EUROPEAN UNION OF
MEDICAL SPECIALISTS
The advocate of medical specialists

European Competence and Training Framework for Hand Surgery

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EBHS European Board of Hand Surgery

FESSH Federation of European Societies for Surgery of the Hand

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I. INTRODUCTION

1. UEMS Preamble

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 programmes. 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 1 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 "professional 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 2 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 3 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 Hospitaliers). 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 programmes 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 programmes, as well as action plans for postgraduate medical education and training.

II. HAND SURGERY AS A MULTIDISCIPLINARY COMPETENCE

1. Hand Surgery

At the European Union level, hand surgery is not listed as an independent primary specialty under Annex V of Directive 2005/36/EC. For consistency with UEMS template language, the term ETR may still appear in headings; however, this document constitutes a European Competency and Training Framework (Framework) for a multidisciplinary competence within UEMS, representing an area of expertise shared between several parent specialties, including Plastic, Reconstructive and Aesthetic Surgery and Orthopaedic Surgery.

Hand Surgery is the competence of surgery concerned with the diagnosis, operative and non-operative treatment, and rehabilitation of congenital, traumatic, degenerative, inflammatory, metabolic, infectious and tumour conditions of the hand, wrist and forearm, and selected disorders of the elbow, arm, shoulder girdle and peripheral nerves of the upper limb.

It covers the repair, reconstruction and preservation of function of bones, joints, tendons, ligaments, muscles, vessels, nerves and skin of the upper limb, from fingertip to (and including) brachial plexus and supraclavicular structures. Because impairment of hand function has a disproportionate impact on independence, work capacity and quality of life, Hand Surgery has a direct socioeconomic relevance far beyond the anatomical area it serves.

Historically, Hand Surgery has evolved at the intersection of Orthopaedics and Traumatology, Plastic and Reconstructive Surgery, Neurosurgery, Vascular Surgery and Rehabilitation Medicine; It also requires cooperation with many allied health care professional disciplines and therapists, medical engineers, prosthetists, and so forth. There is therefore a high demand for collaborative team-working within this field, as the problem-solving aspect of this discipline is called upon frequently to assist the management of complex and salvage cases.

In many European countries, Hand Surgery has developed as a recognised expertise of Orthopaedics and/or Plastic Surgery; in some, it is a distinct specialty in its own right. In all configurations, it remains closely linked to its parent specialties through shared competencies and collaborative practice, integrating these competencies within a focused upper limb domain. The present framework defines the scope of the competence as an integrated upper limb domain. It does not prescribe the obligatory practice profile of every individual surgeon, nor does it require that all practitioners perform the entire spectrum of procedures. Rather, it provides a harmonised training standard for surgeons whose clinical practice is substantially dedicated to Hand Surgery, ensuring that structured, competency-based development supports safe and coordinated care within this field. The practice of Hand Surgery includes, but is not limited to:

- **Acute hand trauma**, including both closed and exposed fractures, tendon and nerve injuries and gaps, vascular compromise, mutilating injuries, replantation and revascularisation;
- **Elective conditions**, such as compressive peripheral nerves neuropathies, degenerative and inflammatory joint diseases, Dupuytren's disease, tumours, overuse syndromes and contractures;
- **Congenital differences and paediatric hand conditions**;
- **Peripheral nerve disorders**, including complex nerve and plexus lesions;

- **Soft tissue coverage and reconstructive microsurgery** for defects of the upper limb;
- **Burns and complex wound management** involving the hand and upper limb;
- **Rehabilitation, hand therapy, and functional restoration** in close collaboration with therapists and multidisciplinary teams.

Hand Surgery is inherently multidisciplinary and collaborative in nature. Optimal care is delivered in close cooperation with orthopaedic surgeons, plastic and reconstructive surgeons, trauma surgeons, neurosurgeons, vascular surgeons, anaesthesiologists, radiologists, paediatricians, rheumatologists, rehabilitation physicians, occupational and physical therapists, psychologists and specialised nursing staff. In selected cases, particularly in the presence of complex or syndromic congenital anomalies, collaboration with medical genetics services may be appropriate.

At European level, the Hand Surgery is represented scientifically and educationally by the **Federation of European Societies for Surgery of the Hand (FESSH)** and by the **European Board of Hand Surgery (EBHS)**. The FESSH White Book and the EBHS European Diploma in Hand Surgery have provided a de facto standard for Hand Surgery training and assessment. This European Competency and Training Framework document (the Framework) builds on that foundation to define a common training framework that is explicit, competency-based and aligned with modern educational principles, to promote harmonization and a high-quality level of training among the European Countries.

2. Aims of the Framework of Hand Surgery

The overarching aim of Hand Surgery as a competence is to ensure that patients across Europe have access to safe, effective and high-quality care for all relevant disorders of the hand, wrist and upper limb, irrespective of national differences in healthcare organisation or training structures.

More specifically, the aims of the Hand Surgery Framework are to produce specialists who can:

1. **Provide comprehensive care for acute hand and upper limb trauma**
    - Perform rapid assessment and triage of injuries;
    - Deliver evidence-based emergency management;
    - Plan and execute operative reconstruction where indicated;
    - Prevent avoidable long-term disability.
2. **Manage the full spectrum of elective hand and wrist conditions**
    - Diagnose and treat degenerative, inflammatory, compressive, tumorous and overuse conditions;
    - Apply both non-operative and operative strategies;
    - Integrate rehabilitation, splinting and occupational considerations into treatment planning.

3. **Perform advanced reconstructive procedures when indicated**
    - Undertake technically demanding surgery such as tendon reconstruction, nerve repair and grafting, osteotomies, arthrodesis, arthroplasty, and soft-tissue coverage;
    - Understand and, where appropriate, participate in microsurgical procedures, including replantation, free tissue transfer and complex limb reconstruction, at a level appropriate to the training environment.
4. **Address congenital and paediatric hand conditions appropriately**
    - Recognise and classify congenital differences;
    - Provide or coordinate appropriate both surgical and non-surgical management;
    - Collaborate within multidisciplinary paediatric teams and recognise when referral to specialised centres is required.
5. **Lead multidisciplinary rehabilitation and functional restoration**
    - Work closely with hand therapists and rehabilitation specialists;
    - Set functional goals with patients;
    - Use validated outcome measures to monitor recovery and quality of life.
6. **Demonstrate high standards of professionalism and patient-centred care**
    - Communicate effectively with patients and families;
    - Involve patients in shared decision-making;
    - Practise ethically and with respect for diversity, vulnerability and psychosocial aspects of hand conditions.
7. **Contribute to patient safety, quality improvement and service organisation**
    - Participate in audit, incident reporting and quality improvement projects;
    - Understand service design, resource allocation and pathway optimisation within Hand Surgery services;
    - Contribute to the development of local and national guidelines.
8. **Participate in research, innovation and education**
    - Critically appraise literature and apply evidence-based practice;
    - Engage in research and/or clinical audit;
    - Teach and supervise trainees and other healthcare professionals in Hand Surgery-related topics.

These aims are aligned with the **CanMEDS** framework: the Hand Surgeon as **Medical Expert**, **Communicator**, **Collaborator**, **Leader**, **Health Advocate**, **Scholar** and **Professional**. Trauma, congenital, degenerative, reconstructive, microsurgical and rehabilitative aspects are all considered essential components of Hand Surgery and are reflected throughout the Framework, the Syllabus (Annex 1), the Procedural Curriculum (Annex 5) and the EPA framework (Annex 6).

3. Procedure of the Framework development and revision

This European Training Requirements document for Hand Surgery has been developed under the auspices of the **UEMS Section of Surgery**, in collaboration with the **European Board of Hand Surgery (EBHS)** and **FESSH**. It is based on the general UEMS template for ETRs and on the EBHS/FESSH White Book on Hand Surgery in Europe.

3.1. Initiation and mandate

Following an invitation from UEMS to submit European Training Requirements for Hand Surgery as a recognised subspecialty, the EBHS appointed a working group to draft the Framework, in close collaboration with FESSH and national hand societies. The objective was to define a common European framework for Hand Surgery training that could support:

- Harmonisation of training across Europe;
- Mutual recognition and mobility of Hand Surgery specialists;
- Alignment with the EBHS European Diploma in Hand Surgery;
- Integration into potential Common Training Framework initiatives under EU law.

3.2. Collection and analysis of national training documents

As a first step, existing training requirements and curricula were collected from national Hand Surgery societies that are members of FESSH. These included national syllabi, logbook requirements, fellowship descriptions, subspecialty curricula and regulations for national Hand Surgery diplomas where available.

These documents were systematically analysed and compared to:

- Identify common core elements;
- Map differences in duration, structure and expected competencies;
- Extract best practices and innovative approaches;
- Ensure that the Framework would be applicable across a wide range of national contexts.

The analysis and preliminary synthesis were shared with the members of the working group and with the EBHS Board, forming the basis of a structured work plan.

3.3. Composition and work of the Framework Working Group

A dedicated Framework Working Group was constituted, with representation from EBHS, FESSH and different European countries and both plastic, orthopaedic and hand surgeons. Within the Working Group, tasks were divided according to expertise (trauma, microsurgery, congenital, curriculum design, assessment, centre accreditation, etc.). Draft sections were produced, circulated, and discussed in online meetings. Particular attention was paid to:

- Respecting national diversity while defining a clear European standard;
- Ensuring consistency with the EBHS Diploma requirements;

- Integrating competency-based education, EPAs and workplace-based assessment;
- Clearly distinguishing between knowledge (Syllabus), technical skills (Procedural Curriculum) and integrated clinical activities (EPAs).

3.4. External review and consensus

A consolidated draft of the Framework was submitted for external review. Comments from this external review were discussed within the Working Group and used to refine the document, clarify definitions and adjust requirements where needed. A particular focus was placed on the feasibility of implementation in countries with limited availability of formal fellowships, by allowing structured networked training with ≥50% Hand Surgery exposure over longer periods as an alternative to traditional 1–2 year fellowships, provided that training occurs within accredited centres and recognised programmes.

3.5. Adoption, publication and revision

After internal consensus was reached, the final draft was submitted to the UEMS Section of Surgery and to the UEMS Council for endorsement as the **European Training Requirements for Hand Surgery**.

The Framework is intended to be a **living document**. It should be periodically reviewed and updated to reflect:

- Scientific and technological developments in Hand Surgery;
- Evolution of educational methodologies;
- Feedback from trainees, trainers and national authorities;
- Changes in European legislation relevant to specialist mobility and recognition.

Future revisions will follow a similar process of Working Group drafting, broad consultation, external review and final adoption by UEMS.

III. TRAINING REQUIREMENTS FOR TRAINEES IN HAND SURGERY

RATIONALE FOR THE TRAINING REQUIREMENTS IN HAND SURGERY

Background and Context

Hand Surgery is practised across Europe within differing national structures. In some countries, it exists as a standalone specialty; in most others it is pursued as a competence following Orthopaedic Surgery, Plastic and Reconstructive Surgery or Trauma Surgery. These varied models reflect national traditions, historical evolution and healthcare organisation. All models are recognised within the European framework. The Framework consistently emphasises competence-based progression, proportional recognition of prior training, and flexibility in implementation across different national systems.

Need for a European Standard

Regardless of local structures, Hand Surgery consistently requires a level of integrated expertise that is not uniformly encompassed within any single parent specialty. The discipline encompasses:

- Acute and elective trauma care
- Tendon and nerve reconstruction
- Microsurgery and replantation
- Joint and wrist surgery
- Congenital and paediatric hand and upper-limb conditions
- Soft-tissue reconstruction and coverage
- Rehabilitation and functional restoration of the upper limb

While substantial components of Hand Surgery are embedded within parent specialty training, the breadth and integration of upper limb practice vary across European training systems. The purpose of Framework is therefore not to replace parent specialty competence, but to ensure focused and coordinated expertise within the upper limb domain. The Framework supports the development of comprehensive knowledge of the hand and upper limb, while recognising that individual surgeons may develop specific areas of practice within the broader scope of hand surgery.

Purpose of the Framework

The purpose of The Framework is **not** to impose a single national model of Hand Surgery training, but to define the **minimum European standard** for specialist-level competence in Hand Surgery. This aims to ensure:

- Patient safety and high-quality specialist practice
- Consistent training outcomes and transparent expectations
- A clearly identifiable professional profile of the Hand Surgeon
- Facilitation of mobility and mutual recognition within Europe

Countries with a standalone Hand Surgery specialty already meet or exceed many of these standards and serve as important reference structures. In countries where Hand Surgery is organised as a expertise, the Framework defines the **additional structured training** needed beyond the parent specialty to achieve equivalent expertise.

Flexibility and Feasibility

To ensure applicability across Europe's diverse healthcare systems, the Framework provides:

- Multiple acceptable training pathways (fellowship-based, combined clinical practice, standalone Hand Surgery specialty)
- Flexible models of exposure
- Possibility of accredited centre networks (e.g. trauma centre, reconstructive / microsurgical centre, congenital/plexus reference centre)
- Clear differentiation between mandatory competencies and exposure-based requirements for rare or highly specialised procedures

- Alignment with existing national frameworks, regulatory structures and EBHS/FESSH standards

This allows countries with limited fellowship capacity to develop structured, recognised Hand Surgery programmes (e.g. longer-duration tracks with ≥50% Hand Surgery exposure), without compromising the distinct identity and advanced nature of the discipline.

Summary

The Framework establishes a common European framework that:

- Preserves national autonomy in training structures
- Respects diverse training traditions and parent specialties
- Ensures high professional standards for Hand Surgeons
- Supports continued development and recognition of Hand Surgery as a distinct, advanced surgical field

The detailed knowledge Syllabus, Procedural Curriculum and EPAs are provided in **Annexes 1–6**.

1. Trainee in Hand Surgery

A **trainee in Hand Surgery** is a medical doctor who has completed general professional training and is trained and assessed in an accredited programme in Hand Surgery, leading to competence in Hand Surgery or specialist recognition in accordance with national law.

Entry usually follows completion, or occurs in the final phase, of a primary surgical specialty, most commonly:

- Orthopaedics and Traumatology, or
- Plastic and Reconstructive Surgery

In some countries, entry may also occur via:

- Trauma Surgery
- General Surgery
- A standalone national Hand Surgery specialty

The Framework recognises all routes listed in the **FESSH White Book**:

1. Hand Surgery as a separate specialty
2. Orthopaedic or Plastic Surgeons with Hand Surgery subspecialisation
3. Surgeons of other major specialties with specific Hand Surgery qualification

The training requirements below apply to **all entry routes**, with adaptations in duration and structure as described in Section 3.a (Organisation of Training).

