

# Center for Implant and Radiostereometric Research Oslo

## Year 2020



### Group Leaders



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



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(lars.nordsletten@medisin.uio.no) / Head of the research and development unit of the Division of Orthopaedic Surgery, OUH (UXLANO@ous-hf.no)

### Group Members

#### Senior members:

- Finnur Snorrason, MD/PhD, OUH
- Vera Halvorsen, MD, OUH
- Marianne Westberg MDT/PhD, OUH

#### 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, UiO and OUH
- Bernhard Flatøy, MD/PhD, Diakonhjemmet hospital
- Eirik Aunan, MD, Lillehammer hospital
- Justin van Leeuwen, MD, Helse Førde Lerdal hospital
- Gunnar Petursson, MD, Lovisenberg Hospital

#### PhD candidates:

- Ole-Christian Brun, MD/PhD, Lovisenberg Hospital
- Jan Egil Brattgjerd, MD/PhD, OUH
- Trygve Glad, MD, OUH, LIS
- Alexander Fraser, MD, Diakonhjemmet hospital
- Are Stødle, MD, OUH, LIS
- Frank David Ørn, MD, Kristiansund Hospital
- Carl Erik Alm, MD, OUH, LIS
- Vinjar Hansen Myklevold, MD, Haukeland univ.hospital
- Peder Thoen, MD, Tønsberg hospital
- Yasser Rehman, MD, Lovisenberg hospital
- Magnus Poulsen, MD, OUH

## Group Members (continued)

Single project candidate:

- Magnus Høgevold, MD, Diakonhjemmet hospital
- Mathilde Kvamme, Oslo University Hospital

Radiographers:

- Alexis Hinohosa, CT and MRI radiographer, OUH
- Mona Risdal, CT radiographer, Application specialist CT, OUH

Research coordinators:

- Marte Traae Magnusson, PT, MSc, OUH

## Research profile and aims

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

- 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, in order to gain insight into mechanisms for disease and eventual treatment.
- To further develop CIRRO as a main research centre delivering sophisticated services to researchers in South-Eastern Norway Regional Health Authority and adjoint hospitals nationally.

**2020**

### Planned projects:

Medacta uncemented TKR project is delayed due to the pandemic restrictions for planned surgery. Everything is ready to start.

### Ongoing studies:

INTRAKS study on kyphoscoliosis in adults started inclusion in September 2020. We had several research meetings with collaboratin cites in Sweden and Japan over ZOOM. Collaboration with the department of fysiotherapy was established with RIKS hospital, OUS. They are supporting the non-surgical cohort.

A new diagnostic tool was established for CIRRO group. CTMA (Computer Tomography Motion Analysis) and IMA (Image Motion Analysis) are CT based methods that use similar algorithms as Radiostereometric Analysis. Pilot projects are started. Feasibility studies (MK) are started also for clinical use. One PhD candidate (MP) has started to perform comparative studies between RSA and

IMA and is now certified to perform analysis with this new technique. We are in close collaboration with the software developer and our intention is to become the main national center for this new technology.

CIRRO arranged two meetings for the PhD-candidates, radiographers and coordinators:

11.01.20: Foredrag av Olof Sandberg fra Sectra AB, Lindköping, Sverige regarding CT-based RSA method

«Image technology for safe implants and surgery of our patients»

Early bird fee until 25.04.2021

Register

Preliminary program now available at <https://meeting2021.radiostereometry.org/>

Join us at the first *virtual*

**INTERNATIONAL RSA MEETING**  
International Radiostereometry Society Online Meeting! May 10-12 2021

Gold Sponsor **SECTRA** Silver Sponsor **DePuy Synthes** **NRT**  
Knowledge and precision

CIRRO is the host and organizer of the upcoming international RSA meeting 2021. The meeting will be held virtually. Intensive preparations were done during the whole year. We reached out to presenters and potential sponsors (<https://www.youtube.com/watch?v=Jkctj5xQIU>), established a congress homepage (<https://meeting2021.radiostereometry.org/>) and an announcement film (<https://www.youtube.com/watch?v=Bwmxo29JzFo>).

Many Zoom meetings were performed to find reliable partners and organizers to solve the challenges to establish an infrastructure for a digital meeting. We learned a lot and are enthusiastically on our way. The program is looking great!.

