AO Trauma Masters Course—
Current Concepts—
Lower Extremity I

Proximal Femur–Tibial Pilon–Tibial Plateau

December 1–6, 2019
Davos, Switzerland

Lecture room:
Aspen 1
The AO’s flagship educational event, the AO Davos Courses offer surgeons at all stages of their career outstanding educational and networking opportunities. Experience this pioneering spirit of peer-to-peer collaboration and learn skills that will help advance your career.

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Mission

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

Purpose statement

AO Trauma is committed to improve patient care outcomes through the highest quality education. We strive to combine the right knowledge and surgical skills that empower the orthopedic and trauma surgeons to put theory into practice and to improve fracture management for the benefit of the patient.

The AO principles of fracture management

1. Fracture reduction and fixation to restore anatomical relationships.
2. Fracture fixation providing absolute or relative stability, as required by the “personality” of the fracture, the patient, and the injury.
3. Preservation of the blood supply to soft-tissues and bone by gentle reduction techniques and careful handling.
4. Early and safe mobilization and rehabilitation of the injured part and the patient as a whole.
Dear AO Trauma course participant,

Welcome to AO Trauma's first-class schedule of activities at the AO Davos Courses 2019. We provide a wide range of relevant courses designed to meet your specific professional needs—and we are confident that you will find your course and the networking experiences professionally rewarding.

With a global reputation for innovation, leadership, and excellence in continuing medical education (CME), AO Trauma and the AO Education Institute are transforming education by expanding the educational activities available to you. CME is not just about face-to-face courses. Our educational opportunities address the specific clinical problems that you encounter daily. Visit our website (www.aotrauma.org) to discover the latest educational activities.

At the AO Davos Courses 2019, AO Trauma offers you a chance to actively engage in your course as well as opportunities to:

- Interact with over 300 international faculty
- Expand your professional network by establishing contacts and new relationships with colleagues, including faculty and participants from over 80 countries
- Meet with staff and surgeons from the AO's clinical divisions, institutes, and initiatives.
- Visit the AO experience or take a tour of our headquarters, the AO center, to gain insight into the AO's ongoing activities and resources available to support you in your clinical work
- Experience the AO spirit of collegiality and camaraderie that is felt by participants and faculty alike

Your current level of knowledge, attitudes, and skills will be challenged throughout the week. At the same time, our best-in-class curriculum and faculty will provide you with a memorable learning experience that will remain with you for a lifetime.

Your experiences with us over the next few days will result in the realization of new and meaningful knowledge, skills, and understanding that we hope will translate into improved patient care.

If you enjoy your experience this week and want to stay in touch, we invite you to become a member of AO Trauma. Doctors of medicine and osteopathy who have completed AO Trauma basic principles course are eligible for membership; contact us to learn more.

Yours sincerely,

Wa'el Taha
Chairperson AO Trauma
Education Commission

Kodi Kojima
Chairperson AO Trauma
International Board
Course description
Current Concepts courses and modules address the latest techniques and best practices in operative fracture management to deal with complex orthopedic trauma problems. The course includes many case presentations and open group discussions moderated by experts in the field. Best evidence is presented through summary lectures and practical exercises, and simulations are integrated where appropriate.

Course structure
This five-day, Masters-level course comprises four one-day modules. Participants also select one from a wide choice of one-day self-directed learning modules.

Goal of the course
The goal of this course is to increase knowledge and skills for managing difficult and complex cases. State-of-the-art techniques and approaches, best practices for treatment, and the management of complications will all be addressed at a high level.

Target participants
Participants must have completed the AO Trauma Basic Principles and Advanced Principles courses. They must be actively involved in orthopedic trauma management and preferably have at least five years of experience postresidency in trauma surgery. Participants must be willing to share their ideas and be able to communicate well in English.

Learning objectives
Upon completion of this course, participants will be able to:

Proximal femur
- Manage complex fractures of the proximal femur based on patient age, fracture location and type, and identify and treat common complications
- Apply current evidence to the management of proximal femoral fractures using the latest principles and techniques of internal fixation
- Reduce displaced femoral neck fracture utilizing closed and open reduction techniques and discuss the rational for when to apply each

Pilon
- Identify soft-tissue injuries associated with the pilon, correctly perform temporary fixation, and determine correct surgical timing
- Assess and apply current evidence when managing complex fractures of the pilon using the latest principles and techniques of internal fixation to avoid complications and discuss salvage options
- Perform pilon surgical approaches

Tibial plateau
- Identify soft-tissue injuries associated with tibial plateau fractures, apply temporary fixation, and determine correct surgical timing
- Assess and apply current evidence when managing complex fractures of the tibial plateau using the latest principles and techniques of internal fixation to avoid complications and discuss salvage options
- Perform surgical approaches for the proximal tibia
## International Faculty

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution/Location</th>
<th>City</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazem Azeem Desuki</td>
<td>Kasr El-Ainy, Cairo University Hospital</td>
<td>Giza</td>
<td>Egypt</td>
</tr>
<tr>
<td>Qiyong Cao</td>
<td>Beijing Jishuitan Hospital</td>
<td>Beijing</td>
<td>China</td>
</tr>
<tr>
<td>Mandeep Dhillon</td>
<td>Post Graduate Institute of Medical Education &amp; Research</td>
<td>Chandigarh</td>
<td>India</td>
</tr>
<tr>
<td>Marcos Giordano</td>
<td>Brazilian Air Force</td>
<td>Rio de Janeiro</td>
<td>Brazil</td>
</tr>
<tr>
<td>El-Zaher Hassan Ahmed</td>
<td>Ain Shams University Hospital</td>
<td>Cairo</td>
<td>Egypt</td>
</tr>
<tr>
<td>Sheriff Khaled</td>
<td>Cairo University</td>
<td>Cairo</td>
<td>Egypt</td>
</tr>
<tr>
<td>Cong Feng Luo</td>
<td>Shanghai Sixth People’s Hospital</td>
<td>Shanghai</td>
<td>China</td>
</tr>
<tr>
<td>Samir Mehta</td>
<td>University of Pennsylvania Health System</td>
<td>Philadelphia</td>
<td>USA</td>
</tr>
<tr>
<td>Sean Nork</td>
<td>Harborview Medical Center</td>
<td>Seattle</td>
<td>USA</td>
</tr>
<tr>
<td>Carlos Olarte Salazar</td>
<td>Hospital de San José - Hospital Infantil de San Jose</td>
<td>Bogotá</td>
<td>Colombia</td>
</tr>
<tr>
<td>Hobie Summers</td>
<td>Loyola University Medical Center</td>
<td>Maywood</td>
<td>USA</td>
</tr>
<tr>
<td>Muhammad Wajid</td>
<td>Shalamar Medical &amp; Dental College</td>
<td>Lahore</td>
<td>Pakistan</td>
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<tr>
<td>Brad Yoo</td>
<td>Yale University</td>
<td>New Haven</td>
<td>USA</td>
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## Regional Faculty

