UNION EUROPÉENNE DES MÉDECINS SPÉCIALISTES
EUROPEAN UNION OF MEDICAL SPECIALISTS

Association internationale sans but lucratif — *International non-profit organisation*

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Revised (2024) Training Requirements

Orthopaedics & Traumatology

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PREAMBLE FOR EUROPEAN TRAINING REQUIREMENTS

The UEMS (Union Européenne des Médecins Spécialistes, or European Union of Medical Specialists) is a non-governmental organisation representing national associations of medical specialists at the European level. With its current membership of 40 national associations and operating through 43 Specialist Sections and their European Boards, 17 Multidisciplinary Joint Committees and 4 Thematic Federations the UEMS is committed to promote the free movement of medical specialists across Europe while ensuring the professional consensus on the framework for the highest possible level of their training which will pave the way to the improvement of quality of care for the benefit of all European citizens and beyond.

UEMS and its Postgraduate Medical Specialists Training programs. In 1994, the UEMS adopted its Charter on Postgraduate Training aiming at providing the recommendations at the European level for high quality training. This Charter set the basis for the European approach in the field of harmonisation of Postgraduate Specialist Medical Training, most importantly with the ongoing dissemination of its periodically updated Chapter 6's, specific to each specialty. After the most recent version of the EU Directive on the recognition of Professional Qualifications was introduced in 2011, the UEMS Specialist Sections and other UEMS Bodies have continued working on developing the documents on European Training Requirement(s) (ETRs). They reflect modern medical practice and current scientific findings in each of the specialty fields and particular competencies covered and being represented within the UEMS. In 2012 the UEMS Council adopted the document Template Structure for ETR.

The linkage between the quality of medical care and quality of training of medical professionals. It is the UEMS' conviction that the quality of medical care and expertise are directly linked to the quality of training, achieved competencies and their continuous update and development provided to the medical professionals. *No matter where doctors are trained, they should have the same core competencies.* The UEMS ETRs reflect many years (or even decades) of experience on the ground of the UEMS Sections/ Multidisciplinary Joint Committees (MJCs) and Boards developing in close collaboration with the relevant European Scientific Societies training requirements coupled with European Medical Assessments. It is one among the clear aims of the UEMS ETRs to raise standards of training to make sure that European patients find high quality standards of safe specialist care. While professional activity is regulated by national laws in EU Member States, it is the UEMS understanding that it has basically to comply with international treaties and UN declarations on Human Rights as well as the WMA International Code of Medical Ethics.

UEMS and European legislation facilitating the mobility of medical professionals. The UEMS Council and its Specialist Sections, first created in 1962, have regularly provided advice and expert opinion to the European Commission. This helped create the framework that informed the drawing up of

the Doctors Directives in 1975, which provided for the mutual recognition of medical diplomas and the free movement of doctors throughout the EU. The revised EU Directive on the recognition of Professional Qualifications (2013/55/EU) allows member states to decide on a common set of minimum knowledge, skills and competencies that are needed to pursue a given profession through a Common Training Framework (CTF) which represents the third mechanism that could be used to ensure mobility within the EU. This directive states that "p*rofessional qualifications obtained under common training frameworks should automatically be recognised by Member States. Professional organisations which are representative at Union level and, under certain circumstances, national professional organisations or competent authorities should be able to submit suggestions for common training principles to the Commission, in order to allow for an assessment with the national coordinators of the possible consequences of such principles for the national education and training systems, as well as for the national rules governing access to regulated professions".* The UEMS supported CTFs since they encompass the key elements developed in modern educational and training models, i.e. knowledge, skills, professionalism. In addition, the Directive 2011/24/EU of the European Parliament and of the Council of 9 March 2011 on the application of patients' rights in cross-border healthcare introduced a strong incentive for harmonisation of medical training and achieved competencies among EU/EEA Countries through the requirements to assure good and comparable quality of care to increasingly mobile European citizens.

The UEMS ETR documents aim to provide for each specialty the basic training requirements as well as optional elements, and should be regularly updated by UEMS Specialist Sections and European Boards to reflect scientific and medical progress. The three-part structure of these documents reflects the UEMS approach to have a coherent pragmatic document for each individual specialty, not only for medical specialists but also for decision-makers at the national and European level interested in knowing more about medical specialist training. To foster harmonisation of the ETR by adopting more specific guidelines, the CanMEDS competency framework is recommended which defines the entire set of roles of the professionals which are common across both medicine and surgery. UEMS has an agreement to use an abbreviated version of the competencies within those roles.

Importance of making a distinction between Knowledge and Competency in ETR documents. Competency-based education is not oriented towards the period of clinical rotations, but towards trainee, and trainee's progress in the acquisition of competencies. Having a clear distinction within an ETR's contents between competencies and knowledge helps define both how that training should be delivered and how it should be assessed. The UEMS considers that the appropriate use of different methods of assessment of knowledge and acquired skills, emphasising the workplace-based assessment, is an essential component of quality postgraduate training, focused on high standards of specialist medical practice. To improve the methods of assessment it is also recommended to use the so-called Entrustable Professional Activities (EPAs) in all specialties ETRs. In order to recognise common and harmonised standards on the quality assurance in specialist training and specialist practice at a European level some UEMS Specialist Sections and Boards also have, for a long time,

organised European examinations (supported and appraised by the UEMS CESMA - Council of European Specialist Medical Assessments).

Overlapping of learning outcomes and competencies. Each of the UEMS ETRs defines a syllabus or knowledge base and describes learning outcomes defined for given competencies. Some of these curricula encompass a whole specialty, other focus on areas within or across specialties and define content of the training requirements for specific areas of expertise. By recognising the potential overlapping it creates the opportunity for those writing ETRs to draft overlapping or common goals for learning outcomes. Similar measurement does not necessarily equate to the same targets. Rather, across different specialties the final goal may differ, i.e. there may be clearly defined individual goals for trainees with different expectations.

