



# Annual Report

## Research Activity 2023



### **Division of Orthopaedic Surgery**

University of Oslo, Diakonhjemmet Hospital  
and Oslo University Hospital





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## Introduction

### Oslo University Hospital and the University of Oslo

Oslo University Hospital (OUH) is Norway's largest hospital with over 24 000 employees and a budget of 23 billion NOK. The Hospital has a local function for parts of Oslo's population. It has a regional function for the inhabitants in the South-Eastern Norway Regional Health Authority, and it also has a large number of national functions. The Hospital is responsible for the majority of medical research and education of health personnel in Norway.

The University of Oslo (UiO) is Norway's largest research and educational institution with 28 000 students and 7000 employees. Professional breadth and internationally recognized research environments make UiO an important contributor to society. The Faculty of Medicine was established in 1814 and works for progressive education, research and dissemination for the patients' and society's best interests.

### Diakonhjemmet Hospital

The research activity of Department of Rheumatology at Diakonhjemmet Hospital is organizationally linked to Division of Orthopaedics.

Diakonhjemmet Hospital is a private, non-profit hospital with defined responsibilities for the health care system both in Oslo, in the health region as well as nationally. Department of Rheumatology has responsibility for people with rheumatic joint diseases living in the entire area of Oslo and a regional function for the inhabitants in the South-Eastern Norway Regional Health Authority. Two national highly specialized functions are located at the Hospital: The Norwegian National Unit for Rehabilitation for Rheumatic Patients with Special Needs and the Norwegian National Advisory Unit on Rehabilitation in Rheumatology.

The Department has since 2008 held the position as EULAR Center of Excellence and has in addition to patient care a strong focus on clinical and epidemiological research, education and information to patients and their relatives. Three professors; Espen A. Haavardsholm, Hilde Berner Hammer and Tillmann Uhlig, have combined positions in the Department of Rheumatology and University of Oslo.

### From Division Director Rolf Riise

Being the largest hospital in Norway, Oslo University Hospital provides highly specialized health care services to the citizens of Oslo and the South-East Health Region. In addition, the Hospital has a nationwide responsibility for a number of national and multi-regional assignments. The Division of Orthopaedics (OPK) is one of 16 medical divisions. It encompasses the fields of orthopaedic traumatology, hand surgery including retransplant surgery, prosthetic surgery, oncology surgery, spinal surgery, scoliosis surgery, pediatric surgery and arthroscopic surgery.





The proximity to patients and their medical issues are the cornerstones for the research conducted at our Division, which is aimed at improving patient care. High ethical standards ensure the confidentiality, and our goal is to continuously improve diagnostics, treatment and management for all our patients.

## Research activity

OPK's research activity is organized into 10 different research groups covering a broad range of basic and clinical research with an overall aim to improve patient care with emphasis on diagnostic, therapeutic and preventive measures. Most group leaders have a combined position at Oslo University Hospital and the University of Oslo. In total, the Division has 8 Professors, 4 Associate Professors, postdoctoral fellowships, several PhD students and administrative and technical staff.

The Division has an Advisory Research Board which in 2023 consisted of: Professor Lars Nordsletten, Professor Jan Erik Madsen, Professor Inger Holm, Professor Magne Røkkum, Professor May Arna Risberg, Professor Stehan Röhrli, Associate Professor Joachim Horn, Associate Professor Thomas Kibsgård, Associate Professor Gilbert Moatshe, Consultant Joachim Thorkildsen, Associate Professor Ida M. Bredesen and Associate Professor/Assistant Administrative Manager Kari Anne Hakestad.

In 2023 OPK had a of total 70 registered peer reviewed publications and 4 PhD dissertations.

Diakonhjemmet's department of Rheumatology registered 58 publications in the same period.

