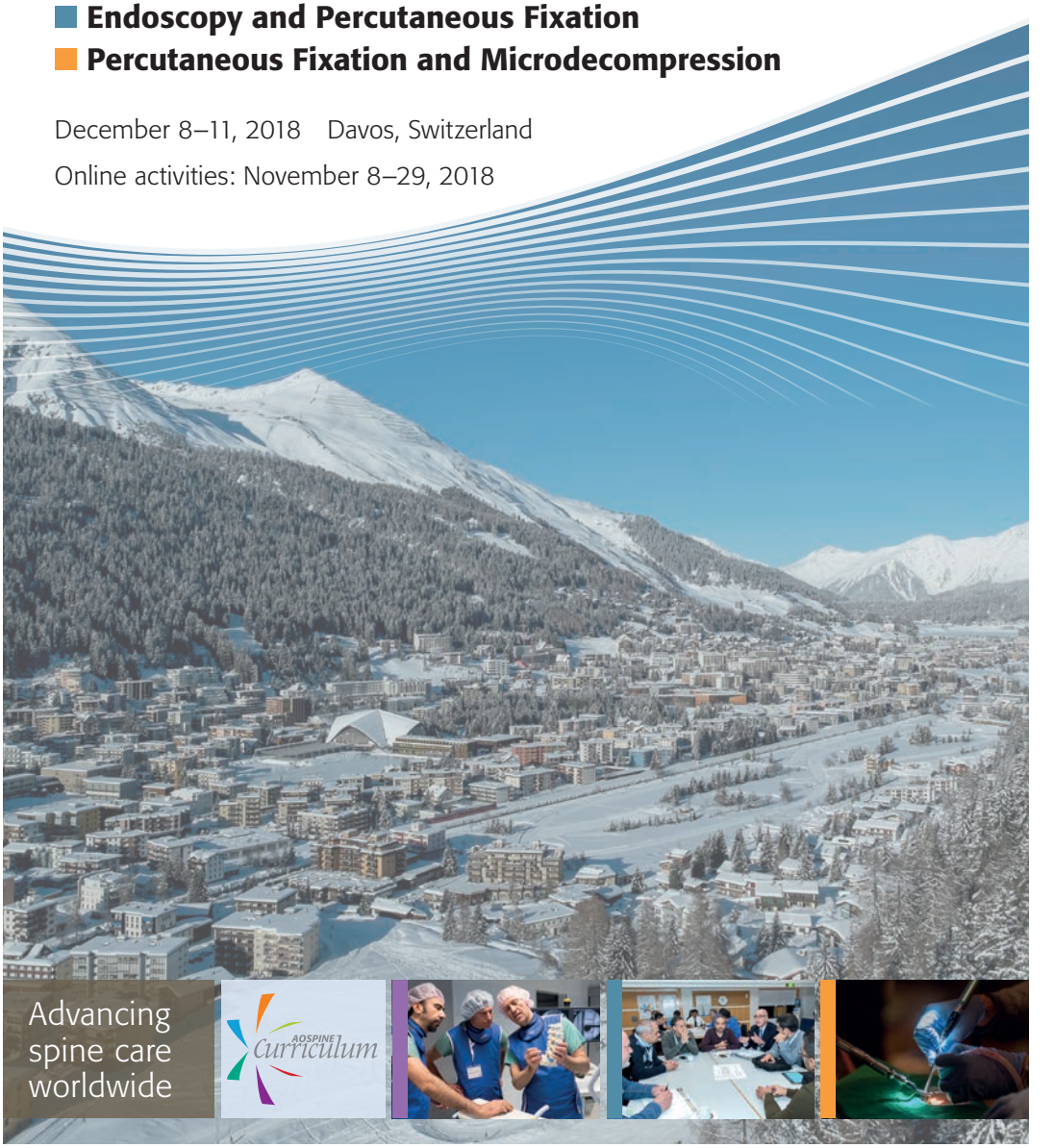
Event Program

AOSpine Davos Courses 2018

- **Microdecompression and Endoscopy**
- **Endoscopy and Percutaneous Fixation**
- **Percutaneous Fixation and Microdecompression**

December 8–11, 2018 Davos, Switzerland

Online activities: November 8–29, 2018



AOSPINE

Join our global spine care community

AOSpine membership

Gain access to numerous privileges, including the most advanced educational programs, a worldwide network of professionals, and the highest quality of research carried out by experts and key opinion leaders in spine care.

AOSpine allows me to be connected to surgeons worldwide.

And acts as a **source of knowledge for current thinking** and change in the concepts of spine surgery in other parts of the world."

Shanmuganathan Rajasekaran
AOSpine International Chairperson

Education
Never stop learning, never stop improving

Research
Research that matters, improving patient care

Networking
Join the best professionals in the field

Advantages
A membership with lots of privileges

50% DISCOUNT
For students and residents

Advancing spine care worldwide

For further information on the latest privileges available, please visit:
www.aospine.org/membership

Content

Design your personal AOSpine Davos Courses 2018!

Dear colleagues

Welcome to the 2018 Davos Courses, which are focusing entirely on minimally invasive spine surgery (MISS).

Participants of all levels of practice will have the opportunity to improve their use of the microscope, the endoscope and work on their percutaneous fixation skills.

All courses include case discussions and hands-on sessions on a life-like simulator as well as online course preparations and provide an outstanding occasion to train under the supervision of world-renowned MISS experts.

Also, make sure you don't miss "the good, the bad, the ugly—a case that taught me a lesson" discussions in the afternoon—a great chance to benefit from the experiences of others and to discuss best practices with your peers.

Our renowned international faculty will not only share their extensive knowledge and skills with you but also make sure that you get the best learning experience possible.

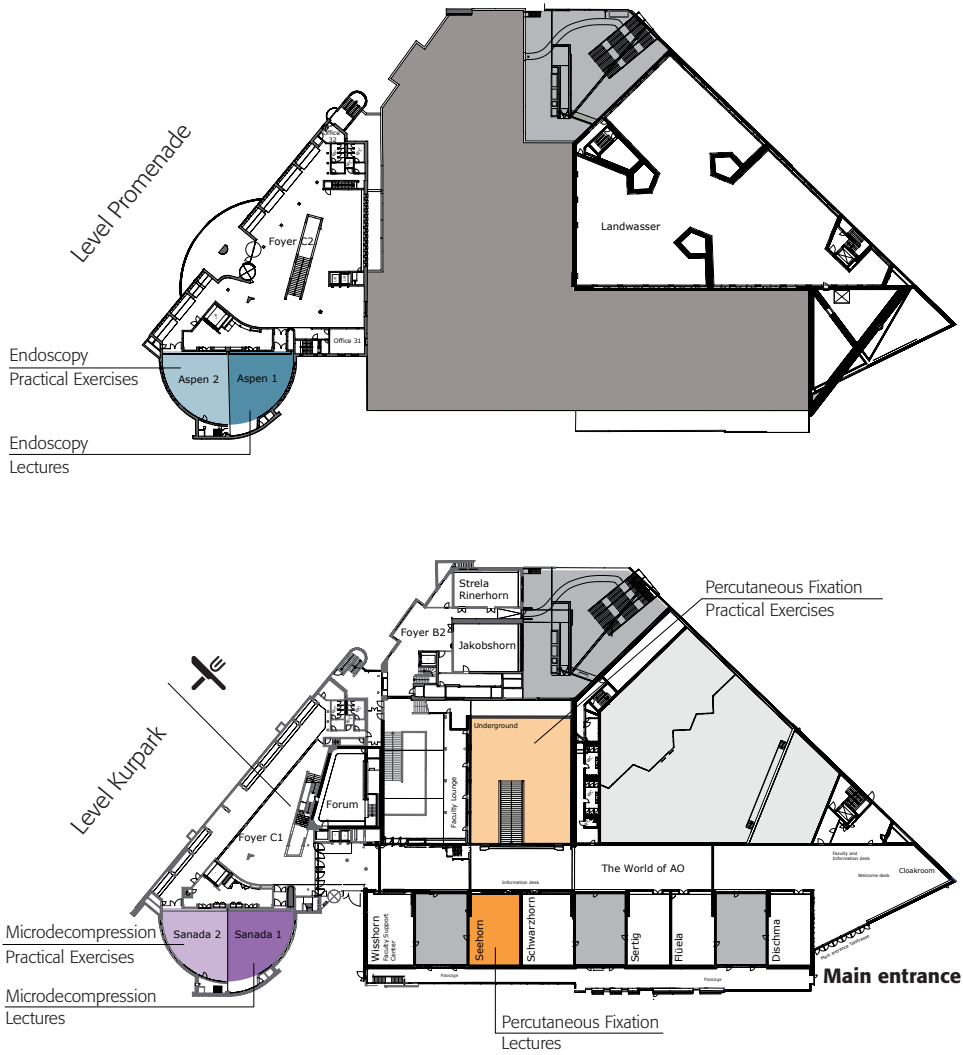
As always during the Davos Courses, you will have plenty of time for discussions and networking with spine experts from all over the world.

