

## Learning Outcomes for the Training Courses

Course	Knowledge	Skills	Competences
<b>Biomechanical analysis of bone in terms of its structure</b>	Advanced knowledge in structural behaviour of the bone.	Ability to determine the stress-strain state in the bone	Manage the definition of complex design criteria applied to the femur.
<b>Factors influencing fracture repair and assessment methods</b>	Advanced knowledge of fracture consolidation mechanisms and main factors influencing fracture repair, according to the different dependent variables.	Ability to promote the mechanisms of fracture healing. Ability to use the non-invasive assessment methods and the therapeutic factors.	Manage the use of non-invasive assessment methods in fracture diagnosis and repair.
<b>Skeletal adaptation to functional stimuli</b>	Advanced knowledge of concepts related to bone remodelling and adaptation.	Ability to use the different variables that influence the mechanical adaptation process of bone tissue.	Demonstrate autonomy, professional integrity and commitment to the use of designed rules for bone adaptation.
<b>Orthopaedic fracture repair systems</b>	Advanced knowledge of fracture repair methods and characteristics of different (conventional/functional) plaster casts.	Ability to apply the suitable osteosynthesis method for a certain type of fracture.	Demonstrate autonomy in the application of each method of surgical fracture repair: conventional and functional plaster casts.

<b>Surgical fracture repair systems</b>	Advanced knowledge of the main functions of different surgical fracture repair methods (osteosynthesis) including screw fixation, plates, IM nails and external fixators.	Ability to select the suitable osteosynthesis method for a certain type of fracture.	Demonstrate autonomy, professional integrity and commitment to the application of each method of surgical fracture repair (screw fixation, plates, IM nails and external fixators) according to the basic principles related to the function of different fixation systems.
<b>Principles of Surgical Treatment of Fractures</b>	Advanced knowledge of anatomic reduction, stability of osteosynthesis and preservation of blood supply.	Ability to select the correct indications according to the fracture characteristics and apply the principles of osteosynthesis so as preserve the blood supply, obtain anatomic reduction and stable osteosynthesis.	Manage complex technical and surgical activities, taking responsibility for decision-making in predicted and in-predicted situations in Surgical Treatment of Fractures.
<b>Errors in Osteosynthesis</b>	Knowledge on the fundamental differences of <i>errors</i> and <i>complications</i> and ways to avoid repeating known errors. Knowledge of the biologic input of fracture healing (bone grafting).	Ability to make the correct preoperative planning and implant choice as well as discriminating in what cases is bone graft addition is necessary.	Demonstrate autonomy and professional integrity and avoid errors when performing an osteosynthesis, by the use of pre-operative planning and correct implant choice, while being aware of the importance of self-criticism and self-audit.

<b>New Tendencies in Orthopaedic Surgery and Traumatology</b>	<p>Highly specialised knowledge on new concepts of osteosynthesis, tissue regeneration therapies, and good practices, documentation and continuous evaluation of results in orthopaedic surgery and traumatology.</p>	<p>Ability to use the most frequent standardisation systems and Clinical Practice Guidelines.</p> <p>Ability to apply the concept of Evidence-Based Medicine and to use Information and Communications Technology (ICT) in documentation and evaluation of results.</p> <p>Ability to make the correct choice of tissue regeneration therapies.</p>	<p>Correct management of documentation of clinical cases and continuous evaluation of the osteosynthesis results.</p> <p>Manage the application of new concepts in osteosynthesis. Manage the application of Platelet-Rich Plasma and mesenchymal stem cells in the therapy of the musculoskeletal system pathology.</p>
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