

# AO Trauma Course— Basic Principles of Fracture Management

March, 2-4, 2020

Spa, Belgium

EVENT PROGRAM



## 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.

# Welcome

## Dear AOTrauma course participant,

Welcome to the AOTrauma Course—Basic Principles of Fracture Management, which is planned and delivered to meet your needs using a competency-based curriculum approach and the AO's seven principles for high-quality education.

AO Trauma's innovative approach to education has been further strengthened as a result of the successful collaboration with the AO Education Institute in the application of state-of-the-art educational concepts in curriculum planning and all faculty development programs.

This course is one of our many educational activities for providing lifelong learning, from the Residents Education Program through to specialized Continuing Professional Development (CPD) for practicing surgeons and clinicians.

We believe that your active engagement in this course will result in improved care for your patients. Your current level of knowledge and skills will be challenged by the activities and throughout the entire event. We are confident that the combination of education principles and relevant content from our curriculum, as well as your interaction with colleagues and expert faculty will provide an effective learning experience that meets your needs.

This course is part of an overall competency-based educational program that includes many other activities and resources for self-directed learning. The educational activities in each program are developed by an international taskforce of clinical experts and educationalists and made available to you through the Education section of [www.aotrauma.org](http://www.aotrauma.org).

We hope you enjoy the course and benefit from the networking opportunities it provides for you to share experiences with your colleagues.



**Wa'el Taha**  
Chairperson AO Trauma  
Education Commission



**Kodi Kojima**  
Chairperson AO Trauma  
International Board

If you enjoy the experience during your course and would like to stay in touch with the organization and its international network of surgeons, we invite you to become a member of AOTrauma. The benefits of membership, including options to get involved in new opportunities that advance trauma care are described at [www.aotrauma.org](http://www.aotrauma.org).

# Goal of the course

The AOTrauma Course—Basic Principles of Fracture Management teaches fundamental principles and current concepts in the treatment of injuries, incorporating the latest techniques in operative fracture management. The AOTrauma Basic Principles course is the initial step along the path of lifelong learning in the area of operative fracture management. This course mainly focuses on the basic principles of fracture management.

## Target participants

The AOTrauma Course—Basic Principles of Fracture Management is targeted at physicians in surgical training but is also open to anyone else who is interested in furthering their knowledge and skills in operative fracture management.

## Course description

Online precourse 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 online modules on bone healing and classification.

The course contains several evidence-based lectures, which cover the key information required. The AO Skills Lab engages participants in hands-on learning of basic principles and practical know-how needed for live surgery. With experiences such as proper tightening of a screw and feeling the difference between drilling with sharp and blunt drill bits, participants gain important surgical skills and learn about basic biomechanical concepts in a safe, instructive environment. In practical exercises participants will be trained in the application of fixation techniques. Discussing cases in small groups helps participants to understand decision-making and management skills.

After the course, an online postcourse self-assessment provides participants an opportunity to review the important topics from the course.

## Learning objectives

At the end of this course, participants will be able to:

- Discuss the concepts of stability, their influence on bone healing, and how to apply implants to achieve appropriate stability
- Plan a treatment based on assessment, imaging, classification, and decision making
- Apply reduction techniques in fracture management with attention to the importance of the soft tissues
- Treat diaphyseal and simple (peri)articular fractures using different application techniques
- Evaluate and recognize the special problems related to fractures in the immature skeleton, pelvic injuries, osteoporotic fractures, postoperative infection, delayed union and/or nonunion
- Plan the initial treatment of the polytraumatized patient



## Chairpersons



Chair

**Harm Hoekstra**  
Leuven, Belgium



Co-chair

**Maike Reul**  
Brussels, Belgium

## National faculty

Michaël de Foy, Namur, Belgium  
Wim De Weerd, St. Truiden, Belgium  
Heinz Hulsmans, Antwerpen, Belgium  
Pierre Maldague, Brussels, Belgium  
Pieter Monteban, Rotterdam, Nederland  
Thomas Schubert, Brussels, Belgium  
Filip Simion, Brussels, Belgium  
Bernard Struelens, Veurne, Belgium  
Wouter van Wijhe, Flekkefjord, Noorwegen

# Event organization

## **AOTrauma Belgium-Luxemburg**

Kristin Beeckman

Phone +32 2 746 31 83

Email [kristin.beeckman@aocourses.org](mailto:kristin.beeckman@aocourses.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/commercial partners for in-kind support to run simulations/skills training if educationally needed.

