

## Locomotor System

### Group leader

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### Researchers

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Toro Aguilera, Álvaro (FGS)  
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### DESCRIPTION

The group's main lines of research focus on studying the pathophysiology, anatomy, and aetiology associated with the various pathologies of skeletal diseases. It focuses on the evaluation and analysis of risk factors in the development of cartilage loss, joint instability, and early osteoarthritis. It also presents findings on the study of drugs that reduce post-surgical bleeding in prosthetic surgery, as well as research on prognostic factors and the evolution of sarcomas.

### MAIN LINES OF RESEARCH

- Hand Surgery and Upper Limb. Anatomy and immunohistochemical study of the thumb carpometacarpal joint. Role of nerve endings, Golgi corpuscles and biomarkers in the proprioception, joint stability and development of early osteoarthritis. Analyse biomarkers in inflammatory musculoskeletal diseases in the wrist and hand. Kienböck's disease. Malunion of the distal radius. Reliable and precise techniques assisted by guides and 3D models for surgical planning. Risk factors of heterotopic ossification in the elbow after radial head prosthesis. Factors associated with the development of lunate necrosis, scaphoid non-union and ulnar diaphyseal nonunion. (Lamas Gomez, Claudia Maria)
- Oncological orthopaedics. The adverse effects of metal ion release on oncological patients after megaprosthesis salvage surgery. Chondrosarcomas. Chondroblastomas in children and young adults: Review of 55

cases Joint work with the SJD Barcelona Children's Hospital. How To Create A Custom Mega Hip Cement Spacer For A 2-Stage Mega Hip Prosthesis Revision Surgery After Oncological Limb Salvage Surgery. Primary iliac sarcoma in elderly patients vs. anaplastic T lymphoma with bone involvement. Validation of International functional scales in Spanish (MSTS-EMSOS scale study). Pathologic fractures in osteosarcoma. Treatment of aneurysmal bone cyst by percutaneous injection of demineralized bone matrix and pelvic medullary blood growth factors. Study of clear cell sarcomas in conjunction with pathological anatomy. Identifying Skills That Define Physical Function for Lower-Extremity Amputations. (Gracia Alegria, Isidre).

- Hip. Coxarthrosis in young adults: etiological study and biomechanical factors. Influence of hip anatomy in early development of coxarthrosis. (Valera Pertegas, Marius; Moya Gomez, Esther).
- Knee, ankle and foot. Effect of high pressure washing versus manual washing on cement penetration in total knee prosthesis - randomized clinical trial. Regeneration of cartilage defects using tissue engineering and a matrix seeded with characterized allogeneic chondrocytes. Fresh osteochondral allograft transplantation. CT, MRI and clinical outcome. Propective randomized clinical trial for the surgical treatment of Achilles tendon ruptures: repair with mini-invasive technique versus open tenorrhaphy. Morton's neuroma. Floating toe. (Ramirez Bermejo, Eduard; Lopez Capdevila, Laia).
- Reduction of risk of bleeding and complications after orthopaedic prosthetic surgery. Blood loss control using tranexamic acid in primary prosthetic surgery and knee revision surgery. Use of tranexamic acid in non-cardiac surgery and risk of major bleeding. (Gonzalez Osuna, Arantxa)
- Trauma. Periprosthetic fractures of the femur and tibia. Tibial plateau fracture. Polytrauma. Biomechanical factors. (Carrera Fernández, Ion; De Caso Rodríguez, Julio)

## SCIENTIFIC CHALLENGES

- Maintain present scientific networks and establish new multidisciplinary and inter-university collaborations.
- Determine the epidemiological and risk factors associated with bone necrosis, bone nonunion and tumors in the musculoskeletal system.
- Determine the anatomical structures and their roles in the development of joint instability and early osteoarthritis.
- Analyse biomarkers in inflammatory musculoskeletal diseases with prognostic value.

## DOCTORAL THESES DEFENDED

- Moya Gómez, Esther. Roturas no reparables del labrum acetabular: comportamiento clínico e histológico de la reconstrucción con aloinjerto. 22/02/2024. Universitat Autònoma de Barcelona. Supervisors: Monllau Garcia, Joan Carles; Natera Cisneros, Luis Gerardo. <http://hdl.handle.net/10803/691590>.

## SCIENTIFIC PRODUCTION

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