AO TRAUMA

AO Competency-Based Curriculum

# AO Trauma Course—

# Advanced Principles of Fracture Management for Swiss Surgeons

December 01–06, 2024
Davos, Switzerland

Lecture hall:
Aspen 2

**PRELIMINARY PROGRAM**

# Course description

This AO Trauma Course—Advanced Principles of Fracture Management for Swiss Surgeons is one of the several 2024 competency-based curriculum events based on a specific framework of competencies and learning objectives. They feature a balanced mix of educational methods with a strong focus on interactive sessions.

Online pre-course self-assessment prepares participants for the course and allows the faculty to tailor the course to the needs of the participants. Before attending the course, participants are expected to complete the online self-assessment questionnaire.

The course will be taught in a modular format. Each module consists of several evidence-based lectures, which cover the key information required. Discussing cases in small groups will help participants to understand decision making and management skills. Debates and interactive sessions promote interactivity between faculty and course participants. In practical exercises, participants will be trained in the application of various techniques.

At the end of the course, participants will be able to assess and manage complex fractures according to the AO principles.

After the course, an online post-course self-assessment will help participants to assess how much they have learned.

After the course, the participant will not only have a deeper knowledge of advanced trauma management, but also be reconnected to the trauma community in Switzerland.

# Goal of the course

The AO Trauma Course—Advanced Principles of Fracture Management for Swiss Surgeons is part of AO Trauma's educational program teaching current concepts and fundamental principles in the treatment of injuries incorporating the latest techniques in operative fracture management. The AO Trauma Advanced Principles course builds upon the AO principles and techniques learned in the AO Trauma Basic Principles course, and focuses on more complex injuries.

# Target participants

The AO Trauma Course—Advanced Principles of Fracture Management for Swiss Surgeons is targeted at newly certified surgeons and residents in their fourth to sixth year of training and intending to specialize in general surgery or in orthopedic surgery with a commitment to trauma.

All surgeons working at a Swiss hospital, including those who are of European or international origin, can participate in this course.

It builds upon the AO principles and techniques of the basic principles course, making it necessary for participants to have completed the AO Trauma Course—Basic Principles of Fracture Management. Participants must be actively involved in trauma management.

# Learning objectives

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

- Define, assess and treat complex fractures of the upper and lower extremities using advanced and specific techniques
- Outline, classify, and formulate a treatment plan for pelvic injuries
- Apply reduction techniques in fracture management with special attention to soft tissue
- Perform fixation of complex fractures
- Discuss the importance of arthroplasty option in trauma management
- List and avoid typical complications in complex fracture treatment

# Chairpersons

**Valentin Neuhaus**

Universitätsspital Zürich,
Zürich, Switzerland

**Philippe Vial**

Hôpital Cantonal, University of
Fribourg, Switzerland

# Faculty

| | | | | |
|---|---|---|---|---|
| Emanuel | Benninger | Kantonsspital Winterthur | Winterthur | Switzerland |
| Samy | Bouaicha | Universitätsspital Balgrist | Zürich | Switzerland |
| Hans-Curd | Frei | Spital Davos | Davos | Switzerland |
| Silvio | Gujer | Spital Frutigen | Frutigen | Switzerland |
| Näder | Helmy | Kantonsspital Solothurn | Solothurn | Switzerland |
| Melanie | Leimbacher | Stadtspital Zürich Waid | Zürich | Switzerland |
| Cesare | Marazzi | Spital Oberengadin | Samedan | Switzerland |
| Jochen | Müller | Ospedale Regionale Lugano | Lugano | Switzerland |
| Birgit | Oberreiter | Universitätsspital Basel | Basel | Switzerland |
| Alex | Schallberger | Spital Nidwalden | Stans | Switzerland |
| Philipp | Stillhard | Kantonsspital Graubünden | Chur | Switzerland |
| Moritz | Tannast | Hôpital Cantonal, University of Fribourg | Fribourg | Switzerland |
| Gregoire | Thürig | Kantonsspital Schaffhausen | Schaffhausen | Switzerland |
| Jörg | Winkler | Spital Davos | Davos | Switzerland |