I hope you will enjoy this outstanding learning experience and wish you a wonderful time in Davos.

Best wishes

Bryan Ashman
Chairperson AOSpine Education Commission

Floor plan


Level Promenade
Foyer C2
Landwasser
Endoscopy
Practical Exercises
Aspen 2
Aspen 1
Endoscopy
Lectures
Level Kurpark
Strela
Rinerhorn
Foyer B2
Jakobshorn
Percutaneous Fixation
Practical Exercises
Underground
Forum
Foyer C1
Faculty Lounge
The World of AO
Cloakroom
Microdecompression
Practical Exercises
Sanada 2
Sanada 1
Wisshorn
Seehorn
Schwarzhorn
Sertig
Flüela
Dischma
Main entrance
Microdecompression
Lectures
Percutaneous Fixation
Lectures

Mission

Our mission is promoting excellence in patient care and outcomes in trauma and musculoskeletal disorders.

Course format

Over three extraordinary days, participants at the Davos Courses 2018 will have multiple opportunities to interact with renowned worldwide faculty who will be teaching MISS at the expert level. These specialists will share their knowledge and experiences in an appropriate faculty-to-participant ratio course setting and will focus on the most relevant, evidence-based information and current controversies in spine surgery.

This year we offer three separate courses emphasizing hands-on experiences on the latest techniques, and offer participants a way to improve their MISS skills on the microscope, the endoscope, and in percutaneous screw placement.

The following courses are offered:

- **Course 1:** AOSpine Davos Courses—Microdecompression and Endoscopy
- **Course 2:** AOSpine Davos Courses—Endoscopy and Percutaneous Fixation
- **Course 3:** AOSpine Davos Courses—Percutaneous Fixation and Microdecompression

The three AOSpine Davos Courses 2018 are targeted at participants of all levels of practice in spine surgery who would like to advance in MISS. Participants will register for one of the above courses focusing on two techniques over three days, including hands-on exercises, case discussions on general related topics and the famous "the good, the bad, and the ugly—a case that taught me a lesson" panel discussion.

Course Director

Bryan Ashman
Canberra Hospital
Canberra, Australia

Chairpersons

Endoscopy course module

JinSung Kim
Seoul St Mary's Hospital, The Catholic University of Korea, Seoul, South Korea

Microdecompression course module

Avelino Parajon
Hospital Universitario Ramón y Cajal, Madrid, Spain

Percutaneous Fixation course module

Muhammed Assous
Razi Spine Clinic,
Amman, Jordan

Educational Advisors

Manabu Ito
National Hospital Organization Hokkaido Medical Center, Japan

Patrick Tropiano
Hopital de la Timone,
Marseille, France

Muzahem Taha
Sardam Hospital,
Erbil, Iraq

Faculty members

Endoscopy course module:

Chien-Min Chen,	Taiwan, Asia Pacific
Christoph Hofstetter,	USA, North America
Jun-Ho Lee,	South Korea, Asia Pacific
Abhay Nene,	India, Asia Pacific
Si Young Park,	South Korea, Asia Pacific
Peter van Daele	Belgium, Europe and South Africa

Microdecompression course module:

Richard Assaker,	France, Europe and South Africa
Luiz Gustavo Dal Oglio da Rocha,	Brazil, Latin America
Kevin Foley,	USA, North America
Matti Scholz, Germany,	Europe and South Africa
Nestor Taboada Taboada,	Colombia, Latin America
Jake Timothy,	UK, Europe and South Africa

Percutaneous fixation course module:

Amer Aziz,	Pakistan, Middle East and North Africa
Daniel Gelb,	USA, North America
Roger Härtl,	USA, North America
Jean Pierre,	USA, North America
Ahmed Shawky Abdelgawaad,	Germany, Europe and South Africa
Paul Taylor,	Autralia, Asia Pacific

Endoscopy course module

Why you should attend this course and how it could benefit your daily practice

Endoscopic spine surgery has been accepted for many kinds of spinal diseases.

Currently, we are seeing the beginning of a paradigm shift in spine surgery toward more minimally invasive techniques. As the chairperson of the endoscopy course module at the AOSpine Davos Courses 2018, I strongly recommend this course because it will give you the opportunity to change your life and improve your patients' outcomes, which is the goal of every MISS spine surgeon.

What the "hands-on" format will provide

This 1.5 day course will cover basic endoscopic procedures—transforaminal, interlaminar discectomy, and unilateral laminotomy and bilateral decompression—for lumbar disc herniation and lumbar spinal stenosis.

All participants will have intensive discussions with expert endoscopic spine surgeons and they will gain an understanding of the best indications for each endoscopic procedure available, in addition to its benefits and risks.

By offering endoscopy teaching in AOSpine, I am confident that this format provides an optimal learning setting to overcome the steep learning curve and enables every participant to start endoscopic spine procedures.

Learning objectives

- Diagnose the patient problem and recognize appropriate indications and contraindications for MISS
- Select the appropriate MISS procedure and set up the technology, OR, and team
- Manage complications and apply a backup plan
- Perform the key steps of endoscopic procedures through interlaminar and transforaminal access
- Recognize possible complications in endoscopic procedures and describe how to avoid these
- Integrate current evidence and expert techniques to determine the optimal treatment for lumbar disc herniation

JinSung Kim
Chairperson
Seoul St Mary's Hospital,
The Catholic University of Korea,
Seoul, South Korea

Microdecompression course module

Why you should attend this course and how it could benefit your daily practice

MISS microsurgical techniques for decompression and fusion are now established tools that can contribute to better outcomes and fewer complications for patients with spinal conditions.

Microsurgical MISS decompression techniques also allow us to treat elderly patients or those with serious medical conditions when open surgeries may be contraindicated or have high risk.

What the "hands-on" format will provide

The format of the course is based on real cases with "real" simulators reflecting the daily practice of a spine surgeon, in small groups and from worldwide experts in the field. This provides the opportunity to discuss the indications, pros and cons and surgical tips and tricks with the experts and other colleagues and to practice the surgical techniques in realistic models of the spinal diseases.

