

Head of CIRRO



Professor Stephan M. Röhl, Email: s.m.rohrl@medisin.uio.no

Senior consultant surgeon, MD, PhD

Division of Orthopaedic Surgery, Oslo university hospital

Board member of the Norwegian arthroplasty Registry,

Vice president of the International Radiostereometry Society

Past president of the Norwegian Hip and Knee society

Social media: homepage: **CIRRO.no** Instagram: **Cirro_norway**

Group Members

Senior members:

- Lars Nordsletten, Professor, OUH
- Anselm Schultz, MD, PhD, OUH
- Vera Halvorsen, MD, OUH
- Marianne Westberg MDT/PhD, OUH
- Lene Solberg, MD/PhD, OUH
- Jan Egil Brattgjerd, MD/PhD, Oslo Met

Alumni (PhD):

- Wender Figwed, MD/PhD Bærum Hospital (2010)
- Berte Bøe, MD/PhD, OUH (2012)
- Einar Lindalen, MD/PhD Lovisenberg Hospital (2013)
- Jon Dahl, MD/PhD, OUH (2014)
- Thomas Kibsgård, MD/PhD, UiO and OUH (2014)
- Bernhard Flatøy, MD/PhD, Diakonhjemmet hospital (2018)
- Eirik Aunan, MD, Lillehammer hospital (2019)
- Justin van Leeuwen, MD, Helse Førde Lerdal Hospital (2019)
- Gunnar Petursson, MD, Lovisenberg Hospital (2019)
- Ole-Christian Brun, MD, Lovisenberg Hospital (2021)
- Frank David Ørn, MD, Kristiansund Hospital (2022)
- Peder Thoen, MD, Tønsberg Hospital (2022)
- Alexander Fraser, MD, Diakonhjemmet hospital (2023)
- Yasser Rehman, MD, Lovisenberg Hospital (2024)
- Engelke Randers, MD, OUH (2024)

PhD candidates:

- Carl Erik Alm, MD, OUH
- Vinjar Brenna Hansen, MD, OUH
- Lars Engseth, MD, OUH
- Magnus Poulsen, MD, OUH
- Wilhelm Johan Mustad, MD, OUH
- Dan Sandbæk, Kallnes sykehus

Group Members (continued)

Single project candidate:

- Magnus Høgevold, MD, Diakonhjemmet hospital
- Trygve Glad, Rikshospitalet, MD, OUH
- Fredrik Bru, Kristiansund hospital
- Mathias Brevik, Kristiansund hospital
- Henrik Friedheim, OUH
- Ingvild Bjåland Østerhus, Diakonhjemmet hospital
- Mohammad Ballo, OUH
- Torben Janssen

Studenter

- Anine Karsen, UiO
- Nadia Iranoust, UiO

Research profile and aims

The overall aim of CIRRO is to perform sophisticated basic and clinical research in the field of orthopaedic surgery, imaging science and bone turnover, establish a team of dedicated researchers and collaborate nationally and internationally. Our intention is outlined at: <http://ous-research.no/home/cirro/About us/11138>

- To use and develop precise measurement methods in musculoskeletal research
- To study new treatment options (implants, surgical techniques, biotechnology, rehabilitation interventions and pharmacological treatment) and to ensure safe treatment to patients
- To study disease development (cartilage wear, bone loss, changes in body composition) together with other methods, to gain insight into mechanisms for disease and eventual treatment.
- To further develop CIRRO as a research centre delivering sophisticated services to researchers in South-Eastern Norway Regional Health Authority and adjoint hospitals nationally as well as internationally.

Ongoing studies in 2024

Indication and Treatment of adult Kyphoscoliosis (INTRAKS study)

1 – years controls are finished, and 2- years controls are ongoing. Our collaborator associate professor Bungo Otsuki from Kyoto university visited for discussion of the project.