<table>
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<tr>
<th>Name</th>
<th>Institution/Location</th>
<th>City</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philipp Bula</td>
<td>Klinikum Gütersloh</td>
<td>Gütersloh</td>
<td>Germany</td>
</tr>
<tr>
<td>Karl-Heinz Frosch</td>
<td>University Medical Center Hamburg-Eppendorf</td>
<td>Hamburg</td>
<td>Germany</td>
</tr>
<tr>
<td>Harm Hoekstra</td>
<td>University Hospitals Leuven</td>
<td>Leuven</td>
<td>Belgium</td>
</tr>
<tr>
<td>Brendan O’Daly</td>
<td>Tallaght Hospital</td>
<td>Dublin</td>
<td>Ireland</td>
</tr>
<tr>
<td>Mario Perl</td>
<td>Friedrich-Alexander University Erlangen-Nürnberg</td>
<td>Erlangen</td>
<td>Germany</td>
</tr>
</tbody>
</table>
Self-directed learning module
External fixation

Learning objectives

Thursday, December 5, 2019

External fixation for bone defects and deformity correction
Upon completion of this module, participants will be able to:

- Describe the principles of external fixation, distraction osteogenesis, and long bone deformity
- Analyze clinical, radiographic findings and the center of rotation of angulation (CORA)
- Describe the techniques using conventional circular frame and 6-axis hexapod systems to correct bone defects and deformity
- Apply the principles of management of bone defects and deformity correction with external fixation
- Perform long bone deformity correction using circular external fixation with hinges, the 6-axis hexapod system, and its software application
- Recognize safe techniques, implementation of post-op care program, and manage complications

Chair-person
Vajara Phiphobmongkol
Bangkok Hospital, Bangkok, Thailand

Co-chair-person
Andrey Volna
Ilyinsky Hospital, Ilyinskoe, Russia

International faculty

Sergio Iriarte Vincenti
Clinica del Sur | La Paz | Bolivia

Mahmoud Mahran
Medical School-Ain Shams University | Cairo | Egypt

Stephen Quinnan
University of Miami | Miami | USA

Spence Reid
Pennsylvania State University College of Medicine, Milton S. Hershey Medical Center | Hershey | USA

Regional faculty

Dankward Höntzsch
Private Practice | Tübingen | Germany

Leonid Solomin
Vreden Russian Research Institute of Traumatology | St.Petersburg | Russia

National faculty

Theddy Slongo
Inselspital | Bern | Switzerland
Self-directed learning module
Intramedullary nailing

Learning objectives

Thursday, December 5, 2019

Complications related to nailing
Upon completion of this module, participants will be able to:
• Define and recognize delayed union, nonunion, malunion, and infection and carry out an appropriate diagnostic work-up
• Develop a treatment plan based on the cause
• Explain the treatment options and indications for delayed union and nonunion
• Explain the treatment options and indications for nailing in malunion
• Explain the treatment options and indications for infection and broken nails

Chair-person

Ernest Kwek
Tan Tock Seng Hospital, Singapore, Singapore

Co-chair-person

Christopher Finkemeier
Orthopedic Trauma Surgeons of North California, Carmichael, USA

International faculty

Hayder Abdul Hadi
Rashid Hospital | Dubai | UAE

Paulo Barbosa
Hospital Quinta D’Or | Rio de Janeiro | Brazil

Mark Lee
University of California, Davis | Sacramento | USA

Jong-Keon Oh
Korea University Guro Hospital | Seoul | South Korea

Chang-Wug Oh
Kyungpook National University Hospital | Daegu | South Korea

Regional faculty

Martin Hessmann
Academic Teaching Hospital Fulda | Fulda | Germany

Christian Kammerlander
Ludwig Maximilian University Munich | Munich | Germany
Self-directed learning module
Pediatric fractures

Learning objectives

Thursday, December 5, 2019

Pediatric fractures of the lower extremity
Upon completion of this module, participants will be better able to:

- Recognize how bone characteristics and fracture classification are different in children and adolescents compared to adults, and describe how this affects bone healing and fracture management
- Evaluate a range of nonsurgical and surgical options for the treatment of common pediatric fractures of the lower extremity
- Manage pediatric lower limb fractures according to biological and mechanical principles and apply appropriate techniques and technologies
- Apply treatment strategies for pediatric fractures of the lower extremity based on available evidence and discuss areas of controversy
- Provide strategies for the prevention and management of complications associated with pediatric fractures
- Demonstrate the ability to perform proper fixation of common lower limb fractures in children and using the Elastic Stable Intramedullary Nailing (ESIN) in femoral fractures

Chair-person

Mamoun Kremli
Dallah Hospital, Riyadh, Saudi Arabia

Co-chair-person

Matej Kastelec
University Medical Centre Ljubljana, Ljubljana, Slovenia

International faculty

Daniel Green
Hospital for Special Surgery | New York | USA

James Hui
National University Hospital Singapore | Singapore | Singapore

Talal Ibrahim
Sidra Medical and Research Center | Doha | Qatar

Unni Narayanan
The Hospital for Sick Children | Toronto | Canada

Jamil Soni
Pontifical Catholic University Paraná | Curitiba | Brazil

Regional faculty

Arnold Besselaar
Maxima Medical Centre | Veldhoven | The Netherlands

Fergal Monsell
Bristol Childrens Hospital | Bristol | United Kingdom
Self-directed learning module
Polytrauma and soft tissue

Learning objectives

Thursday, December 5, 2019

Soft tissue
Upon completion of this module, participants will be able to:
• Demonstrate strategies for assessing and treating open fractures and mangled limbs
• Use soft-tissue techniques to create local and rotational flaps to deal with soft-tissue defects
• Understand surgical techniques and rehabilitation to ensure amputations are successful