2. Content of Training and Learning Outcomes

The content of training in Hand Surgery is structured around three complementary and interdependent components:

(i) theoretical knowledge (syllabus),

(ii) practical and clinical skills, and

(iii) non-technical skills and professionalism

Entrustable Professional Activities (EPAs) integrate these components into real clinical practice and support explicit entrustment decisions.

The practical and clinical skills curriculum (procedural curriculum), competence expectations and EPAs constitute core elements of this Framework. For clarity and readability, their conceptual framework and end-of-training expectations are described in the main body of the document, while the full procedural matrices, detailed competence tables and EPA descriptions are provided in Annexes 2, 5 and 6.

'Learning outcomes' describe what the trainee must know, understand and be able to do at completion of training. They are expressed in terms of **knowledge, skills and competences**, consistent with the **CanMEDS framework**. The CanMEDS framework provides the overarching structure for these learning outcomes, ensuring that technical expertise is integrated with communication, collaboration, leadership, scholarship, health advocacy and professionalism. The central role is **Medical Expert**, integrated with the roles of **Communicator, Collaborator, Leader, Health Advocate, Scholar** and **Professional**.

Alignment with Parent Specialty Curricula
This Framework recognises that substantial components of Hand Surgery are already embedded within accredited training programmes in Plastic, Reconstructive and Aesthetic Surgery and Orthopaedic Surgery. Competencies related to microsurgery, flap reconstruction, peripheral nerve surgery, congenital conditions, trauma reconstruction and oncologic reconstruction, when demonstrably achieved during parent specialty training, shall be acknowledged within the Framework.

2.a Competencies Required of the Trainee

i. Theoretical Knowledge (Syllabus)

By the end of Hand Surgery training, the trainee must master the knowledge domains corresponding to the FESSH White Book and core principles of Hand Surgery. A detailed Syllabus is provided in **Annex 1**.

Key domains include:

Basic Sciences

- Anatomy and embryology of the hand and upper limb
- Physiology of tendon, muscle, nerve and bone
- Principles of wound, tendon, bone and nerve healing

- Mechanism of action of pharmacology on the microcirculation
- Principles of infection, spread of infection, surgical pathology, microbiology and antibiotic stewardship
- Blood supply to the limb and skin
- Imaging: radiographs, ultrasound, CT, MRI – indications and interpretation
- Biomechanics of the hand and wrist
- Pathology of degenerative, inflammatory, rheumatological and neoplastic disorders

Principles of Hand Surgery

- Clinical examination of nerves, tendons, joints and vascular system
- Acute trauma assessment and management of skeletal, soft-tissue, nerve and vascular injuries
- Fractures, malunions, ligament injuries and joint instabilities of the hand and wrist
- Tendon injuries, reconstructions and transfers
- Peripheral nerve injuries, including exposure to brachial plexus lesions
- Burns, major trauma and mutilating injuries
- Arthrosis, arthritis and inflammatory conditions of the hand and wrist
- Overuse syndromes and complex regional pain syndrome (CRPS)
- Congenital hand and upper limb conditions
- Soft-tissue coverage: grafts, local, regional and free flaps
- Hand infections: superficial, deep, tendon sheath, osteomyelitis, septic arthritis
- Psychiatric aspects, secondary gain and functional symptoms
- Principles of hand therapy and rehabilitation

The **recommended (not mandatory) literature and educational resources** are listed in **Annex 4**.

ii. Practical and Clinical Skills (Curriculum)

Hand Surgery is a highly technical and decision-intensive subspecialty. The Framework defines the minimum practical competencies expected of all trainees at the end of training.

The **Procedural Curriculum and competence levels** are detailed in **Annex 2 and Annex 5**. The following is a high-level summary.

A. Mandatory Practical Competences
(End-level expectation: generally Level 4 – independent, or Level 3 approaching 4, depending on case mix.)

Trauma and Acute Care

- Assessment, triage and initial management of acute hand and wrist trauma
- Treatment of phalangeal and metacarpal fractures and dislocations (closed and open techniques)
- Management of combined bone and soft-tissue injuries
- Participation in the management of complex trauma, mangled hand and replantation cases, including initial care, decision-making and referral pathways

Tendons and Soft Tissue

- Flexor and extensor tendon repair of the hand and digits
- Tenolysis in selected cases
- Trigger finger release
- De Quervain diagnosis and treatment
- Tendon grafting and selected tendon transfers for common indications
- Surgery for flexor sheath and deep-space infections

Nerves

- Independent digital nerve repair (microsurgical level)
- Surgical management of common compression neuropathies (e.g. carpal tunnel, cubital tunnel, Guyon's canal)
- Participation as primary surgeon or first assistant in major nerve repairs and grafts, with demonstrated ability to plan digital and selected larger nerve repairs

Bone and Joints

- Open reduction and internal fixation (ORIF) of common phalangeal and metacarpal fractures
- Corrective osteotomies of phalanges and metacarpals
- Small joint arthrodeses and selected wrist procedures (centre-dependent)
- Synovectomy, arthrolysis and denervation in selected cases
- Exposure to wrist arthroscopy; diagnostic arthroscopy may be performed in some centres

Soft-Tissue Coverage

- Elements of wound healing
- Full-thickness and split-thickness skin grafts
- Local and regional flaps for common defects of the hand and wrist
- Indication and use of dermal substitute
- NPWT (Negative Pressure Wound Therapy)

- Management of scars and contractures (including Dupuytren's disease) and burns of the hand
- Lipofilling

Infections and Tumours

- Organisms causing soft tissue and bone infection including microbiology of infecting organisms, surgical pathology and spread of infection
- Incision, drainage and management of hand infections, including tendon sheath and deep-space infections, osteomyelitis and septic arthritis
- Biopsy and excision of common benign and selected malignant skin and soft-tissue tumours of the hand

Rehabilitation and Multidisciplinary Care

- Planning and coordination of postoperative rehabilitation and splinting in collaboration with hand therapists
- Integrating therapy, work demands and patient-reported outcomes into surgical planning

For all items listed above, they should be able to demonstrate knowledge of:

- range, indications and principles of operations to treat conditions listed in this module
- postoperative complications and their management
- hand therapy interventions for wound & scar management, reduction of swelling and management of stiffness
- ability to assess the patients' eligibility for surgery, general and psychosocial health, contraindications

B. Advanced / Rare Procedures – Knowledge and Exposure

Certain procedures are complex, rare or require highly specialised infrastructure. For these, every trainee must:

- Understand indications, contraindications, alternatives, surgical principles and complications (theoretical knowledge), and
- Have at least observed and preferably assisted in a specialised centre,

but **is not required** to perform them independently to fulfil the Framework. These include, for example:

- Pollicisation of the thumb
- Complex congenital surgery (e.g. cleft hand, triphalangeal thumb, radial club hand)
- Brachial plexus exploration and complex peripheral nerve reconstruction
- Replantation and major revascularisation of hand and upper limb
- Free tissue transfers and vascularised bone grafts for complex upper-limb reconstruction
- Complex DRUJ and wrist ligament reconstructions

Detailed lists and expected competence levels are provided in **Annex 2 and Annex 5**.

iii. Non-Technical Skills and Professionalism

Non-technical skills are essential and are integrated into daily clinical work. By completion of training, the trainee must demonstrate:

Communication and Consent

- Clear, structured communication with patients and families, including in emergency situations
- Ability to obtain informed consent for elective and emergency hand procedures, explaining options, risks, limitations, expected outcomes and rehabilitation

Teamwork and Leadership

- Effective collaboration with theatre staff, nurses, hand therapists, rehabilitation teams and other specialists
- Leadership of the hand surgery team in the management of complex cases, including trauma and multidisciplinary cases
- Appropriate delegation of tasks while maintaining responsibility for quality and safety

Time and Stress Management

- Prioritisation of emergency and elective worklists
- Ability to cope constructively with stress, uncertainty and intra-operative complications

Referral and Boundaries

- Recognising personal and institutional limitations
- Timely referral or transfer to more specialised centres or colleagues when appropriate

Scholarship and Audit

- Critical appraisal of research papers and presentations
- Participation in research and/or audit projects during training
- Understanding of basic study design, statistics and outcome measurement

Service Management and Documentation

- Accurate, timely and clear clinical documentation
- Use of validated outcome measures (e.g. QuickDASH, PEM, Michigan Hand Questionnaire)
- Participation in service planning, incident reporting and quality improvement

These aspects correspond to the intellectual skills, personal qualities and “other skills” described in **FESSH White Book Sections 3.3–3.5** and are supported by the assessment framework in **Annex 3**.

2.b Levels of Competence

The Framework use a four-level scale of competence to describe the expected level of performance for clinical and procedural activities at different stages of training.

Level 1 – Knowledge / Observation

The trainee has knowledge of the procedure or clinical activity, understands indications and principles, and has observed it in clinical practice.

Level 2 – Direct Supervision

The trainee performs the procedure or manages the clinical activity under direct and continuous supervision; the supervisor is scrubbed or immediately present.

Level 3 – Distant Supervision

The trainee performs the procedure or manages the clinical activity with the supervisor immediately available, but not continuously scrubbed or physically present.

Level 4 – Independent Practice

The trainee performs the procedure or manages the clinical activity independently, including recognition and management of common complications.

These competence levels define the expected progression of practical and clinical skills during training and the minimum level required for independent practice at completion of training. They apply to the procedural and clinical curriculum described in this The Framework and form the basis for the competence matrices presented in Annexes 2 and 5.Minimum expectations at the end of training:

- **Mandatory practical competencies** (Section 2.a.ii A): generally, **Level 4**; in some complex elements Level 3 may be accepted where case mix is limited, but the overarching aim remains independent practice as a Hand Surgeon.
- **Advanced/rare procedures** (Section 2.a.ii B): at least **Level 1–2** (knowledge and observation/assistance) in all trainees; Level 3–4 for those training in reference centres with sufficient volume.

Entrustable Professional Activities (EPAs), described in Section 2.c and Annex 6, build upon these competence levels by integrating multiple skills and professional roles into real clinical tasks and supporting explicit entrustment decisions.

The CanMEDS competency framework provides the overarching structure for the definition of learning outcomes in this THE FRAMEWORK. While the seven CanMEDS roles (Medical Expert, Communicator, Collaborator, Leader, Health Advocate, Scholar and Professional) are generic and not directly assessable as isolated entities, they are fully integrated into the competence-based structure of this training programme.

Competence levels (Section 2.b) describe the progressive acquisition of clinical and procedural abilities, primarily within the Medical Expert role, while also incorporating relevant elements of the other CanMEDS roles. Entrustable Professional Activities (EPAs) translate these competencies into real clinical work and serve as the principal units for holistic assessment and entrustment decisions.

In this way, CanMEDS defines *what kind of specialist the trainee should become*, competence levels describe *how abilities develop*, and EPAs determine *whether the trainee can be trusted to perform professional activities independently in practice*. Together, these three components form an integrated, outcome-oriented framework for assessment and certification in Hand Surgery training.

2.c Entrustable Professional Activities (EPAs)

An Entrustable Professional Activity (EPA) is a key unit of professional work that can be identified as a task or responsibility to be entrusted to a trainee once sufficient competence has been demonstrated. EPAs translate competencies into clinical practice and support explicit entrustment decisions regarding the level of supervision required.

While competence levels (Section 2.b) describe the trainee's ability to perform specific clinical or procedural tasks, EPAs integrate multiple competencies and professional roles and focus on whether the trainee can be trusted to perform a clinical activity independently in real practice.

EPA assessments are conducted longitudinally using workplace-based assessment tools and are documented in the trainee's portfolio and logbook. Achievement of independent practice for the core EPAs at completion of training is required for completion of Hand Surgery training according to this The Framework.

At completion of training, the trainee should be entrusted to perform independently (**EPA entrustment Level 4**) at least the core EPAs listed below. This expectation should be interpreted in the context of the training environment and case mix, recognising that competence must be demonstrated in a manner proportionate to the trainee's exposure, while ensuring readiness for safe independent practice.

1. **Management of acute hand and wrist trauma**
    - Assessment, triage and initial management in ED/acute settings
    - Planning definitive operative or non-operative treatment and coordinating the trauma team
2. **Diagnosis and management of common hand conditions in outpatient care**
    - Full outpatient assessment and evidence-based treatment planning for common conditions
3. **Performance of common elective hand surgery**
    - Independent performance of standard elective procedures (e.g. carpal tunnel release, trigger finger release, simple ganglion excision, simple arthrodeses, digital nerve repair and common tendon repairs)
4. **Tendon repair, reconstruction and tenolysis**
5. **Bone and joint surgery of the hand and wrist**
6. **Nerve decompression, repair and selected reconstructions**
7. **Soft-tissue coverage and flap surgery of the hand**
8. **Diagnosis and surgical management of hand infections**

9. **Management of Dupuytren's disease and common contractures**
10. **Coordination of rehabilitation and long-term functional recovery**
11. **Leadership in complex case discussions and multidisciplinary planning**
12. **Participation in research, audit, education and quality improvement**

Optional EPAs at Level 2–3 are defined for highly specialised areas (replantation, brachial plexus, complex congenital surgery, complex free tissue transfer) in centres with relevant case volume.

The full EPA descriptions, including required knowledge, skills, behaviours and assessment tools, are provided in **Annex 6**.

3. Organisation of Training

The organisation of training in Hand Surgery reflects its multidisciplinary character and the diversity of national training systems across Europe. The Framework therefore adopts a competence-based framework that combines defined minimum standards with proportional recognition of prior training.

Recognition of Prior Competence

Competencies and operative experience acquired during accredited training in a parent specialty (including Plastic, Reconstructive and Aesthetic Surgery and Orthopaedic Surgery) that are directly relevant to Hand Surgery shall be recognised towards fulfilment of the required Hand Surgery Full-Time Equivalent (HS-FTE), provided that sufficient and documented case volume, progressive responsibility and competence level can be demonstrated.

The Framework therefore adopts a competency-based approach, allowing recognition of validated operative experience obtained during parent specialty training rather than requiring uniform additional time-based training irrespective of demonstrated expertise.

The equivalence between previously acquired competencies and HS-FTE should be determined through a structured evaluation process, which is proportionate and adaptable to national training structures, including:

- documented operative case volume and case mix,
- level of responsibility (assistant, supervised, independent),
- validated competence levels (as defined in Section 2.b), and
- formal review within the trainee's portfolio and logbook by the Training Programme Director.

National training authorities or accredited programmes are responsible for validating this equivalence in accordance with local regulatory frameworks.

3.a Schedule of Training and Minimum Requirements

The Framework should ensure that trainees have the possibility to obtain the recommended levels of competence and should be based on the EPA framework defined in this document and the criteria for training networks in hand surgery. Assurance of competence-based training and assessment should take precedence over strict exposure time definitions.