# Guest lecturers

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| Emanuel | Gautier | Hôpital Cantonal, University of Fribourg | Fribourg | Switzerland |
| Hans-Christoph | Pape | Universitätsspital Zürich | Zürich | Switzerland |
| Christoph | Sommer | Kantonsspital Graubünden | Chur | Switzerland |

# Sunday

## December 01, 2024

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| 15:00 | Opening of the Davos Congress Centre |
| 15:00–17:00 | Registration of participants |
| 17:00–19:00 | Opening Ceremony and Founders' Reception |

# Monday

December 02, 2024

## Module 1

### Moderator: V Neuhaus

### Review of the principles and technique

Upon completion of this module, participants will be able to:

- Reiterate the principles of absolute and relative stability
- Explain the different available implants
- Describe the role of soft tissue in fracture management

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| 08:00–08:15 | Welcome and introduction | V Neuhaus, P Vial |
| 08:15–08:35 | Review the principles of fracture treatment | S Bouaicha |
| 08:35–08:50 | Functions of the hardware - screws, plates, nails | S Gujer |
| 08:50–09:20 | Soft-tissue handling in fracture treatment | Ch Sommer |
| 09:20–09:40 | Discussion and case examples | V Neuhaus |
| 09:40–10:00 | Coffee break | |

## Module 2

### Moderator: S Bouaicha

### Fractures of the upper extremity

Upon completion of this module, participants will be able to:

- Identify the expected outcomes and appropriate treatment options for clavicular fractures
- Evaluate evidence for fixation of proximal humeral fractures versus replacement
- Identify the indications for surgical treatment of humeral shaft fractures
- Define strategies in the treatment of the distal humeral fractures
- Describe surgical approaches to the distal humerus
- Discuss different treatment options of distal radial fractures

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| 10:00–10:15 | Fractures of the clavicle | G Thürig |
| 10:15–10:30 | Proximal humeral fractures osteosynthesis | P Vial |
| 10:30–10:45 | Humeral shaft fractures | J Winkler |
| 10:45–11:00 | Distal intraarticular humeral fractures | E Benninger |

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| 11:00–11:15 | Discussion | |
| 11:15–11:20 | Location change to the practical exercise room Jakobshorn | |
| 11:20–11:25 | Introduction to the practical exercises | V Neuhaus |
| 11:25–12:30 | **Practical exercise 1**<br>**Proximal humerus—fixation of an 11C1 four-fragment fracture using a proximal humeral internal locking system** | P Stillhard |
| 12:30–13:30 | Lunch break | |
| 13:30–14:15 | SHARD (Live Surgery)<br>Surgical approaches to the distal humerus | P Vial |
| 14:15–14:20 | Location change to the practical exercise room Jakobshorn | |
| 14:20–15:45 | **Practical exercise 2**<br>**Fixation of a type 13C3 fracture in the distal humerus using an elbow system variable angle locking compression plate (VA-LCP) perpendicular plating** | E Benninger |
| 15:45–16:05 | Coffee break | |
| 16:05–16:20 | Fractures of the forearm | S Gujer |
| 16:20–16:35 | Distal radial fractures osteosynthesis | P Vial |
| 16:35–16:50 | Pin positioning in upper extremity fractures | M Leimbacher |
| 16:50–17:00 | Discussion | |
| 17:00-17:10 | Evaluation | |