UEMS ETRs and national curricula. The UEMS strongly encourages the National Medical Competent Authorities (NMCAs) to adopt such requirements and believes that this is the most efficient way of implementation of good standards in postgraduate training. We clearly respect and support the vital role of the NMCAs in setting high standards of training and care in their respective Countries and checking through robust quality control mechanisms the qualifications of medical specialists moving across Europe. *The UEMS ETRs are developed by professionals for professionals and this adds unique value to them.* UEMS aim is to indicate the knowledge and competencies that should be achieved by trainees in EU/EEA countries and also competencies and organisation of the training centres. The training environment and results described in UEMS ETRs may be achieved in adapted ways, depending on local traditions, organisation of healthcare system and of medical specialist training. Adaptation of UEMS ETRs to local conditions assures the highest quality of specialist training and each state may include additional requirements, depending on local needs.

Importance of collaboration with other representative European medical bodies. The UEMS always wishes to work with all Colleagues, NMAs, professional and scientific organisations across Europe. In the process of ETRs development, the UEMS recognises the importance of meaningful collaboration with the other European medical representative bodies, the European Junior Doctors (EJD representing doctors in training), the European Union of General Practitioners (UEMO – Union Européenne des Médecins Omnipraticiens), the Standing Committee of European Doctors (CPME - Comité Permanent des Médecins Européens), the Federation of European Salaried Doctors (FEMS) and the European Association of Senior Hospital Doctors (AEMH - Association Européenne des Médecins des Hôpitaux). In addition, UEMS continues to develop closer links with the many European Specialist Societies. UEMS, in collaboration with its fellow European representative bodies, has constantly been highlighting the importance of coordinated postgraduate specialist medical training programs always accepting the differing needs of different specialties. In this way quality medical care is delivered by highly qualified medical specialists - essential to ensuring consumer confidence and protection all over Europe.

Conclusions. UEMS is very proud for all the hard work that has been done until now in developing the UEMS ETRs as well as that they are increasingly implemented as national curricula. However,

we also recognise the need for constant improvement, and we are always open to further suggestions. The UEMS insists that the medical profession remains the driver in defining its own specialist training and continuous professional development needs. On this basis, we sincerely look forward to working with the key European Union responsible bodies, as well as the national stakeholders in implementing the basic common strategies and requirements outlined with this initiative. We are confident that the priorities detailed in UEMS ETR documents developed for individual specialties (and/or competencies) will become evident in national strategies and programs, as well as action plans for postgraduate medical education and training.

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CHALLENGES IN ORTHOPAEDICS AND TRAUMATOLOGY

Musculoskeletal conditions are the leading cause of pain and disability in Europe. They have a high impact on healthcare and are a major cause of work absence and early retirement [1].

The musculoskeletal system comprises the bones and joints between them, and the muscles that act on the joints to produce the movement that allows us to care for ourselves and others, work and enjoy recreation. It is subject to a wide range of disease processes and these are common as recently described in The EFORT White Book "Orthopaedics and Traumatology in Europe: nearly 150 million Europeans, or 30% of the population, experienced a musculoskeletal disorder in 2019. The burden of musculoskeletal disease is huge and is growing. Over the age of 65, more than half the population is affected, as the joints are prone to 'wear and tear' with ageing, causing osteoarthritis (OA) and spinal pain.[2]

In 2019 again, more than 66 million Europeans had persistent back pain and another 21 million reported neck pain. Back pain is the main reason why patients access rehabilitation services.[3] 40 million were affected by OA of the knee, 21 million by OA of the hand, 6.7 million by hip OA and 8 million by OA in other joints such as the shoulder, elbow and ankle. [2] The impact is variable between individuals, but 80% of people with OA have limitation of movement and 25% are unable to perform their activities of daily living. Mobility from cradle to grave on the other hand reduces the risk of cardiovascular disease, diabetes and stroke. The management of OA often includes joint replacement, which is highly successful but not without its own consequences. The development of periprosthetic infection is fortunately rare, but when it does occur the mortality is higher than that of the 5 most common cancers.

Inflammatory arthritis, often caused by malfunctioning of the immune system, is managed medically by Rheumatologists, though some patients develop problems that need surgical intervention. 2 million Europeans have Rheumatoid Arthritis

Osteoporosis affects 21% of women and 6% of men between the age of 50 and 94 (more than 20 million citizens) in the five largest European countries. Osteoporosis is the underlying cause of fragility fractures (low energy fractures which can occur spontaneously or after simple slips and trips), which are increasingly prevalent as the population becomes proportionately older. Currently there are 2.5 million new fragility fractures every year including 0.5 million hip fractures in Europe. Patients, both men and women, suffering a fragility fracture have at least double the risk of death. All consume orthopaedic services, many needing surgery. [4]

Trauma is also a huge economic burden in the younger population: major trauma due to road traffic accidents is the leading cause of disability in adults under 40. It is also the leading cause of disability and death in adolescents and children. 21.000 children aged 5-14 suffer death due to trauma every year, 36% of these being road traffic related. Fractures are much more frequent but, surprisingly, there is no reliable data on their overall incidence in Europe. However, 13% of those who suffer a fracture may lose their employment as a consequence.