Chair-person

Richard Buckley
University of Calgary, Calgary, Canada

Co-chair-person

Waleed Abdulwahid Alsaadan
Medical City Teaching Complex, Baghdad, Iraq

International faculty

Khalid Alawadi
Rashid Hospital | Dubai | UAE
Jay Bridgeman
Missouri Orthopedic Institute | Columbia | USA
Tito Rocha
Instituto Nacional de Ortopedia e Traumatologia | Rio de Janeiro | Brazil

Regional faculty

Jasmin Gaab
Bundeswehr Krankenhaus Berlin | Berlin | Germany
John McMaster
John Radcliffe Hospital | Oxford | United Kingdom
Inger Schipper
Leiden University Medical Center | Leiden | The Netherlands
Christian Willy
Bundeswehr Krankenhaus Berlin | Berlin | Germany
Sunday
December 1, 2019

15:00 Opening of the congress center
15:00–17:00 Registration of participants
17:00–19:00 Opening Ceremony and Founders’ Reception

Monday
December 2, 2019

Location: Aspen 1

08:00–08:05 Welcome and introduction to the course and the module
08:05–08:35 Interactive case panel discussion 1
  Femoral neck fractures
08:35–10:10 Live femoral neck reduction of a life-like fractured specimen
  with displaced femoral neck fractures
10:10–10:30 Coffee break
10:30–11:00 Interactive case panel discussion 2
  Failed intertrochanteric fractures
11:00–11:20 Evidence-based management of femoral neck fractures
11:20–11:35 Intertrochanteric fracture reduction techniques
11:35–12:50 Lunch break
12:50–13:50 Discussion group 1
  Intertrochanteric fractures
  Group 1 – Landwasser 14
  Group 2 – Landwasser 16
  Group 3 – Landwasser 18
  Group 4 – Landwasser 20
  Group 5 – Landwasser 22
  Group 6 – Landwasser 24
  Group 7 – Aspen 1
13:50–13:55 Location change to lecture room
13:55–14:25 Interactive case panel discussion 3
  Pitfalls and failures of subtrochanteric fractures
14:25–14:40 Subtrochanteric fractures—techniques to avoid failure
14:40–14:45 Location change to discussion groups
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Facilitators</th>
</tr>
</thead>
</table>
| 14:45–15:45 | **Discussion group 2**  
Subtrochanteric femoral fractures  
Group 1 – Landwasser 14  
Group 2 – Landwasser 16  
Group 3 – Landwasser 18  
Group 4 – Landwasser 20  
Group 5 – Landwasser 22  
Group 6 – Landwasser 24  
Group 7 – Aspen 1 | M Dhillon, B Yoo  
C Olarte Salazar, H Hoekstra  
M Wajid, B O’Daly  
M Perl, H Summers  
Q Cao, S Mehta  
S Nork, P Bula  
CF Luo, M Giordano |
| 15:45–15:50 | Location change to lecture room                                          |                                    |
| 15:50–16:10 | Salvage of failed subtrochanteric femoral fractures                       | E Carroll                           |
| 16:10–16:25 | Summary and take-home messages                                           | C Olarte Salazar                   |
| 16:25–16:45 | Coffee break                                                             |                                    |

**Module 2**  
**Moderator: S Mehta**  
Pilon fractures

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<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Facilitators</th>
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</thead>
<tbody>
<tr>
<td>16:45–16:50</td>
<td>Introduction to the module</td>
<td>S Mehta</td>
</tr>
</tbody>
</table>
| 16:50–17:20 | Interactive case panel discussion 1  
Initial management, external fixation—when, how, and what else? | All faculty  
H Summers |
| 17:20–17:35 | Understanding the fracture and planning surgical strategy               | S Nork                             |
| 17:35–17:50 | Obtaining and maintaining reduction                                      | M Perl                             |
| 17:50–18:00 | Summary, evaluation, and take-home messages                              | S Mehta                            |
## Tuesday
December 3, 2019

**Location: Aspen 1**

**Module 2**
**Moderator: S Mehta**
**Pilon fractures (continuation)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter/Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00–08:05</td>
<td>Introduction to today's module</td>
<td>F Bonnaire, E Carroll</td>
</tr>
<tr>
<td>08:05–08:20</td>
<td>Fixation methods and implant selection</td>
<td>S Mehta</td>
</tr>
<tr>
<td>08:20–08:35</td>
<td>Surgical anatomy and approaches</td>
<td>M Wajid</td>
</tr>
<tr>
<td>08:35–08:40</td>
<td>Location change to discussion groups</td>
<td></td>
</tr>
<tr>
<td>08:40–09:30</td>
<td>Discussion group 1 Management of type B fractures</td>
<td>S Khaled, M Perl, M Giordano, EZ Hassan Ahmed, H Azeem Desuki, H Hoekstra, C Olarte Salazar, B O’Daly, KH Frosch, M Dhillon, M Wajid, S Nork, CF Luo, P Bula</td>
</tr>
<tr>
<td>09:30–09:45</td>
<td>Coffee break</td>
<td></td>
</tr>
<tr>
<td>09:45–10:30</td>
<td>Discussion group 2 Complex type C fractures</td>
<td>C Olarte Salazar, P Bula, KH Frosch, S Mehta, Q Cao, H Summers, CF Luo, S Khaled, M Giordano, M Wajid, H Azeem Desuki, M Perl, EZ Hassan Ahmed, H Hoekstra</td>
</tr>
<tr>
<td>10:30–10:35</td>
<td>Location change to lecture room</td>
<td></td>
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<tr>
<td>10:35–10:50</td>
<td>Evidence-based management of pilon fractures</td>
<td>S Khaled</td>
</tr>
<tr>
<td>10:50–11:05</td>
<td>Pitfalls and complications</td>
<td>H Summers</td>
</tr>
<tr>
<td>11:05–11:20</td>
<td>Salvage operations</td>
<td>B O’Daly</td>
</tr>
<tr>
<td>11:20–11:30</td>
<td>Summary and take-home messages</td>
<td>S Mehta</td>
</tr>
<tr>
<td>Time</td>
<td>Activity</td>
<td>Location</td>
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<tr>
<td>11:30-11:45</td>
<td>Transfer to the hospital&lt;br&gt;Meeting point 11:30 at congress center main entrance</td>
<td>Hospital (laboratory and lecture room)</td>
</tr>
<tr>
<td>11:45-11:50</td>
<td>Preparation for anatomical specimen laboratory</td>
<td>Location: Hospital (laboratory and lecture room)</td>
</tr>
<tr>
<td>11:50-15:00</td>
<td><strong>Anatomical specimen laboratory—pilon approaches</strong>&lt;br&gt;• Anteromedial approach&lt;br&gt;• Anterolateral approach&lt;br&gt;• Posteromedial approach&lt;br&gt;• Posterolateral approach&lt;br&gt;• Distractor</td>
<td>Location: Hospital (laboratory and lecture room)</td>
</tr>
<tr>
<td>15:00-16:00</td>
<td>Lunch break</td>
<td>Location: congress center</td>
</tr>
<tr>
<td>16:00-18:00</td>
<td><strong>Plenary case discussion—femoral neck and subtrochanteric fractures</strong></td>
<td>Location: congress center</td>
</tr>
<tr>
<td>18:00-18:20</td>
<td>Transfer to the congress center&lt;br&gt;Meeting point 18:00 at Hospital main entrance</td>
<td>Location: congress center</td>
</tr>
</tbody>
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**Location: congress center**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
<th>Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:30-13:10</td>
<td>Lunch break</td>
<td>Location: congress center</td>
<td>Q Cao</td>
</tr>
<tr>
<td>13:10-13:30</td>
<td>Transfer to the hospital&lt;br&gt;Meeting point 13:10 at congress center main entrance</td>
<td>Location: Hospital (laboratory and lecture room)</td>
<td>All faculty, B Yoo, S Mehta, H Azeem Desuki, S Khaled, M Perl</td>
</tr>
</tbody>
</table>