# Tuesday

December 03, 2024

## Module 2 (continued)

### Moderator: S Bouaicha

### Fractures of the upper extremity

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| 08:00–09:00 | **Discussion group 1**<br><br>**Fractures of the upper extremity**<br>Group 1: Landwasser 14<br>Group 2: Landwasser 16<br>Group 3: Landwasser 18<br>Group 4: Landwasser 20<br>Group 5: Landwasser 22<br>Group 6: Landwasser 24 | |
| 09:00–09:05 | Location change to the practical exercise room Jakobshorn | |
| 09:05–10:05 | **Practical exercise 3**<br><br>**Distal radius—two-column distal radial fracture** | P Vial |
| 10:05–10:25 | Coffee break | |

## Module 3

### Moderator: N Helmy

### Principles in pelvic fractures

Upon completion of this module, participants will be able to:

- Identify the correct classification and appropriate treatment options for pelvic fractures
- Outline emergency pelvic treatment

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| 10:25–10:40 | Principles of pelvic injuries | M Tannast |
| 10:40–10:55 | Treatment concepts in pelvic fractures | M Tannast |
| 10:55–11:05 | Discussion | |
| 11:05–11:10 | Location change to the practical exercise room Jakobshorn | |
| 11:10–12:30 | **Practical exercise 4**<br>**Supraacetabular external fixator, C-clamp, standard external fixator for pelvis** | M Tannast |
| 12:30–13:40 | Lunch break | |

# Module 4
## Moderator: M Tannast
## Femoral fractures

Upon completion of this module, participants will be able to:

- Outline the management of proximal femoral fractures in young patients and in the elderly
- Explain the biomechanics of the trochanteric region including the forces acting on the fracture fragments
- Identify the expected outcomes and appropriate treatment options for trochanteric fractures
- Assess the complexity of distal femoral fractures
- Compare the pros and cons of open osteosynthesis, minimally invasive plate osteosynthesis (MIPO), and intramedullary (IM) nailing in femoral fractures
- Explain the Vancouver classification

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| 13:40–13:55 | Femoral head fractures - treatment and surgical approach | N Helmy |
| 13:55–14:10 | Femoral neck fractures - different concepts for different patients | B Oberreiter |
| 14:10–14:25 | Current treatments of peri-trochanteric femoral fractures | C Marazzi |
| 14:25–14:40 | Femoral shaft fracture - nailing versus plating | P Stillhard |
| 14:40–14:55 | Discussion | |
| 14:55–15:15 | Coffee break | |
| 15:15–15:30 | Distal femoral fractures - treatment options and complications | A Schallberger |
| 15:30–15:45 | Periprosthetic femoral shaft fracture - is stem revision the only option? | N Helmy |
| 15:45–15:55 | Discussion | |
| 15:55–16:00 | Location change to the discussion group rooms | |
| 16:00–17:00 | **Discussion group 2**<br><br>**Fractures of the proximal femur**<br>Group 1: Landwasser 14<br>Group 2: Landwasser 16<br>Group 3: Landwasser 18<br>Group 4: Landwasser 20<br>Group 5: Landwasser 22<br>Group 6: Landwasser 24 | |
| 17:00–17:10 | Evaluation | |
| 17:45–20:30 | **AO Davos Courses Night:** Davos Congress Centre | |

# Wednesday

December 04, 2024

## Module 4 (continued)
### Moderator: M Tannast
## Femoral fractures

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| 08:00–09:05 | **Practical exercise 5**<br>**Proximal femur—fixation of a reversed intertrochanteric three-part fracture using trochanteric femoral nail advanced (TFN-A) system** | C Marazzi |
| 09:05–09:10 | Location change to the discussion group rooms | |
| 09:10–10:10 | **Discussion group 3**<br>**Fractures of the distal femur and femoral shaft**<br>Group 1: Landwasser 14<br>Group 2: Landwasser 16<br>Group 3: Landwasser 18<br>Group 4: Landwasser 20<br>Group 5: Landwasser 22<br>Group 6: Landwasser 24 | |
| 10:10–10:30 | Coffee break | |
| 10:30–12:30 | **Practical exercise 6**<br>**Fixation of a distal intraarticular femoral fracture (type 33C2.1)** | A Schallberger |
| 12:30–13:15 | Lunch Break | |