Learning objectives

- Diagnose the patient problem and recognize appropriate indications and contraindications for MISS
- Select the appropriate MISS procedure and set up the technology, OR, and team
- Manage complications and apply a backup plan
- Use microsurgical instruments and perform basic techniques for the lumbar spine
- Describe and perform the key steps of lumbar decompression and MIS TLIF through tubular retractors
- Identify and address potential complications with the lumbar tubular microsurgical approach

Avelino Parajon
Chairperson
Hospital Universitario Ramón y Cajal,
Madrid, Spain

Percutaneous Fixation course module

Why you should attend this course and how it could benefit your daily practice

Percutaneous screw placement is an integral part of most MISS procedures requiring instrumentation. Adult spinal deformity correction, trauma reduction and stabilization, degenerative spinal fusions, and many infection/tumor cases require pedicle screw insertion. This can be effectively and safely achieved percutaneously, reducing unnecessary tissue and muscle dissection, and bleeding, and enhances post-operative patient recovery.

What the "hands-on" format will provide

The hands-on format, the signature of the AOSpine Davos Courses 2018, ensures the maximum increase of knowledge as it deals with actual clinical cases that may present to any spine surgeon's clinic using realistic simulators in a supervised training environment. Backed up with highly interactive discussions moderated by world renowned experts, based on the best available evidence, ideas and concepts are challenged and redefined. This is what usually improves one's practice and patients' care. The hands-on framework is most useful to show and explain the real and proven advantages of MISS.

Learning objectives

- Diagnose the patient problem and recognize appropriate indications and contraindications for MISS
- Select the appropriate MISS procedure and set up the technology, OR, and team
- Manage complications and apply a backup plan
- Take specific steps and precautions to minimize radiation exposure during percutaneous fixation
- Identify radiological landmarks required for safe and accurate placement of a trephine needle into the pedicle
- Correctly and safely insert percutaneous pedicle screws in the thoracic and lumbar spine

Muhammed Assous
Chairperson
Razi Spine Clinic,
Amman, Jordan

Schedule at a glance

Saturday, December 8

TIME	AGENDA ITEM
12:00–16:00	Participant registration
16:00–19:00	Opening ceremony and welcome reception (AO Foundation)

Sunday, December 9

TIME	AGENDA ITEM
08:00–08:30	AOSpine opening session
08:30–10:00	Microdecompression and Endoscopy Endoscopy and Percutaneous Fixation Percutaneous Fixation and Microdecompression
10:00–10:30	COFFEE BREAK
10:30–12:00	Microdecompression and Endoscopy Endoscopy and Percutaneous Fixation Percutaneous Fixation and Microdecompression
12:00–13:00	LUNCH BREAK
13:00–15:00	Microdecompression and Endoscopy Endoscopy and Percutaneous Fixation Percutaneous Fixation and Microdecompression
15:00–15:30	COFFEE BREAK
15:30–17:30	Microdecompression and Endoscopy Endoscopy and Percutaneous Fixation Percutaneous Fixation and Microdecompression
17:45–18:45	"The good, the bad, and the ugly– A case that taught me a lesson" session

Monday, December 10

TIME	AGENDA ITEM
08:00–10:00	Microdecompression and Endoscopy Endoscopy and Percutaneous Fixation Percutaneous Fixation and Microdecompression
10:00–10:20	COFFEE BREAK
10:20–12:20	Microdecompression and Endoscopy Endoscopy and Percutaneous Fixation Percutaneous Fixation and Microdecompression
12:20–12:30	Closing session of course module
12:30–13:30	LUNCH BREAK
13:30–15:00	Microdecompression and Endoscopy Endoscopy and Percutaneous Fixation Percutaneous Fixation and Microdecompression
15:00–15:30	COFFEE BREAK
15:30–17:00	Microdecompression and Endoscopy Endoscopy and Percutaneous Fixation Percutaneous Fixation and Microdecompression
17:15–18:15	"The good, the bad, and the ugly– A case that taught me a lesson" session
18:15–20:00	AO World Night (social event)

Tuesday, December 11

TIME	AGENDA ITEM
08:00–10:00	Microdecompression and Endoscopy Endoscopy and Percutaneous Fixation Percutaneous Fixation and Microdecompression
10:00–10:30	COFFEE BREAK
10:30–12:30	Microdecompression and Endoscopy Endoscopy and Percutaneous Fixation Percutaneous Fixation and Microdecompression
12:30–13:30	LUNCH BREAK
13:30–15:30	Microdecompression and Endoscopy Endoscopy and Percutaneous Fixation Percutaneous Fixation and Microdecompression
15:30–15:50	COFFEE BREAK
15:50–17:50	Microdecompression and Endoscopy Endoscopy and Percutaneous Fixation Percutaneous Fixation and Microdecompression
17:50–18:00	Closing session of course module

Microdecompression and Endoscopy

Sunday, December 9

LOCATION: **Microdecompression:** Room Sanada 1 and 2, House C

TIME	AGENDA ITEM	WHO
08:00–08:30	AOSpine opening session	B Ashman
Introduction to the microdecompression course module—part I		Moderator: A Parajon
08:30–08:45	Welcome to course module—introduction to MISS microsurgical techniques	A Parajon
08:45–09:00	Integration of microscope into surgical flow	A Parajon
09:00–09:15	How to use microsurgical tools	N Taboada
09:15–09:30	Evidence for tubular techniques	LG Dal Oglio da Rocha
09:30–09:45	Navigation and MISS	J Timothy
09:45–10:00	Advantages and disadvantages of microsurgical tubular techniques	K Foley
10:00–10:30	COFFEE BREAK	
Introduction to the microdecompression course module—part II		Moderator: tbc
10:30–10:45	Indirect microsurgical decompression—interspinous devices	J Timothy
10:45–11:00	Step-by-step microsurgical discectomy	M Scholz
11:00–11:15	Step-by-step over the top decompression	A Parajon
11:15–11:30	Microsurgical tubular dural repair	N Taboada
11:30–11:45	Step-by-step MISS tubular TLIF	R Assaker
11:45–12:00	Step-by-step cervical tubular foraminotomy	K Foley
12:00–13:00	LUNCH BREAK	
13:00–14:00	**Case 1–Lumbar stenosis (without spondylolisthesis)** • Indication for surgery • Indication for decompression only vs stabilization—advantages of MISS vs open in terms of less postop instability • Surgical approaches • Complications management	M Scholz, P Tropiano

Microdecompression and Endoscopy

Sunday, December 9

LOCATION: **Microdecompression:** Room Sanada 1 and 2, House C

TIME	AGENDA ITEM	WHO
14:00–15:00	**Case 2–Lumbar spondylolisthesis and stenosis** • Indication for surgery • Indication for decompression only vs stabilization • Surgical approaches: TLIF, XLIF, laminectomy • Complications management	M Scholz, P Tropiano
15:00–15:30	COFFEE BREAK	
15:30–16:30	**Case 3–Cervical foraminal disc** • Surgical indications • Anterior vs posterior approach • Fusion vs decompression • Tubular approach vs endoscopic • Tips and tricks	M Scholz, P Tropiano
16:30–17:30	**Case 4–Lumbar synovial cyst** • Physiopathology • Surgical indication • Complications (CSF leak) • Tubular contralateral approach • The need for instrumentation and fusion vs only excision • Other MISS options (punction)	M Scholz, P Tropiano
13:00–17:30 incl. coffee break 15:00–15:30	**Practical exercises (parellel session)** • Over the top laminectomy, ipsilateral decompression • Over the top laminectomy, contralateral decompression • Microdiscectomy • CSF leak repair	A Parajon, K Foley, LG Dal Oglio da Rocha, P Assaker, N Taboada, J Timothy
	LOCATION: Hotel Ameron, Room Symondpark I	
17:45–18:45	**The good, the bad, and the ugly—a case that taught me a lesson in microdecompression**	R Assaker, K Foley, J Timothy