As cancer treatment improves, more patients are surviving with metastases, which commonly affect the skeleton. 7-15% of patients with the 5 most common cancers (including lung, breast, prostate, and bowel) develop bone metastases that require orthopaedic consultation. Musculoskeletal conditions are the most prominent work related health problem in the EU, three out of every 5 workers reporting such.[2] Through the declaration of the 'Bone and Joint Decade' initiative, at the beginning of the millennium, the World Health Organization addressed the high burden of Musculoskeletal Conditions on societies and the individual. [5]

Eurostat population data estimate that the population of people over 65 years old in Europe will increase from 17.3% in 2010 to 29.4% in 2050. The EU-27 population will increase significantly, rising from 90.5 million at the start of 2019 to reach 129.8 million by 2050. Along with the rise in life expectancy and population growth a bigger increase in the burden of Musculoskeletal Conditions is expected. [6]

This will create an enormous challenge to the EU health care systems that have to perform a difficult balancing act, firstly between increasing demands on health services and restricted supply. [7,8] In addressing this enormous burden the response of each country is different and the distribution of MSK health professionals, resources and rates of surgery vary widely. In 2016 the number of orthopaedic surgeons per country varied from 5-12 per 100000.[9] The rate at which knee replacement was carried out in 2016 ranged from 20-250 per 100000 population per year and hip replacement (including hip replacement for fractures) from 30-310.[8]

Member States will have to assess what specialist skills they each need, considering differences in national health care provision, in health care budgets, in changing healthcare treatments with the introduction of new technology, as well as the effects of the ageing population on the pattern of disease and the increased number of elderly patients with multiple chronic conditions.

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I. TRAINING REQUIREMENTS FOR TRAINEES

Recently, updating of the Professional Qualifications Directive of the European Commission has required Europe-wide agreement of Training Requirements in all professional bodies, including all medical specialties, and this has contributed to an increased interest in the harmonization of training in orthopaedic and traumatology surgery.

There is a wide variation in the way orthopaedic specialization is practiced in each European country.

In December 2012, EFORT (European Federation of national societies of Orthopaedics and Traumatology) launched The **European Education Platform – (EEP)**, by inviting the National Associations to contribute to this process. The idea was to start with a small group to establish a framework and later to involve all Associations, in order to have wide representation across the European Union. At the same time UEMS, EBOT, the Specialty Societies and FORTE, (the trainees association), were invited to participate in the process.

The particularities of each Association have been preserved but the broad principles of the curriculum have been developed to allow general applicability and the trainee will have the same core competencies. Minimal requirements for Orthopaedic and Traumatology Training have been agreed by the European Union of Medical Specialists (UEMS) that fulfills all of these needs with training courses and syllabus.

So far, European residents take their national examination (where such an examination exists). This is managed by the national association or health authority, in the national language. In many countries national law requires this process.

The European Board of Orthopaedics and Traumatology (EBOT), on behalf of the Orthopaedic Section of the UEMS has been running an annual examination, conducted in the English language since 2001, in the Spanish language since 2016, and for the first time in French in 2023. Over time EFORT has become directly involved in this examination process by taking responsibility for much of the administration. A cooperation agreement about this exam has been signed between UEMS and EFORT and his operational since 2021.

This EBOT exam tests the generality of orthopaedics and trauma. This exam is not mandatory but is used by both trainees and trainers as a guarantee of quality proof.

Considering the already existing and soon to expected burden of musculoskeletal conditions it is fundamental to improve the capacity and consistency in producing well trained, competent orthopaedic surgeons throughout Europe.

1. Content of training and learning outcome

Competencies required of the trainee

Competence based medical education (CBME) includes the CanMEDS Core Competencies. It provides a framework whereby competence as a medical expert can be secured across the roles of being a communicator, collaborator, leader, health advocate, scholar and professional.

A medical trainee is a doctor who has completed his / her general professional training as a physician and is in an accredited training program to become a recognized orthopaedic and traumatology surgeon. The "name" may vary among countries: intern, fellow, resident, registrar …

The medical trainee must be fit to practice medicine and surgery.

The medical trainee must acquire competency: knowledge, skills and professionalism in orthopaedic surgery and traumatology.

The medical trainee must demonstrate their commitment in ethical and professional manner. They should be dedicated to patient care and the highest standard and participate in all recommended activities.

They will abide by the rules and regulations of the training program in a non-discriminatory manner.

The trainee must be able to communicate with patients and relatives in a sensitive and caring manner as well as being able to communicate with healthcare staff including teamwork.

At the 'Learning Outcomes' the trainee should know, understand and be able to perform with professionalism, skill, and knowledge in the specialty of Orthopaedics and Traumatology.

This revision has included some additional high-level outcomes from training. These are commonly termed Entrustable Professional Activities (EPAs) but are also referred to in some nations as Capabilities in Practice (CiPs).

These aim to ensure that the role of an independently practising surgeon is capable of performing all the tasks required of a professional during their working day. That will include having developed generic skills, alongside behaviour that reflects the highest standards and values expected of such practitioners. Some countries use a series of defined capabilities termed 'Generic Professional Capabilities' (GPCs) which are aligned to the statutory guidance issued to all doctors. They are used in this ETR as a template for future development of such higher-level competencies throughout the UEMS nations.

a. Theoretical knowledge

The main domains covered by the specialty that a trainee should master in the specialty are covered in the core curriculum (see below)

The specialty of Orthopaedics and Traumatology involves prevention, diagnostics (including imaging techniques), non-operative, pharmacological, and surgical treatments and rehabilitation of degenerative, inflammatory, infectious, metabolic, and neoplastic pathologies, as well as the management of musculoskeletal trauma and its post-traumatic consequences. Furthermore, it encompasses contributions to the multidisciplinary management of congenital and acquired deformities and functional disorders at any age in collaboration with other relevant specialties.

Fundamentals of basic science, including applied biotechnology, evidence-based medicine and ethics should underpin the educational process.

b. Practical and clinical skills

Training for OT surgeons should be a minimum of 5 years, being one to two years of basic education (or common trunk), and three to four years of a specific orthopaedic and traumatology program depending on national requirements. The key skills to possess are acquired after a long education process.