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**Location: Hospital (laboratory and lecture room)**

<table>
<thead>
<tr>
<th>Time</th>
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</tr>
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<tr>
<td>13:30-15:30</td>
<td><strong>Plenary case discussion—femoral neck and subtrochanteric fractures</strong></td>
<td>Location: Hospital (laboratory and lecture room)</td>
<td>B Yoo</td>
</tr>
<tr>
<td>15:30-15:45</td>
<td>Coffee break</td>
<td>Location: Hospital (laboratory and lecture room)</td>
<td>All faculty, B Yoo, S Mehta, H Azeem Desuki, S Khaled, M Perl</td>
</tr>
<tr>
<td>15:45-15:50</td>
<td>Preparation for anatomical specimen laboratory</td>
<td>Location: Hospital (laboratory and lecture room)</td>
<td>All faculty, B Yoo, S Mehta, H Azeem Desuki, S Khaled, M Perl</td>
</tr>
<tr>
<td>15:50-19:00</td>
<td><strong>Anatomical specimen laboratory—pilon approaches</strong>&lt;br&gt;• Anteromedial approach&lt;br&gt;• Anterolateral approach&lt;br&gt;• Posteromedial approach&lt;br&gt;• Posterolateral approach&lt;br&gt;• Distractor</td>
<td>Location: Hospital (laboratory and lecture room)</td>
<td>All faculty, B Yoo, S Mehta, H Azeem Desuki, S Khaled, M Perl</td>
</tr>
<tr>
<td>19:00-19:20</td>
<td>Transfer to the congress center&lt;br&gt;Meeting point 19:00 at Hospital main entrance</td>
<td>Location: congress center</td>
<td>Q Cao</td>
</tr>
</tbody>
</table>

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17:45-20:30  **AO Davos Courses night**
**Wednesday**

**December 4, 2019**

**Location: Aspen 1 (lectures) Foyer C2 (practicals)**

**Module 3**
**Moderator: H Azeem Desuki**
**Tibial plateau fractures**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Facilitator(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00–08:05</td>
<td>Introduction to today's module</td>
<td>F Bonnaire</td>
</tr>
<tr>
<td>08:05–08:20</td>
<td>Initial clinical and radiological assessment of tibial plateau fractures and initial temporization</td>
<td>CF Luo</td>
</tr>
<tr>
<td>08:20–08:35</td>
<td>Anatomy and surgical approaches</td>
<td>M Dhillon</td>
</tr>
</tbody>
</table>
| 08:35–09:05 | **Interactive case panel discussion 1**
  Complex fracture patterns, including posterior injury | All faculty, KH Frosch                                                     |
| 09:05–09:20 | Understanding the fracture pattern and treatment strategy               | S Nork                                                                        |
| 09:20–09:35 | Implant selection and why                                                | M Giordano                                                                    |
| 09:35–10:00 | Coffee break                                                            |                                                                               |
| 10:00–11:00 | **Discussion group 1**
  Complex Schatzker IV, V, VI fractures | Q Cao, B O'Daly, S Mehta, H Azeem Desuki, S Khaled, KH Frosch, M Perl, M Dhillon, M Giordano, B Yoo, EZ Hassan Ahmed, H Summers |
| 11:00–11:05 | Location change to lecture room                                         |                                                                               |
| 11:05–11:30 | **Interactive case panel discussion 2**
  Complications | All faculty, Q Cao                                                        |
| 11:35–12:35 | Location change to discussion groups                                    |                                                                               |
| 11:35–12:35 | **Discussion group 2**
  Complications | H Hoekstra, S Nork, M Wajid, B Yoo, P Buia, H Azeem Desuki, M Dhillon, C Olarte Salazar |
| 12:35–14:00 | Lunch break                                                             |                                                                               |
| 14:00–14:15 | Common pitfalls and complications                                       | CF Luo                                                                        |
| 14:15–14:30 | Salvage of failed tibial plateau fractures                              | KH Frosch                                                                     |
| 14:30–14:40 | Summary and evaluation                                                  | H Azeem Desuki                                                                |
| 14:40–15:00 | Coffee break                                                            |                                                                               |
| 15:00–18:10 | **Practical exercise 1**
  Intertrochanteric valgus osteotomy | All faculty, H Summers, S Nork                                             |
| 18:10–18:15 | Summary, evaluation, and take-home messages                             | H Azeem Desuki                                                                |
## External fixation for bone defects and deformity correction