# Event information and logistics

## **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 (Letter of Secondment, AO Foundation—Principles of AO Educational Events) to ensure that this cooperation has no impact on the curricula, scientific program, or faculty selection.

# Event venue



## **Hotel Silva Spa Balmoral**

Route de Balmoral 33

4900 Spa

Phone +32 87 79 32 53

[www.silvahotelspabalmoral.be](http://www.silvahotelspabalmoral.be)



# Floorplan – Meetingrooms



# Day 1 : Monday, March 2, 2020

| TIME        | AGENDA ITEM                                                                                                                                                                                                                                                                                                                                                                                                                               | WHO                                      | WHERE                                                       |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------|
| 07:30-08:00 | Registration participants & Welcome Coffee                                                                                                                                                                                                                                                                                                                                                                                                |                                          | Lobby                                                       |
| 08:00-08:10 | Welcome and introduction                                                                                                                                                                                                                                                                                                                                                                                                                  | H. Hoekstra                              | Montréal                                                    |
| 08:10-08:20 | The AO World – from history to lifelong learning                                                                                                                                                                                                                                                                                                                                                                                          | P. Maldague                              | Montréal                                                    |
| 08:20-08:40 | Bone healing and the effect of patient factors and injury mechanism on fracture management                                                                                                                                                                                                                                                                                                                                                | T. Schubert                              | Montréal                                                    |
| 08:40-08:55 | The (soft-tissue) injury—a high priority consideration                                                                                                                                                                                                                                                                                                                                                                                    | M. Reul                                  | Montréal                                                    |
| 08:55-09:10 | Absolute stability:<br>biomechanics, techniques, fracture healing                                                                                                                                                                                                                                                                                                                                                                         | D. Putineanu                             | Montréal                                                    |
| 09:10-09:25 | Relative stability :<br>biomechanics, techniques, and fracture healing                                                                                                                                                                                                                                                                                                                                                                    | B. Struelens                             | Montréal                                                    |
| 09:25-09:35 | Summary and Q & A                                                                                                                                                                                                                                                                                                                                                                                                                         | H. Hoekstra                              | Montréal                                                    |
| 09:35-09:40 | Location change to practical exercises                                                                                                                                                                                                                                                                                                                                                                                                    |                                          |                                                             |
| 09:40-10:45 | <b>Practical exercise 1:</b><br>Internal fixation with screws and plates—absolute stability                                                                                                                                                                                                                                                                                                                                               | D. Putineanu                             | Indianapolis                                                |
| 10:45-11:05 | COFFEE BREAK                                                                                                                                                                                                                                                                                                                                                                                                                              |                                          | Bar                                                         |
| 11:05-11:20 | The use of plates in fracture fixation                                                                                                                                                                                                                                                                                                                                                                                                    | H. Hulsmans                              | Montréal                                                    |
| 11:20-11:35 | The 2018 AO/OTA Fracture and Dislocation Classification Compendium                                                                                                                                                                                                                                                                                                                                                                        | W. van Wijhe                             | Montréal                                                    |
| 11:35-12:35 | <b>Group discussion 1 :</b><br>Discussion on general principles, classification, concepts of stability, their influence on bone healing, and how to apply implants to achieve appropriate stability <ul style="list-style-type: none"> <li>• Group A ( B. Struelens – W. De Weerd)</li> <li>• Group B (W. van Wijhe – H. Hulsmans)</li> <li>• Group C (P. Monteban – T. Schubert)</li> <li>• Group D (P. Maldague – M. de Foy)</li> </ul> | Group A<br>Group B<br>Group C<br>Group D | Spa-Francorchamps<br>Silverstone<br>Magny Cours<br>Montréal |
| 12:35-13:35 | LUNCH                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                          | Restaurant                                                  |