The process of education should be guided and controlled by national authorities responsible for health care provision. There has to be the freedom to choose an appropriate training concept, which enables the doctor to obtain thorough knowledge of the complex field of Orthopaedics & Traumatology.

The educational process in the curriculum includes a basic clinical education and leads to a progressive increase in knowledge and skills in the specialty. Due to the different structures and facilities of clinical departments this process can be modified individually, but the concept of generalization and modularization should allow an appropriate program to be established for each individual. There should be established rotation periods covering all main area of the specialty.

The basic education (common trunk) will teach the trainee to cope with routine tasks in the healthcare system including the management of medical emergencies, first aid, the basics of perioperative and post-traumatic care, understanding hygiene and surgical infection as well as further development of the skills of communication with the patient, health care personnel and medical colleagues, initiated in medical school and respecting ethical and humanitarian principles.

The trainee should also be sufficiently exposed to inpatient, day stay and outpatient management.

After this basic education (common trunk) the content of the curriculum covers the whole spectrum

of musculoskeletal pathology and comprises knowledge, experience, clinical skills and attitudes, and professional behavior. The educational process is related to the development of a level of competence in which the specific content is repeated in increasing levels of complexity, which can be thought of as a spiral developmental process, returning to the same topics repeatedly, at progressively higher levels of competence, throughout the years of residency. The different topics of the specialty also can be formed in blocks and modules supporting the development of competence.

As the field is so vast, a strict "number" of procedures required is not relevant. During the process of training, the accent is more on the quality than the actual numbers. Procedures performed by the trainee will become more and more complex and supervised by a senior surgeon.

Throughout training an education program will be followed by the trainee. This will include regular conferences, meetings, staff meetings, case discussion. Protected time must be given to the trainee for study and research.

Basic / advanced lectures by staff and visiting speakers

- -Clinical presentations including multidisciplinary presentations
- -Pathology and radiology conferences
- -Radioprotection
- -Journal clubs
- -Mortality and morbidity meetings
- -Research meetings
- -Teaching in ethics, administration, management and economics

The trainee should be involved in these scientific activities by giving lectures, presentations both locally and at least on a national level. Some type of "personal" scientific paper should be done during the training. This personal work should at least be presented at a national/international meeting or published.

c. Competences

Supervision levels are recommended for the assessment of trainee's ability to manage EPAs.

Level 1	Able to observe only
Level 2	Able and trusted to act with direct supervision
Level 3	Able and trusted to act with indirect supervision
Level 4	Able and trusted to act at the level expected of a day-one consultant
Level 5	Able and trusted to act at a level beyond that expected of a day-one consultant, exhibiting good judgement and reflective practice based on breadth of experience.

The content should be organized to achieve at first a general view of the wide spectrum of the specialty, followed by a modular process of developing knowledge and skills in more specific areas, bearing in mind that at first, particularly with respect to skills, the clinical situation will not allow simultaneous development to level 3 and 4 in all topics. These levels will therefore be achieved in defined orthopaedic and traumatology modules according to the special interests of the hosting department, the demands of the health care that is required as well as the talents of the individual resident. Non-operative treatment including assessment of rehabilitation needs as well as prevention are also mandatory to underpin the development of comprehensive surgical skills and excellence. This also includes the safeguarding of children with awareness of abuse/maltreatment/neglect of minors and initiating investigations when determined needed to prevent further harm.

At the end of training the trainee should have acquired a level 4 in all non-operative issues and a level 3 + in the operative procedures (complete independent practice by a trainee being prohibited in more and more countries. It will be the trainer who will assign a level 3 + and thus recognize his/her trainee as a level 4 and the supervision being "available on demand ")

The training must cover the full range of the specialty and end with the license to practice orthopaedic and traumatology surgery but not all at level 4.

The trainer will have to recognize at the end of training that the trainee will be able to perform independently and thus recognize that the trainee has become entrustable.

Entrustable professional activity (EPA) has to be reached by the trainee in basic orthopaedics and traumatology. This includes performing at level 4 regarding the following criteria:

- Review of case notes ahead of surgery
- Patient consent
- Completion of WHO or applicable checklists
- Successful perioperative management
- Successful surgical management
- Completion of medical records
- Post-operative review and management including pain control
- Communication with patient and relatives
- Communication with other medical staff (teamwork skills)

Regarding traumatology the trainee must be entrustable with basic lower limb and upper limb fracture and other trauma care (level 4). Pelvis, spine, specialized pediatric orthopaedic surgery, and orthopaedic oncology are the next level up and will require extra training as "fellowships" or other means and thus a level 2 is sufficient.

The majority of orthopaedic surgeons become "subspecialized" after the end of basic training and go into fellowships. All of them need minimum level 2 in the full range of the specialty but level 3 and 4 could be different. Let us take an example: a future "hip surgeon" might already have level 4 in hip surgery (primary total hip replacement as an example) but only level 2 for spine trauma. A future spine surgeon on the opposite might already have a level 4 in spine and only 2 or 3 in hip surgery. The trainer or training team have thus an important responsibility in verifying that the basics are reached (lower and upper limb traumatology) and have to be able to nuance the more delicate issue of orthopaedics (pelvis, spine, oncology, pediatrics)

2. Organisation of training

a. Schedule of training

To enter the program in orthopaedics and traumatology trainees should have demonstrated competence in working as a team member, assessing emergency patients, and initiating investigations and treatment, managing the perioperative care of patients, and performing simple invasive and operative procedures: the basic clinical education (1 year minimum).