## Module 5
### Moderator: J Müller
## Tibial fractures

Upon completion of this module, participants will be able to:

- Evaluate surgical options and techniques for open reduction and external fixation (ORIF) of the tibial plateau fractures
- Evaluate indications and techniques for extreme IM nailing of the tibia
- Describe surgical approaches to the tibia

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| 13:15–13:30 | Complex tibial plateau fractures—strategies for fixation | G Thürig |
| 13:30–13:45 | Proximal, distal and segmental tibial shaft fractures—treatment strategies, also in case of a compartment | P Stillhard |

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| 13:45–14:45 | SHARD: Surgical approaches to the proximal tibia | Robinson Pires<br>Tips from the Masters |
| 14:45–15:05 | Coffee break | |
| 15:05–16:15 | **Practical exercise 7**<br>**Management of a type 41C3 bicondylar tibial plateau fracture using a VA-LCP** | HC Frei |
| 16:15–16:20 | Location change to the discussion group rooms | |
| 16:20–17:20 | **Discussion group 4**<br>**Fractures of the tibia**<br>Group 1: Landwasser 14<br>Group 2: Landwasser 16<br>Group 3: Landwasser 18<br>Group 4: Landwasser 20<br>Group 5: Landwasser 22<br>Group 6: Landwasser 24 | |
| 17:20–17:30 | Evaluation | |

# Thursday

December 05, 2024

## Module 6
### Moderator: P Stillhard
## Foot and ankle fractures

Upon completion of this module, participants will be able to:

- Select and apply an appropriate classification system
- Explain the decision making process in ankle fractures
- Identify patterns of calcaneal injuries
- Explain the risk of complications following injuries to the talus

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| 08:00–08:15 | Complex malleolar fractures | M Leimbacher |
| 08:15–08:30 | Pilon fractures - treatment options | HC Frei |
| 08:30–08:35 | Location change to the practical exercise room | |
| 08:35–10:20 | **Practical exercise 8**<br>**Management of a type 43C2.3 pilon tibial fracture using a distal tibial LCP** | M Leimbacher |
| 10:20–10:40 | Coffee break | |
| 10:40–10:55 | Calcaneal fractures - predicting and avoiding problems | J Müller |
| 10:55–11:10 | Talar neck fractures and complications | J Müller |
| 11:10–11:15 | Location change to the discussion group rooms | |
| 11:15–12:15 | **Discussion group 5**<br>**Fractures of the ankle and foot**<br>Group 1: Landwasser 14<br>Group 2: Landwasser 16<br>Group 3: Landwasser 18<br>Group 4: Landwasser 20<br>Group 5: Landwasser 22<br>Group 6: Landwasser 24 | |
| 12:15–13:10 | Lunch break | |
| 13:10-13:20 | Group picture and location change to practical exercise room | |
| 13:20–14:50 | **Practical exercise 9**<br>**Open reduction and internal fixation of intraarticular** | J Müller |

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| | **calcaneal fractures using a calcaneal locking plate** | |
| 14:50–15:10 | Coffee break | |

## Module 7

### Moderator: P Vial, V Neuhaus

## Controversies in shoulder and hip fracture treatments: battle discussion

Upon completion of this module, participants will be able to:

- Identify and discuss the indications, advantages, and risks for primary joint arthroplasty in the trauma setting
- List the limit of osteosynthesis of the humeral head and femoral neck
- Discuss the outcome of conservative treatment