Microdecompression and Endoscopy

Monday, December 10

LOCATION: **Microdecompression:** Room Sanada 1 and 2, House C

TIME	AGENDA ITEM	WHO
08:00–09:00	**Case 1–Lumbar stenosis (without spondylolisthesis)** • Indication for surgery • Indication for decompression only vs stabilization—advantages of MISS vs open in terms of less postop instability • Surgical approaches • Complications managemnt	M Scholz, P Tropiano
09:00–10:00	**Case 2–Lumbar spondylolisthesis and stenosis** • Indication for surgery • Indication for decompression only vs stabilization • Surgical approaches: TLIF, XLIF, laminectomy • Complications management	M Scholz, P Tropiano
10:00–10:20	COFFEE BREAK	
10:20–11:20	**Case 3–Cervical foraminal disc** • Surgical indications • Anterior vs posterior approach • Fusion vs decompression • Tubular approach vs endoscopic • Tips and tricks	M Scholz, P Tropiano
11:20–12:20	**Case 4–Lumbar synovial cyst** • Physiopathology • Surgical indication • Complications (CSF leak) • Tubular contralateral approach • The need for instrumentation and fusion vs only excision • Other MISS options (punction)	M Scholz, P Tropiano
08:00–12:20 incl. coffee break 10:00–10:20	**Practical exercises (parellel session)** • Over the top laminectomy, ipsilateral decompression • Over the top laminectomy, contralateral decompression • Microdiscectomy • CSF leak repair	A Parajon, K Foley, LG Dal Oglio da Rocha, P Assaker, N Taboada, J Timothy
12:20–12:30	Closing session of course module	A Parajon, P Tropiano
12:30–13:30	LUNCH BREAK	

Microdecompression and Endoscopy

Monday, December 10

LOCATION: **Endoscopy:** Room Aspen 1 and 2, House C

TIME	AGENDA ITEM	WHO
Introduction to the endoscopy course module—part I Incorporating spinal endoscopy into your routine practice		Moderator: Tbc
13:30–13:40	Welcome to course module—Introduction to endoscopy	J KIM
13:40–13:55	Critical reappraisal of spinal endoscopy based on historical evidence	J Lee
13:55–14:10	Optimizing case selection & surgical indications for spinal endoscopy	P van Daele
14:10–14:25	Anatomical considerations prior to spinal endoscopy performance decision	Ch Chen
14:25–14:40	Recent advances in spinal endoscopy preceding publication	S Park
14:40–15:00	Questions and answers	All faculty
15:00–15:30	COFFEE BREAK	
Introduction to the endoscopy course module—part II Navigating through technical details for spinal endoscopy		Moderator: Tbc
15:30–15:45	Customizing your OR to spinal endoscopy; setting up considerations	P van Daele
15:45–16:00	Transforaminal vs interlaminar approach (based on foraminal morphometry)	Ch Chen
16:00–16:15	Commonly expected complications and their management tactics	J Lee
16:15–16:30	Feasibility of endoscopic revision surgery	Ch Hofstetter
16:30–17:00	Questions and answers	All faculty
	LOCATION: Hotel Ameron, Room Campanello	
17:15–18:15	**The good, the bad, and the ugly—a case that taught me a lesson in endoscopy**	Ch Chen, J H Lee, N Abhay

Microdecompression and Endoscopy

Tuesday, December 11

LOCATION: **Endoscopy:** Room Aspen 1 and 2, House C

TIME	AGENDA ITEM	WHO
08:00–09:00	**Case 1–Huge migrated lumbar disc herniation: which approach?**	M Ito, N Abhay
09:00–10:00	**Case 2–Twicely recurred lumbar disc herniation: still going for another endoscopy?**	M Ito, N Abhay
10:00–10:30	COFFEE BREAK	
10:30–11:30	**Case 3–Simultaneous dual root compression (double-crutch) at single lumbar level; single or two step surgery?**	M Ito, N Abhay
11:30–12:30	**Case 4–Concomitant single level lumbar disc herniation and lateral recess stenosis**	M Ito, N Abhay
08:00–12:30 incl. coffee break 10:00–10:30	**Practical exercises (parallel session)** Transforaminal endoscopy and interlaminar endoscopy • Transforaminal Endoscopy 1 • Transforaminal Endoscopy 2 • Interlaminar Endoscopy 1 • Interlaminar Endoscopy 2 • Interlaminar Endsocopy 3 • Interlaminar Endoscopy 4	 J Kim Ch Chen Ch Hofstetter S Park J Lee P van Daele
12:30–13:30	LUNCH BREAK	
13:30–14:30	**Case 1–Huge migrated lumbar disc herniation: which approach?**	M Ito, N Abhay
14:30–15:30	**Case 2–Twicely recurred lumbar disc herniation: still going for another endoscopy?**	M Ito, N Abhay
15:30–15:50	COFFEE BREAK	

Microdecompression and Endoscopy

Tuesday, December 11

LOCATION: **Endoscopy:** Room Aspen 1 and 2, House C

TIME	AGENDA ITEM	WHO
15:50–16:50	**Case 3–Simultaneous dual root compression (double-crutch) at single lumbar level; single or two step surgery?**	M Ito, N Abhay
16:50–17:50	**Case 4–Concomitant single level lumbar disc herniation and lateral recess stenosis**	M Ito, N Abhay
13:30–17:50 incl. coffee break 15:30–15:50	**Practical exercises (parallel session)** Transforaminal endoscopy and interlaminar endoscopy • Transforaminal Endoscopy 1 • Transforaminal Endoscopy 2 • Interlaminar Endoscopy 1 • Interlaminar Endoscopy 2 • Interlaminar Endsocopy 3 • Interlaminar Endoscopy 4	 J Kim Ch Chen Ch Hofstetter S Park J Lee P van Daele
17:50–18:00	Closing session of course module End of course	

Endoscopy and Percutaneous fixation

Sunday, December 9

LOCATION: **Endoscopy:** Room Aspen 1 and 2, House C

TIME	AGENDA ITEM	WHO
08:00–08:30	AOSpine opening session	B Ashman
Introduction to the endoscopy course module–part I Incorporating spinal endoscopy into your routine practice		Moderator: Tbc
08:30–08:40	Welcome to course module–Introduction to endoscopy	J Kim
08:40–08:55	Critical reappraisal of spinal endoscopy based on historical evidence	J Lee
08:55–09:10	Optimizing case selection & surgical indications for spinal endoscopy	P van Daele
09:10–09:25	Anatomical considerations prior to spinal endoscopy performance decision	Ch Chen
09:25–09:40	Recent advances in spinal endoscopy preceding publication	S Park
09:40–10:00	Questions and answers	All faculty
10:00–10:30	COFFEE BREAK	
Introduction to the endoscopy course module–part II Navigating through technical details for spinal endoscopy		Moderator: tbc
10:30–10:45	Customizing your OR to spinal endoscopy; setting up considerations	P van Daele
10:45–11:00	Transforaminal vs interlaminar approach (based on foraminal morphometry)	Ch Chen
11:00–11:15	Commonly expected complications and their management tactics	J Lee
11:15–11:30	Feasibility of endoscopic revision surgery	Ch Hofstetter
11:30–12:00	Questions and answers	All faculty
12:00–13:00	LUNCH BREAK	