To ensure harmonisation across Europe, minimum exposure is defined in terms of Hand Surgery Full-Time Equivalent (HS-FTE) = (% of working time spent in Hand Surgery) × duration.

Recommended minimum standard for completion of subspecialty training:

- A total of at least **24 months HS-FTE** devoted to Hand Surgery should be aimed at during training but achieving corresponding EPA levels should be higher weighed than minimum time duration
- Where feasible, a period of concentrated full-time (100%) Hand Surgery exposure is recommended to support immersion and competence development. This exposure may be achieved through flexible or distributed training models, particularly in systems where full-time Hand Surgery fellowships are not available, provided that equivalent
  competence and exposure are demonstrably achieved
- Training within a **Hand Surgery training programme** (single centre or recognized network) as described in detail below
- Supervision by recognised Hand Surgery trainers as defined in the following chapters.

The recommended duration of dedicated Hand Surgery training corresponds to approximately two years of full-time equivalent exposure. However, this duration may be adjusted proportionally based on previously acquired and documented competencies within accredited parent specialty training programmes**.**

These competencies may be acquired across different phases of professional development, including during parent specialty training and, where applicable, during subsequent clinical practice. This may include structured competence development within the clinician's own practice setting, provided that it is embedded within an accredited programme or recognised training pathway. This ensures that competence acquisition remains transparent, verifiable and aligned with the standards of this training framework.

Accepted Training Models

Different national systems may achieve the recommended ≥24 HS-FTE through various organisational models:

Model A – Dedicated Full-Time Competence Training

- At least 12 months at 100% Hand Surgery (hand fellowship) recommended and
- another 12 months HS-FTE obtained by variable Hand Surgery focused exposure (e.g. 12-18 months at 80-100% Hand surgery
- Ideally, continuous 24 months of 100% hand surgery allows for the most robust fellowship based training

Model B – Combined Clinical Practice Model

Designed for systems with limited formal fellowship capacity. The focus in these systems should be to ensure trainees reach the recommended levels of competence, ideally with the use of EPA based training and assessment.

Requirements:

- A period of concentrated full-time Hand Surgery exposure where feasible, and / or
- A longer period at **with significant clinical focus on Hand Surgery**, typically 24–36 months, such that the total reaches **≥24 HS-FTE**.

Model C – Standalone National Hand Surgery Specialties (3–6 years)

Standalone Hand Surgery programmes are accepted if they document:

- ≥24 HS-FTE
- ≥12 consecutive months full-time Hand Surgery
- A mapped curriculum covering trauma, reconstructive, congenital, nerve, microvascular and therapy exposure, aligned with the Framework
- It is recommended that specific provisions are made for decreasing mandatory duration for trainees of related specialties (e.g. Orthopaedic and Trauma Surgery, General Surgery, Plastic, Reconstructive and Aesthetic Surgery) if their training programmes can adequately document competencies achieved in overlapping aspects of hand surgery training.

3.b Required Clinical Breadth

Regardless of the model, the trainee is expected to gain:

- structured exposure to acute trauma (including major trauma, mangled hand and complex injuries), and
- exposure to reconstructive, congenital, microsurgical and nerve/plexus surgery
- access to hand therapy and multidisciplinary rehabilitation

Rotations across centres (e.g. trauma-focused, reconstructive/microsurgical, congenital/plexus) are strongly recommended to ensure balanced training. In all cases, training must be **planned, documented and** must be embedded within a structured and supervised training programme, and cannot rely solely on unstructured service provision. Structured and supervised training programmes in hand surgery may be embedded in training pathways of related specialties (e.g Orthopedic and Plastic, Reconstructive and Aesthetic Surgery) and **planned, documented** training within these specialties, **ideally EPA-based** are explicitly recognized as hand surgery training.

3.c Curriculum of Training

The curriculum must cover:

- Theoretical knowledge domains (Section 2.a.i; detailed in **Annex 1**)

- Practical and operative skills (Section 2.a.ii; detailed in **Annex 2 and 5**)
- Non-technical skills and professionalism (Section 2.a.iii)
- Entrustable Professional Activities (Section 2.c; detailed in

Annex 6) Mandatory educational components include:

- A certified **microsurgery training course** (laboratory-based)
- A **hand fracture/trauma course** (e.g. AO or equivalent)
- Attendance **at least one national Hand Surgery society meeting**
- Attendance **at least one FESSH Annual Congress or equivalent European Hand Surgery meeting**, preferably including an Instructional Course

Learning formats should include:

- Clinical rotations or fellowships in accredited Hand Surgery centres and networks
- Structured theatre and outpatient supervision
- Tutorials and small-group teaching
- Journal clubs and case conferences
- Participation in multidisciplinary meetings (MDTs)
- Research, audit and quality improvement projects
- Self-directed learning, supported by the recommended resources in **Annex 4**

3.d Assessment and Evaluation

Assessment follows UEMS principles and is detailed in **Annex 3 (Assessment Framework)**.

Formative Assessment

Formative assessment is continuous and includes:

- Regular structured appraisals at the start, mid-point and end of rotations
- Workplace-Based Assessments (WBAs), such as:
    - Mini-CEX (clinical evaluation exercises)
    - DOPS (direct observation of procedural skills)
    - OSATS (objective structured assessment of technical skills)
    - Case-based discussions (CbD)
    - Multisource feedback (360°) for non-technical skills
    - EPA-specific entrustment assessments
- A mandatory, countersigned **logbook** (digital or written) documenting:
    - Performed and assisted operations

- Emergency and on-call activity
- EPAs and WBA results
- Educational activities, courses and meetings
- Scientific and audit activity

The logbook must cover the **14 FESSH domains** (skin and soft tissue, tendons, joints, bone, vascular, nerves, replantation, congenital, paediatric, tumours, infections, burns, complex trauma, contractures/Dupuytren).

Summative Assessment

Summative assessment certifies readiness for independent practice and includes:

- Review of the **complete portfolio and logbook**
- Confirmation that all core **EPAs have reached Level 4**
- Satisfactory completion of formative assessments and multisource feedback
- A national exit assessment and/or interview, where applicable
- A formal examination in Hand Surgery:
    - In countries **without** a national Hand Surgery examination, successful completion of the **European Diploma in Hand Surgery (EBHS),** which constitutes the European Board of Hand Surgery Examination, is strongly recommended or recognition according to the Framework .
    - In countries **with** a national Hand Surgery exam, the **EBHS Diploma is also recommended** and should progressively become the European reference standard, analogous to EBOPRAS in Plastic Surgery.

The EBHS is a summative European Board examination assessing knowledge, clinical reasoning and professional competence at the end of training. It does not constitute a training programme or fellowship, but an independent certification aligned with UEMS and CESMA standards.

Eligibility for the EBHS Diploma requires:

- Completion of required training duration and HS-FTE as per the Framework and FESSH White Book
- A complete, countersigned logbook with activity across all 14 domains
- Evidence of scientific or audit activity
- A recommendation from the candidate's National Hand Surgery Society

The final certification decision is made by the training authority based on:

- Evidence in the portfolio and logbook
- Successful completion of formative and summative assessments
- Recommendation from the Training Director and education committee
-

4. Governance of Training

Training in Hand Surgery must take place in **Hand Surgery training centres** or networks and under the supervision of recognised trainers, as defined in the subsequent sections on **Training Requirements for Trainers** and **Training Requirements for Training Institutions**.

Each programme must have a designated **Training Programme Director** and a **local education committee** responsible for:

- Implementing and periodically reviewing the curriculum
- Ensuring adequate exposure to the full spectrum of Hand Surgery (including trauma, reconstructive, congenital, nerve and microsurgical cases)
- Monitoring assessments, EPAs, logbooks and progression decisions
- Coordinating rotations within centre networks, including trauma and reference centres

Depending on national structures, the role of Training Programme Director role may be fulfilled by:

- a Hand Surgery subspecialty lead, or
- the Training Programme Director of the relevant parent specialty where Hand Surgery is organised within the parent specialty (e.g. Plastic, Reconstructive and Aesthetic Surgery or Orthopaedic Surgery), provided that adequate expertise and oversight in Hand Surgery are ensured. Where such expertise is not present at the level of the parent specialty TPD, responsibility for the Hand Surgery component of training must be delegated to a trainer within the programme who has a sustained and recognised clinical practice in Hand Surgery.

In all cases, the TPD must ensure that the Hand Surgery curriculum, supervision, assessment and competence development are fully implemented in accordance with this training framework.

Programmes should participate in national and European **quality assurance processes**, including:

- Regular internal and external reviews and accreditation cycles
- Reporting on training and research activities to national authorities, FESSH and EBHS where applicable
- Continuous improvement of training based on trainee feedback, outcomes and evolving standards

IV. TRAINING REQUIREMENTS FOR TRAINERS IN HAND SURGERY

1. Process for Recognition as Trainer

1.1 Trainers in Countries Without a Primary Hand Surgery Specialty

In countries where Hand Surgery is **not** recognised as an standalone specialty, specialists trained in Plastic, Reconstructive and Aesthetic Surgery, Orthopaedic or other relevant specialties may serve as trainers, provided that they demonstrate that their **predominant and sustained clinical activity is in Hand and Upper Limb Surgery**. Predominant and sustained clinical activity refers to a clearly demonstrable and ongoing engagement in Hand and Upper Limb Surgery, typically constituting a substantial proportion of the clinician's practice (e.g. ≥50%), as evidenced by clinical workload, case mix and operative activity. The requirement ensures subspecialty competence independent of the original specialty pathway.

Specialists whose practice is primarily within general Orthopaedic Surgery, Plastic Surgery or Trauma Surgery **without a sustained and documented focus in Hand Surgery** may not be recognised as overall Hand Surgery trainers under the Framework. However, specialists with recognised expertise in specific components of Hand Surgery may contribute to training within their area of competence as part of a multidisciplinary trainer group. The overall responsibility for training must remain with recognised Hand Surgery trainers, ensuring coherence and completeness of the curriculum.

This requirement ensures that trainees are supervised by clinicians with **substantial, up-to-date and ongoing expertise** in Hand Surgery, irrespective of their original parent specialty.

1.2 Required Qualifications and Experience

All trainers (Training Programme Directors and Clinical Supervisors) must meet the following criteria:

- Hold full specialist accreditation in **Orthopaedic Surgery**, **Plastic and Reconstructive Surgery**, or **Trauma Surgery**.
- Demonstrate recognised **competence in Hand Surgery**, during a sustained period of independent clinical practice in Hand Surgery (typically around 5 years), or equivalent demonstrable experience and competence in settings where formal subspecialisation pathways are not established. In countries without formal national certification in Hand Surgery, possession of the Holder of the European Board of Hand Surgery (EBHS-holder) or an equivalent UEMS-recognised qualification is strongly recommended.
- Completion of a recognised **Training-the-Trainer** programme or equivalent medical education qualification.
- Demonstrated competence in **education, organisation, mentorship and scientific engagement**, including participation in CPD activities.
- Good Professional Standing with no active disciplinary procedures.

Hold a formal appointment within a **Hand Surgery training institution or training network or,** in cases where formal national certification in hand surgery is unavailable**, in an accredited training institution in the parent specialty**. In this latter case the training institution in the parent specialty must provide documented focus in a majority of domains

of hand surgery.

1.3 Experience Thresholds

- **Training Programme Director (TPD):** The TPD should have substantial post-certification clinical and educational experience in Hand Surgery. A minimum of 5 years is recommended; however, equivalent leadership, experience and demonstrable may be considered acceptable depending on the training context.

  In systems where Hand Surgery is organised within a parent specialty, the role of TPD may be fulfilled by the Training Programme Director of the parent specialty, provided that sufficient Hand Surgery expertise is ensured within the trainer group. Where this is not the case, responsibility for the Hand Surgery component of training must be delegated to a trainer with a sustained clinical practice in Hand Surgery.

- **Clinical Supervisors (CS):** A CS must demonstrate appropriate competence in the specific areas of Hand Surgery in which they supervise trainees. A minimum of approximately 3 years of independent practice is recommended; however, equivalent demonstrable experience and competence may be considered acceptable depending on the training context.

1.4 Institutional Requirements Related to Trainers

Accredited training centres must ensure:

- The TPD has **protected time**, secretarial assistance and administrative support.
- A **sufficient number of qualified trainers** are available to ensure adequate supervision and trainer-to-trainee ratios.
- Access to CPD, educational development opportunities for trainers.

2. Core Competencies of Trainers

Hand Surgery trainers must demonstrate competence in the following areas:

2.1 Knowledge of the Curriculum

- Full understanding of all components of the Hand Surgery framework : syllabus (Annex 1), procedural curriculum (Annex 2 and 5), EPA set (Annex 6), and assessment framework (Annex 3).
- Awareness of challenges related to clinical implementation in varying healthcare systems.

2.2 Competence in Medical Education

- Knowledge of adult learning theory and modern postgraduate training principles.
- Proficiency with validated assessment tools, including WBAs (Mini-CEX, DOPS, OSATS, CBD).
- Ability to identify, support and remediate trainees in difficulty.
- Skill in providing structured, timely, constructive feedback and career guidance.

- Completion of formal pedagogic or Training-the-Trainer education.

2.3 Promotion of Professionalism and Ethics

- Consistent demonstration of ethical practice, professionalism, integrity and humanistic values.
- Commitment to a respectful, safe, inclusive and supportive learning environment.

2.4 Leadership and Mentorship

- Effective leadership, communication, supervisory and mentoring capabilities.
- Engagement in ongoing development of these skills.

2.5 Academic and Scientific Engagement

- Active participation in research, clinical audit, symposium presentations, publications or national/international scientific meetings.

2.6 Commitment to Continuing Professional Development (CPD)

- Participation in structured CPD to maintain clinical, surgical and educational competencies.

2.7 Adequate Staffing

Ensure that the trainer group is sufficiently staffed to provide broad exposure, consistent supervision and meaningful mentorship across all training domains, including access to complementary expertise within multidisciplinary teams where required.

3. Responsibilities of Trainers

3.1 Responsibilities of the Training Programme Director (TPD)

The TPD is responsible for the overall governance and quality of the Hand Surgery training programme, including:

- Establishing a transparent, equitable trainee selection process.
- Designing and implementing a structured programme covering all components of the Framework curriculum.
- Ensuring a balanced distribution between service and training, including protected time for educational activities.
- Monitoring and validating the trainee's portfolio, logbook and completion of formative and summative assessments.
- Conducting regular meetings with trainees to review progress, provide feedback and discuss career development.
- Ensuring adequate exposure to acute trauma, elective surgery, microsurgery, congenital and reconstructive cases.
- Facilitating trainee participation in mandatory courses, scientific meetings, audit and research.