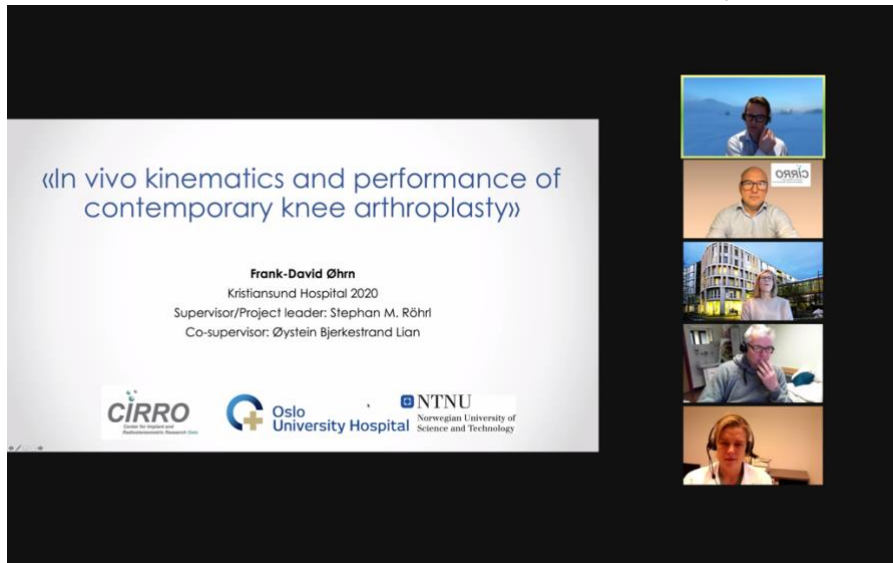
Several members of the group attended the annual research seminar arranged by Dept. of Orthopaedics, OUH and collaborating units which was organized virtually.

CIRRO research coordinator Marte Traae Magnusson also attended in GCP courses.

Facilitating datacollection of PROMS for the Norwegian Arthroplasty Register. Participating in several different ongoing projects [INTRAKS](#) and [PHACT](#). Supervisor for a PT group in developing a national guideline for [rehabilitation after elbow surgery](#).

All PhD students continued their studies. Some even took a large hurdle on their quest to a PhD.

- Half time evaluation was on Zoom med **Frank David Øhrn** from Kristiansund sykehus.



Midtveisevaluering med veiledere. External evaluator was Ass. Prof. Tina Wiik, NTNU.

- **Yasser Rehman's** studie: "A randomized trial to study the effect of different implant designs on knee function and kinematics after knee arthroplasty". opponent Stig Heir fra Martina Hansens Hospital



- **Peder Thoen** gjennomførte sin midtveisevaluering av sitt PhD project "Advance in THR in at risk patients" med Bernhard Flatøy og Prof. Nordsletten til stede. Peder er i rute og godt i gang med artikkel nr. 2 og 3.



## Ongoing projects

### Hip projects

- 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)
- Solutions for patients at risk: dislocation (PhD program)
- The value of minimal invasive approaches for THP compared to traditional ones

### 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 kneedesignes (collaboration with Lovisenberg Hospital)

### Methodological projects

- Precision of RSA with different RSA systems
- Motionanalysis with CTMA and IMA in the forefoot and in the IS joint (Part of PhD projects)

### 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)

### Shoulder project

- Stability of the glenoid implant in reversed shoulder arthroplasty (PhD project OUH)

### Hand project

- A prospective randomized trial comparing two different wrist arthroplasties (PhD project OUH)

### Spinal project

- INTRAKS study on spinal deformities (<https://www.intraks.org>)

## Most important national and international collaborators

### *National*

- Norwegian Arthroplasty register (NAR)
- Norwegian society for hip and knee surgery (NFHKK)
- Diakonhjemmet Hospital
- Lovisenberg Diaconal 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
- Kyoto University Orthopedic Association, Japan
- Skåne University, Sweden

## Scientific production of the research group in 2020

Peer reviewed original research articles: 18

### Selected publications:

1. Øhrn FD, Gøthesen Ø, Låstad Lygre SH, Peng Y, Lian ØB, Lewis PL, Furnes O, **Röhrl SM** (2020) **Decreased Survival of Medial Pivot Designs Compared with Cruciate-retaining Designs in TKA Without Patellar Resurfacing**  
Clin Orthop Relat Res, 478 (6), 1207-1218  
DOI [10.1097/CORR.0000000000001120](https://doi.org/10.1097/CORR.0000000000001120), PubMed [31977446](https://pubmed.ncbi.nlm.nih.gov/31977446/)
2. Thoen PS, **Nordsletten L**, Pripp AH, **Röhrl SM** (2020) **Results of a randomized controlled trial with five-year radiostereometric analysis results of vitamin E-infused highly crosslinked versus moderately crosslinked polyethylene in reverse total hip arthroplasty**  
Bone Joint J, 102-B (12), 1646-1653  
DOI [10.1302/0301-620X.102B12.BJJ-2020-0721.R1](https://doi.org/10.1302/0301-620X.102B12.BJJ-2020-0721.R1), PubMed [33249906](https://pubmed.ncbi.nlm.nih.gov/33249906/)
3. **Röhrl SM** (2020) **"Great balls on fire:" known algorithm with a new instrument?**  
Acta Orthop, 91 (6), 621-623  
DOI [10.1080/17453674.2020.1840029](https://doi.org/10.1080/17453674.2020.1840029), PubMed [33143497](https://pubmed.ncbi.nlm.nih.gov/33143497/)

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- Bergen University (PhD program)
- Oslo University (PhD program)
- Medacta International AG
- Sophies Minde Health Fund (PhD program)