Endoscopy and Percutaneous fixation

Sunday, December 9

LOCATION: **Endoscopy:** Room Aspen 1 and 2, House C

TIME	AGENDA ITEM	WHO
13:00–14:00	**Case 1–Huge migrated lumbar disc herniation: which approach?**	M Ito, N Abhay
14:00–15:00	**Case 2–Twicely recurred lumbar disc herniation: still going for another endoscopy?**	M Ito, N Abhay
15:00–15:30	COFFEE BREAK	
15:30–16:30	**Case 3–Simultaneous dual root compression (double-crutch) at single lumbar level; single or two step surgery?**	M Ito, N Abhay
16:30–17:30	**Case 4–Concomitant single level lumbar disc herniation and lateral recess stenosis**	M Ito, N Abhay
13:00–17:30 incl. coffee break 15:00–15:30	**Practical exercises (parallel session)** Transforaminal endoscopy and interlaminar endoscopy • Transforaminal Endoscopy 1 • Transforaminal Endoscopy 2 • Interlaminar Endoscopy 1 • Interlaminar Endoscopy 2 • Interlaminar Endsocopy 3 • Interlaminar Endoscopy 4	 J Kim Ch Chen Ch Hofstetter S Park J Lee P van Daele
	LOCATION: Hotel Ameron, Room Campanello	
17:45–18:45	**The good, the bad, and the ugly—a case that taught me a lesson in endoscopy**	Ch Hofstetter, S Park, P van Daele

Endoscopy and Percutaneous fixation

Monday, December 10

LOCATION: **Endoscopy:** Room Aspen 1 and 2, House C
Percutaneous fixation: Room Seehorn, House A, Bunker rooms

TIME	AGENDA ITEM	WHO
08:00–09:00	**Case 1–Huge migrated lumbar disc herniation: which approach?**	M Ito, N Abhay
09:00–10:00	**Case 2–Twicely recurred lumbar disc herniation: still going for another endoscopy?**	M Ito, N Abhay
10:00–10:20	COFFEE BREAK	
10:20–11:20	**Case 3–Simultaneous dual root compression (double-crutch) at single lumbar level; single or two step surgery?**	M Ito, N Abhay
11:20–12:20	**Case 4–Concomitant single level lumbar disc herniation and lateral recess stenosis**	M Ito, N Abhay
08:00–12:30 incl. coffee break 10:00–10:20	**Practical exercises (parallel session)** Transforaminal endoscopy and interlaminar endoscopy	
	• Transforaminal Endoscopy 1	J Kim
	• Transforaminal Endoscopy 2	Ch Chen
	• Interlaminar Endoscopy 1	Ch Hofstetter
	• Interlaminar Endoscopy 2	S Park
	• Interlaminar Endsocopy 3	J Lee
	• Interlaminar Endoscopy 4	P van Daele
12:20–12:30	Closing session of course module	J Kim, M Ito
12:30–13:30	LUNCH BREAK	

Endoscopy and Percutaneous fixation

Monday, December 10

LOCATION: **Percutaneous fixation:** Room Seehorn, House A, Bunker rooms

TIME	AGENDA ITEM	WHO
Introduction percutaneous fixation course module–part I		Moderator: P Taylor
13:30–13:40	Welcome to course module—Introduction to percutaneous screw fixation	M Assous
13:40–13:50	Percutaneous screws: Literature review	A Aziz
13:50–14:00	Ionizing radiation: Safety and tips to minimize exposure	R Härtl
14:00–14:10	Square vertebra concept, entry point and trajectory	D Gelb
14:10–14:20	Lumbar percutaneous screws: Technique and tips	A Shawky
14:20–14:30	Thoracic percutaneous screws: Technique and tips	JP Mobasser
14:30–14:40	Percutaneous screw fixation in the pelvis	D Gelb
14:40–15:00	Discussion	All faculty
15:00–15:30	COFFEE BREAK	
Introduction percutaneous fixation course module–part II		Moderator: D Gelb
15:30–15:40	Rod application, compression/distraction techniques	JP Mobasser
15:40–15:50	Multiaxial vs monoaxial screws: Tips in trauma	A Aziz
15:50–16:00	Percutaneous screws: Tips in fusion surgery	P Taylor
16:00–16:10	Percutaneous screws: In the osteoporotic spine	P Taylor
16:10–16:20	Percutaneous screws: Complications and avoidance	A Shawky
16:20–16:30	Navigated screws: Added value?	R Härtl
16:30–17:00	Discussion	All faculty
	LOCATION: Hotel Ameron, Room Symondpark II	
17:15–18:15	**The good, the bad, and the ugly—a case that taught me a lesson in percutaneous fixation**	R Härtl, JP Mobasser, D Gelb

Endoscopy and Percutaneous fixation

Tuesday, December 11

LOCATION: **Percutaneous fixation:** Room Seehorn, House A, Bunker rooms

TIME	AGENDA ITEM	WHO
08:00–09:00	**Case 1–Degeneration (TLIF)**	A Shawky
09:00–10:00	**Case 2–Adult deformity**	D Gelb
10:00–10:30	COFFEE BREAK	
10:30–11:30	**Case 3–Trauma**	A Shawky
11:30–12:30	**Case 4–Infection/Tumors**	D Gelb
08:00–12:30 incl. coffee break 10:00–10:20	**Practical exercises (parallel session)**	
	• Percutaneous screw placement in proximal thoracic spine	A Aziz
	• Percutaneous screw placement in mid/lower thoracic spine	M Assous
	• Percutaneous screw placement in lumbar spine	M Taha
	• Screw placement into the pelvis	P Taylor
	• Rod insertion, compression and distraction	JP Mobasser
	• Navigated screws	R Härtl
12:30–13:30	LUNCH BREAK	
13:30–14:30	**Case 1–Degeneration (TLIF)**	A Shawky
14:30–15:30	**Case 2–Adult deformity**	D Gelb
15:30–15:50	COFFEE BREAK	
15:50–16:50	**Case 3–Trauma**	A Shawky
16:50–17:50	**Case 4–Infection/Tumors**	D Gelb
13:30–17:50 incl. coffee break 15:30–15:50	**Practical exercises (parallel session)**	
	• Percutaneous screw placement in proximal thoracic spine	A Aziz
	• Percutaneous screw placement in mid/lower thoracic spine	M Assous
	• Percutaneous screw placement in lumbar spine	M Taha
	• Screw placement into the pelvis	P Taylor
	• Rod insertion, compression and distraction	JP Mobasser
	• Navigated screws	R Härtl
17:50–18:00	Closing session of course module	M Assous, M Taha
	End of course	

Percutaneous fixation and Microdecompression

Sunday, December 9

LOCATION: **Percutaneous fixation:** Room Seehorn, House A, Bunker rooms

TIME	AGENDA ITEM	WHO
08:00–08:30	AOSpine opening session	B Ashman
Introduction percutaneous fixation course module–part I		Moderator: P Taylor
08:30–08:40	Welcome to course module—Introduction to percutaneous fixation	M Assous
08:40–08:50	Percutaneous screws: Literature review	A Aziz
08:50–09:00	Ionizing radiation: Safety and tips to minimize exposure	R Härtl
09:00–09:10	Square vertebra concept, entry point and trajectory	D Gelb
09:10–09:20	Lumbar percutaneous screws: Technique and tips	A Shawky
09:20–09:30	Thoracic percutaneous screws: Technique and tips	JP Mobasser
09:30–09:40	Percutaneous screw fixation in the pelvis	D Gelb
09:40–10:00	Discussion	All faculty
10:00–10:30	COFFEE BREAK	
Introduction percutaneous fixation course module–part II		Moderator: D Gelb
10:30–10:40	Rod application, compression/distraction techniques	JP Mobasser
10:40–10:50	Multiaxial vs monoaxial screws: Tips in trauma	A Aziz
10:50–11:00	Percutaneous screws: Tips in fusion surgery	P Taylor
11:00–11:10	Percutaneous screws: In the osteoporotic spine	P Taylor
11:10–11:20	Percutaneous screws: Complications and avoidance	A Shawky
11:20–11:30	Navigated screws: Added value?	R Härtl
11:30–12:00	Discussion	All faculty
12:00–13:00	LUNCH BREAK	