*Lars Nordsletten*





## Osteoarthritis Research Group



### Group Leader

Lars Nordsletten, Prof, Division of Orthopaedics, UiO (lars.nordsletten@medisin.uio.no) /  
Head of R & D, Division of Orthopaedic Surgery, OUH (UXLANO@ous-hf.no)

### Group Members

- May Arna Risberg, Prof
- Tore K. Kvien, Prof em
- Till Uhlig, Prof
- Inger Holm, Prof
- Ida K. Haugen, Senior researcher
- Kristin Bølstad, Research coordinator
- Nina Østerås, Professor
- Britt Elin Øyestad, Prof
- Nina J. Kise, Post Doc
- Sonia Rojewski, Phd fellow
- Bjørnar Berg, PostDoc
- Tuva Moseng, post doc
- Pernille Steen Pettersen, post doc
- Alexander Mathiessen, post doc
- Marthe Gløersen, PhD candidate
- Elisabeth Mulrooney, PhD candidate
- Heidi Gammelsrud, Research coordinator
- Elise Berg Vesterhus, Research coordinatoor

### Research profile and aims

To study the etiology, treatment and prevention of osteoarthritis (OA). We are primarily studying knee, hip and hand OA.

### Ongoing projects

- Training in knee OA: RCT between different training forms
- Risk factors for OA in hip, knee and hand: HUNT-NLR-OUH study and Ullensaker study
- Development of hand OA
- Aktiva: implementation of treatment and prevention and registry of OA in primary care in Norway
- OMEX: RCT between traing and operation in meniscal injury
- ArtroVax: The immunological impact on OA development
- HIPARTI: Hip arthroscopy vs training





- Nor-Hand: Observational study of persons with hand OA
- MERINO: RCT studying the efficacy and safety of methotrexate in erosive hand OA
- The development of EULAR classification criteria for hand OA
- Delaware- Oslo ACL Cohort

## Most important national and international collaborators

### National

- The Norwegian Arthroplasty Register
- The Norwegian Cruciate Ligament Register
- The Norwegian Hip Fracture Register
- NTNU, HUNT Research Center
- FHI

### International

- David T. Felson, Boston University, USA
- Martin Englund, Lund University, Sweden
- Lynn Snyder-Mackler, University of Delaware, USA
- Tuhina Neogi, Boston University, USA

## Funding

- South-Eastern Norway Regional Health Authority
- Norwegian Extra Foundation for Health and Rehabilitation
- The Research Council of Norway
- Foundation of Sophies Minde
- Dr Trygve Gythfeldt and wife's Research Foundation
- Pahle's Foundation
- Simon Fougner Hartmann's Family Foundation
- Pfizer: Global Awards for Advancing Chronic Pain Research (ADVANCE)
- Novartis: QUC knee OA study

## Scientific production of the research group in 2023

**Peer reviewed original research articles: 21**

### Selected publications:

Gloersen, M., P. Steen Pettersen, T. Neogi, J. Sexton, T. K. Kvien, H. B. Hammer, and I. K. Haugen. 2023. 'Associations between pain sensitization and measures of physical function in people with hand osteoarthritis: Results from the Nor-Hand study', *Osteoarthritis Cartilage*, 31: 1388-95





Fosdahl, M. A., B. Berg, M. A. Risberg, B. E. Oiestad, and I. Holm. 2023. 'Body Mass Index, Quality of Life and Activity Limitation Trajectories over 2 Years in Patients with Knee or Hip Osteoarthritis: A Dual Trajectory Approach Based on 4265 Patients Included in the AktivA Quality Register', *J Clin Med*, 12

Rojewski, S., M. Westberg, L. Nordsletten, H. E. Meyer, K. Holvik, O. Furnes, A. M. Fenstad, and J. Dahl. 2023. 'Postvaccination immune responses and risk of primary total hip arthroplasty-A population-based cohort study', *Osteoarthritis Cartilage*, 31: 1249-56.





## Pediatric Orthopaedics



### Group Leader

Joachim Horn, Associate Professor, Section of Children's Orthopaedics and Reconstructive Surgery, UiO (joachhor@medisin.uio.no) /OUH (jhorn@ous-hf.no)

### Group Members

- Terje Terjesen, Professor emeritus, UiO
- Harald Steen, MD/PhD, OUH
- Ola Wiig, MD/PhD, OUH
- Stefan Huhnstock, MD/PhD, OUH
- Anders Wensaas, MD/PhD, OUH
- Anne Berg Breen, MD, PhD-candidate, OUH
- Anders Grønseth, MD, PhD-candidate, OUH
- Andreas Knaus, MD, OUH
- Vera Halvorsen, MD, OUH
- Patrick Bjørge, PT, MSc-cand, OUH
- Johan Brevik, PT
- Anne Marthe Svendsen Rysst-Heilmann, PT
- Sanyalak Niratiarak, PhD, Head engineer, UiO

### Research profile and aims

The main intention of the group is to promote clinical and experimental research within the field of children's orthopaedics and reconstructive surgery. Core areas of research are: limb deformity (limb lengthening and growth modulation) and children's hip (Perthes, DDH and SCFE). Novel areas of research are: mixed reality/holographic technology within the field of orthopaedics and research concerning patient safety in children's orthopaedics.