|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                       |                                                             |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| 13:35-13:55 | Principles of diaphyseal fracture management—what is important in treating these fractures?                                                                                                                                                                                                                                                                                                                                                                                                    | W. De Weerdt                                                                                                                                                          | Montréal                                                    |
| 14:00-15:10 | <b>Group discussion 2 :</b><br>Management principles for the treatment of diaphyseal fractures <ul style="list-style-type: none"> <li>• Group A (M. Reul – P. Monteban)</li> <li>• Group B (D. Putineanu – B. Struelens)</li> <li>• Group C (W. van Wijhe – M. de Foy)</li> <li>• Group D (H. Hulsmans – F. Simion)</li> </ul>                                                                                                                                                                 | Group A<br>Group B<br>Group C<br>Group D                                                                                                                              | Spa-Francorchamps<br>Silverstone<br>Magny Cours<br>Montréal |
| 15:10-15:25 | COFFEE BREAK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                       | Bar                                                         |
| 15:25-16:35 | <b>Practical exercise 2 :</b><br>Principle of the internal fixator using the locking compression plate                                                                                                                                                                                                                                                                                                                                                                                         | H. Hulsmans                                                                                                                                                           | Indianapolis                                                |
| 16:35-16:40 | Change to lecture room                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                       |                                                             |
| 16:40-17:00 | Principles of articular fracture management—how do they differ from diaphyseal fractures ?                                                                                                                                                                                                                                                                                                                                                                                                     | W. De Weerdt                                                                                                                                                          | Montréal                                                    |
| 17:00-17:05 | Change to Skills Lab                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                       |                                                             |
| 17:05-18:50 | <b>AO Skills Lab</b><br><br>A. Torque measurement of bone screws (10)<br>B. Soft-tissue penetration during drilling (10)<br>C. Heat generation during drilling (10)<br>D. Mechanics of bone fractures (10)<br>E. Techniques of reduction, part 1 (10)<br><br>Break (5)<br><br>F. Techniques of reduction, part 2 (10)<br>G. Mechanics of intramedullary fixation (10)<br>H. Mechanics of plate fixation (10)<br>J. Fracture healing and plate fixation (10)<br>K. Damaged implant removal (10) | M. Reul<br><br>H. Hulsmans<br>T. Schubert<br>D. Putineanu<br>B. Struelens<br>W. van Wijhe<br><br>F. Simion<br>P. Maldague<br>M. de Foy<br>P. Monteban<br>W. De Weerdt | Imola-Monaco                                                |
| 18:50       | <b>End of Day 1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                       |                                                             |
| 19:30       | COURSEDINNER FACULTY & PARTICIPANTS                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                       | Restaurant                                                  |

## Day 2 : Tuesday, March 3, 2020

|             |                                                                                                                      |              |              |
|-------------|----------------------------------------------------------------------------------------------------------------------|--------------|--------------|
| 15:25-16:35 | <b>Practical exercise 3 :</b><br>Intramedullary Nailing                                                              | W. De Weerdt | Indianapolis |
| 09:00-09:20 | COFFEEBREAK                                                                                                          |              | Bar          |
| 09:20-09:35 | Distal radial fractures – which to fix ? How to fix ?                                                                | F. Simion    | Montréal     |
| 09:35-09:50 | The tension band principle                                                                                           | P. Monteban  | Montréal     |
| 09:50-10:05 | Forearm fractures—understanding the principles of diaphyseal and articular fractures                                 | W. De Weerdt | Montréal     |
| 10:05-10:20 | Preoperative planning— rationale and how to do it                                                                    | M. de Foy    | Montréal     |
| 10:20-10:30 | Summary and Q & A                                                                                                    | W. De Weerdt | Montréal     |
| 10:30-11:30 | Preoperative planning—“plan your forearm operation”<br>(Templating exercise)                                         | M. de Foy    | Montréal     |
| 11:30-12:30 | LUNCH                                                                                                                |              | Restaurant   |
| 12:30-13:40 | <b>Practical exercise 4 :</b><br>Operate your plan—fixation of a 22C1 forearm fracture<br><br>Change to lecture room | M. de Foy    | Indianapolis |
| 13:40-13:55 | Ankle fractures : a systematic approach to their fixation                                                            | P. Maldague  | Montréal     |
| 13:55-14:10 | Femoral neck fractures                                                                                               | P. Monteban  | Montréal     |
| 14:10-14:25 | Trochanteric fractures                                                                                               | W. van Wijhe | Montréal     |
| 14:25-14:40 | Distal femoral fractures—management principles                                                                       | T. Schubert  | Montréal     |
| 14:40-14:55 | Introduction to tibial plateau fractures                                                                             | M. Reul      | Montréal     |
| 14:55–15:05 | Summary and Q & A                                                                                                    | D. Putineanu | Montréal     |
| 15:05-15:25 | COFFEE BREAK                                                                                                         |              | Bar          |