Percutaneous fixation and Microdecompression

Sunday, December 9

LOCATION: **Percutaneous fixation:** Room Seehorn, House A, Bunker rooms

TIME	AGENDA ITEM	WHO
13:00–14:00	**Case 1–Degeneration (TLIF)**	A Shakwy
14:00–15:00	**Case 2–Adult deformity**	D Gelb
15:00–15:30	COFFEE BREAK	
15:30–16:30	**Case 3–Trauma**	A Shakwy
16:30–17:30	**Case 4–Infection/Tumors**	D Gelb
13:00–17:30 incl. coffee break 15:00–15:30	**Practical exercises (parallel session)**	
	• Percutaneous screw placement in proximal thoracic spine	A Aziz
	• Percutaneous screw placement in mid/lower thoracic spine	M Assous
	• Percutaneous screw placement in lumbar spine	M Taha
	• Screw placement into the pelvis	P Taylor
	• Rod insertion, compression and distraction	JP Mobasser
	• Navigated screws	R Härtl
	LOCATION: Hotel Ameron, Room Symondpark II	
17:45–18:45	**The good, the bad, and the ugly—a case that taught me a lesson in percutaneous fixation**	A Aziz, A Shawky, P Taylor

Percutaneous fixation and Microdecompression

Monday, December 10

LOCATION: **Percutaneous fixation:** Room Seehorn, House A, Bunker rooms
Microdecompression: Room Sanada 1 and 2, House C

TIME	AGENDA ITEM	WHO
08:00–09:00	**Case 1–Degeneration (TLIF)**	A Shakwy
09:00–10:00	**Case 2–Adult deformity**	D Gelb
10:00–10:20	COFFEE BREAK	
10:20–11:20	**Case 3–Trauma**	A Shakwy
11:20–12:20	**Case 4–Infection/Tumors**	D Gelb
08:00–12:20 incl. coffee break	**Practical exercises (parallel session)**	
10:00–10:20	• Percutaneous screw placement in proximal thoracic spine	A Aziz
	• Percutaneous screw placement in mid/lower thoracic spine	M Assous
	• Percutaneous screw placement in lumbar spine	M Taha
	• Screw placement into the pelvis	P Taylor
	• Rod insertion, compression and distraction	JP Mobasser
	• Navigated screws	R Härtl
12:20–12:30	Closing session of course module	M Assous, M Taha
12:30–13:30	LUNCH BREAK	
Introduction to the microdecompression course module–part I		Moderator: A Parajon
13:30–13:45	Welcome to course module–introduction to MISS microsurgical techniques	A Parajon
13:45–14:00	Integration of microscope into surgical flow	A Parajon
14:00–14:15	How to use microsurgical tools	N Taboada
14:15–14:30	Evidence for tubular techniques	LG Dal Oglio da Rocha
14:30–14:45	Navigation and MISS	J Timothy
14:45–15:00	Advantages and disadvantages of microsurgical tubular techniques	K Foley
15:00–15:30	COFFEE BREAK	

Percutaneous fixation and Microdecompression

Monday, December 10

LOCATION: **Microdecompression:** Room Sanada 1 and 2, House C

TIME	AGENDA ITEM	WHO
Introduction to the microdecompression course module—part II		Moderator: tbc
15:30–15:45	Indirect microsurgical decompression—interspinous devices	J Timothy
15:45–16:00	Step-by-step microsurgical discectomy	M Scholz
16:00–16:15	Step-by-step over the top decompression	A Parajon
16:15–16:30	Microsurgical tubular dural repair	N Taboada
16:30–16:45	Step-by-step MISS tubular TLIF	R Assaker
16:45–17:00	Step-by-step cervical tubular foraminotomy	K Foley
	LOCATION: Hotel Ameron, Room Symondpark I	
17:15–18:15	**The good, the bad, and the ugly—a case that taught me a lesson in microdecompression**	LG Dal Oglio da Rocha, N Taboada, M Scholz

Percutaneous fixation and Microdecompression

Tuesday, December 11

LOCATION: **Microdecompression:** Room Sanada 1 and 2, House C

TIME	AGENDA ITEM	WHO
08:00–09:00	**Case 1–Lumbar stenosis (without spondylolisthesis)** • Indication for surgery • Indication for decompression only vs stabilization—advantages of MISS vs open in terms of less postop instability • Surgical approaches • Complications management	M Scholz, P Tropiano
09:00–10:00	**Case 2–Lumbar spondylolisthesis and stenosis** • Indication for surgery • Indication for decompression only vs stabilization • Surgical approaches: TLIF, XLIF, laminectomy • Complications management	M Scholz, P Tropiano
10:00–10:30	COFFEE BREAK	
10:30–11:30	**Case 3–Cervical foraminal disc** • Surgical indications • Anterior vs posterior approach • Fusion vs decompression • Tubular approach vs endoscopic • Tips and tricks	M Scholz, P Tropiano
11:30–12:30	**Case 4–Lumbar synovial cyst** • Physiopathology • Surgical indication • Complications (CSF leak) • Tubular contralateral approach • The need for instrumentation and fusion vs only excision • Other MISS options (punction)	M Scholz, P Tropiano
08:00–12:30 incl. coffee break 10:00–10:30	**Practical exercises (parellel session)** • Over the top laminectomy, ipsilateral decompression • Over the top laminectomy, contralateral decompression • Microdiscectomy • CSF leak repair	A Parajon, K Foley, LG Dal Oglio da Rocha, P Assaker, N Taboada, J Timothy
12:30–13:30	LUNCH BREAK	

Percutaneous fixation and Microdecompression

Tuesday, December 11

LOCATION: **Microdecompression:** Room Sanada 1 and 2, House C

TIME	AGENDA ITEM	WHO
13:30–14:30	**Case 1–Lumbar stenosis (without spondylolisthesis)** • Indication for surgery • Indication for decompression only vs stabilization—advantages of MISS vs open in terms of less postop instability • Surgical approaches • Complications management	M Scholz, P Tropiano
14:30–15:30	**Case 2–Lumbar spondylolisthesis and stenosis** • Indication for surgery • Indication for decompression only vs stabilization • Surgical approaches: TLIF, XLIF, laminectomy • Complications management	M Scholz, P Tropiano
15:30–15:50	COFFEE BREAK	
15:50–16:50	**Case 3–Cervical foraminal disc** • Surgical indications • Anterior vs posterior approach • Fusion vs decompression • Tubular approach vs endoscopic • Tips and tricks	M Scholz, P Tropiano
16:50–17:50	**Case 4–Lumbar synovial cyst** • Physiopathology • Surgical indication • Complications (CSF leak) • Tubular contralateral approach • The need for instrumentation and fusion vs only excision • Other MISS options (punction)	M Scholz, P Tropiano
13:30–17:50 incl. coffee break 15:30–15:50	**Practical exercises (parellel session)** • Over the top laminectomy, ipsilateral decompression • Over the top laminectomy, contralateral decompression • Microdiscectomy • CSF leak repair	A Parajon, K Foley, LG Dal Oglio da Rocha, P Assaker, N Taboada, J Timothy
17:50–18:00	Closing session of course module End of course	A Parajon, P Tropiano

Event organization

Course organization
AOSpine International
Melanie Schatz
Stettbachstr. 6
8600 Dübendorf, Switzerland
Phone: +41 44 200 24 15
Email: mschatz@aospine.org

Participant management
AOSpine International
Denise Diggelmann
Stettbachstr. 6
8600 Dübendorf, Switzerland
Phone: +41 44 200 24 33
Email: ddiggelmann@aospine.org

AO funding sources
Unrestricted educational grants from different sources are collected and pooled together centrally by the AO Foundation. All events are planned and scheduled by local and regional AO surgeon groups based on local needs assessments. We rely on industrial and/or commercial partners for in-kind support to run simulations and/or skills training if educationally needed.