The residents should have rotated through a basic surgical training program that equips them to per-

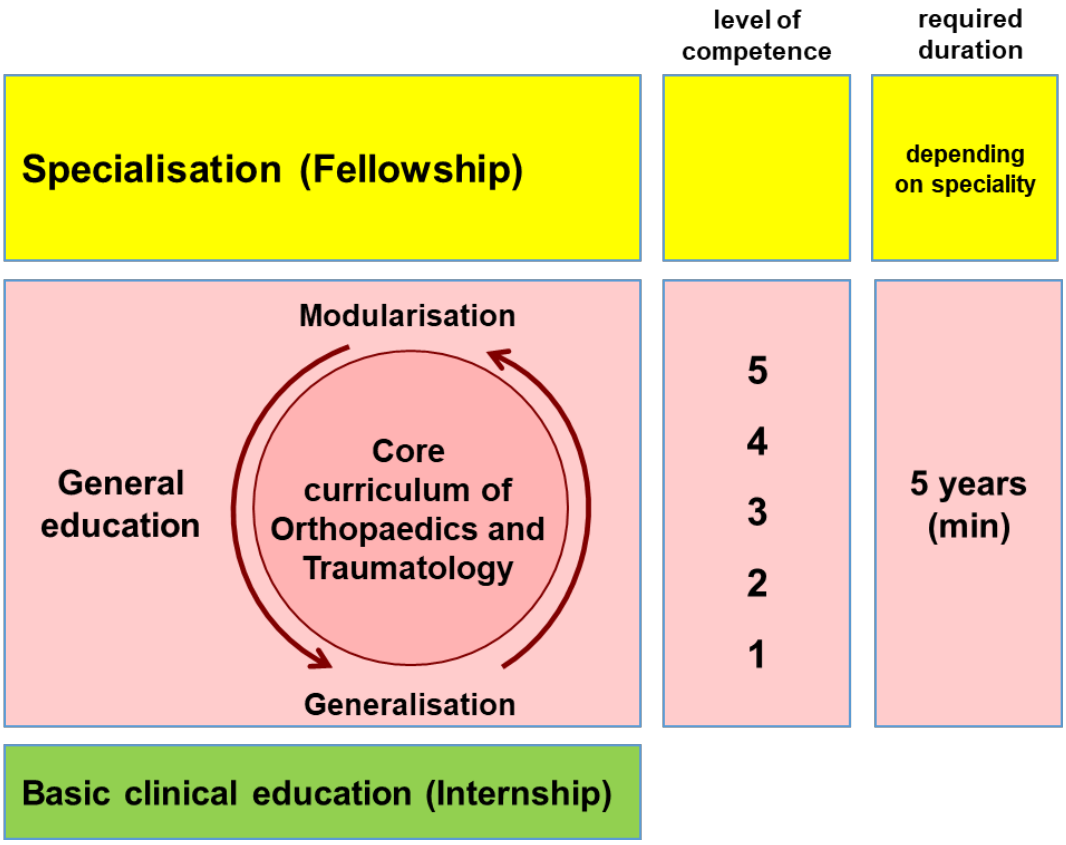
form as a member of a surgical team, receive emergency patients, initiate diagnostic tests and management, manage the perioperative care of surgical patients, and recognize and treat common complications. They should be a safe and useful assistant in the operating room and be able to perform simple procedures under minimal supervision. The basic part can be included in the overall curriculum or undertaken independently prior to embarking on OT training.

Selection for an OT training program is usually competitive, after completion of basic medical/ surgical foundation. The institutions providing training must provide the infrastructure (including the financial and administrative elements) to allow the trainee access to inpatients, outpatients, and theatre settings. It should comply with relevant quality assurance and surveillance mechanisms designed to maintain the quality of training. This would be a minimum of four years. In total, depending on the duration of the basic clinical education and the time to acquire "competency" one should thus count on a minimum duration of five to six years.

Specialization and expertise should be provided by a fellowship process after completion of the General Training provided in a residency and described in this document. The content and structure of these programs is beyond the scope of this curriculum and should be developed by the Specialty Societies. Fellowship level training will be related to the requirements of each specific specialty with its own reference points in terms of quantity, quality, and structure.

Fellowships are not part of these ETR. Fellowships are just mentioned here and shown on the diagram below since there are more and more OT surgeons who go in to one or another fellowship after their initial diploma.

The modularization of the OT curriculum should allow the resident to reach at least level three in most fields and allow him/her to deal with patients in a holistic way, providing diagnostic and first line treatment for the common conditions of the locomotor system, and to fulfil general on-call requirements in an orthopaedic and traumatology setting. The definitive surgical treatment of polytrauma for example is multidisciplinary and full competence is often not achieved in residency, but a fellowship in a high-level trauma centre should serve this purpose and can provide the experience necessary to reach the highest standards in the treatment of this challenging problem. In summary, the concept of Training in the Generality of Orthopaedic Surgery and Traumatology, leading to Certification and followed by Specialist Training at fellowship level in fields of the Trainee's choice is essential in providing a universal standard of Orthopaedic Competence, providing the basis for specialist care.


level of competence
required duration
Specialisation (Fellowship)
depending on speciality
Modularisation
General education
Core curriculum of Orthopaedics and Traumatology
5
4
3
2
1
5 years (min)
Generalisation
Basic clinical education (Internship)

b. Curriculum of training

The Core Curriculum in Orthopaedics and Traumatology

Defined in Pathologies

- inherent
- growth associated
- caused by bone metabolism
- caused by infections
- caused by nervous system
- caused by systematic diseases
- caused by bone and soft tissue tumors
- caused by inflammation
- caused by sports
- caused by injuries
- cause by medical interventions

Defined in Areas

- shoulder, elbow, upper arm
- lower arm and hand
- pelvis, hip and thigh
- knee
- lower leg and foot
- viscerocranium,
- body cavities
- spine

