

Center for Implant and Radiostereometric Research Oslo - CIRRO



Group Leaders

Stephan M. Röhrli, Ass. Prof., (s.m.rohrl@medisin.uio.no) / orthopaedic consultant, Division of Orthopaedic Surgery, OUH, Head of the Norwegian Society for Hip and Knee Surgery, Board member of the Norwegian arthroplasty Registry



Lars Nordsletten, Prof., Dept of Orthopaedics, UiO (lars.nordsletten@medisin.uio.no) / Oslo Sports Trauma Research Center, Dept of Sports Medicine, Norwegian School of Sports Sciences / Chair of the Orthopaedic Centre, OUH / Head of the Experimental Orthopaedic group, Institute for Surgical Research, OUH (UXLANO@ous-hf.no)

Group Members

Senior members:

- Finnur Snorrason, MD/PhD, OUH
- Vera Halvorsen, MD, OUH
- Marianne Westberg MDT/PhD, OUH
- Harald Steen, Professor, OUH
- Ragnhild Gundersen, MD radiolog, OUH
- Eirik Aunan, MD, Lillehammer Hospital

Alumni (PhD):

- Wender Figwed, MD/PhD Bærum Hospital
- Berte Bøe, MD/PhD, OUH
- Einar Lindalen, MD/PhD Lovisenberg Hospital
- Jon Dahl, MD/PhD, OUH
- Thomas Kibsgård, MD/PhD, OUH

PhD candidates:

- Justin van Leeuwen, MD, Betanien Hospital
- Bernhard Flatøy, MD, OUH, LIS
- Gunnar Petursson, MD, Lovisenberg Hospital
- Trygve Glad, MD, OUH, LIS
- Alexander Fraser, MD, OUH, LIS
- Are Stødle, MD, OUH, LIS
- Jan Egil Brattgjerd, MD, OUH, LIS
- Frank David Ørn, MD, Kristiansund Hospital
- Carl Erik Alm, MD, OUH, LIS
- Anders Karlsten, MD, OUH, LIS
- Ole-Christian Brun, MD, OUS
- Vinjar Myklevold, MD, OUS
- Peder Thoen, MD Lovisenberg

Radiographers:

- Alexis Hinohosa, CT and MRI radiographer, OUH
- Mona Risdal, CT radiographer, Application specialist CT, OUH
- Silje Klausen, BSC radiography, PgCert Reporting Radiography, OUH
- Kathrine Lamark, BSC radiography, MSC Diagnostic imaging, OUH
- Siri Engelstad Helmsett, Lovisenberg hospital





Group Members (continued)

Research coordinators:

- Marte Traae Magnusson, PT, Master, OUH
- Anne Christine Brekke, Head nurse, Master, OUH

CIRRO PhD fellows:

- Masako Tsukanaka, MD/PhD, Postdoc, Kyoto University Hospital, Japan

Research profile and aims

The overall aim of CIRRO is to perform sophisticated basic and clinical research in the field of implant surgery and bone turnover, establish a team of dedicated researchers and collaborate nationally and internationally. Our intention is:

- To use and develop precise measurement methods (RSA, dynamic RSA and DXA in musculoskeletal research).
- To supervise and help PhD fellows in all connected hospitals/institutions.
- To study new treatment options (implants, surgical techniques, biotechnology, rehabilitation interventions and pharmacological treatment) with precise methods to ensure benefit to patients in a short time.
- To study disease development (cartilage wear, bone loss, changes in body composition) together with other methods in order to gain insight into mechanisms for disease and eventual treatment.
- To further develop CIRRO as a main research centre that delivers sophisticated services to researchers in South-Eastern Norway Regional Health Authority and adjoint hospitals nationally.

2017

In 2017 we have worked a lot to update our RSA systems and move the files to a new research server. This collaboration with Sykhuspartner and the University was extremely time consuming but now we have succeeded and all systems are up and running.

We are additionally working to establish the new RSA Adora system that is able to take dynamic films right next to our usual location.

We have continued to recruit for our ongoing studies and followed the patients clinically and with RSA. At the university we presented projects for students. A large project on spinal deformities and a continuation of movement of the SI joint has gone through all pre-study instances and waits for the start of inclusion.





In November several researcher presented CIRRO at the biannual RSA conference in Adelaide, Australia. It was a interesting meeting and collaboration with other RSA centers was intensified and established.

Three PhD candidates have finished their studies and were writning their final PhD thesis. We expect them to defend their thesis in the upcoming year.