Event information and logistics

Accommodation
Please refer to the event page www.aodavoscourses.org for more information about accommodation and special hotel rates for Davos courses participants.

Travel by car
Davos is located in the heart of Grisons (Graubünden) in the east of Switzerland, about 150 km from Zurich. It takes approximately 2 hours from Zurich. Four-wheel drive and winter tires are strongly recommended at this time of the year. Depending on road conditions, you may need snow chains on the last few kilometers.

Travel by plane
The nearest airport is Zurich Airport. From there you can travel to Davos either by train or by car.

Travel by train
A regular train service will conveniently take you from Zurich main station or Zurich Airport to Davos Platz; travel time is approximately 3 hours. Tickets and train schedule available at: www.sbb.ch

Event venue and opening times

Congress Center Davos
Talstrasse 49A
7270 Davos, Switzerland
Phone +41 81 414 62 00
Fax +41 81 414 62 29

General information

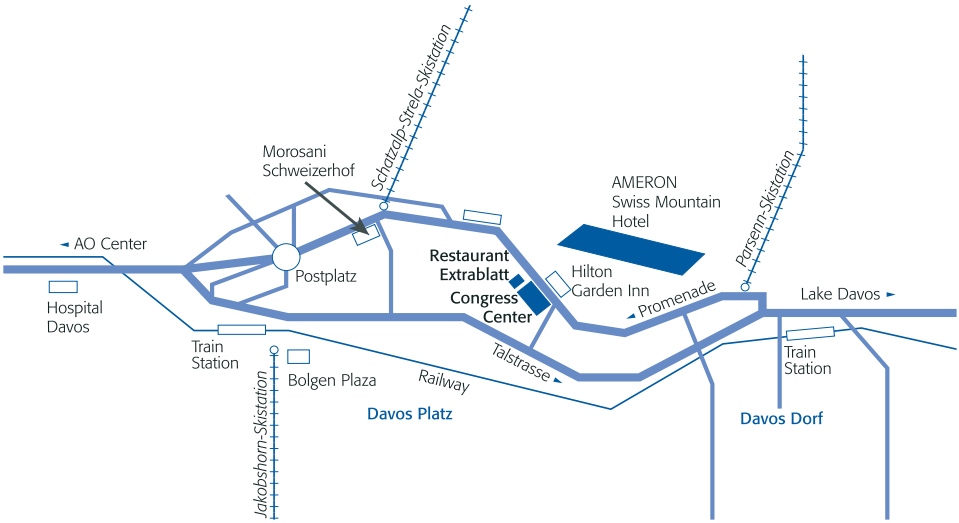
Sunday	12:00–19:00
Monday to Thursday	07:30–19:00
Friday	07:30–16:00

AO World

Sunday	14:00–17:00
Monday to Thursday	09:00–18:00
Tuesday	09:00–20:30
Friday	09:00–15:30

Industry exhibition

Sunday	14:00–17:00
Monday to Thursday	09:00–18:00
Friday	09:00–15:30



Events

Opening Ceremony
Sunday 17:00–18:00

AO World Night
Tuesday 17:45–20:30

Exhibitions

Experience a whole new AO World
This year AO World has been transformed to give you a new insight into our history and activities. You are invited to view the latest publications at the AO library, find out what benefits you are eligible for at the AO community and membership area, explore the AO's teaching and learning resources at the AO digital learning zone's interactive stations, visit AO research and innovations – which this year includes AOTK's popular Meet the Experts sessions, and purchase mementos at the AO merchandise area. Experience the AO spirit, walk the timeline of the AO's history and development, and mingle with other participants. AO staff will be on-hand to ensure you get the most out of this experience.

Industry exhibitors
Visit the exhibitions of our industry partners DePuy Synthes and Siemens, and the other exhibitors:
SYNBONE, Ethicon, Invibio and Touch Surgery

Media exhibitors
Lehmanns Media can be found this year newly in the industry exhibition.

Sponsors

We thank our major industry partners DePuy Synthes, Siemens, Karl Storz, Richard Wolf and Zeiss Meditec AG for contributing in-kind support (material and logistics) without which this event would not be possible. A special thanks to DePuy Synthes and Siemens for providing an unrestricted educational grant for this event.

We also extend our thanks to the following co-sponsors (educational grants, in-kind support):

Business center

There are business center facilities in the Congress Center which are accessible to everybody.

Services
- Internet and e-mail access
- Printer access
- www.aodavoscourses.org
  AO Course website offering course-related information

Opening hours
- 30 minutes before the first course of the day starts
  until
- 30 minutes after the last course ends

Disclaimer
The use of your own computer in the business center network is inherently not secure. We strongly recommend that you take appropriate actions to protect your computer against unauthorized use or theft (eg, Firewall, VPN-Connection, VirusScanner). AO cannot be held responsible for any data loss or theft. For further information or support please contact:
AO Foundation
Phone +41 81 414 28 70
E-mail it.helpdesk@aofoundation.org

Wireless network

How to connect to the AO Wireless LAN

1. Open the Wireless Network Connection Window
2. Choose the **AO Business** Network as shown in the print screen below and click on the **Connect** Button

3. Our **AO Business** Wireless Network requires a WPA network key:
   Network key: **aowireless**

4. Then click on the **OK** button

General information

Event fee
Non-member fee CHF 3,000.
AOSpine member fee CHF 2,700.
Included in course fee are: AO Foundation opening ceremony and welcome reception, AOSpine opening session, access to congress center, participation in courses, course bag, coffee breaks, lunches, bus transportation in Davos, AO, World Night, confirmation of attendance (AO certificate), and CME certificate (only upon proof of course participation)

Cancellation policy
Until November 8, 2018 Refund of 50% of the registration fee. After November 8, 2018
No refund of the registration fee

Event registration
Register online: www.aodavoscourses.org

Payment options
Bank transfer (against handling fee of 30 CHF) and credit card (American Express, Visa, Eurocard/Mastercard)

European CME Accreditation
An application has been made to the UEMS-EACCME® in Brussels for CME accreditation of this event.

Conflicts of Interest (COI)
All disclosure information can be viewed at the event webpage

Evaluation guidelines
All AOSpine events apply the same evaluation process, either audience response system (ARS) or paper and pencil questionnaires. This helps AOSpineto ensure that we continue to meet your training needs.

Intellectual property
Event materials, presentations, and case studies are the intellectual property of the event faculty. All rights are reserved. Check hazards and legal restrictions on www.aofoundation.org/legal.

Recording, photographing, or copying lectures, practical exercises, case discussions, or any event materials is strictly forbidden. Participants violating intellectual property will be dismissed. The AO Foundation reserves the right to film, photograph, and audio record during its events. Participants must understand that in this context they may appear in these recorded materials. The AO Foundation assumes participants agree that these recorded materials may be used for the AO's marketing and other purposes, and that they may be made available to the public.