**Location:** Aspen 1 (lectures) Foyer C2 (practicals)

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00–08:10</td>
<td>Welcome and introduction to today’s module</td>
<td>V. Phiphobmongkol, A. Volna</td>
</tr>
</tbody>
</table>

### Module 1

**Moderator:** M. Mahrani

**General principles**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:10–08:25</td>
<td>External fixation options for bone defects and deformity</td>
<td>S. Quinnan</td>
</tr>
<tr>
<td>08:25–08:40</td>
<td>Circular frame construction—equipment and terminology</td>
<td>L. Solomin</td>
</tr>
</tbody>
</table>

### Module 2

**Moderator:** S. Iriarte Vincenti

**Bone defects**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:40–08:55</td>
<td>Options for long-bone defects—tips and tricks for bone transport</td>
<td>S. Quinnan</td>
</tr>
<tr>
<td>08:55–09:10</td>
<td>Modulation of bone transport—the problem of bad regeneration</td>
<td>A. Volna</td>
</tr>
<tr>
<td>09:10–09:20</td>
<td>Case-based lecture—transport/lengthening then intramedullary nailing</td>
<td>S. Reid</td>
</tr>
<tr>
<td>09:20–09:30</td>
<td>Case-based lecture—transport over intramedullary nail or along a plate</td>
<td>V. Phiphobmongkol</td>
</tr>
<tr>
<td>09:30–09:35</td>
<td>Location change to discussion groups</td>
<td></td>
</tr>
<tr>
<td>09:35–10:40</td>
<td><strong>Discussion group 1</strong>&lt;br&gt;Long bone defect management&lt;br&gt;Group 1 – Landwasser 12&lt;br&gt;Group 2 – Landwasser 14&lt;br&gt;Group 3 – Landwasser 16&lt;br&gt;Group 4 – Landwasser 18&lt;br&gt;Group 5 – Aspen 1</td>
<td>All faculty</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:40–11:00</td>
<td>Coffee break</td>
<td></td>
</tr>
</tbody>
</table>

### Module 3

**Moderator:** S. Reid

**Long bone deformity**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00–11:15</td>
<td>Radiographic analysis of deformity</td>
<td>L. Solomin</td>
</tr>
<tr>
<td>11:15–11:30</td>
<td>Principles of deformity correction</td>
<td>T. Slongo</td>
</tr>
<tr>
<td>11:30–11:35</td>
<td>Location change to practical exercise room</td>
<td>T. Slongo</td>
</tr>
<tr>
<td>11:35–13:00</td>
<td><strong>Practical exercise 1</strong>&lt;br&gt;Circular frame construction for deformity correction</td>
<td>All faculty</td>
</tr>
<tr>
<td>13:00–14:00</td>
<td>Lunch break</td>
<td></td>
</tr>
</tbody>
</table>

### Module 4

**Moderator:** A. Volna

**Long bone deformity**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00–14:15</td>
<td>Analysis of oblique plane deformity and placement of hinges</td>
<td>S. Reid</td>
</tr>
<tr>
<td>14:15–14:30</td>
<td>Principles of deformity correction using 6-axis orthopedic hexapods</td>
<td>L. Solomin</td>
</tr>
<tr>
<td>14:30–14:45</td>
<td>Case-based lecture—treatment of complex long bone deformity with orthopedic hexapod—new technology</td>
<td>T. Slongo</td>
</tr>
<tr>
<td>14:45–14:50</td>
<td>Location change to discussion groups</td>
<td></td>
</tr>
<tr>
<td>14:50–15:50</td>
<td><strong>Discussion group 2</strong>&lt;br&gt;Long bone deformity management&lt;br&gt;Group 1 – Landwasser 12&lt;br&gt;Group 2 – Landwasser 14&lt;br&gt;Group 3 – Landwasser 16&lt;br&gt;Group 4 – Landwasser 18&lt;br&gt;Group 5 – Aspen 1</td>
<td>All faculty</td>
</tr>
<tr>
<td>15:50–16:10</td>
<td>Coffee break</td>
<td></td>
</tr>
<tr>
<td>16:10–16:50</td>
<td><strong>Practical exercise 2</strong>&lt;br&gt;Hexapod system for complex deformity correction</td>
<td>All faculty</td>
</tr>
<tr>
<td>16:50–17:50</td>
<td>Location change to lecture room</td>
<td></td>
</tr>
<tr>
<td>17:55–18:00</td>
<td>Question and answer session</td>
<td>All faculty</td>
</tr>
<tr>
<td>18:00–18:05</td>
<td>Summary, evaluation, and take-home messages</td>
<td>V. Phiphobmongkol, A. Volna</td>
</tr>
</tbody>
</table>
Complications related to nailing

Location: Flüela (lectures) Studio (practicals)

08:00–08:05 Welcome and introduction to today’s module
C Finkemeier

Module 1
Moderator: JK Oh
Complications related to nailing techniques

08:05–08:25 Case-based lecture—ineffective entry point and its consequences for the femur
JK Oh

08:25–08:40 Fractures of the femoral neck while nailing diaphyseal fractures—what now?
C Finkemeier

08:40–08:55 Implant loosening and loss of fixation in proximal femoral fractures—prevention and management strategies
C Kammerlander

Module 2
Moderator: H Abdul Hadi
Nonunion after nailing

08:55–09:10 Disturbances of fracture union after nailing—causes and management
CW Oh

09:10–09:25 Broken nails—how to deal with them?
H Abdul Hadi

09:25–09:35 Question and answer session
All faculty

09:35–09:50 Coffee break

09:50–11:10 Practical exercise 1 Femoral reconstruction nailing (FRN)
All faculty P Barbosa, M Hessmann

11:10–11:15 Location change to lecture room

Module 3
Moderator: CW Oh
Malunion after nailing

11:15–11:30 Malunions of the lower limb after nailing—diagnostic work-up and deformity analysis
JK Oh

11:30–11:45 Angular and complex malunions of the lower limb—nailing strategies and techniques
M Hessmann

11:45–12:00 Correcting length and rotational deformities with nails
CW Oh

12:00–12:10 Question and answer session
All faculty

12:10–13:30 Lunch break

Module 4
Moderator: P Barbosa
Infection after nailing

13:30–13:45 Challenges of the surgical treatment of infections after nailing
CW Oh

13:45–14:00 Extended indications and tips for reaming
P Barbosa

14:00–14:05 Location change to practical exercise room

14:05–15:25 Practical exercise 2 Suprapatellar tibial nailing
All faculty M Lee, JK Oh