Ongoing projects

Hip projects

- Unipolar or bipolar hemiarthroplasty for the treatment of displaced femoral neck fractures. A prospective randomised controlled trial of RSA (Radiostereometric Analyses) measurements of acetabular wear. (Collaboration with Bærum hospital)
- Wear and different materials in hip arthroplasty (PhD project OUS, Ullevål)
- THR in patients under 20 years (Collaboration with Hip registry in Bergen)
- Randomized study between operation with pins with or without plate for undisplaced dislocated femoral neck fracture. Radio stereogrammetric analysis (RSA) of stability and fracture healing and clinical endpoints. (The Pinloc Study)
- RCT on the function of the Trochanteric Support Plate(TSP) in combination with the Dynamic Hip Screw(DHS)
- Cartilage wear in hemiarthroplasty

Knee projects

- Patellar eversion in total knee arthroplasty
- Custom positioning guides technique versus conventional technique in total and unikondyler knee arthroplasty (PhD project OUS, Ullevål + Betanien sykehus)
- Computer navigation and conventional technique in total knee replacement (PhD project, Collaboration with Lovisenberg and Bergen)
- In vivo kinematics and performance of contemporary knee arthroplasty (PhD project OUS, Ullevål in collaboration with HF Møre Romsdal)
- Precision of RSA with different RSA systems
- Phantom study of the hip and the knee during motion

Pelvis project

- Kinematic analysis of the pelvic girdle during straight leg rise (Continuation of former PhD project)

Ankle and foot projects

- Callotasis of the deformed lower leg (Collaboration with Rikshospital)
- Investigating acute Lisfranc injuries in the foot and a new surgical procedure (PhD project OUS, Ullevål)
- Kinematics of the midfoot after Lisfranc injury





Shoulder projects

- Stability of the glenoid implant in reversed shoulder arthroplasty
- Precision and accuracy of model shaped vs large marker model RSA of shoulder prosthesis

Hand projects

- A prospective randomized trial comparing two different wrist arthroplasties (PhD project OUS, Rikshospital and Ullevål)
- Precision and accuracy of 2 different wrist implants (Phantom study)

Most important national and international collaborators

National

- Norwegian Arthroplasty register (NAR)
- Norwegian society for hip and knee surgery (NFHKK)
- Betanien Hospital Skien
- Diakonhjemmet Hospital
- Elverum Hospital
- Lillehammer Hospital
- Lovisenberg Diakonale Hospital
- Oslo Sports Trauma Research Center (OSTRC)
- Regional Health Authority Møre Romsdal
- Kristiansund hospital
- Haukeland University hospital
- Arendal hospital

International

- Umeå University Hospital, Arthroplasty unit, Sweden
- UmRSA Biomedical, Sweden
- Leiden University, The Netherlands
- University of Western Australia, Perth orthopaedic center, Australia
- Innovationsmanufaktur, München, Germany
- Harvard and Massachusetts General Hospital, US
- Kyoto University Orthopedic Association, Japan
- Helsinki bone and joint research group, Finland





Funding

- South-Eastern Norway Regional Health Authority
- Sophies Minde Ortopedi AS
- Medacta International AG
- ZimmerBiomet
- Charnely stipend

Scientific production of the research group in 2016

Peer reviewed original research articles: 7

Selected publications:

Aunan E, Kibsgård T, **Röhrli SM** (2017)

Minimal effect of patella eversion on ligament balancing in cruciate-retaining total knee arthroplasty

Arch Orthop Trauma Surg, 137 (3), 387-392

Brun OL, Månsson L, **Nordsletten L** (2017)

The direct anterior minimal invasive approach in total hip replacement: a prospective departmental study on the learning curve

Hip Int, 0 (in press)

Kibsgård TJ, **Röhrli SM**, Røise O, Stuesson B, **Stuge B** (2017)

Movement of the sacroiliac joint during the Active Straight Leg Raise test in patients with long-lasting severe sacroiliac joint pain

Clin Biomech (Bristol, Avon), 47, 40-45





Van Leeuwen JAMJ, Snorrason F, Röhrl SM (2017)

No radiological and clinical advantages with patient-specific positioning guides in total knee replacement

Acta Orthop, 89 (1), 89-94

Wangen H, Havelin LI, Fenstad AM, Hallan G, Furnes O, Pedersen AB, Overgaard S, Kärrholm J, Garellick G, Mäkelä K, Eskelinen A, Nordsletten L (2017)

Reverse hybrid total hip arthroplasty

Acta Orthop, 88 (3), 248-254

Wangen H, Nordsletten L, Boldt JG, Fenstad AM, Beverland DE (2017)

The Corail stem as a reverse hybrid - survivorship and x-ray analysis at 10 years Hip Int, 27 (4), 354-360