Defined in Patient groups

- neonates
- children
- adolescents
- adults
- older people

Differentiated in Diagnosis

- Imaging methods (including but not limited to ultrasound, plain X-ray, CT, MRI, nuclear medicine scan and osteodensitometry)
- Specialist laboratory medicine
- Puncture and biopsy

- Investigation technique

Differentiated in Conservative Therapy

- Physical – medical measures, occupational therapy, complementary therapies
- Treatment with immobilizing or corrective bandage
- Orthoses, prosthetics, therapeutic products and medical aid
- Non- Operative treatment (manipulation) of fractures and dislocations
- Pain relief therapy incl. injections, infiltrations, acupuncture
- Manual Medicine
- Drug treatment of musculoskeletal disorders and symptoms
- Rehabilitation of musculoskeletal disorders and injuries

Differentiated in Operative Therapy

- Arthroscopy
- Reconstruction procedures
- Osteotomies
- Osteosyntheses
- Resections
- Endoprosthetics
- Intervention in nerves, vessels and connective tissue
- (tendon-, muscle- and ligament repair/ reconstruction)
- Amputation

Infection control

- Hygiene procedures
- Antibiotic prophylaxis
- Antibiotic treatment

Communication and interdisciplinary collaboration

- Communication with patients taking into account cognitive impairment, psychiatric comorbidity as well as addiction, environmental exposure and social deprivation.
- Communication with relatives and health care staff
- Interdisciplinary communication and triage with relevant specialties regarding both orthopaedics (e.g. malformations and metabolic diseases) and traumatology
- This includes but is not limited to neurosurgery, neurology, hand surgery, plastic surgery, pediatrics, ENT, maxillofacial surgery, endocrinology, psychiatry, geriatrics, primary care physicians and physical and rehabilitation medicine.
- To know and be able to apply basic principles of telemedicine and digital health

c. Assessment and evaluation

Regular assessment by the Training Program Director or members of his/her staff designated for such a matter should be done on a regular basis.

Each trainee must keep an official national trainee logbook. In this logbook the trainee will demonstrate that he/she has been sufficiently exposed to a wide range of cases as an assistant or supervised operator. Logbooks must be monitored regularly and undersigned by the trainee and the Training Program Director or the designated staff member.

A logbook/ portfolio will include not only the surgeries performed but also:

- details of previous training post, dates, duration and trainers
- details of examinations passed
- list of publications
- list of research/clinical presentations at a local, national and/or international meeting
- list of courses attended
- cumulative operative totals-copies of assessment forms for each training period, completed and signed by trainers for that period.

A training agreement will be signed by the trainee and the Program director if necessary or required by the specific country and will define the respective duties and obligations. Assessment of trainees should include formative and summative elements. Some countries have already developed sophisticated annual appraisals including tests of knowledge whilst others do not even have a system for regular monitoring of trainee progress. Similarly, some countries hold validated examinations at the end of training, which form one part of the assessment for certification, whilst others do not.

Formative appraisal in particular allows individual deficiencies to be addressed in a timely manner without prolonging the overall training time or prolonging it minimally. It also allows Quality Assurance of the Training Centers and Trainers.

The Interim EBOT examination is available to assist those countries where annual appraisal systems are not well developed and will give valuable feedback on the progress of individual trainees to help them and their trainers to focus on future training. Details of the EBOT Interim examination are set out below:

EBOT Interim Examination

It has been recognised for some time that MCQs are the most effective way of assessing the knowledge base, and an annual MCQ examination would be instrumental in encouraging trainees to improve their knowledge base. Examples of successful interim examinations include the AAOS OITE and the UKITE in UK.

Interim examinations of various types are already in use in many European programs.

The EBOT Interim exam has been running now since years and provides a similar incentive. It has already been shown to be a unique and useful tool that hospitals, training programs and Regional and National Postgraduate Education Organisations can use in order to improve the quality of orthopaedic and trauma training in Europe. The anonymised results of the interim test are returned to both candidates and Training Directors and show the candidate's ranking relative to his/her peers, locally, nationally and internationally. The information gathered so far from each of the previous exams has been extremely useful for the trainees who have a yearly assessment of the 5 different areas covered by the MCQ exam.

Prior to a final exam they have a tool that can help them to correct deficiencies in their knowledge. Heads of Training also receive a global assessment of how their residents are doing and have the opportunity of comparing their performance with the other hospitals in the country or elsewhere in Europe.

Consistent deficiencies in particular areas also allow external assessment of the individual training program and permit adjustments to be made.

With this interim exam we are able to improve the quality of orthopaedic training in Europe and get a better quality of care for our orthopaedic patients as well.

At present, the interim written examination is set in English as we expect all European trainees to read English and also for the reason that translating an MCQ alters the sense and validity of the questions. The matter has been discussed at length with Board members and Trainers and it is agreed that for the time being the MCQ questions will continue to be in English, as are the questions in the Final examination. It may eventually become feasible to provide an examination in different languages.

The principle of an interim exam is that trainees at all levels of their program should take it, and it should be sat without specific prior revision. It is used both as an assessment of the trainee's level of knowledge retention, and as a guide to progression from year to year. Finally, it provides good practice in the gaming required to be successful at MCQs. Candidates are anonymised and their marks are graded according to their position relative to others in the same and other years of training. It allows trainees to see where they are in comparison to their peers. The anonymised results can also be used to assess the training programs, both regional and national, and ultimately international, to see where deficiencies in the training provided lie, especially regarding certain subjects, such as e.g. hands and

paediatrics, and also basic sciences.