15:25–15:40 Coffee break

15:40–17:00 Discussion group 1 Complications related to nailing
Group 1 – Landwasser 4
Group 2 – Landwasser 6
Group 3 – Landwasser 8
Group 4 – Landwasser 10
Group 5 – Flüela

17:00–17:05 Location change to lecture room

17:05–17:20 What is new about implants for infection prevention and treatment?
C Kammerlander

17:20–17:30 Summary, evaluation, and take-home messages
E Kwek
# Pediatric fractures of the lower extremity

**Location:** Seehorn (lectures) Ducan/Altein (practicals)

## Module 1
**Moderator:** M Kastelec  
**Fundamentals of managing pediatric fractures**

Upon completion of this module, participants will be able to:
- Recognize the relevance of age in relation to injury pattern
- Describe the optimum treatment of pediatric fractures and how it is different from fractures in adults
- Explain the relationship of age to modeling capacity and define acceptable limits of malunion
- Describe the impact of growth disturbance in the management of pediatric fractures

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Description</th>
<th>Facilitator(s)</th>
</tr>
</thead>
</table>
| 08:10–08:20 | Plenary session  
Evaluation of warm-up cases to promote understanding of modeling capacity | M Kastelec                      |
| 08:20–08:35 | The influence of growth and modeling in pediatric fractures                          | A Besselaar                     |
| 08:35–08:50 | Choice of treatment of children’s fractures—surgical or nonsurgical?                | U Narayanan                     |
| 08:50–09:00 | Plenary session  
Reevaluation of warm-up cases to promote understanding of modeling capacity      | M Kastelec                      |
| 09:00–09:20 | Coffee break                                                                       |                                |
| 09:20–09:35 | Principles of elastic nails—hints and pitfalls                                      | T Ibrahim                       |
| 09:35–10:25 | Round table discussion 1  
Clinical decision making  
Table 1–7                                     | All faculty                     |
| 10:25–10:35 | Summary of discussions:  
Key learning points presented by tables 1–7                                        | M Kastelec                      |

## Module 2
**Moderator:** J Hui  
**Lower extremity—femoral fractures**

Upon completion of this module, participants will be able to:
- Evaluate the range of treatment options for epiphyseal, metaphyseal and diaphyseal femoral fractures in children
- Define indications for and principles of femoral traction
- Perform the technique for elastic nailing of femoral fractures and discuss limitations
- Compare and contrast treatment options of femoral fractures in children of different ages (casting, traction, plating, external fixation, and intramedullary devices)

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Description</th>
<th>Facilitator(s)</th>
</tr>
</thead>
</table>
| 10:35–10:45 | Plenary session  
Evaluation of warm-up cases to demonstrate principles in management of common femoral fractures | J Hui                           |

## Module 3
**Moderator:** J Soni  
**Lower limb—tibial, fibular, and ankle injuries**

Upon completion of this module, participants will be able to:
- Recognize the range of treatment options of tibial diaphyseal fractures in children
- Describe the presentation of compartment syndrome
- Describe the pattern of Tillaux and triplane fractures
- Apply principles of fracture reduction and fixation that maintain the function of the phys

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Description</th>
<th>Facilitator(s)</th>
</tr>
</thead>
</table>
| 15:15–15:25 | Plenary session  
Evaluation of warm-up cases—common tibial fractures and important ankle injuries | J Soni                          |
| 15:25–15:50 | Coffee break                                                                       |                                |
| 15:50–16:40 | Round table discussion 3  
Tibial diaphysis and distal tibial fractures  
Table 1–7                              | All faculty                     |
| 16:40–16:50 | Plenary session  
Reevaluation of warm-up cases—common tibial fractures and important ankle injuries | J Soni                          |
| 16:50–16:55 | Location change to practical exercise room                                         |                                |
| 16:55–18:05 | Practical exercise 2  
Tillaux and triplane fractures                                                      | D Green, T Ibrahim              |
| 18:05–18:10 | Summary, evaluation, and take-home messages                                        | M Kremli, M Kastelec           |
## Thursday
**December 5, 2019**

### Soft tissue

**Location:** Sanada 1 (lectures) Sanada 2 (practicals)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Facilitators</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00-08:10</td>
<td>Welcome and introduction to the course and today’s module</td>
<td>R Buckley, W Abdulwahid</td>
</tr>
<tr>
<td>08:10-08:15</td>
<td>Location change to discussion groups</td>
<td></td>
</tr>
<tr>
<td>08:15-10:00</td>
<td><strong>Discussion group 1</strong> Soft tissue</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 1 – Landwasser 2</td>
<td>J Gaab, J McMaster</td>
</tr>
<tr>
<td></td>
<td>Group 2 – Landwasser 4</td>
<td>J Bridgeman, T Rocha</td>
</tr>
<tr>
<td></td>
<td>Group 3 – Landwasser 6</td>
<td>W Abdulwahid, I Shipper</td>
</tr>
<tr>
<td></td>
<td>Group 4 – Landwasser 25</td>
<td>K Alawadi, C Willy</td>
</tr>
<tr>
<td></td>
<td>Group 5 – Sanada 1</td>
<td>R Buckley</td>
</tr>
<tr>
<td>10:00-10:20</td>
<td>Coffee break</td>
<td></td>
</tr>
<tr>
<td>10:20-11:30</td>
<td>Principles of soft-tissue management and stabilization of the wound</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Reconstructive ladder—timing of definitive coverage—anatomical basis for flaps</td>
<td>J Gaab</td>
</tr>
<tr>
<td></td>
<td>• Negative pressure wound therapy (NPWT)</td>
<td>J Bridgeman</td>
</tr>
<tr>
<td></td>
<td>• Skin grafting</td>
<td>K Alawadi</td>
</tr>
<tr>
<td></td>
<td>• Extremity flap principles</td>
<td>J Gaab</td>
</tr>
<tr>
<td></td>
<td>• Detection of infection—what tools do we have?</td>
<td>C Willy</td>
</tr>
<tr>
<td></td>
<td>• Mangled extremities and decision making</td>
<td>R Buckley</td>
</tr>
<tr>
<td>11:30-11:55</td>
<td>Interactive case-based discussion</td>
<td>J Bridgeman</td>
</tr>
<tr>
<td>11:55-12:00</td>
<td>Summary of key points—questions</td>
<td>W Abdulwahid</td>
</tr>
<tr>
<td>12:00-13:30</td>
<td>Lunch break</td>
<td></td>
</tr>
</tbody>
</table>