- Preparing annual progress evaluations and final training certification documents.
- Maintaining a safe, supportive and inclusive learning environment consistent with UEMS and institutional standards.

3.2 Responsibilities of Clinical Supervisors (CS)

Clinical Supervisors are responsible for the day-to-day educational experience and supervision of trainees:

- Ensuring patient safety through supervision tailored to the trainee's level of competence.
- Conducting regular Work-Based Assessments (WBAs) with timely, constructive feedback.
- Supporting trainee development in collaboration with the multidisciplinary team (including hand therapists, nurses, anaesthetists and physiotherapists).
- Promptly identifying and reporting concerns regarding performance, professionalism or wellbeing to the TPD.
- Maintaining trainee confidentiality and adhering to institutional and national regulations.
- Serving as role models for clinical excellence, professional behaviour and ethical standards.

4. Quality Management for Trainers

Training institutions must ensure high-quality educational practice by providing:

Institutional Support

- Adequate time, administrative support and resources for training activities.
- Access to CPD and educational development opportunities for all trainers.
- Psychological support services for trainers and trainees where needed.

Governance and Oversight

- Systems to ensure that the TPD maintains a safe, fair, inclusive and progressive learning environment.
- Sufficient numbers of qualified trainers to guarantee comprehensive supervision across the curriculum.

Evaluation and Revalidation

- Structured evaluation of trainers by trainees as part of the institution's quality assurance programme.
- Periodic revalidation of trainers (ideally every 5 years), including review of:
    - clinical and surgical case activity,

- academic and scientific contributions,
- professional conduct,
- educational performance,
- updated curriculum vitae and CPD record.

Monitoring of Training Quality

Training institutions must monitor and analyse:

- Trainee performance indicators,
- Progression data (e.g., competence acquisition, EPA achievement),
- Examination results (national and EBHS),
- Documented training outcomes.

Findings must inform continuous improvement of the training programme and the professional development of trainers.

V. TRAINING REQUIREMENTS FOR TRAINING INSTITUTIONS IN HAND SURGERY

1. Process for Recognition as Training Centre

Requirements on Staff and Clinical Activities

1. General Principles

Hand Surgery is a surgical discipline focusing on diagnosis and treatment of conditions affecting the fingers, hand, wrist, forearm, elbow and, in many settings, the shoulder and peripheral nerves of the upper limb.

Across Europe, Hand Surgery may be:

- an independent primary specialty, or
- a competence following completion of a primary specialty (usually Orthopaedic Surgery, Plastic and Reconstructive Surgery or Trauma Surgery, depending on national regulatory models).

The purpose of these Training Institution Requirements is to define the **minimum standards for centres** that provide Hand Surgery training, ensuring that trainees receive:

- high-intensity and high-quality exposure to the full spectrum of hand and upper limb pathology,
- within a **structured, supervised training programme**,
- delivered by appropriately trained and experienced Hand Surgery trainers,
- either within a single institution or within a formally organised **training network** (with clearly defined responsibilities and rotations).

These requirements align with general UEMS standards for postgraduate training, but explicitly

recognise that **Hand Surgery requires a higher level of focused exposure** than any primary specialty alone can uniformly provide. However, in instances where hand surgery training is embedded within parent specialties, training programmes may be organized within these specialties provided all quality criteria and minimum standards are withheld.

2. Definition and Accreditation of a Hand Surgery Training Centre

A **Hand Surgery Training Centre** may consist of:

- a single institution, **or**
- a **network of cooperating institutions** (e.g. trauma centre, reconstructive centre, congenital/plexus reference centre, ambulatory hand surgery unit)

which together provide the full range of:

- clinical exposure,
- surgical case mix
- supervision,
- educational structure, and
- emergency access required by the Framework

2.1 National Accreditation Requirement

A. Countries where Hand Surgery is *not* recognised as a primary specialty

In these countries, Hand Surgery is practised as a subspecialty after completion of a parent specialty such as Orthopaedic Surgery, Plastic Surgery or Trauma Surgery.

For such systems:

- At least one **core institution** within the training network must hold national accreditation as a training centre in a relevant parent specialty.
- This core institution provides the **formal educational and regulatory framework** for the Hand Surgery training programme (including evaluation, supervision and reporting responsibilities).

B. Countries where Hand Surgery is recognised as a primary specialty

In countries with Hand Surgery as a distinct, nationally recognised specialty:

- The core training institution must hold national accreditation for **Hand Surgery training** itself.
- All additional requirements of the Framework (case exposure, trainer qualifications, supervision, 24/7 access, network organisation where applicable) also apply and must be explicitly documented.

C. Additional Training Sites (all countries)

Additional participating institutions (e.g. specialised hand units, ambulatory centres, private or

independent clinics) may be recognised as training sites if they:

- deliver high-volume, high-quality Hand Surgery practice (with procedure-based logbook documentation),
- meet the trainer, supervision and educational requirements of the Framework ,(including mentorship assignments),
- operate under the educational governance of the nationally accredited core institution, (with formalised communication mechanisms),
- have a clearly defined role within a documented training network (rotations, objectives, duration).

These additional sites are not required to hold independent national specialty accreditation, provided they are fully integrated into the accredited training network (with transparency of training outcomes).

2.2 Recognition of the Training Network

The Hand Surgery Training Centre is accredited as a **network**, not merely an isolated unit. Compliance is judged on the **combined capacity** of all participating sites regarding:

- clinical exposure and case mix,
- operative volume and complexity,
- supervision and trainer availability, including bedside and OR-based supervision,
- educational activities,
- governance and quality assurance.

This network model allows both large hospitals and smaller specialised centres to contribute meaningfully to Hand Surgery training, improving access to overall and specialised exposure when single centres cannot cover all aspects.

2.3 Supra-national Accreditation

Supra-national accreditation (e.g. via the **European Board of Hand Surgery – EBHS**) is strongly encouraged when available.
It is not mandatory under the Framework but is recognised as a marker of high quality and alignment with European standards.

3. Distinction from Parent Specialties and National Variability

In countries where Hand Surgery is not an independent specialty, completion of a primary specialty (Orthopaedic, Plastic, Trauma Surgery) alone does not by itself provide sufficient training for independent practice in Hand Surgery.

A **training period** dedicated to Hand surgery is required to achieve the competencies defined in the Framework , with structured assessment and competencies documented via EPA-based evaluation tools and can be organised within parent specialty training if formally accredited hand surgery training is not available.

In countries where Hand Surgery is a primary specialty, these requirements must be interpreted

alongside national regulations to ensure equivalent exposure to the full Hand Surgery curriculum, including trauma, reconstructive surgery, nerve and microsurgery, congenital and paediatric conditions, and rehabilitation.

4. Structure of Training Centres

A Hand Surgery Training Centre may be organised as:

- a dedicated Hand Surgery unit, or
- a Plastic Surgery, Orthopaedic Surgery or Trauma Surgery department with an explicitly defined Hand Surgery programme, or
- a network of institutions that together provide the full breadth of exposure

required.

Each institution within a network must have a:

- formally defined and documented training role
- documented rotation structure,
- clearly described learning objectives,

and the Programme Director must ensure trainees rotate appropriately within this network to achieve all curriculum outcomes.

5. Clinical Environment and Case Exposure

A designated Hand Surgery Training Centre must provide a clinical environment in which trainees can develop competence across the **full Hand Surgery curriculum**.

5.1 Clinical Exposure

During the dedicated period of Hand Surgery training, the majority of clinical and operative activity must be focused on Hand and Upper Limb Surgery. Trainees must gain exposure to:

- **Acute trauma**:
    - soft tissue injuries, fractures and dislocations, tendon, nerve and vascular injuries, ring avulsions, high-energy trauma, amputations.
- **Elective surgery**:
    - tendon and nerve procedures, compressive neuropathies, contracture surgery, Dupuytren's, joint procedures and arthrodeses.
- **Degenerative and inflammatory disorders**:
    - arthritis, rheumatoid conditions, overuse syndromes.
- **Soft tissue/bone infections**
- **Post-traumatic and post-oncologic reconstruction**.
- **Common congenital hand anomalies** (observation and participation according to

case mix).

- **Multidisciplinary rehabilitation**, including close collaboration with Hand Therapy. Complex cases requiring prolonged recovery or functional reintegration must allow coordinated management involving rehabilitation specialists and multidisciplinary support services.
- Regular multidisciplinary meetings, including structured collaboration with radiology services, particularly for complex trauma, tumour and congenital cases.

Centres must demonstrate **adequate case volume and diversity**. Exact numerical thresholds are not mandated in the Framework but exposure must be sufficient for trainees to achieve the competence levels defined in Annex 2 and Annex 5.

5.2 Highly Specialised Procedures

Not all centres will routinely perform highly specialised procedures such as:

- brachial plexus reconstruction,
- advanced congenital hand surgery,
- complex oncologic reconstructions,
- major replantations and complex free tissue transfers.

Where such cases are not routinely available, the programme must **guarantee access** (rotational attachments, visiting fellowships, or structured observerships) to appropriate **reference centres**, so that trainees at least achieve the required knowledge and observation level (L1–L2).

5.3 24/7 Emergency Care

Hand Surgery training requires structured exposure to urgent and emergency conditions. A Training Centre or its accredited network must provide:

- 24/7 access to emergency hand and microsurgical care,
- trainee participation in emergency rotas under appropriate supervision,
- clear escalation pathways to senior Hand Surgery trainers.

This ensures that all trainees gain competence in acute hand trauma assessment and management, including night and weekend work, while allowing smaller units to participate via network arrangements.

6. Staffing Requirements

Specialist staff in a Hand Surgery Training Centre must:

- have completed their training in the relevant parent specialty (where applicable),
- maintain a predominant practice in Hand and Upper Limb Surgery,
- be current in clinical practice and educational skills. Recommended standards

include:

- Ideally, at least three specialists with a clear Hand Surgery focus and active surgical involvement within the centre or network.
- Each trainee supervised by several named trainers, covering different aspects of the curriculum (trauma, elective, nerve, microsurgery, paediatrics, rehabilitation).
- A trainee–trainer ratio of 1:1 is recommended; Up to a ratio of 2:1 is acceptable when structured supervision system exist and supervision quality is demonstrably maintained.
- A stable Programme Director throughout the trainee's Hand Surgery training period is desirable to ensure continuity.

In countries where Hand Surgery is not a primary specialty, trainers whose practice is mainly general orthopaedic, plastic or trauma surgery **without continuous Hand Surgery focus** cannot be recognised as overall Hand Surgery trainers under this The Framework, However, specialists with recognised expertise in specific components of Hand Surgery may contribute to training within their area of competence as part of a multidisciplinary trainer group.

Requirements on Equipment and Accommodation

A Hand Surgery Training Centre (or network) must have access to facilities that reflect contemporary Hand Surgery practice (and support structured education, clinical service delivery and research activity.

1. Surgical Facilities

- Operating theatres suitable for microsurgery and complex hand procedures and procedures emergency access when required.
- Operating microscope and high-quality surgical loupes.
- Dedicated microsurgical and small-fragment instrument sets.
- Fluoroscopy and standard radiographic imaging in theatre.
- Access to CT, MRI, ultrasound and other advanced imaging modalities as indicated.

2. Outpatient and Diagnostic Facilities

- Dedicated outpatient clinics for Hand and Upper Limb Surgery with sufficient patient volume (including supervised trainee involvement).
- Facilities for minor procedures under local anaesthesia (with appropriate sterile setup and documentation of performed procedures).
- Access to comprehensive musculoskeletal imaging services, including ultrasound, MRI and CT, with availability of consultation from a musculoskeletal radiologist. .

3. Rehabilitation Services

- Access, where required, to rehabilitation specialists (e.g. Physical and Rehabilitation Medicine physicians) for complex functional recovery planning.
- On-site Hand Therapy (physiotherapy/occupational therapy) is strongly preferred, or

- a formal collaboration with specialised therapists, including:
    - agreed protocols,
    - structured communication pathways,
    - joint planning of postoperative rehabilitation and splinting,
    - continuity of care (structured documentation of functional outcomes when feasible).
- For complex cases, centres should ensure access to a multidisciplinary rehabilitation team, potentially including physiotherapists, occupational therapists, rehabilitation physicians, social workers and psychologists, particularly where prolonged recovery, psychosocial support or return-to-work planning is required.

Trainee Working Environment

- Adequate workspace for trainees (desk, IT access) for administrative and study activities (including access during inter-institutional rotations).
- Access to electronic medical records, hospital intranet, internet and digital library resources.
- On-call facilities when night duties are required.
- Teaching rooms/classrooms for case discussions, journal clubs and formal teaching.

4. Skills Training and Simulation

- Access to a tabletop microscope or similar for microsurgical skills training.
- Microsurgical instruments and consumables for simulation and practice, where possible.
- Where available, access to skills labs, anatomical dissection courses and simulation-based training is strongly encouraged (and participation should be documented in trainee logbooks).

5. Research and Development Environment

- Facilities for data collection, outcome measurement (PROMs) and audit.
- Access to academic support (statistics, research office) where possible.
- Institutional support for participation in clinical research and scientific meetings, acknowledging variations in resources across Europe.

2. Quality Management Within Training Institutions

2.1 Accreditation and Reaccreditation

Training Centres or networks must participate in national accreditation and quality management systems (and must be able to provide documentation of compliance when **requested).**

- Accreditation should be **reviewed regularly (e.g. every 5 years), in line with national regulations.**
- **Supra-national accreditation (FESSH/EBHS) is encouraged when available (as an external benchmarking mechanism).**
- Reaccreditation must demonstrate that:
- case volume and case mix remain adequate for training (based on documented procedure numbers and trainee exposure),
- trainer numbers and qualifications remain appropriate,
- educational resources and infrastructure are maintained or improved,
- training outcomes and quality indicators are systematically monitored (with regular review of logbooks, EPA progression and trainee feedback mechanisms).

2.2 Clinical Governance and Manpower Planning

- Clinical service must be organised such **that training is integrated, not** incidental.
- Sufficient resources must be allocated to ensure:
    - protected teaching time,
    - adequate supervision in ward, clinic and OR,
    - regular educational activities (teaching sessions, journal clubs, M&M meetings).
- Manpower planning should ensure that clinical workload remains compatible with high-quality training, in line with national manpower strategies.

2.3 Programme Organisation and Coordination

Each training centre/network must have:

- A designated Programme Director in Hand Surgery responsible for:
    - the design and implementation of the training programme,
    - coordination of rotations within the network,
    - alignment of local curriculum with the framework monitoring trainee progression, logbook and EPA achievement.
- Clearly documented training pathways, with descriptions of:
    - rotations,
    - duration and objectives,
    - exposure to trauma, reconstructive, paediatric and microsurgical cases.