|             |                                                                                                                                                                                                                                                                                                                           |                                          |                                                             |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------|
| 15:25-16:35 | <b>Group discussion 3 :</b> Management principles for the treatment of articular fractures <ul style="list-style-type: none"> <li>• Group A (W. De Weerdt – D. Putineanu)</li> <li>• Group B (M. Reul – P. Maldague)</li> <li>• Group C (T. Schubert – F. Simion)</li> <li>• Group D (M. de Foy – P. Monteban)</li> </ul> | Group A<br>Group B<br>Group C<br>Group D | Spa-Francorchamps<br>Silverstone<br>Magny Cours<br>Montréal |
| 16:35-16:40 | Change to lecture room                                                                                                                                                                                                                                                                                                    |                                          |                                                             |
| 16:40-16:50 | Minimally invasive osteosynthesis (MIO)—when to use it?                                                                                                                                                                                                                                                                   | F. Simion                                | Montréal                                                    |
| 16:50-17:00 | Radiation in the operating room—appropriate use and hazards                                                                                                                                                                                                                                                               | B. Struelens                             | Montréal                                                    |
| 17:00-17:05 | Change to practicals                                                                                                                                                                                                                                                                                                      |                                          |                                                             |
| 17:05-18:15 | <b>Practical exercise 5 :</b><br>Fixation of a trochanteric fracture                                                                                                                                                                                                                                                      | W. van Wijhe                             | Indianapolis                                                |
| 18:15-18:20 | Change to lecture room                                                                                                                                                                                                                                                                                                    |                                          |                                                             |
| 18:20-18:35 | Fractures in the growing skeleton – how are they different ?                                                                                                                                                                                                                                                              | D. Putineanu                             | Montréal                                                    |
| 18:35-18:50 | Fixation principles in osteoporotic bone—the geriatric patient                                                                                                                                                                                                                                                            | H. Hulsmans                              | Indianapolis                                                |
| 18:50       | <b>End of Day 2</b> – Free evening for participants                                                                                                                                                                                                                                                                       |                                          |                                                             |