13:30-15:10 **Practical exercise 1**

**Soft-tissue care**
- Group 1—Anatomy—understanding the possible flaps
- Group 2—Negative pressure wound therapy—how to do a good VAC
- Group 3—Vascular shunts
- Group 4—Fasciotomies
- Group 5—Z-plasties

(rotating stations 20 min each)

15:10-15:30 Coffee break

15:30-16:40 **Practical exercise 2**

**Soft-tissue planning**
- Irrigation and debridement
- Timing of procedures
- Soft-tissue preparation
- Bone stabilization
- Definitive soft-tissue coverage
- Aftercare with rehabilitation of the limb

16:40-17:10 **Case discussion 2**

Summary cases of the day

17:10-17:30 **Summary, evaluation, and take-home messages**

**All faculty**

W Abdulwahid
### Friday
December 6, 2019

**Location: Hospital (laboratory and lecture room)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>07:00–07:15</td>
<td>Transfer to the hospital</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Meeting point 07:00 at congress center main entrance</td>
<td></td>
</tr>
<tr>
<td>07:15–07:20</td>
<td>Preparation for anatomical specimen laboratory</td>
<td></td>
</tr>
<tr>
<td>07:20–10:40</td>
<td><strong>Anatomical specimen laboratory—tibial plateau approaches</strong></td>
<td>All faculty</td>
</tr>
<tr>
<td></td>
<td>• Anterolateral and modified anterolateral approach</td>
<td>CF Luo</td>
</tr>
<tr>
<td></td>
<td>• Direct medial approach</td>
<td>EZ Hassan Ahmed</td>
</tr>
<tr>
<td></td>
<td>• Posterior approach</td>
<td>S Nork</td>
</tr>
<tr>
<td></td>
<td>• Modified posterolateral approach</td>
<td>KH Frosch</td>
</tr>
<tr>
<td>10:40–11:00</td>
<td>Sandwich break</td>
<td></td>
</tr>
<tr>
<td>11:00–13:00</td>
<td><strong>Plenary case discussion—pilon and tibial plateau fractures</strong></td>
<td>S Nork</td>
</tr>
<tr>
<td>13:00–13:20</td>
<td>Transfer to the congress center</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Meeting point 13:00 at Hospital main entrance</td>
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</tr>
</tbody>
</table>

**GREEN TEAM**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:40–09:00</td>
<td>Transfer to the hospital</td>
<td>H Hoekstra</td>
</tr>
<tr>
<td></td>
<td>Meeting point 08:40 at congress center main entrance</td>
<td></td>
</tr>
<tr>
<td>09:00–10:50</td>
<td><strong>Plenary case discussion—pilon and tibial plateau fractures</strong></td>
<td></td>
</tr>
<tr>
<td>10:50–11:30</td>
<td>Sandwich break</td>
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<td>Preparation for anatomical specimen laboratory</td>
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<td>All faculty</td>
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<tr>
<td></td>
<td>• Anterolateral and modified anterolateral approach</td>
<td>H Hoekstra</td>
</tr>
<tr>
<td></td>
<td>• Direct medial approach</td>
<td>KH Frosch</td>
</tr>
<tr>
<td></td>
<td>• Posterior approach</td>
<td>H Summers</td>
</tr>
<tr>
<td></td>
<td>• Modified posterolateral approach</td>
<td>P Bula</td>
</tr>
<tr>
<td>15:00–15:20</td>
<td>Transfer to the congress center</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Meeting point 15:00 at Hospital main entrance</td>
<td></td>
</tr>
</tbody>
</table>
Event organization

AO Trauma Education
Bettina Bolliger
Clavadelstrasse 8
7270 Davos
Switzerland
Phone +41 81 414 27 22
Fax +41 81 414 22 84
E-mail bbolliger@aotrauma.org

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

Event venue and opening times

Congress Centre 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 through Thursday 07:30-19:00
Friday 07:30-16:00

The AO experience
Sunday 14:00-17:00
Monday through Thursday 09:00-18:30 (Tuesday –20:30)
Friday 09:00-16:00

Industry exhibition
Sunday 14:00-17:00
Monday through Thursday 09:00-18:30
Friday 09:00-16:00
Exhibitions

The AO experience
The AO experience offers you the chance to view the latest publications in the AO library, see what benefits you are eligible for in the community and membership area and take a selfie with your new colleagues. Explore AO teaching and learning resources and find out about our new digital gateway myAO at the digital zone’s interactive stations. Visit the innovation in research and development zone, to take part in hands on demos featuring some of our newest innovations, and join the AO Technical Commission’s popular Meet the Experts sessions. Don’t forget to purchase any mementos at our store in the main entrance. Experience the AO spirit, walk the timeline of AO history, and mingle with other participants. AO staff will be on-hand to help you get the most out of this experience.

Exhibition partners
Visit the exhibitions of our trusted partner DePuy Synthes, Siemens, and other exhibitors: SPI, Invibio, Precision OS, Synoste, Rimasys, AO Alliance.

Media exhibitors
Lehmanns Media is in the welcome area.

Sponsors

We thank our trusted partner DePuy Synthes, and Siemens, for contributing in-kind support (materials 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

The business center facilities in the Congress Centre Davos are accessible to everyone.

Services
- Internet and e-mail access
- Printer access
- www.aodavoscourses.org

AO Davos Courses website offering course-related information

Opening hours
The business center is open 30 minutes before the first course of the day starts until 30 minutes after the end of the last course of the day.

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 (e.g., firewall, virtual private network [VPN] connection, virus scanner).

AO cannot be held responsible for any data loss or theft.

For further information or support, please contact:
Phone +41 81 414 28 70
E-mail it.helpdesk@aofoundation.org

Wireless network

How to connect to the AO wireless local area network (LAN)

1. Open the Wireless Network Connection window

2. Choose the AO Business network as shown in the image below and click on the Connect button

3. Our AO Business wireless network requires a wireless protected access (WPA) network key:
   Network key: aowireless

4. Then click on the OK button
Event information

Event fee
AO Trauma Masters Course—Current Concepts—Lower Extremity I: CHF 4,350
The event fee covers the conference bag, documentation, coffee breaks, lunches, participation in AO Davos Courses night, and the course certificate.