For more comprehensive information about the study:

<https://www.intraks.org/>



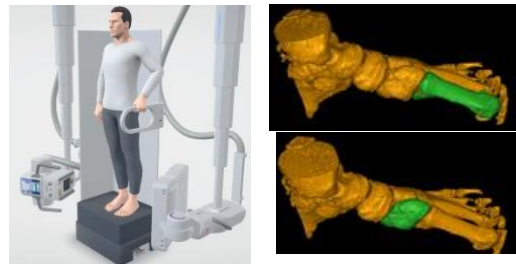
NaKiD knee study

This study of PhD candidate Lars H. Engseth has now finished inclusion of all patients. The results of the last project on the migration of cementless knees was presented at the annual orthopaedic meeting in Norway



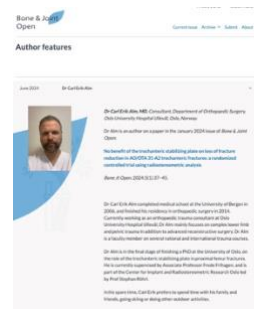
Lisfranc study

The ongoing CT-based study of Magnus Poulsen in diagnostics of Lisfranc injuries included 38 patients in 2024. 1 – years controls are ongoing and will be finished by april 2025. For more information please have a look at the studies homepage: [Lisfrancstudien](#)



Trochanteric Stabilizing Plate in Pertrochanteric fractures

PhD candidate Carl Erik Alm published his last article in his PhD program and was awarded with the author of the month title in British Joint Journal open. He is now focusing on the summary of the thesis.



Kinematics in Total Knee Arthroplasty

We reach out to our colleagues in Århus for the possibility to use automated RSA for the analysis of our kinematic data on the Medacta knee prosthesis. Formalities and REC have to be organized. PhD candidate, Fredrik Bru, joined the team for this project. This is a project in collaboration with Ortoforsk- KS (Kristiansund with Frank-David Øhrn)



Investigation of the stability of hand arthroplasties (INSTHA – trial)

Wilhelm Johan Mustad completed all regulatory work to start with his clinical studies TWIST-study and StableTouch (CMC1 arthroplasty). We also visited the joint registry in Bergen (Yngar Krukhaug and Geir Hallan) as a start off meeting for the planned registry study on wrist arthroplasties.



Surgical treatment of pelvic girdle pain

PhD candidate Engelke Randers from the spinal unit focuses on writing the summary of her PhD thesis on pelvic girdle pain.



Cless TKA

The first 1 year results were published of the 3D printed medial pivoting TKA study. Frank-David Øhrn and Prof. Otto Schnell Husby are satisfied with the clinical outcome. Fredrik Bru wrote several applications for a PhD position.



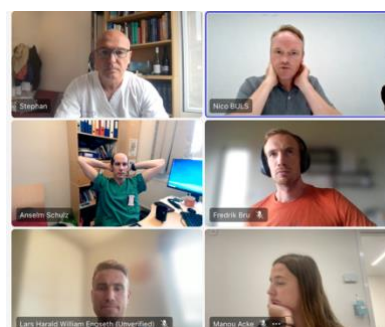
Dual Mobility cups – A lasting solution for dislocations?

Mathias Brevik is a new PhD student from Kristiansund who evaluates Dual mobility cups in his planned PhD study. This is a collaboration project with Kristiansund and the Norwegian implant registry.



AI solution for CT-RSA

Collaboration with Brüssel university to develop a AI solution for CT-RSA. First project is a precision study on a porcine cadaver. This is part of a PhD project of Amou Acke at Brüssel university hospital.



Other activities

World arthroplasty congress, Madrid, Spain, April 2024.

Stephan M. Röhl held a talk about the longest HXLPE RSA study (E-poly) study in the world.



2 medical student **Charlotte Prager and Lina Christiansen from Germany** had a 4 week internship at the orthopedic department.

IRSA online meeting in June 2024 held a talk by Frank David Øhrn, MD, PhD, about experiments with different doses for CT-RSA on a phantom.

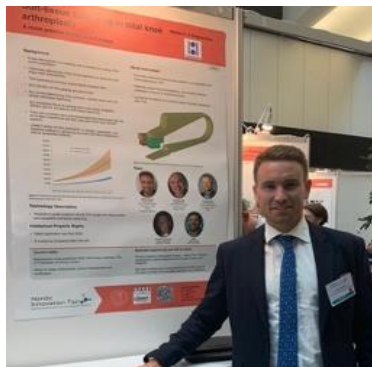


Prof. Stephan M. Röhl visited **Kyoto university hospital, to meet with Prof. Matsuda** regarding the INTRAKS project. Dr. Shima is helping to collect the missing data. He also visited former CIRRO fellow Masako Kano, head of the department at Shiba childrens hospital, Japan.



Nordic Innovation Fair

Dr. Lars Engseth presented his innovative ligament balancing tool at the international Innovation Fair in Copenhagen, Denmark.



