

Department of Orthopedics in the Malteser Waldkrankenhaus St. Marien gGmbH

Division of Orthopedic Rheumatology

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Head of Division

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Research focus

- Arthroscopic synovectomy
- Endoprostheses for degenerative and inflammatory joint diseases
- Dynamic pedobarography

Structure of the Division

Professorship: 1
Personnel: 3
• Doctors (of Medicine): 2
• Graduate students: 3

Clinical focus areas

- Arthritis surgery of patients with degenerative and inflammatory joint diseases
- Joint preserving operations
- Joint arthroplasties of the lower extremities (hip and knee)
- Audited center for arthritis surgery
- Treatment of patients with rare diseases of the synovia (synovial joint chondromatosis, pigmented villonodular synovitis, etc.)

Research

Clinical research still focuses on the outcome of arthroscopic synovectomies as well as joint replacements of hip and knee. Basic osteoarthritis research (in cooperation with Prof. Dr. K. Gelse, Department of Trauma Surgery – Orthopedic Surgery; compare own report) has its focus on chondrocyte differentiation in human osteoarthritis. Dynamic pedographic measurements that started on rheumatoid patients investigate meanwhile also pathologies in soccer players.

Arthroscopic synovectomy

PI: Prof. Dr. B. Swoboda
Clinical studies investigated the effect of arthroscopic synovectomies in patients with rheuma-

toid arthritis. Arthroscopic synovectomies of the knee joint were combined with a radiosynoviorthesis. The long-term effect of this procedure was evaluated using joint replacement as an endpoint.

Endoprostheses for degenerative and inflammatory joint diseases

PI: Dr. A. Jendrissek, Prof. Dr. B. Swoboda
Clinical studies are conducted on the clinical outcome of large joint arthroplasty, especially in patients with degenerative and inflammatory joint diseases. For this purpose, different preoperative findings, surgical requirements, postoperative outcome, and patient satisfaction are compared.

Dynamic pedobarography

PI: Dr. T. Hotfiel
Dynamic pedobarography has been considered as an important measurement device and has been used in various orthopedic and biomechanic investigations. Dynamic pedobarography enables to assess various kinetic parameters such as pressure, force, or contact-time in the interface between the plantar skin and the measurement surface. It can be used in different conditions such as walking, running, or specific movements. Increased and asymmetric plantar pressure conditions can be seen as risk factors for the development of metatarsal stress fractures or plantar ulcers and is associated with prolonged and complicated recurrence of existing tissue damages. Moreover the assessment of foot loads can be helpful for the evaluation of orthotic devices or given weight bearing conditions in the field of rehabilitation:

- Systematic comparison of foot pressure conditions between insole and platform based pedobarography systems
- Plantar pressure distributions in adolescent and professional adult soccer players
- Assessing foot load distribution during rehabilitation and strengthening exercises.

Teaching

The Division of Orthopedic Rheumatology offers lectures on obligatory and optional topics. Students can take part in orthopedic operations. The Division offers hands on examination courses.

We supervise MD and PhD theses.

Selected publications

Klinger P, Lukassen S, Ferrazzi F, Ekici AB, Hotfiel T, Swoboda B, Aigner T, Gelse K. PEDF Is Associated with the Termination of Chondrocyte Phenotype and Catabolism of Cartilage Tissue. *Biomed Res Int.* 2017;7183516

Hotfiel T, Carl HD, Eibenberger T, Gelse K, Weiß J, Jendrissek A, Swoboda B. Cementless femoral components in bicompartmental hybrid knee arthroplasty in patients with rheumatoid arthritis: A 10-year survivorship analysis. *J Orthop Surg (Hong Kong).* 2017 May-Aug;25(2):2309499017716252

Hotfiel T, Carl HD, Wendler F, Jendrissek A, Heiß R, Swoboda B. Plantar pressures increase with raising body weight: A standardised approach with paired sample using neutral shoes. *J Back Musculoskelet Rehabil.* 2017; 30(3):583-589

Heiss R, Kellermann M, Swoboda B, Grim C, Lutter C, May MS, Wuest W, Uder M, Nagel AM, Hotfiel T. Effect of Compression Garments on the Development of Delayed-Onset Muscle Soreness: A Multimodal Approach Using Contrast-Enhanced Ultrasound and Acoustic Radiation Force. *Impulse Elastography.* *J Orthop Sports Phys Ther.* 2018; 48(11): 887-894

Hotfiel T, Heiss R, Swoboda B, Kellermann M, Gelse K, Grim C, Strobel D, Wildner D. Contrast-Enhanced Ultrasound as a New Investigative Tool in Diagnostic Imaging of Muscle Injuries-A Pilot Study Evaluating Conventional Ultrasound, CEUS, and Findings in MRI. *Clin J Sport Med.* 2018; 28(4): 332-338

Kellermann M, Heiss R, Swoboda B, Gelse K, Freiwald J, Grim C, Nagel A, Uder M, Wildner D, Hotfiel T. Intramuscular Perfusion Response in Delayed Onset Muscle Soreness (DOMS): A Quantitative Analysis with Contrast-Enhanced Ultrasound (CEUS). *Int J Sports Med.* 2017; 38(11): 833-841

International cooperation

Prof. Dr. T. Kirsch, PhD, Department of Orthopedic Surgery, NYU Hospital for Joint Diseases, New York City: USA