2.4 Evaluation, Transparency and Internal Quality Assurance

Training institutions must ensure:

- Regular formative and summative assessments of trainees, using validated tools

and logbooks (see Annex 3).

- Structured feedback to trainees and a transparent system for reporting and addressing concerns.
- Clear documentation of:
    - curriculum and learning objectives,
    - assessment methods,
    - rotation plans,
    - educational policies.
- A transparent process by which trainees and trainers can provide feedback on the programme, feeding into continuous quality improvement.

2.5 External Auditing and Reporting

- Centres must participate in national or regional visitations and accreditation processes for specialist training.
- Regular reporting on teaching, scientific and clinical activities should be submitted to relevant authorities, national Hand Societies and/or UEMS bodies where applicable.

2.6 Research and Academic Activity

Although resources vary, centres should actively support:

- participation in clinical audit and quality improvement projects,
- involvement in research (data collection, studies, publications),
- attendance and presentation at national and international Hand Surgery meetings,
- attendance at national and international courses and cadaver labs.

This promotes a culture of continuous improvement and evidence-based practice aligned with the Framework , the FESSH White Book and EBHS standards.

3. Relationship to Parent Specialties and Training Networks

3.1 Relationship to Parent Specialties

In countries where Hand Surgery is not a primary specialty:

- Hand Surgery training must constitute a separate, structured training programme,
- with recognised Hand Surgery trainers whose practice is demonstrably focused on Hand Surgery,
- ensuring competencies beyond what is obtained in basic training in Orthopaedics, Plastic Surgery or Trauma Surgery alone.

Centres must document that the Hand Surgery curriculum is followed in full.

3.2 Training Networks

Because the full spectrum of Hand Surgery (trauma, nerve, wrist, congenital, microsurgery) rarely exists in a single institution, training may be organised as a network of accredited institutions, each contributing defined elements such as:

- acute trauma and emergency microsurgery,
- elective hand and wrist surgery,
- congenital or paediatric exposure,
- peripheral nerve or complex reconstruction,
- integrated Hand Therapy.

The network is accredited as one programme, with rotations designed to ensure that trainees collectively receive all required exposures, even if no single centre offers them all.

3.3 Determinants of Training Quality

Training quality is judged on the combined output of the network, including:

- comprehensive exposure across all curriculum domains,
- supervision by recognised Hand Surgery trainers,
- coherent rotation planning,
- and evidence of progressive entrustment to independent practice.

This ensures feasibility across different national models while maintaining a uniform European standard for Hand Surgery training.

4. Summary and Final Considerations

Hand Surgery training requires a specific and specialized level of clinical breadth, technical expertise and educational structure. The standards set out in this chapter ensure that accredited Training Centres—whether stand-
alone units or integrated networks—provide the necessary environment for trainees to acquire the full spectrum of competencies defined in the Framework. High-quality training depends on dedicated Hand Surgery practice, access to emergency and elective care, appropriate case mix, and supervision by recognised trainers whose clinical activity is predominantly focused on Hand and Upper Limb Surgery.

By adhering to these requirements, Training Centres across Europe can deliver harmonised, safe and comprehensive subspecialty training, while allowing for flexibility in national systems and institutional resources. A transparent governance structure, clear educational responsibilities, and continuous quality assurance form the foundation for sustained excellence. These standards ultimately support the development of competent Hand Surgeons capable of providing high-level care to patients throughout Europe, consistent with the mission of the UEMS to promote mobility, quality and professional integrity in specialist medical training.

ANNEX 0 — LIST OF ABBREVIATIONS

Applicable to the Framework for Hand Surgery

The following abbreviations are used throughout the European Training Requirements for Hand Surgery, including all Annexes. They are presented in alphabetical order.

A

AEMH: European Association of Senior Hospital Physicians
ALT: Anterolateral thigh flap
AO: Arbeitsgemeinschaft für Osteosynthesefragen (AO Foundation)
ASSH: American Society for Surgery of the Hand

B

BSSH: British Society for Surgery of the Hand

C

CanMEDS: Canadian Medical Education Directions for Specialists
CAT: Critically Appraised Topic
CbD: Case-based Discussion
CESMA: Council of European Specialist Medical Assessments
CMC1: First carpometacarpal joint
CPD: Continuing Professional Development
CPME: Standing Committee of European Doctors (Comité Permanent des Médecins Européens)
CRPS: Complex Regional Pain Syndrome
CT: Computed Tomography
CTR: Carpal Tunnel Release
CTS: Carpal Tunnel Syndrome
CuTR: Cubital Tunnel Release
CuTS: Cubital Tunnel Syndrome

D

DIP: Distal interphalangeal joint
DOPS: Direct Observation of Procedural Skills
DRUJ: Distal Radioulnar Joint

E

EBHS: European Board of Hand Surgery
EBOPRAS: European Board of Plastic, Reconstructive and Aesthetic Surgery
ED: Emergency Department
EEA: European Economic Area
EJD: European Junior Doctors
EPA / EPAs: Entrustable Professional Activity / Activities
ETR / ETRs: European Training Requirement(s)
EU: European Union

F

FEMS: Federation of European Salaried Doctors
FESSH: European Federation of Societies for Surgery of the Hand

G

GCTTS: Giant Cell Tumour of the Tendon Sheath

H

HS-FTE: Hand Surgery Full-Time Equivalent

I

IFSSH: International Federation of Societies for Surgery of the Hand
IT: Information Technology

J

JAMA: Journal of the American Medical Association
JHS: Journal of Hand Surgery

K
K-wire – Kirschner wire
K1–K4 – Theoretical knowledge levels used in Annex 1
L
L1–L4: Procedural competence levels used in the Framework
M
MCP: Metacarpophalangeal joint
MDT: Multidisciplinary Team
Mini-CEX: Mini Clinical Evaluation Exercise
MRI: Magnetic Resonance Imaging
MSF: Multisource Feedback
N
NMA / NMAs: National Medical Association(s)
NMCA / NMCAs: National Medical Competent Authority / Authorities
O
OR: Operating Room
ORIF: Open Reduction and Internal Fixation
OSATS: Objective Structured Assessment of Technical Skills
P
PEM: Patient Evaluation Measure
PICO: Patient–Intervention–Comparison–Outcome framework
PIP: Proximal interphalangeal joint
PRC: Proximal Row Carpectomy
PROMs: Patient-Reported Outcome Measures
PRWHE: Patient-Rated Wrist and Hand Evaluation
Q
QuickDASH: Quick Disabilities of the Arm, Shoulder and Hand questionnaire
R
ROM: Range of Motion
S
SL: Scapholunate (ligament)
T
TPD: Training Programme Director
U
UEMO: European Union of General Practitioners
UEMS: European Union of Medical Specialists
UN: United Nations
V
VAC: Vacuum-Assisted Closure (negative pressure wound therapy)
W
WB: FESSH White Book
WBA / WBAs: Workplace-Based Assessment(s)
WMA: World Medical Association

ANNEX 1 — THEORETICAL SYLLABUS FOR HAND SURGERY
(Knowledge Domains Only)

A. Purpose and Scope
This Annex defines the **theoretical knowledge** that a trainee in Hand Surgery must master by the completion of training.
It includes conceptual, factual, clinical and integrative knowledge across the full spectrum of Hand Surgery.
This Annex **does not** include:

- Practical or operative skills
- Competence levels in procedures
- Entrustable Professional Activities (EPAs)
- Minimum case numbers
- Skills curriculum or assessment methods

These are included in **Annex 2 – Practical Curriculum, Competence Framework, and EPAs**.
The structure of the syllabus aligns with the **FESSH White Book** and the CanMEDS "Scholar" domain, and serves as the knowledge basis for all practical components of training.

B. Knowledge Levels (K1–K4)
In accordance with UEMS guidance, theoretical knowledge is classified as:

- **K1 – Basic recognition and terminology**
  (definitions, basic anatomy, simple concepts)
- **K2 – Factual knowledge**
  (pathophysiology, classifications, diagnostic principles)
- **K3 – Applied clinical knowledge**
  (indications, interpretations, differential diagnoses, decision-making)
- **K4 – Integrative advanced knowledge**
  (complex reasoning, multidisciplinary integration, evidence-based choices)

C. Theoretical Syllabus Matrix

1. Basic Sciences

Domain	Content	FESSH White Book Ref.	Level
Anatomy of the hand & upper limb	Bones, joints, ligaments, tendons, nerves, vascular and lymphatic supply	3.1	K2
Embryology	Developmental biology, congenital disruption patterns, classification systems	3.1 / Congenital	K2
Biomechanics	Grip and pinch mechanics, wrist kinematics, tendon pulleys, load transfer	3.1	K3
Physiology	Wound, tendon, bone and nerve healing; vascular responses	3.1	K2
Microbiology	Infection principles, virulence, biofilm, antibiotics	3.1	K2
Imaging	Radiographs, ultrasound, MRI, CT; indications,	3.1	K3

Domain	Content	FESSH White Book Ref.	Level
	limitations and clinical integration of imaging findings relevant to Hand Surgery. Applied clinical knowledge (K3) includes the independent interpretation of standard radiographs and the integration of imaging findings into clinical decision-making. Advanced imaging modalities (MRI, CT and specialised ultrasound) require appropriate consultation or collaboration with musculoskeletal radiology services, particularly in complex or equivocal cases.		

2. Trauma and Acute Care

Domain	Content	WB Ref.	Level
Amputations	Classification, mechanism, ischemia time, replant indications	I/J/L	K3
Fractures	Phalanx, metacarpals, carpus, DRUJ, instability patterns	C	K3
Dislocations & Instabilities	MCP/PIP/DIP, CMC1, perilunate patterns	C	K3
Tendon injuries	Flexor/extensor zones, mechanisms, classifications	B	K3
Nerve injuries	Neuropraxia, axonotmesis, neurotmesis; prognostic factors	E	K3
Vascular injuries	Acute ischaemia, compartment syndrome, revascularisation principles	F/H/M	K3
Wound management	Debridement, contamination, crush injuries	A/L	K2
Acute infections	Felon, paronychia, deep-space infection, tenosynovitis	N	K3

3. Elective Hand Conditions

Domain	Content	WB Ref.	Level
Osteoarthritis	DIP/PIP/CMC1, wrist arthritis, staging, clinical evaluation	Arthritis	K3
Tendinopathies	Trigger finger, De Quervain, intersection syndrome	B	K2
Contractures	Dupuytren’s disease, burn sequelae, post-traumatic contractures	P	K3
CRPS	Pathophysiology, diagnostic criteria, differential diagnosis	Principles	K3
Compression neuropathies	Carpal tunnel, cubital tunnel, Guyon’s canal	E	K3
Tumours	Ganglia, glomus tumours, GCTTS, enchondroma	O	K3
Overuse syndromes	Tendinitis, tendon instability, muscle–tendon imbalance	Principles	K2

4. Congenital Hand Differences

Domain	Content	WB Ref.	Level
Classification systems	IFSSH, Oberg–Manske–Tonkin system	Congenital	K2
Polydactyly	Pre-, post-, central; syndromic vs. non-syndromic	Q	K2
Syndactyly	Simple vs. complex; Apert-associated fusion patterns	Q	K3
Thumb hypoplasia	Blauth classification; functional implications	Q	K3
Longitudinal deficiencies	Radial club hand, ulnar deficiency, Madelung deformity	Q	K3
Constriction band syndrome	Mechanisms, clinical features, classifications	Q	K2
Arthrogryposis & neuromuscular disorders	Hand and upper-limb function, contractures, reconstructive principles	Q	K3
Genetic and syndromic associations	Basic awareness of genetic and syndromic conditions that may be associated with congenital hand anomalies (e.g. radial ray anomalies, syndactyly, polydactyly, split-hand malformations, Madelung deformity, arthrogryposis). Recognition of clinical features that may warrant referral for genetic evaluation within a multidisciplinary framework.	Q	K1-2

5. Reconstructive Surgery

Domain	Content	WB Ref.	Level
Reconstructive ladder	Grafts → local flaps → regional flaps → free tissue transfer	A	K2
Skin grafts	Split- and full-thickness grafts: indications, limitations	A	K2
Local flaps	Cross-finger, heterodigital, Z-plasties	A	K3
Regional flaps	Radial forearm, posterior interosseous, ulnar artery-based flaps	A	K3
Free flaps (principles)	Microvascular fundamentals, indications, failure patterns	A/F	K2
Bone grafting	Non-vascularised vs vascularised grafts, indications	C	K3
Tendon reconstruction	Grafts and transfers: principles and considerations	B	K3

6. Neurological and Plexus Conditions

Domain	Content	WB Ref.	Level
Peripheral nerve injuries	Mechanisms, regeneration, timing of intervention	E	K3
Neuromas	Pathophysiology, clinical findings, management options	E	K3
Brachial plexus injuries	Basic evaluation, classification, reconstructive principles	E	K2
Neurogenic contractures	Cerebral palsy, stroke, spasticity	Principles	K2

7. Inflammatory, Systemic and Rheumatic Disorders

Domain	Content	WB Ref.	Level
Rheumatoid hand	Synovitis, erosions, deformities	Principles	K3
Connective tissue disorders	Scleroderma, lupus, vasculitis effects on hand function	Principles	K2
Diabetic hand	Infection risk, stiffness, Charcot changes	Principles	K2

8. Rehabilitation and Non-Operative Treatment

Domain	Content	WB Ref.	Level
Hand therapy	Splinting, postoperative protocols, therapy principles	Principles	K3
Functional evaluation	QuickDASH, PEM, Michigan Hand Questionnaire	Principles	K3
Postoperative rehabilitation	Tendon rehab, nerve rehab, stiffness prevention	Principles	K3

9. Evidence-Based Practice and Scientific Skills

Domain	Content	WB Ref.	Level
Research methodology	Study design, bias, statistical basics	2.1	K2
Critical appraisal	CAT, PICO, appraisal of trial quality	2.1	K3
Guidelines	FESSH consensus, national guidelines	WB	K2
Outcome measures	PROMs, performance metrics	Principles	K3

D. Recommended Literature (not mandatory)

Core Hand Surgery Textbooks

- *Green's Operative Hand Surgery*
- *ASSH Textbook of Hand and Upper Extremity Surgery*
- *Hand Surgery* (Weinzweig)
- *Tendon Surgery of the Hand* (Tang)
- *Congenital Hand Differences* (Kozin & Zlotolow)

Journals

- *Journal of Hand Surgery – European Volume*
- *Journal of Hand Surgery – American Volume*
- *Hand Clinics*
- *Journal of Wrist Surgery*

Guidelines and Reference Documents

- **FESSH White Book** (primary reference for training content)
- **EBHS Examination Syllabus**
- Relevant national hand surgery guidelines

ANNEX 2 — PROCEDURAL CURRICULUM AND COMPETENCE LEVELS
This Annex provides the detailed procedural curriculum and competence matrices that operationalise The Framework described in Section III.2 of the Framework
European Training Requirements for Hand Surgery

1. Introduction and References
This Annex defines the **procedural curriculum** and **minimum competence levels** required for completion of training in **Hand Surgery** under the European Training Requirements; competence and training framework .
Although several Entrustable Professional Activities (EPAs) originate from the curriculum of the Plastic Surgery specialty—where Hand Surgery is only a partial component—the competence levels defined *in this Annex* correspond to the **final expected level of an accredited European Hand Surgeon**, not to the level of a trainee in Plastic Surgery or Orthopaedics.
The following sources form the basis of this curriculum:

Primary References

- **FESSH White Book** (Sections 3.1–3.5): Knowledge domains, procedural categories, competence levels
- **EBHS (European Board of Hand Surgery) Diploma requirements**: Logbook structure, index procedures, competencies
- **International Fellowship Curricula** (ASSH, BSSH, German Hand Surgery Facharzt requirements)

Principles

- Competence levels reflect **subspecialist end-level expectations**.
- All trainees must achieve independent practice (Level 4) in **core Hand Surgery procedures**.
- Advanced or rare procedures require knowledge and exposure but not mandatory independent performance for all trainees.
- Programmes with higher case volume (reference centres) may train selected trainees to Level 3–4 in advanced areas.
- Competence levels are expressed using the UEMS 4-level scale:

Level	Definition
1 – Knowledge / Observation	Understands theory and has observed the procedure
2 – Direct Supervision	Performs under direct, scrubbed supervision
3 – Distant Supervision	Performs with supervisor immediately available, not scrubbed
4 – Independent	Performs independently, including common complications

2. Procedural Curriculum and Competence Matrix
The procedural syllabus is organised according to the anatomical and functional domains defined in the **FESSH White Book**: skin, soft tissues, tendons, bone, joints, nerves, vessels, congenital, trauma, tumours, infections, and complex reconstructions.
The tables below specify the **minimum competence level (European standard)** for each domain.