First OrtoForsk-KSU meeting

Impressive first OrtoForsk meeting in Kristiansund. Interesting collaboration and projects on robot assisted surgery in TKA and on Dual mobility hips. Supervisor meeting with PhD student Mathias Brevik from Kristiansund. Dr. Frank David Øhrn has built up a great research team!



Annual Norwegian orthopedic meeting:

CIRRO presentors:

Lars Engseth: Migration analysis of the tibia implant with CT-RSA compared with RSA.

Frank David-Øhrn: Precision of CT – based RSA on femoral migration in total knee arthroplasty: A porcine cadaver study.

Lene Bergendal Solberg: Total hofte protese hos pasienter med Morquio syndrom

Marianne Westberg: Forekomst og utfall av uventet oppvekst ved aseptiske revisjoner av hofte og kneproteser

Ingvild Bjåland Østerhus: Diagnostics of painful implants with CT-RSA.

Ingvild Østerhus won the price for the Charnely Stipend at NOF 2025 and Marianne Westberg the price for best paper within hip and knee arthroplasty!



Kleivstua 2024:

Reviewers from Denmark: Maiken Stilling and Sweden: Maziar Mohaddes.



2 presenters from CIRRO:

- *Fredrik Bru*
- *Henrik Fridheim*



Ongoing projects an overview

Hip projects

- RCT on the function of the Trochanteric Support Plate (TSP) in combination with the Dynamic Hip Screw (DHS)
- Long time performance of Vit E infused poly in THP with different head sizes
- Dual Mobility cups. A lasting solution for hip dislocations?

Knee projects

- In vivo kinematics and performance of contemporary knee arthroplasty (PhD project OUH, in collaboration with HF Møre Romsdal)
- Kinematic RSA of three different kneedesigns (collaboration with Lovisenberg Hospital)

Methodological projects

- Motionanalysis with CTMA and IMA in the forefoot and the IS joint (part of the PhD projects)
- Precision of CTMA in the knee in collaboration with Kristiansund and the Radiology departments at OUH
- Experimental studies on CT-RSA with a phantom on dose reduction and precision

Ankle and foot projects

- Investigating acute Lisfranc injuries in the foot and a new surgical procedure (PhD project OUH)
- Kinematics of the midfoot after Lisfranc injury (PhD project OUH)

Hand project

- A prospective randomized trial comparing two different wrist arthroplasties (PhD project OUH)
- New diagnostics for loose implants in the hand
- Register study for wrist implants

Spinal project

- INTRAKS study on spinal deformities (<https://www.intraks.org>)
- Surgical treatment of pelvic girdle pain

Shoulder project

- Which position should be applied for diagnostic CT-RSA? (PhD project OUH)
- New diagnostics for loose implants in the shoulder
- Long time follow up reverse shoulder arthroplasty

Elbow project

- Safety and long time outcome of surgical treatment of distal humerus fractures

Most important national and international collaborators

National

- Norwegian Arthroplasty register (NAR)
- Kristiansund hospital (Ortoforsk –KS)
- Diakonhjemmet Hospital
- Lovisenberg Diaconal Hospital
- Regional Health Authority Møre Romsdal
- Haukeland University Hospital
- National register for leddproteser

International

- Leiden University, The Netherlands
- Kyoto University Orthopaedic Association, Japan
- Skåne University, Sweden
- SECTRA, Sweden
- UmRSA Biomedical, Sweden
- Brüssel university, Belgium
- Århus university, Denmark

Scientific production of the research group in 2024

Dissertations:

On April 5th 2024 Yasser Rehaman conducted his PhD defence on the topic: The impact of implant design and severity of knee osteoarthritis on clinical outcome after total knee arthroplasty.



Peer reviewed original research articles: 5

Selected publication:

Kaptein BL, Pijls B, Koster L, Kärrholm J, Hull M, Niesen A, Heesterbeek P, Callary S, Teeter M, Gascoyne T, **Röhrli SM**, Flivik G, Bragonzoni L, Laende E, Sandberg O, Solomon LB, Nelissen R, Stilling M (2024)

Guideline for RSA and CT-RSA implant migration measurements: an update of standardizations and recommendations Acta Orthop, 95, 256-267

Funding

- South-Eastern Norway Regional Health Authority (PhD program)
- NTNU
- Møre Romsdal Health Authority (PhD program)
- Medacta International AG
- Sophies Minde Health Fund (PhD program)
- The Research Council of Norway
- Health fund of Western Norway (PhD program)