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| 15:10–15:40 | Pro and contra battle discussion with cases | E Benninger, P Vial, S Bouaicha |
| 15:40–15:45 | Pro conservative treatment of proximal humerus fractures | E Benninger |
| 15:45–15:50 | Pro osteosynthesis of proximal humerus fractures | P Vial |
| 15:50–15:55 | Pro acute total shoulder arthroplasty in shoulder fractures | S Bouaicha |
| 15:55–16:00 | Setting Change | |
| 16:00–16:05 | Pro conservative treatment of femoral neck fractures | V Neuhaus |
| 16:05–16:35 | Pro and contra battle discussion with cases | N Helmy, M Tannast |
| 16:35–16:40 | Pro osteosynthesis of the femoral neck fractures | N Helmy |
| 16:40–16:45 | Pro acute total hip arthroplasty in hip fractures | M Tannast |
| 16:45–17:00 | Discussion | |
| 17:00–17:10 | Evaluation | |

# Friday

## December 06, 2024

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| 08:00–09:00 | **Discussion group 6**<br><br>**You are on call—fractures from head to toe**<br>Group 1: Landwasser 14<br>Group 2: Landwasser 16<br>Group 3: Landwasser 18<br>Group 4: Landwasser 20<br>Group 5: Landwasser 22<br>Group 6: Landwasser 24 | |
| 09:00–09:05 | Location change to the lecture room | |

## Module 8
### Moderator: E Benninger
## It is getting complicated

Upon completion of this module, participants will be able to:

- Recognize and analyze the reasons for a nonunion
- Set priorities for management of mangled extremities
- Debate the role of surgical intervention and antibiotics in the management of infected implants

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| 09:05–09:15 | Introduction to the week's quiz | V Neuhaus, G Thürig |
| 09:15–09:45 | Week's quiz (questions about learning objectives of the week) | G Thürig |
| 09:45–10:00 | General management of nonunion - why do not all fractures heal? | |
| 10:00–10:15 | Mangled extremity management - when is salvage reasonable? | V Neuhaus |
| 10:15–10:30 | Coffee break | |
| 10:30–11:00 | Polytraumatized patients - principles of fracture treatment | HC Pape |
| 11:00–11:15 | Osteoporotic fractures | B Oberreiter |
| 11:15–11:30 | Infection after ORIF—when to keep the implants? | E Benninger |
| 11:30–12:00 | The past, the present (…and the future) of fracture treatment | E Gautier |

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| 12:00–12:05 | Results of the quiz and award ceremony | P Vial |
| 12:05–12:15 | Summary of the week, course feedback, and closing remarks | V Neuhaus |
| 12:15–12:25 | Evaluation | |
| 12:25–12:45 | Sandwich break | |

# Event organization

**AO Foundation**

Stefanie Walser

Clavadelerstrasse 8 | 7270 Davos | Switzerland

Mobile: +41 79 459 19 31

E-mail: stefanie.walser@aofoundation.org

**Participant information and contact**

Laila Plattner

Mobile: +41 79 835 57 04

E-mail: laila.plattner@aofoundation.org

**Registration fee**

Course Full Fee: CHF 2'300

The registration fee covers the following:

- Course materials
- Coffee breaks and lunches
- AO Davos Courses opening ceremony
- Networking with participants and faculty during AO Davos Courses night
- Guided tour of the AO Center (on-site registration required)
- Demonstrations of the latest technologies
- Live surgical demonstrations
- Course certificate

Cancellation policy: 50% until 30 days before the event. No refund thereafter.

**Online registration**

Event: AO Trauma Course—Advanced Principles of Fracture Management for Swiss Surgeons (site.com)

**Language**

English

**Disclosures and conflicts of interest (COI)**

Disclosure information and potential conflicts of interest (COI) can be viewed at the event webpage.

**National CME accreditation**

An application has been made to SGC and Swiss Orthopaedics.

**Event organization compliance**

In certain countries where AO has no office but offers educational events, the AO cooperates with third party companies to conduct local organization and logistics, as well as to communicate with participants in the local language. In these cases, the AO has put rules and guidelines in place to ensure that this cooperation has no impact on the curricula, scientific program, or faculty selection.

**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/skills training if educationally needed.

# Venue

**Davos Congress Centre**

Talstrasse 49A

7270 Davos Platz

Switzerland

Phone +41 81 414 6