## Day 3 : Wednesday, March 4, 2020

|             |                                                                                                                                                                                                                                             |                                          |                                                             |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------|
| 08:00-08:30 | <b>Practical exercise 6 :</b><br>Tension band wiring of the oleocranon                                                                                                                                                                      | P. Monteban                              | Indianapolis                                                |
| 08:30-09:30 | <b>Practical exercise 7 :</b><br>Management of a type 44C malleolar fracture                                                                                                                                                                | P. Maldague                              | Indianapolis                                                |
| 09.30-09:50 | COFFEE BREAK                                                                                                                                                                                                                                |                                          | Bar                                                         |
| 09:50-10:05 | Management of open fractures                                                                                                                                                                                                                | M. Reul                                  | Montréal                                                    |
| 10:05-10:20 | Principles of external fixation                                                                                                                                                                                                             | H. Hulsmans                              | Montréal                                                    |
| 10:20-10:35 | Treatment algorithms for the polytrauma patient                                                                                                                                                                                             | P. Monteban                              | Montréal                                                    |
| 10:35-10:50 | Emergency management of pelvic fractures—a critical skill can save lives                                                                                                                                                                    | T. Schubert                              | Montreal                                                    |
| 10:50-11:05 | Perioperative infection—prevention, evaluation and management                                                                                                                                                                               | D. Putineanu                             | Montréal                                                    |
| 11:05-11:20 | Delayed healing—causes and treatment principles                                                                                                                                                                                             | M. de Foy                                | Montréal                                                    |
| 11:20-11:30 | Summary - Q & A                                                                                                                                                                                                                             | P. Maldague                              | Montréal                                                    |
|             | <b>Group discussion 4 :</b><br>Final case discussion selected topic<br>Polytrauma/Complications/Special fractures. eg, geriatric fractures, osteoporosis, periprosthetic fractures                                                          | Group A<br>Group B<br>Group C<br>Group D | Spa-Francorchamps<br>Silverstone<br>Magny Cours<br>Montréal |
|             | <ul style="list-style-type: none"> <li>• <b>Group A</b> (W. van Wijhe – P. Maldague)</li> <li>• Group B (H. Hulsmans – W. De Weerd)</li> <li>• Group C ( M. Reul – D. Putineanu)</li> <li>• Group D (T. Schubert – B. Struelens)</li> </ul> |                                          |                                                             |
| 12:35-13:25 | LUNCH                                                                                                                                                                                                                                       |                                          | Restaurant                                                  |
| 13:25-14:25 | <b>Practical exercise 8 :</b><br>Application of a modular external fixator                                                                                                                                                                  | T. Schubert                              | Indianapolis                                                |
| 14:25-14:30 | Location change to lecture hall                                                                                                                                                                                                             |                                          |                                                             |
| 14:30-14:45 | Violation of principles                                                                                                                                                                                                                     | P. Maldague                              | Montréal                                                    |
| 14:45-15:00 | Closing remarks & certificats                                                                                                                                                                                                               | H. Hoekstra                              | Montréal                                                    |

# General information

## Course fee

AOTrauma Course—Basic Principles of Fracture Management: - 125 € - participation restricted to Belux participants.

Included in the course fee : lectures, practical exercises, lunch at noon, coffee breaks, 1 course dinner Monday March 3, 2020 and course certificate.

## Evaluation guidelines

All AOTrauma events apply the same evaluation process, either online (pre- and post-event evaluation) or/and on-site by audience response system (ARS) or paper and pencil questionnaires. This helps AOTrauma to 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](http://www.aofoundation.org/legal).

Recording, photographing, or copying of lectures, practical exercises, case discussions, or any event materials is absolutely forbidden.



The AO Foundation reserves the right to film, photograph, and audio record during their 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 AO marketing and other purposes, and made available to the public.

## No insurance

The event organization does not take out insurance to cover any individual against accidents, theft, or other risks.

## Mobile phone use

Mobile phone use 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.

# 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](http://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](http://www.accme.org))
- ACCME Standards for Commercial Support: Standards to Ensure Independence in CME Activities ([www.accme.org](http://www.accme.org))
- Criteria for Accreditation of Live Educational Events of the European Accreditation Council for Continuing Medical Education ([www.uems.eu](http://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](http://www.medtecheurope.org))
- AdvaMed Code of Ethics on Interactions with Health Care Professionals ([advamed.org](http://advamed.org))
- Mecomed Guidelines on Interactions with Healthcare Professionals ([www.mecomed.org](http://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](http://www.aofoundation.org).

## 5. Personnel

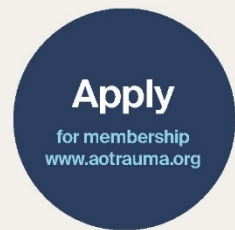
Industry staff members are not permitted to interfere with the educational content or engage in educational activities during the event.



## Notes

[illegible]

# Share your passion and join the **AO Trauma community**



**Belong** to a  
unique orthopedic  
trauma network



**Get involved**  
and shape the  
future of AO Trauma

Discover the  
exclusive AO Trauma  
**content**

**Develop**  
your personal and  
professional career

**Share and exchange**  
your knowledge

**AO Trauma** is the **leading global orthopedic trauma network** with a unique culture of surgeon leadership, camaraderie, volunteerism, and mutual respect.



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