European CME Accreditation
For this course the UEMS-EACCME® in Brussels have granted 32 European CME credits (ECMEC).

Swiss CME Accreditation
Additionally, an application has been made to the following Swiss societies:
Schweizerische Gesellschaft für Chirurgie (SGC/SSC)
Schweizerische Gesellschaft für Orthopädie und Traumatologie (SGO/SSO).

Conflicts of Interest (COI)
All disclosure information can be viewed at the event webpage: http://AOTRAUMA10009583.aotrauma.org

Course certificate
Course certificates will be available at the end of the event at the general information desk.

Evaluation guidelines
All AO Trauma events apply the same evaluation process, which includes pre- and post-event online evaluation and on-site written questionnaires. These evaluation tools help ensure that AO Trauma continues to meet your training needs.

Use of social media
During the AO Davos Courses 2019, you can post about your experience using the #AODavosCourses2019 hashtag. While we encourage you to share your AO Davos Courses 2019 experience with your online network, it is expressly forbidden to share any images or recordings from inside the course.

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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.

Security
Security checks will be conducted at the building entrance. Wearing a name tag is compulsory at all times in the congress center and hospital.

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 permitted in the lecture halls or 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 AO Davos Courses 2019, 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 recommended.
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 AO network surgeons. All education is planned based on needs assessment data, designed and evaluated using concepts and evidence from the most current medical education research, and reflects 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, US (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 (apart from the AO Foundation and its 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**
   In case simulations are chosen as an educational method to educate skills, we only use technology approved by the AO Technical Commission—a large independent group of volunteer surgeons developing and peer reviewing new technology. More information about the AO Technical Commission and its development and approval processes can be found on the AO’s website: www.aofoundation.org.

5. **Personnel**
   Industry staff members are not permitted to interfere with the educational content or engage in educational activities during the event.
AO Research Institute Davos (ARI)

**Mission**
The AO 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 mission, ARI’s purpose is to advance patient care through innovative orthopedic research and development.

Orthopedics concerns musculoskeletal, spine and craniofacial trauma, degenerative musculoskeletal diseases, infections, and congenital disorders.

**Goals**
- Contribute high-quality, applied preclinical research and development focused toward 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 and ideas, and learn about the latest results from ARI.

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

**Craniofacial**
- Imaging and planning of surgery, computer aided preoperative planning
- Medication-related osteonecrosis of the jaw
- Bone regeneration and 3D 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 humeral 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 principles: 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 computed tomography (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 **AO Research Institute Davos Activity Report 2018** and recent publications, go to www.aofoundation.org/ari/publications.
Save the date: Madrid, April 2020
Sharing a world of knowledge

AO Trauma provides an outstanding selection of AO Trauma courses designed to meet your specific professional needs. We are confident that you will find the course offerings as well as the networking opportunity professionally rewarding.

Your current level of knowledge, attitudes, and skills will be challenged throughout the week. The best-in-class curriculum and faculty will provide you with a memorable learning experience that will remain with you for a lifetime.

All courses include one day of anatomical specimen lab.

AO Trauma Masters Course—Shoulder Trauma
Chairpersons:
Stefaan Nijs (BE), Ashraf Moharram (EG)
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AO Trauma Masters Course—Fractures around the Elbow
Chairpersons:
Gregory Della Rocca (US), Pedro Labronici (BR)
AO TRAUMA10010977.aotrauma.org

AO Trauma Masters Course—Hip Fractures
Chairpersons:
Michael Baumgaertner (US), Rodrigo Pesantez-Hoyos (CO)
AO TRAUMA10010971.aotrauma.org

AO Trauma Masters Course—Knee Injuries and Deformities
Chairpersons:
Hans Philipp Lobenhoffer (DE), Steffen Schröter (DE)
AO TRAUMA10010972.aotrauma.org

AO Trauma Masters Course—Foot and Ankle
Chairpersons:
Mandeep Dhillon (IN), Stefan Rammelt (DE)
AO TRAUMA10010973.aotrauma.org

For more information visit: www.aotrauma.org
AO Davos Courses—November 29–December 4, 2020

- AO Trauma Course—Basic Principles of Fracture Management
- AO Trauma Course—Advance Principles of Fracture Management
- AO Trauma Course—Advanced Principles of Fracture Management for Swiss residents
- AO Trauma Masters Course—Current Concepts
- AO Trauma Course—Pelvic and Acetabular Fracture Management
- AO Trauma Masters Kurs (German speaking)
- AO Trauma Course—Managing Pediatric Musculoskeletal Injuries
- AO Trauma and AO Recon Course—Comprehensive Periprosthetic Fracture Management of the Hip and Knee

AO Davos Courses—December 6–9, 2020

- AO Trauma Course—Basic Principles of Fracture Management for Swiss Surgeons
- AO Spine Courses
- AO CMF Courses
- AO VET Masters Course—Small Animal
- AO VET Masters Course—Large Animal
- AO Recon Course—Principles in Shoulder Arthroplasty
- AO Recon Course—Complex Total Hip and Knee Arthroplasty
- AO PEER Course—Level 1 Principles of Clinical Research
- AO PEER Course—Level 2 Grant writing
- AO PEER Course—Level 2 GCP and study management
- AO PEER Course—Level 2 Publication writing course

This course list is subject to further change.

The final list of AO Davos Courses and worldwide courses will be available on www.aotrauma.org in January 2020.
Expanding precision medicine in image-guided surgery

Expanding precision medicine through a complete imaging portfolio for orthopedic trauma, spine and CMF surgery ranging from mobile C-arms and robotic angiography systems to computed tomography and magnetic resonance imaging, as well as multi-modality suites.

Engineered to be truly patient-oriented, ARTIS pheno® is a unique floor-mounted robotic C-arm system for individualized preprocedural planning, intraoperative guidance, and immediate checkup in 2D and 3D directly in the hybrid operating room – regardless of patient condition or procedure complexity.

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.
AO Trauma membership
Driving excellence and empowering the next generation

Discover the advantages of joining the leading global trauma and orthopedic community, providing its members with education, research, and networking opportunities worldwide. Join us and share your passion.