Use of social media
During the Davos Courses you can post about your experience using the #AODavosCourses2018. While we encourage you to share your Davos Courses experience with your online network, it is expressly forbidden to share any images or recordings from inside

Security
Security checks will be conducted at the building entrance. Wearing a name tag is compulsory during lectures, practical exercises, and group discussions.

No insurance
The event organization does not take out insurance to cover any individual against accident, theft, or other risks.

Use of mobile phones
Use of mobile phones is not allowed in the lecture halls and in other rooms during educational activities. Please be considerate of others by turning off your mobile phone.

Picture Gallery
Check out aodavoscourses.org for a daily selection of pictures from the Davos Courses 2018, the best from last year's courses, and a selection of photographs from the first ever AO Davos Courses.

Dress code
Warm clothes and suitable shoes are advisable.

AO Foundation—Principles of AO Educational Events

1) Academic independence
Development of all curricula, design of scientific event programs, and selection of faculty are the sole responsibilities of volunteer surgeons from the AO network. All education is planned based on needs assessment data, designed and evaluated using concepts and evidence from the most current medical education research, and involving the expertise of the AO Education Institute (www.aofoundation.org).

Industry participation is not allowed during the entire curriculum development and planning process to ensure academic independence and to keep content free from bias.

2) Compliance to accreditation and industry codes
All planning, organization, and execution of educational activities follow existing codes for accreditation of high-quality education:
- Accreditation Criteria of the Accreditation Council for Continuing Medical Education, USA (www.accme.org)
- ACCME Standards for Commercial Support: Standards to Ensure Independence in CME Activities (www.accme.org)
- Criteria for Accreditation of Live Educational Events of the European Accreditation Council for Continuing Medical Education (www.uems.eu)

Events that receive direct or indirect unrestricted educational grants or in-kind support from industry also follow the ethical codes of the medical industry, such as:
- Eucomed Guidelines on Interactions with Healthcare Professionals (www.medtecheurope.org)
- AdvaMed Code of Ethics on Interactions with Health Care Professionals (advamed.org)
- Mecomed Guidelines on Interactions with Healthcare Professionals (www.mecomed.org)

3) Branding and advertising
No industry logos or advertising (with the exception of the AO Foundation and AO clinical divisions) are permitted in the area where educational activities take place.

Sponsors providing financial or in-kind support are allowed to have a promotional booth or run activities outside the educational area with approval from the event chairperson.

4) Use of technologies and products in simulations
If case simulations are chosen as an educational method to educate skills, we only use technology approved by the AOTK System (AOTK)—a large independent group of volunteer surgeons developing and peer-reviewing new technology (more information about the AOTK, its development and approval process can be found on the AO Foundation website: www.aofoundation.org).

5) Personnel
Industry staff are not allowed to interfere with the educational content or engage in educational activities during the event.

AO Research Institute Davos (ARI)

Mission
The AO Foundation's mission is promoting excellence in patient care and outcomes in trauma and musculoskeletal disorders.

AO Research Institute Davos (ARI)
In its work to further the AO Foundation's mission, ARI's purpose is to advance patient care through innovative orthopedic research and development.

Orthopedics concerns musculoskeletal, spine and cranio-maxillo-facial trauma, degenerative musculoskeletal diseases, infections, and congenital disorders.

Goals
- Contribute high quality applied preclinical research and development focused towards clinical applications/solutions.
- Investigate and improve the performance of surgical procedures, devices and substances.
- Foster a close relationship with the AO medical community, academic societies, and universities.
- Provide research environment/support/training for AO clinicians.

Meet with our team including our ARI Medical Research Fellows, establish contacts, freely discuss your clinical problems, ideas, and learn about the latest results from the ARI.

Collaborative research programs
- Annulus fibrosus rupture
- Acute cartilage injury
- Osteochondral defect

Craniomaxillofacial
- Imaging and planning of surgery, computer aided preoperative planning
- Medication-related osteonecrosis of the jaw
- Bone regeneration and 3-D printing

Spine
- Degeneration and regeneration of the intervertebral disc
- Biomarkers and patient outcomes

Trauma
- Bone infection, including the development and testing of active anti-infective interventions
- Sensing implants for objective monitoring of fracture healing
- Development of smart surgical tools
- New implant concepts for optimized bone healing
- Prediction of subject-specific risk of proximal humerus fixation failure via computational tools
- Development of generic Asian pelvic bone model
- Patient outcomes and biomarkers

Veterinary medicine
- Improving osteosynthesis for small and large animals

Multidisciplinary
- 3R – refinement of preclinical studies
- Bioreactor culture systems and mechanobiology
- Development, standardization, optimization, and improvement of preclinical models and methods
- Ex vivo testing using advanced biomechanical models
- Gene transfer: non-viral and viral
- Implant design using the finite element methods
- Implant positioning assistance, C-arm guided implant placement
- In-vivo and in-vitro quantification of bone turnover and scaffold degradation
- Medical additive manufacturing and biofabrication
- Medical CT image processing and analysis
- Polymers to deliver cells and biological factors, create potential space for tissue development, and guide the process of tissue regeneration
- Prototype development and production
- Stem cell therapies for the treatment of bone, intervertebral disc, and cartilage defects

For the 2017 AO Research Institute Davos activity report and recent publications go to:
www.aofoundation.org/ari/publications

AOSPINE

Download AOSpine Classification toolkits at aospine.org/classification

Upcoming AO Courses—Davos 2019

AO Courses—December 8–13, 2019
AOTrauma Course—Basic Principles of Fracture Management
AOTrauma Course—Advances Principles of Fracture Management
AOTrauma Course—Advanced Principles of Fracture Management for Swiss Residents
AOTrauma Masters Course—Current Concepts
AOTrauma Course—Pelvic and Acetabulum Fractures
AOTrauma Masters Course
AOTrauma/AORecon Course—Comprehensive Periprosthetic Fracture Management of the Hip and Knee
AORecon Course

AO Courses—December 15–20, 2019
AOTrauma Course—Basic Principles of Fracture Management for Swiss Surgeons
AOSpine Courses
AOCMF Courses
AOVET Courses

This course list is subject to further change.
The final list of AO Davos Courses and worldwide courses will be available on www.aodavoscourses.org in January 2019

A91AT-23304-30C1-7600

New perspectives.
Full control.

Cios Spin

Cutting-edge mobile 3D imaging for intraoperative quality assurance.

Conventional 2D imaging may not always provide enough information to safeguard correct placement of screws and implants. Intraoperative 3D imaging can therefore be an important factor in improving surgical outcomes.

To provide 3D capabilities that can be seamlessly integrated into clinical routine, we developed Cios Spin®: a mobile 2D and 3D C-arm for intraoperative quality assurance. Delivering new insights and perspectives, Cios Spin gives you more certainty in surgical routine – and full control over your procedures.

Cios Spin is currently under development; is not for sale in the U.S.
Its future availability cannot be guaranteed.

siemens.com/cios-spin

SIEMENS Healthineers

Global Spine Congress 2019

The Global Spine Congress heads to North America

Global Spine Congress

Toronto, Canada | May 15–18, 2019

www.gsc2019.org

AOSpine International
Stettbachstrasse 6
8600 Duebendorf
Switzerland

Phone: +41 44 200 24 98
Fax +41 44 200 24 12
Email: gsc@aospine.org

AOSPINE

© 2018 AOSpine International. All rights reserved. E & OE.