Where applicable, an additional column **“Reference Centre Level (optional)”** is included for training programmes with access to high-volume subspecialist practice.

A. Skin and Soft Tissue Procedures

Procedure	Minimum Competence Level	Reference Centre Optional Level
Split-thickness skin graft	**4**	–
Full-thickness skin graft	**4**	–
Local flaps (V-Y, Z-plasties, rotational/transpositional flaps)	**4**	–
Regional flaps (cross-finger, thenar, posterior interosseous, reverse radial forearm)	**3–4**	**4**
Management of scars and contractures (incl. Dupuytren’s disease)	**4**	–
Negative pressure wound therapy (VAC)	**4**	–
Treatment of extravasation injuries	**2–3**	**4**
Free flaps for hand reconstruction	**1–2**	**3–4**
Free bone/osteocutaneous flaps (e.g., free fibula)	**1**	**2–3**

B. Tendon Surgery

Procedure	Minimum Competence Level	Reference Centre Optional Level
Flexor tendon repair (Zones 1–3)	**4**	–
Extensor tendon repair (Zones 3–7)	**4**	–
Trigger finger release	**4**	–
Tenolysis (flexor/extensor)	**3–4**	–
Pulley reconstruction	**2–3**	**3–4**
Tendon grafting	**2–3**	**3–4**
Tendon transfers (common indications)	**2–3**	**4**
Tendon reconstructions in rheumatoid arthritis	**2**	**3**
Flexor sheath infection surgery	**4**	–
Free functional muscle transfer	**1**	**2–3**

C. Bone and Joint Surgery

Procedure	Minimum Competence Level	Reference Centre Optional Level
Closed reduction & K-wire	**4**	–

Procedure	Minimum Competence Level	Reference Centre Optional Level
fixation (phalanges, metacarpals)		
Open reduction & internal fixation (phalanges, metacarpals)	**4**	–
Distal radius fractures (selected ORIF)	**3**	**3–4**
Scaphoid ORIF & grafting	**2–3**	**3–4**
Corrective osteotomies (phalanges, metacarpals)	**4**	–
Corrective osteotomies of the radius/ulna	**2–3**	**3–4**
Arthrodesis of small joints (DIP, PIP)	**4**	–
Wrist arthrodesis / partial fusions (PRC, 4-corner)	**2–3**	**3–4**
Arthroplasty (finger/wrist implants)	**2–3**	**3–4**
Denervation	**2**	**3–4**
Synovectomy, arthrolysis	**3**	**4**
Carpal instabilities (SL/LT repair, capsulodesis, reconstruction)	**1–2**	**3–4**
Paediatric fracture fixation	**3–4**	–

D. Nerve Surgery

Procedure	Minimum Competence Level	Reference Centre Optional Level
Digital nerve repair	**4**	–
Common compression neuropathies (CTR, CuTR, Guyon)	**4**	–
Neurolysis (digital and common nerves)	**3–4**	–
Major nerve repair (median/ulnar/radial)	**2–3**	**3–4**
Nerve grafts / conduits	**2–3**	**3–4**
Neuroma surgery	**2–3**	**3–4**
Brachial plexus exploration & reconstruction	**1**	**2–3**

E. Vascular Procedures

Procedure	Minimum Competence Level	Reference Centre Optional Level
Digital artery repair	**3–4**	–

Procedure	Minimum Competence Level	Reference Centre Optional Level
Revascularisation of digits	**2–3**	**3–4**
Microvascular anastomoses (arterial/venous)	**2**	**3–4**
Treatment of vascular anomalies	**1–2**	**3**
Replantation (digital)	**1–2**	**3–4**
Replantation (hand, forearm)	**1**	**2–3**

F. Congenital and Paediatric Procedures

Procedure	Minimum Competence Level	Reference Centre Optional Level
Simple syndactyly	**2–3**	**4**
Simple polydactyly	**2–3**	**4**
Complex syndactyly (Apert)	**1**	**2–3**
Pre-axial / central polydactyly	**1–2**	**2–3**
Thumb hypoplasia (Blauth II–III)	**1–2**	**3**
Radial longitudinal deficiency	**1**	**2–3**
Pollicisation	**1**	**2–3**
Madelung deformity	**1–2**	**3**
Arthrogryposis procedures	**1**	**2–3**

G. Tumours and Oncology

Procedure	Minimum Competence Level	Reference Centre Optional Level
Excision of common benign tumours (ganglion, lipoma, glomus)	**4**	–
Biopsy (incisional/excisional)	**4**	–
Excision of malignant skin tumours	**3–4**	–
Excision of soft-tissue sarcoma (hand/wrist)	**1**	**2–3**
Bone tumour resection	**1**	**2–3**

H. Infections

Procedure	Minimum Competence Level	Reference Centre Optional Level
Incision & drainage of hand abscess	**4**	–
Flexor sheath infection	**4**	–

Procedure	Minimum Competence Level	Reference Centre Optional Level
surgery		
Deep space infections	**3–4**	–
Osteomyelitis / septic arthritis	**3–4**	–
Necrotising fasciitis (hand)	**2–3**	**3–4**

I. Complex Trauma and Reconstruction

Procedure	Minimum Competence Level	Reference Centre Optional Level
Severe mutilating injuries (mangled hand) – initial care	**3**	**4**
Definitive reconstruction (multi-tissue loss)	**1–2**	**3–4**
Amputations (fingers/hand)	**3–4**	–
Replantations (see Vascular)	**1–2**	**3–4**
Fasciotomy (acute/chronic)	**4**	–

3. Competence Expectations
Minimum Requirement for European Certification
Trainees must achieve:

- **Level 4** in all *core* Hand Surgery procedures
- **Level 1–2** in all *advanced/rare* procedures
- **Level 3** in selected complex procedures depending on exposure
- Documented performance and outcomes in a **logbook** (EBHS format)

Reference Centre Training (Optional Track)
Centres with high case volume may train selected trainees to:

- Level **3–4** in advanced reconstructive microsurgery
- Level **3–4** in complex congenital surgery
- Level **3–4** in wrist ligament reconstructions and arthroscopy
- Level **3–4** in replantation
- Level **3–4** in free tissue transfer

This optional track must be explicitly documented by the programme director.

4. Alignment with EPA Framework
Procedures in this Annex support the following **Core EPAs**:

- Acute hand trauma assessment and management
- Tendon repair and reconstruction
- Nerve decompression and nerve repair
- Osteosynthesis and bone reconstruction

- Soft tissue coverage
- Management of infections
- Contracture and Dupuytren treatment
- Multidisciplinary rehabilitation and follow-up

  Advanced procedures map to optional EPAs for specialised centres.

ANNEX 3 — ASSESSMENT FRAMEWORK FOR HAND SURGERY TRAINING

Reference documents

This assessment framework is based on:

- **UEMS 2014 Charter on Training**
- **UEMS definitions of formative and summative assessment**
- **EBHS/FESSH White Book (2020)**
- **European Diploma in Hand Surgery (EBHS)** examination requirements
- **UEMS Section of Surgery – Workplace-Based Assessment Guidelines**

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1. Principles of Assessment

Assessment in Hand Surgery training must be:

a. Continuous – monitoring competence development throughout training

b. Multi-modal – incorporating knowledge, skills, EPAs, professionalism and non-technical skills

c. Objective and transparent – using standardised tools

d. Aligned with learning outcomes – as listed in the main framework and Annex 1–2

e. Documented – all assessments must be registered in the trainee's digital or paper portfolio

Assessment is divided into:

1. **Formative Assessment** – supports learning and progression
2. **Summative Assessment** – certifies readiness for independent practice

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2. Formative Assessment

2.1 Required Work-Based Assessments (WBAs)

Throughout training, the trainee must complete WBAs covering the full spectrum of Hand Surgery domains (trauma, tendons, nerves, bone, soft tissue coverage, congenital, infections, rehabilitation).

a. Mini-CEX / Clinical Evaluation Exercise

To assess:

- History taking
- Physical examination
- Clinical reasoning
- Patient communication

Minimum requirement: *At least 12 Mini-CEX across training*, covering trauma, elective, and emergency settings.

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b. DOPS (Direct Observation of Procedural Skills)

To assess:

- Technical skills
- Respect for tissue
- Instrument handling
- Perioperative safety

Minimum requirement:
At least 20 DOPS, including procedures in:

- Tendon injury
- Nerve repair
- Bone fixation
- Skin flaps
- Infections
- Burns/soft tissue reconstruction

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c. OSATS (Objective Structured Assessment of Technical Skills)
Required for key subspecialty procedures to assess higher surgical competence.
Minimum requirement:
At least 10 OSATS covering different anatomical/treatment domains (aligned with Annex 2).

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d. CBD (Case-Based Discussion)
To assess:

- Decision making
- Interpretation of imaging
- Multidisciplinary reasoning
- Pre-operative planning

Minimum: *At least 10 CBDs* including acute trauma and elective reconstruction.

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e. Multisource Feedback (MSF / 360° evaluation)
Mandatory to evaluate:

- Communication
- Teamwork
- Leadership
- Professionalism

Minimum:
One MSF per year, including:

- Theatre nurses
- Hand therapists
- Senior colleagues
- Outpatient staff

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f. Entrustable Professional Activity (EPA) evaluations
EPA evaluations assess readiness for independent practice (see Annex 6).
Minimum requirements:

- Each core EPA (as defined in Annex 2) must be evaluated at least twice

- At least one evaluation from a trainer specialised in the area concerned (e.g., hand trauma, nerve surgery)

Each EPA must reach **EPA Level 4 (independent)** by end of training, taking into account training environment and documented exposure

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g. Portfolio Review Meetings
A structured appraisal meeting must occur:

- **At the start of each rotation**
- **Midway assessment** with feedback
- **End-of-rotation evaluation**

Each review must confirm progression towards:

- Knowledge goals
- Technical skill milestones
- Non-technical competencies
- EPA-level advancement
- Logbook adequacy

A summary must be countersigned by the Training Director.

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3. Logbook Requirements
A **countersigned logbook** is compulsory for certification and European Diploma examination.

3.1 The logbook must document:

- All operative procedures (performed, assisted, supervised)
- All emergency duties related to hand and wrist cases
- Educational activities (courses, meetings, self-study)
- Scientific activities
- EPA evaluations
- Annual MSF

3.2 Content must cover all 14 surgical domains identified by FESSH:

1. Skin and soft tissue
2. Tendons
3. Joints
4. Bone
5. Vascular
6. Nerves
7. Replantation
8. Congenital

9. Paediatric hand conditions
10. Tumours
11. Infections
12. Burns
13. Complex trauma / mutilating injuries
14. Contractures / Dupuytren

No strict numerical minimum is mandated, but the trainee must show:

- **Significant operative experience** across domains
- **Progressive entrustment** (Levels 2 → 3 → 4)
- **Breadth of exposure**, not only high volume of one type

Logbook compliance is required for both national and EBHS eligibility.

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4. Summative Assessment
Summative assessment determines fitness for independent practice as a Hand Surgeon.

4.1 Local/National Summative Assessments
Each country may require:

- National board exam
- Exit interview
- Portfolio viva
- Submission of complete logbook

These are accepted within the UEMS framework if aligned to framework principles.

4.2 European Diploma in Hand Surgery (EBHS)
The **EBHS Diploma constitutes the European Board of Hand Surgery Examination and** is recommended as the *European reference standard for summative assessment in Hand Surgery*.
Eligibility requires:

- Completion of required training duration (as defined in the Framework Organisation section)
- Countersigned logbook covering 14 FESSH domains
- Recommendation from the national Hand Surgery society
- Scientific activity (e.g., audit, publication, or presentation)

Examination format:

- Written multiple-choice exam (knowledge)
- Oral viva/case discussion (competence & judgement)

Passing the EBHS exam satisfies the Framework summative assessment requirement in countries without a national Hand Surgery exam.

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5. Final Competence Decision ("Certification of Completion")
A trainee is eligible for certification when:
A. All core EPAs = Level 4
Confirmed by trainer group consensus.
B. Logbook is complete and validated, covering:

- Required domains
- Adequate breadth
- Progressive entrustment

C. All formative assessments completed
(Meeting minimum numbers and distribution.)
D. MSF results acceptable
(Professionalism and communication meeting expected standards.)
E. Summative examination passed
(EBHS Diploma or a recognised national alternative.)
F. Training Director attestation
Formal declaration that the trainee is fit for independent practice according to the Framework standard.