Additionally, to the evaluation process of the knowledge within the interim exam a differentiated logbook of the EPAs is recommended to document progress of skills and professional behavior. The fulfillment of this logbook has to be an interactive process between the trainee and the trainer and has to be structured as continuous increasing competences over the years. The progress has to be checked and discussed with the trainee in a half year rhythm and feedback given to both sides. The EPAs as well as clinical, surgical, and professional development should also be part of the final assessment and certificate to approve and document the whole spectrum of the educational process.

Summative Assessments

The principle of a final examination is increasingly becoming accepted as an effective tool for defining the competence of a surgeon trained in the Generality of Orthopaedics and Traumatology. Ideally it should take place towards the end of training, usually in the final year.

The eligibility criteria for the final EBOT exam are: to be a certified European Orthopaedic and traumatology surgeon, to be trainee in a European accredited program in his/her last year having fulfilled all the criteria to be recognized as an orthopaedic and traumatology surgeon (letter of Training Program Director) in his/her country.

It should assess overall competence and therefore cover the whole curriculum. The assessment is therefore for General rather than Subspecialist training. Most final examinations comprise a written MCQ paper, which tests the candidates' knowledge base, and a separate oral examination, which determines clinical skills and some aspects of professional behavior. A clinical examination, which allows assessment of communication skills, physical examination, and ability to make decisions about a live clinical scenario, is also used in some countries.

Operative skill is not tested, as this requires ongoing evaluation by the trainer over a period of time, during local formative assessments if a nation does not have a final examination, but wishes to introduce one, or wishes to supplement its own National Examination before certifying trainees, then the EBOT final examination is available to fulfil that function.

At present the EBOT examination (http://www.ebotexam.org/) comprises two parts, taken separately, with the written section sat in June in centres throughout Europe but also with special supervision in one's own home/hospital (since Covid) , and the oral examination taken in October. The examination is in English.

The exam is also available for the oral part in French in Belgium for French speaking Belgian candidates (2023) and in Spanish (since 2016). The exams are then organized by the "local" associations in close collaboration and supervision by EBOT. German, Greek, and Turkish versions are being prepared.

A clinical examination in local languages in the candidates own country is planned. We need to test

attitude, clinical skills, and professional behavior of candidates as throughout modern times decision making by surgeons is moving away from the clinical grounds to be based quickly on examinations only. We must guarantee that Fellows of the European Board are skilled clinicians and know how to make a therapeutic decision based on the relevance of the clinical findings and of the investigations performed.

It is important to recognise that successful completion of the EBOT examination is not the sole determinant of clinical competence and must be associated with a rigorous appraisal system before a trainee is recognised as a Specialist. This provides the National Regulatory Authority in each EU country with an important influence. If acquisition of Specialist Certification were dependent on both satisfactory appraisals throughout the training period AND successful completion of an examination which tests Knowledge, Clinical Skills and to an extent Professional Behavior, then doctors without these qualifications would not be able to be employed as Certified Specialists. It should be emphasized that successful completion of a final examination should NOT confer Specialist status on its own but will have to be the last step in a residency program where all other steps have been fulfilled successfully during training.

Language issue will be a challenge of the future. The general idea being that the exam will be conducted in several languages by the different countries (grouping of smaller ones) on the same "model" as the EBOT exam and under supervision by EBOT examiners.

At the end of the training, the Training Program Director certifies the attainment of:

- satisfactory operative totals
- adequate competency level
- satisfactory assessment for each year of training
- EPA Entrustable professional activity

d. Governance

The governance of an individual's training program will be the responsibility of the Program Director and the institution(s) in which the training program is being delivered. A trainer will be responsible to the Program Director for delivering the required training in their area of practise. Governance of training competencies and contents for now remains a core competency of respective national medical specialty boards. However, UEMS strongly encourages the implementation of structures on a national level that allow for continued reassessment of specialty training programs in close cooperation with all participants.

II. TRAINING REQUIREMENTS FOR TRAINERS

1. Process for recognition as trainer

a. Requested qualification and experience Training Program Director

The Training Program Director must be a certified specialist for a minimum of 5 years.

His/her substantial working contract must be within the training institution/network. The CV of the Training Program Director should provide evidence of his/her continuing professional development (CPD) in the field of Orthopaedic and Trauma surgery.

The Training Program Director must have full secretarial and administrative support and there must be sufficient protected time for him/her to carry out his/her responsibilities.

Responsibilities of the Training Program Director

- To establish a transparent and fair selection and appointment process for trainees.
- To arrange a balanced training program with established rotations ensuring that the trainee will have complete exposure to the aspects of O and T in order to be able to fulfil the criteria in the curriculum.
- To ensure that there is dedicated time allocated for training and that the trainers are fulfilling their responsibilities to oversee, support and assess trainers.
- To ensure that the individual trainees´ documentation and training portfolios are up to date.
- To advice trainees and ensure that they attend proper and approved courses. To provide valid documentation as to the satisfactory completion of training.
- To oversee the types of operative procedures and clinical activities performed in the department and participating units connected with the training program.
- To provide opportunity for research, audit and other educational valid activities such as attending courses and scientific meetings.
- To provide a yearly and final report on each trainee.

Accreditation of trainers

Trainers must be certified Orthopaedic and Trauma (OT) surgeons with adequate pedagogical competence. The Training Program Director must be registered with the relevant national medical authority and possess the necessary administrative, pedagogical, scientific, clinical and surgical skills required to conduct the program.

Criteria for trainer status

Trainers should be certified OT surgeons who can demonstrate pedagogical skills and that they are in compliance with the requirements of continuing professional development in their field.

Trainers must be recognised by the responsible national authority. Preferably the trainer is a member of the national society.

Trainers should possess the necessary administrative, communicative, pedagogical, scientific and clinical skills as well as commitment to conduct the program.

Trainers should have received instruction for training e.g. pedagogical course (assessment of needs and teaching objectives and evaluation of trainees). They should be able to assess needs and advise on teaching objectives.