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6. Records, Quality Assurance and Appeals

- All assessments must be archived for **minimum 5 years**.
- Programmes must participate in internal and external quality assurance audits.
- Trainees must have the right to appeal summative decisions through national procedures aligned with UEMS quality principles.

ANNEX 4 — RECOMMENDED LITERATURE & EDUCATIONAL RESOURCES

Reference documents
This literature list is derived from:

- **EBHS/FESSH White Book (2020)**
- **EBHS European Diploma in Hand Surgery — Recommended Reading List**
- **UEMS standards for postgraduate training resources**
- **International Hand Surgery society guidance**

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1. Recommended Textbooks
These textbooks represent the core body of knowledge for the Hand Surgery subspecialty. They are **strongly recommended**, but programmes may supplement them with national alternatives.

General Hand Surgery

1. **Green's Operative Hand Surgery** (Green, Hotchkiss, Pederson, Wolfe, Kozin)
   The standard global reference for operative hand surgery.
2. **Tubiana's Atlas of Hand Surgery**
   Excellent anatomical and procedural overview.
3. **Hand Surgery** – European Federation of Societies (FESSH Instructional Course Books)
   Updated annually, aligned with European practice.
4. **Plastic Surgery – Hand and Upper Extremity Volume** (Neligan)
   Strong for plastic-surgical reconstruction and flaps.
5. **Atlas of Human Hand Anatomy** (Kaplan or Schünke)
   Highly recommended for trainees in early phases.

Microsurgery

6. **Microsurgery: Techniques and Principles** (Buncke / Acland)
   Core reference for microvascular work.
7. **Practice Manual for Microvascular Surgery** (Acland)
   Essential for trainees in microsurgery courses.

Trauma & Fractures

8. **AO Manual of Fracture Management: Hand and Wrist**
   The standard for fracture fixation in the hand and wrist.
9. **The Wrist** (Berger & Weiss)
   Gold standard for wrist biomechanics and pathology.

Pediatric Hand Surgery

10. **Congenital Malformations of the Hand and Upper Limb** (Oberg, Tonkin, Marquardt)
    Authoritative reference for congenital deformities.

11. **Pediatric Hand and Upper Limb Surgery: A Practical Guide**
    Good overview for trainees rotating in paediatric centres.

Peripheral Nerve Surgery

12. **Surgery of Peripheral Nerves** (Omer, Spinner, Van Beek)
    Comprehensive surgical text for nerve injuries.

13. **The Median and Ulnar Nerves** (Mackinnon)
    High-level reference, especially for advanced training.

Flaps and Reconstruction

14. **Plastic Surgery – Flaps Volume** (Neligan)
    Must-have for soft tissue coverage of the hand.

15. **Reconstructive Microsurgery** (Wei)
    Extensive atlas for free flaps and reconstruction.

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2. Recommended Journals

Trainees should regularly read at least *one* major hand surgery journal.
The following are internationally recognised:

1. **Journal of Hand Surgery (European Volume)** – FESSH
2. **Journal of Hand Surgery (American Volume)**
3. **Hand Clinics** (review updates)
4. **HAND** (American Association for Hand Surgery)
5. **Journal of Wrist Surgery**

Additional national journals (optional):

- *Handchirurgie, Mikrochirurgie, Plastische Chirurgie* (German-speaking countries)
- *Revista Iberoamericana de Cirugía de la Mano*
- *Rivista di Chirurgia della Mano*
- *Hand Surgery and Rehabilitation*
- *Romanian Journal of Hand and Reconstructive Microsurgery*

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3. Recommended Online Resources

Core international resources

- **PubMed** (mandatory for literature search training)
- **FESSH Online Academy** (videos, lectures, e-learning modules)
- **EBHS Examination Preparation Resources**
- **AO Surgery Reference (Hand/Wrist)**
- **AO Trauma Online Learning**

- **ASSH Hand-e platform** (if institution has access)

Anatomy and simulation resources
- Thieme **Hand Anatomy online atlas**
- **Touch Surgery** (select hand/wrist modules)
- **Microsurgery simulation videos** (Acland videos when institutionally licensed)

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4. Recommended Meetings and Courses
These represent the minimal exposure expected of every trainee, also listed in the Framework main document.

Mandatory during training (at least once):
1. **FESSH Annual Congress** – including the Instructional Course
2. **National Hand Surgery Society Meeting**
3. **Accredited Microsurgery Training Course** (laboratory based)
4. **Hand Fracture/Trauma Course** (AO or equivalent)

Strongly recommended
5. **Wrist arthroscopy course**
6. **Peripheral nerve surgery course**
7. **Soft-tissue reconstruction/flap course**
8. **Pediatric Hand Surgery symposium**
9. **Brachial plexus or nerve reconstruction course** (for advanced trainees)

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5. Recommended Self-Assessment Tools
These tools support self-directed learning and exam preparation.

FESSH Resources
- **FESSH Online Self-Assessment Exam**: http://fessh.com/online-self-assessment-examination/

ASSH Resources
- **ASSH Self-Assessment Exam**
- **ASSH Question of the Week**

Journal-Based Learning
- "**So You Think You Have Read This Journal?**" (JHS European Volume)

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5. Recommended Research Reading and Methods

Trainees should be able to demonstrate familiarity with:
- Principles of clinical trial design
- Epidemiological methods
- Common statistical analyses

- Outcome measures in hand surgery
  (QuickDASH, PRWHE, Michigan Hand Questionnaire, PEM)
- Guidelines for surgical audit and quality improvement

Recommended reading:

- **Users' Guides to the Medical Literature** (JAMA series)
- **Basic & Clinical Biostatistics** (Dawson & Trapp)

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6. Minimum Institutional Access Requirements

Accredited training centres must guarantee trainee access to:

- At least *one* core textbook (Green's or Tubiana)
- At least *one* leading journal
- Online database access (PubMed, institutional library licences)
- Simulation resources for microsurgery and anatomy
- Structured courses (microsurgery, trauma) within the training period

ANNEX 5 — PROCEDURAL CURRICULUM & COMPETENCE MATRIX

This Annex contains the detailed procedural competence matrix supporting the procedural curriculum outlined in the main body of the Framework (Section III.2).

Introductory Note

This Procedural Curriculum Matrix complements the Entrustable Professional Activities (EPAs) listed in Annex 6. Although both tools describe competence development within Hand Surgery training, they address different and complementary levels of the curriculum, in accordance with UEMS educational standards.

An EPA is 'a critical part of professional work that can be identified as a unit to be entrusted to a trainee once sufficient competence has been reached'. They assess the trainee's ability to combine medical knowledge, operative planning, communication, teamwork, safety, and professionalism within real clinical tasks.

The Procedural Curriculum (Annex 5), by contrast, lists the specific surgical procedures and technical skills that underpin these EPAs.

It provides:

- a structured overview of the *technical repertoire* expected of a European Hand Surgeon
- minimum competence levels per procedure, based on the FESSH White Book
- mandatory categories required for the EBHS European Diploma logbook
- a tool for training centres to ensure adequate exposure to the breadth of Hand Surgery

Both components are essential:

- EPA assessment ensures that the trainee can perform complex clinical activities independently and safely.
- The procedure matrix ensures that the trainee reaches an appropriate technical standard, distinguishable from general Plastic or Orthopaedic Surgery training.

Together, they guarantee a harmonised, high-level skillset for Hand Surgeons across Europe (Aligned with the FESSH/EBHS White Book and UEMS competence levels).

Reference

This Procedural Curriculum is derived from:

- EBHS/FESSH White Book (2020), Section 3.2 & procedural lists A–Q
- Adapted to UEMS ETR structure and competence levels (1–4)
- Competence expectations reflect the final level required for a European Hand Surgeon, not the level of a trainee in General/Plastic/Orthopaedic Surgery.

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1. Competence Levels Used in This Annex

Level	Description
L1 – Knowledge / Observation	Knows indications, principles, steps; has observed the procedure.
L2 – Performs under direct supervision	Executes relevant steps under continuous supervision.
L3 – Performs under distant supervision	Performs most steps independently; supervisor immediately available.
L4 – Independent practice	Performs the procedure independently, including management of common complications.

Interpretation for framework **Hand Surgery**

- **Core Hand Surgery Procedures** → Expected **Level 3–4** at end of training
- **Advanced / Rare Procedures** → Expected **Level 1–2**, unless trained in a reference centre
- **Microsurgery** → Independent digital-level microsurgery required (L4); major free tissue transfer optional (L2–3)

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2. Summary of Expected Competence per Domain

Domain	Expected level at completion	Notes
Skin / Soft Tissue	L3–4	Core flap coverage procedures are mandatory.
Tendons	L3–4	Flexor/extensor repair & tenolysis required.
Bone / Joints	L3–4	Metacarpal/phalangeal ORIF & simple wrist procedures required.
Nerves	L3–4	Digital nerve repair independent; major nerve L2–3.
Vessels	L2–3	Digital revascularisation expected; major replantations L1–2.
Complex Trauma	L3	Full participation in acute trauma care mandatory.
Congenital	L1–2	Basic congenital conditions observed; complex congenital optional.
Tumours	L3–4	Benign tumours independent; malignant cases L2–3.
Infections	L4	Mandatory independent competence.
Burns / Contractures	L3–4	Dupuytren's and common contractures L4.

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3. Detailed Procedural Curriculum Matrix

A. Skin and Subcutaneous Tissue

Procedure	Expected Competence Level	Notes
Split- and full-thickness skin grafts	**L4**	Mandatory core skill
Local pedicled flaps (advancement, rotation, Z-plasty)	**L4**	Mandatory
Regional flaps (cross-finger, thenar, posterior interosseous)	**L3–4**	Required for common defects
Island flaps (e.g., homodigital flaps)	**L3–4**	Mandatory

Procedure	Expected Competence Level	Notes
Free flap with microvascular anastomosis (e.g., ALT, radial forearm free flap)	**L2–3**	Exposure mandatory; independence optional
Treatment of scar contractures	**L4**	Includes burns & trauma
Dupuytren's disease surgery (open fasciectomy, needle fasciotomy, collagenase)	**L4**	Core competence
Extravasation management	**L3–4**	Required
Soft tissue infections and necrotising fasciitis	**L3–4**	Must recognise & manage

B. Tendons

Procedure	Level	Notes
Flexor tendon repair (Zones I–III)	**L4**	Mandatory
Flexor tendon graft	**L3**	Required competence
Pulley reconstruction	**L3**	Required
Flexor tendon tenolysis	**L3–4**	Required
Trigger finger release	**L4**	Common & essential
Extensor tendon repair (Zones III & VII)	**L4**	Mandatory
Extensor tendon graft	**L3**	Required
Extensor tendon tenolysis	**L3–4**	Required
Tendon sheath synovectomy	**L3**	Required
Tendon transfers (e.g., EPL, EDC transpositions)	**L2–3**	Exposure required; independence optional
Free functional muscle transfer	**L1–2**	Rare/specialized
Flexor sheath infection management	**L4**	Core emergency case

C. Bone and Joints

Procedure	Level	Notes
Closed reduction & fixation of fractures	**L4**	Core trauma skill
Open reduction & internal fixation of phalangeal/metacarpal fractures	**L4**	Mandatory
ORIF of selected distal radius/carpal fractures	**L3**	Depends on centre
Corrective osteotomies (phalanges/metacarpals)	**L3–4**	Mandatory
Non-union treatment (bone grafting, fixation)	**L3**	Required
Bone resections	**L3–4**	Depending on pathology

Procedure	Level	Notes
Bone grafts & substitutes	**L3–4**	Required
Free vascularised bone graft	**L1–2**	Complex & rare
Ligament repair/reconstruction (digital/wrist)	**L2–3**	Exposure required
Wrist arthroscopy (diagnostic)	**L1–2**	Exposure required; independence optional
Arthrolysis	**L3**	Mandatory
Small joint arthroplasty (PIP/MCP)	**L2–3**	Exposure required
Wrist partial/total fusion, PRC	**L2–3**	Required exposure
DRUJ reconstruction	**L1–2**	Reference centre skill
Paediatric fractures of the hand	**L4**	Mandatory

D. Nerves

Procedure	Level	Notes
Microsurgical digital nerve repair	**L4**	Mandatory
Major sensory/mixed nerve repair (median/ulnar/radial)	**L2–3**	Required exposure; independence not required
Nerve grafting	**L2–3**	Required
Neurotization / conduits	**L1–2**	Advanced
Neurolysis	**L3–4**	Mandatory
Neuroma management	**L3**	Required
Nerve tumours (benign)	**L2–3**	Required exposure
Peripheral nerve decompressions (carpal/cubital/Guyon)	**L4**	Core competence

E. Vessels & Microvascular

Procedure	Level	Notes
Digital arterial anastomosis	**L3–4**	Mandatory microsurgical level
Digital venous anastomosis	**L3–4**	Mandatory
Vein graft	**L2–3**	Required exposure
Digital revascularisation	**L3**	Required
Major replantation (hand/forearm/arm)	**L1–2**	Rare; reference centres

F. Complex Trauma & Special Conditions

Procedure	Level	Notes
Management of mutilating hand injuries	**L3**	Required
Mangled hand treatment (damage control + reconstruction plan)	**L3**	Mandatory
Acute & chronic fasciotomy	**L4**	Core competence
Burns of the hand	**L3–4**	Required
Electrical/chemical injuries	**L3**	Required

G. Tumours

Procedure	Level	Notes
Excision benign skin/soft tissue tumors	**L4**	Mandatory
Excision deep/osseous tumors	**L2–3**	Required exposure
Complex oncologic reconstruction	**L2**	Rare

H. Congenital Hand Surgery

Procedure	Level	Notes
Simple syndactyly release	**L1–2**	Exposure required
Simple polydactyly	**L1–2**	Exposure required
Complex syndactyly (Apert)	**L1**	Rare
Complex polydactyly	**L1**	Rare
Hypoplasia / triphalangeal thumb	**L1**	Reference centre skill
Cleft hand	**L1**	Rare
Madelung deformity	**L1**	Orthopaedics-led
Toe-to-hand transfer	**L1**	Highly specialized

4. Minimal Exposure Requirements (Qualitative)

All trainees must:

- Participate actively in **all major domains** (skin, tendons, bone, nerves, vessels, trauma, paediatrics, tumours, infections, contractures).
- Log cases with **significant operator or first-assistant involvement** across the 14 FESSH subsets.
- Achieve **Level 4** in all common emergency & elective procedures.
- Achieve at least **Level 1–2** exposure to advanced or rare procedures.