Trainers should provide evidence of academic activities (clinical and/or basic research, publications in peer reviewed journals and participation in OT scientific meetings).

Trainers will require secretarial and administrative support.

There should be sufficient number of trainers. The ratio between the number of qualified specialists (teaching faculty) and the number of trainees should enable a close monitoring and provide versatile exposure to different schools of thoughts.

Responsibilities of trainers

- To set realistic aims and objectives for a rotation or training period.
- To supervise the day-to-day work of the trainee in the ward, clinic, the operating theatre and during on-call commitments.
- To support and assess the trainees progress at the end of each rotation or training period. To encourage the trainee to carry out research.
- To ensure that there is appropriate balance between service commitment and training.
- To ensure that the regular assessments and reports are completed and agreed upon by both the trainer and the trainee (under the supervision of the Training Program Director).
- To keep the Training Program Director informed of any problems at an early stage.
- To manage with the other trainers under the guidance of the Training Program Director any inadequacies/deficiencies demonstrated by a trainee. The institution/network and if necessary, the

relevant national authority should become involved if the local conflict between the Training Program Director and the trainee cannot be resolved.

2. Quality management for trainers

To assure the quality of the training programs, program directors and trainers will undergo regular controls during the site visit/ external auditing.

They will also on a regular basis (as defined by the appropriate governing body of each country) have to "re-apply" of their teaching position: CV update, practice evaluation (clinical work, surgeries …), scientific work (publications etc.), work of their colleagues etc. Every five years would be an appropriate timing.

Evaluation is also performed by the trainees per questionnaire, or any other mean decided by the individual countries.

III. TRAINING REQUIREMENTS FOR TRAINING INSTITUTIONS

1. Process for recognition as training centre

a. Requirement on staff and clinical activities

National authorities will give accreditation to departments/networks based on the range of clinical specialties, number of patients cared for as inpatients and as outpatients in such a way that the trainee will be exposed to what needs to be covered by the curriculum.

Different types of accreditations are thus possible as described under III.2….and a trainee will be able to do part of his /her training in a "partial" accredited program for part of his/her training …

To assure that the trainee will receive appropriate exposure to the different pathologies (quality and quantity) is one of the duties of the Program Director.

Appropriate faculty covering the broad spectrum of orthopaedics should be available in "full" at a "fully" accredited department: paediatrics, spine, upper limb, lower limb, sports, trauma, tumor, arthroplasty …As per curriculum.

Faculty can be missing in the "partially" accredited departments; nevertheless, the program of the trainee has to cover all aspects.

An appropriate ratio of trainee/trainer will be maintained in such a way that the trainee will have enough exposure to patient care in all its aspects but also time for scientific work and appropriate rest time.

This is part of the accreditation process, and a minimum/maximum number of trainees will be assigned to each department/network.

b. Requirement on equipment, accommodation

Appropriate medical and technical equipment will be made available to the trainee. Classic library or computer with internet access to medical library online (journals etc …) will be made available to the trainee. Appropriate accommodation for scientific work as well has a resting place will be available.

2. Quality Management within Training institutions

Accreditation

I. Full accreditation may be granted if the program has demonstrated full compliance. The Department/ Network will receive a certificate indicating that the Department/ Network and the Training Program fulfills the standards and criteria. The accreditation should be reassessed regularly.
II. Partial accreditation may be granted if the program has demonstrated compliance for only a partial scope or has training limitations. The Department/Network will receive a certificate indicating that the Department/Network and Training Program fulfills the standards and criteria for a limited spectrum of accreditation or a limited period. The accreditation should be reassessed regularly. Missing criteria can be reassessed, and full accreditation granted if the missing criteria are fulfilled.
III. Accreditation may be withdrawn of the program does not substantially comply with the requirements.

The training institution/ network should possess an adequate infrastructure and offer qualitative and quantitative clinical exposure as defined in the scope of the curriculum. The nationally accredited training program fulfilling the criteria will obtain approval delivered by the board. A training program must be reviewed every 5 years. The National Authority is responsible for setting up at national level a program for quality assurance of training and of trainers and training institutions in accordance with national rules and EU legislation as well as considering UEMS recommendations.

Clinical Governance - Manpower planning - Regular report

The relevant medical chamber/National Authority is the responsible body for recognition/ certification of medical specialties in each member state of the UEMS member states. The majority of these countries now have a Board Examination.

National bodies should be made aware of the existence of the EBOT exam.

The standards for recognition of national training institutions and education networks are matters for national authorities, in accordance with national rules and EU legislation with the aim of harmonizing the different training programs of OT at national level.

A training institution/educational network must have national recognition/accreditation, in agreement with national/UEMS standards. In order to be accredited, an educational program must substantially

comply with the special national requirements for residency training. Programs must demonstrate their compliance with these requirements at the time of the site visit.

Transparency of training programs-Structure for coordination of training

To establish a transparent and fair selection and appointment process for trainees is the responsibility of the Training Program Director.

To arrange a balanced training program with established rotations ensuring that the trainee will have complete exposure to the aspects of O and T to be able to fulfil the criteria in the curriculum is also the responsibility of the Training Program Director.

Framework of approval – how are they approved – Process for recognition as a Training Institution/Network

Training institutions for the specialty OT are recognized by the National Authority and/or National Board and/or medical chamber/medical society of the member country. Each member country will keep a register of approved institutions.

To obtain recognition, the training institution must comply with the national requirements for Residency Training in OT. The training institution/network must be able to demonstrate its compliance with these requirements.

The Training Program Director must submit a Program Application form to the National authorities/medical chamber/medical society describing the levels of staffing, space allocation, technical facilities, and particularly the Residency Training Program.