ANNEX 6 – Entrustable Professional Activities (EPAs) for Hand Surgery
This Annex provides the full descriptions of the Entrustable Professional Activities (EPAs) referenced in Section III.2.c of the Framework.
Introductory Note
The EPAs in this Annex define the core professional activities that a Hand Surgery trainee must be able to perform independently (EPA Level 4) at the end of training and form the clinical backbone of the Hand Surgery framework and are assessed alongside the **Procedural Curriculum (Annex 5)** and the **Syllabus (Annex 1).**
EPA level 5 represents the highest entrustment level and indicates whether one could trust the individual to perform the job and not whether he is just competent to do it. At the end of level 5 the trainee:
a. Can be **trusted** to deal with straightforward and difficult cases to a satisfactory level and without the requirement for external input to the level at which one would expect a consultant surgeon to function.
b. Is capable of instructing and supervising trainees.

Each EPA integrates multiple CanMEDS roles and combines knowledge, technical skills, decision-making, communication, documentation, leadership and collaboration.
Cross-cutting age-related competence
In alignment with the CanMEDS roles of Communicator, Professional and Health Advocate, all clinical EPAs (EPA 1–11) require the ability to provide age-appropriate care across the lifespan, including adolescents and young adults.
This includes adapted communication, appropriate consent and shared decision-making processes, and consideration of psychosocial, educational and vocational factors relevant to this age group.
This competence does not constitute a separate transitional care qualification but reflects the general professional responsibility of the Hand Surgeon when managing patients in this developmental stage.

Structure of EPA Tables
Each EPA includes:
1. **EPA Title**
2. **Description of the Activity**
3. **Specifications & Limitations**
4. **Knowledge, Skills, Professional Behaviours**
5. **Assessment Methods**
6. **Required Level of Entrustment**

EPA 1 — Acute Hand Trauma Assessment and Initial Management
Description
Independently evaluate, triage, stabilise and initiate management of acute hand and wrist trauma in emergency or urgent care settings.
Specifications
Includes:
- Lacerations, fractures, dislocations
- Tendon and nerve injuries
- Vascular compromise
- Bite injuries, ring avulsion

- High-energy trauma and mangled hand (initial care)

Limitations:
Definitive complex reconstructive surgery is covered under EPA 4–7.
Required competencies

- **Knowledge**: anatomy, biomechanics, trauma principles, imaging, wound management, ischaemia assessment.
- **Skills**: complete neurovascular exam; imaging interpretation in collaboration with radiology services; splinting, reductions; emergency soft-tissue management.
- **Professionalism**: safety, escalation, clear communication with patient and team.

Assessment

- Mini-CEX / DOPS
- Case-based discussion
- Trauma on-call assessment
- Multisource feedback

Level required: EPA Level 4 (independent)

EPA 2 — Diagnosis and Management of Common Hand Conditions in Outpatient Care
Description
Independently perform full outpatient evaluation for common hand and wrist conditions and develop an evidence-based treatment plan using shared decision-making.
Includes

- Compression neuropathies (CTS, CuTS, Guyon's canal)
- Trigger finger, De Quervain
- Early degenerative disease
- Simple ganglia
- Dupuytren's contracture (diagnosis ± indication for treatment)
- Simple tumours (lipoma, ganglion, enchondroma)

Assessment

- Outpatient clinic direct observation
- Case-based discussion
- 360° feedback from nurses/therapists
- Review of documentation

Level required: EPA Level 4

EPA 3 — Perform Common Elective Hand Surgery Independently
Description
Perform standard elective procedures safely, efficiently and independently.
Includes

- Carpal tunnel release
- Trigger finger release

- De Quervain release
- Simple ganglion excision
- Digital nerve repair
- Tendon repair (extensor/flexor zones except complex Zone II)
- Simple joint arthrodeses (DIP)

Assessment
- DOPS / OSATS
- OR performance assessment
- Logbook review

Level required: EPA Level 4

EPA 4 — Perform Tendon Repair, Reconstruction and Tenolysis
Description
Independently manage tendon injuries including primary repair, tenolysis and selected reconstructions.
Includes
- Flexor tendon repair (Zones 1–3)
- Extensor tendon repair (Zones 1–7)
- Tenolysis (flexor/extensor)
- Pulley reconstruction
- Tendon grafting for selected cases
  Postoperative therapy planning mandatory.

Assessment
- Microsurgical/tendon OSATS
- Multisource feedback (OR nurses, therapists)
- Review of postop outcomes

Level required: EPA Level 4

EPA 5 — Perform Bone and Joint Surgery of the Hand and Wrist
Description
Independently perform essential osteosynthesis and reconstructive procedures.
Includes
- ORIF of phalangeal and metacarpal fractures
- ORIF selected distal radius and carpal fractures (centre-dependent)
- Corrective osteotomies (phalanges/metacarpals)
- Simple joint arthrodeses
- Wrist salvage procedures (PRC ± observation; 4-corner assist at minimum)

Limits:
Complex wrist ligament reconstruction and total wrist arthroplasty require at least **Level 2–3**.
Assessment

- OSATS bone surgery
- Logbook volume & diversity
- Case-based discussion

Level required: EPA Level 4

EPA 6 — Perform Nerve Decompression, Repair and Selected Reconstructions
Description
Diagnose and surgically manage peripheral nerve pathologies of the upper limb.
Includes

- Carpal tunnel, cubital tunnel, Guyon's canal decompression
- Digital nerve repair
- Major nerve repair (median/ulnar) — independent for select cases
- Nerve grafting — independent for short grafts; assist for complex grafts/transpositions
- Neurolysis

Limits:
Brachial plexus surgery requires **Level 1–2** minimum.
Assessment

- Microsurgical OSATS
- Portfolio review
- 360° feedback

Level required: EPA Level 4 (with exceptions above)

EPA 7 — Soft Tissue Coverage and Flap Surgery of the Hand
Description
Independently manage soft-tissue defects and perform coverage procedures.
Includes

- Full-thickness and split-thickness skin grafts
- Dermal substitutes
- NPWT (Negative Pressure Wound Therapy
- Local flaps (V-Y, Z-plasty, cross-finger, rotation, advancement)
- Regional flaps (dorsal metacarpal artery flaps, thenar flaps)
- Basic free-flap principles + assist role in free flap transfer

Limits:
Complex free flaps and toe-to-hand transfers require **Level 2–3**.
Assessment

- Soft tissue OSATS
- Cadaver lab participation
- Case-based discussions

Level required: EPA Level 4

EPA 8 — Diagnosis and Surgical Management of Hand Infections

Description
Independently diagnose and treat acute and chronic infections of the hand.
Includes

- Flexor sheath infections
- Deep space infections
- Bite wounds
- Paronychia/pulp infections
- Septic arthritis & osteomyelitis (early operative management)
- Postoperative infection management

Assessment

- DOPS
- Case-based discussion
- Documentation review

Level required: EPA Level 4

EPA 9 — Management of Dupuytren's Disease and Contractures
Description
Independently evaluate and treat Dupuytren's disease and other contractures.
Includes

- Needle fasciotomy (centre-dependent)
- Limited fasciectomy (mandatory)
- Open palm technique
- Scar contracture release
- Post-burn contracture management (simple to moderate)

Assessment

- OSATS
- Outcome review (ROM, QuickDASH)
- Case discussions

Level required: EPA Level 4

EPA 10 — Coordination of Rehabilitation and Long-Term Functional Recovery
Description
Lead the multidisciplinary post-operative rehabilitation pathway for hand surgery patients.
Includes

- Prescription and coordination of hand therapy
- Splinting protocols
- Return-to-work planning
- CRPS prevention/recognition
- Monitoring of functional outcome measures

Assessment

- Multisource feedback (therapists, nurses)
- Documentation review
- Case-based discussion

Level required: EPA Level 4

EPA 11 — Complex Case Leadership and Multidisciplinary Decision-Making
Description
Lead complex case discussions and coordinate multidisciplinary planning for trauma, including structured collaboration with radiology services, particularly in cases requiring advanced musculoskeletal imaging or image-guided procedures, congenital anomalies, nerve injuries, tumours and reconstructive challenges.
Includes

- MDT preparation and presentation
- Referral decisions
- Shared decision-making with patients and families

Assessment

- MDT participation review
- Leadership feedback
- Portfolio evidence

Level required: EPA Level 4

EPA 12 — Participation in Research, Audit, Education and Quality Improvement
Description
Demonstrate academic engagement and contribute to quality improvement.
Includes

- Completing at least one audit or research project
- Teaching medical students or juniors
- Presentations at local/national meetings
- Understanding research methodology

Assessment

- Portfolio
- Supervisor report
- Presentation / publication record

Level required: EPA Level 4

Optional EPA Set (Level 2–3) – Highly Specialized Procedures
Not required for all trainees; mandatory only for centres with relevant volume.
EPA A — Replantation & Revascularisation (Level 2–3)
EPA B — Brachial Plexus & Major Nerve Reconstruction (Level 1–2)
EPA C — Complex Congenital Hand Surgery (Level 1–2)
EPA D — Complex Free Tissue Transfer / Toe Transfers (Level 2–3)

ANNEX 7 — REFERENCES

The following references represent the regulatory, curricular, scientific and educational sources used in the formulation of the European Training Requirements for Hand Surgery. They are presented in accordance with UEMS document formatting conventions.

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1. UEMS Core Documents

1.1 UEMS. *Charter on Postgraduate Training*. Union Européenne des Médecins Spécialistes; 1994 (with subsequent revisions).

1.2 UEMS. *Template Structure for European Training Requirements*. UEMS Council; latest version.

1.3 UEMS. *Principles of Assessment in Postgraduate Medical Training*. UEMS Council; 2014.

1.4 UEMS Section of Surgery. *Guidelines for Workplace-Based Assessment*. Latest edition.

1.5 UEMS CESMA. *Standards for European Specialist Medical Examinations*. Council of European Specialist Medical Assessments; latest edition.

1.6 Royal College of Physicians and Surgeons of Canada. *CanMEDS 2015 Physician Competency Framework*. Ottawa; 2015.

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2. European Hand Surgery Standards

2.1 FESSH – Federation of European Societies for Surgery of the Hand. *FESSH White Book: Training Requirements in Hand Surgery*. Latest edition (2020 referenced).

2.2 EBHS – European Board of Hand Surgery. *EBHS Diploma Requirements and Examination Syllabus*. Current version.

2.3 EBHS/FESSH. *White Book of Hand Surgery in Europe*. 2020 edition.

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3. International Curricula Consulted

3.1 ASSH – American Society for Surgery of the Hand. *Hand Surgery Fellowship Curriculum*. Current edition.

3.2 BSSH – British Society for Surgery of the Hand. *Training Standards and Fellowship Curriculum*. Current edition.

3.3 DGH – German Society for Hand Surgery. *Hand Surgery Facharzt Curriculum*. Current version.

3.4 Additional international Hand Surgery fellowship curricula (various).

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4. Core Textbooks Referenced

4.1 General Hand Surgery

4.1.1 Green DP, Hotchkiss RN, Pederson WC, Wolfe SW, Kozin SH. *Green's Operative Hand Surgery*. Latest edition.

4.1.2 Tubiana R, ed. *Tubiana's Atlas of Hand Surgery*. Latest edition.

4.1.3 FESSH. *Instructional Course Books*. Annual editions.

4.1.4 Neligan P, ed. *Plastic Surgery: Hand and Upper Extremity Volume*. Latest edition.

4.1.5 Kaplan EB; Schünke M. *Atlas of Human Hand Anatomy*. Most recent edition.

4.2 Microsurgery

4.2.1 Buncke H, Acland RD. *Microsurgery: Techniques and Principles*. Latest edition.

4.2.2 Acland RD. *Practice Manual for Microvascular Surgery*. Latest edition.

4.3 Trauma and Wrist Surgery

4.3.1 AO Foundation. *AO Manual of Fracture Management: Hand and Wrist*. Latest edition.

4.3.2 Berger RA, Weiss A-PC. *The Wrist*. Latest edition.

4.4 Pediatric and Congenital Hand Surgery

4.4.1 Oberg KC, Tonkin MA, Marquardt A. *Congenital Malformations of the Hand and Upper Limb*. Latest edition.

4.4.2 *Pediatric Hand and Upper Limb Surgery: A Practical Guide*. Current edition.

4.5 Peripheral Nerve Surgery

4.5.1 Omer GE, Spinner M, Van Beek AL. *Surgery of Peripheral Nerves*. Latest edition.

4.5.2 Mackinnon SE. *The Median and Ulnar Nerves*. Latest edition.

4.6 Reconstruction and Flaps
4.6.1 Neligan P, ed. *Plastic Surgery: Flaps Volume*. Latest edition.
4.6.2 Wei FC. *Reconstructive Microsurgery*. Latest edition.

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5. Scientific Journals Referenced
5.1 *Journal of Hand Surgery – European Volume (FESSH).*
5.2 *Journal of Hand Surgery – American Volume.*
5.3 *HAND* (American Association for Hand Surgery).
5.4 *Hand Clinics.*
5.5 *Journal of Wrist Surgery.*
5.6 National and regional Hand Surgery journals (various).

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6. Online Educational Resources
6.1 PubMed – U.S. National Library of Medicine.
6.2 FESSH Online Academy – educational modules and e-learning.
6.3 EBHS Examination Preparation Resources – official EBHS materials.
6.4 AO Surgery Reference (Hand/Wrist).
6.5 AO Trauma Online Learning.
6.6 ASSH Hand-e platform (institutional access).
6.7 Thieme Hand Anatomy Online Atlas.
6.8 Touch Surgery – Hand and Wrist modules.
6.9 Acland Microsurgery Videos (licensed institutional access).

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7. Outcome Measures Cited
7.1 QuickDASH — Disabilities of the Arm, Shoulder and Hand.
7.2 PRWHE — Patient-Rated Wrist/Hand Evaluation.
7.3 Michigan Hand Questionnaire (MHQ).
7.4 Patient Evaluation Measure (PEM).

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8. Ethical and Regulatory References
8.1 World Medical Association. *International Code of Medical Ethics.*
8.2 United Nations. *International Human Rights Instruments* (general reference in postgraduate medical training context).

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9. Research Methodology Resources
9.1 *Users' Guides to the Medical Literature.* JAMA Evidence Series.
9.2 Dawson B, Trapp RG. *Basic and Clinical Biostatistics.* Latest edition.

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10. Courses and Meetings Referenced
10.1 FESSH Annual Congress and Instructional Course.
10.2 National Hand Surgery Society Meetings (various).
10.3 Accredited Microsurgery Training Courses (laboratory-based).
10.4 AO or equivalent Hand Trauma/Fracture Courses.
10.5 Wrist Arthroscopy Courses.
10.6 Peripheral Nerve Surgery Courses.
10.7 Soft-Tissue Reconstruction / Flap Courses.
10.8 Paediatric Hand Surgery Symposia.
10.9 Advanced Brachial Plexus and Nerve Reconstruction Courses.