### Ongoing projects

#### 1. Limb lengthening and reconstruction (Joachim Horn)

"Growth modulation in correction of leg length and axial deviations"; PhD project, Anne Berg Breen

- The timing of percutaneous epiphysiodesis for leg length discrepancy – an evaluation of four different prediction methods
- A comparison of 3 different methods for assessment of skeletal age when treating leg length discrepancies: An inter- and intra-observer study
- Comparison of Different Bone Age Methods and Chronological Age in Calculation of Remaining Growth Around the Knee







- Angular deformities after percutaneous epiphysodesis for leg length discrepancy

“Idiopathic increased femoral anteversion”; PhD project Anders Grønseth

- “Derotational osteotomy in the femur with either percutaneous osteotomy and intramedullary nailing or with an open approach and plating – a randomized controlled trial”
- “Three-dimensional gait analysis before and after derotational osteotomy in patients with idiopathic increased femoral anteversion”
- “Long-term follow-up of untreated patients with increased femoral anteversion”
- “Larger Core Locking Bolts Enhance Precision in Intramedullary Nailing for Femoral Derotational Osteotomies: A Biomechanical Study”

## 2. Children’s hip

“A nationwide Perthes study – a long term follow-up with more than 20 years” (Stefan Huhnstock)

## 3. Mixed Reality, Holographic technology (Ola Wiig)

“OrthoNav-mixed reality/holographic technology in orthopaedic surgery”, PhD project Inger Gruenbeck, MSc, The Intervention Centre, OUH (Ola Wiig)

“gAlt” AI based treatment and diagnostic support for gait evaluation in children with cerebral palsy, Eirik Gromholdt Homlong, Institutt for Informatikk.” (Ola Wiig)

## 4. Children’s foot and ankle

“Idiopathic toewalkers: a clinical intervention study for children from 7-14 years” (Andreas Knaus)

## 5. Skeletal dysplasia

Establishment of a “Norwegian Skeletal Dysplasia Register” in collaboration with the Norwegian National Advisory Unit on Rare Diseases, Department of Medical Genetics and Pediatric Endocrinology. The register will be a base for broad interdisciplinary research within this field. (Joachim Horn)

“The use of gait analysis in skeletal dysplasia – a literature review”, in collaboration with ERN BOND (European Reference Network for Rare Bone Disorders) (Joachim Horn)

“Orthopaedic clinical decision making in skeletal dysplasia – a survey among ERN BOND and EPOS members” (Joachim Horn)





## Most important national and international collaborators

### National

- Lena Lande Wekre, MD, PhD, Norwegian National Advisory Unit on Rare Diseases
- Cecilie Rustad, MD, Dept. of Medical Genetics, OUH
- Cathrine Alsaker Heier, Div. of Pediatrics, Endocrinology
- The Intervention Centre, OUH

### International

- EPOS Study Group  
Genetics and Metabolic Diseases
- International Perthes Study Group
- European Reference Network for rare Bone Disorders (ERN BOND)
- Nordic Limb Lengthening and Reconstruction Society

## Scientific production of the research group in 2023

### Selected publications:

Breen AB, Steen H, Pripp A, Hvid I, Horn J. Comparison of Different Bone Age Methods and Chronological Age in Prediction of Remaining Growth Around the Knee. *J Pediatr Orthop.* 2023 Jul 1;43(6):386-391. doi: 10.1097/BPO.0000000000002397. Epub 2023 Mar 20. PMID: 36941111.

Vinje S, Terjesen T, Kibsgård T. Scoliosis in children with severe cerebral palsy: a population-based study of 206 children at GMFCS levels III-V. *Eur Spine J.* 2023 Nov;32(11):4030-4036. doi: 10.1007/s00586-023-07868-1. Epub 2023 Aug 2. PMID: 37532910.

Larsen SM, Terjesen T, Jahnsen RB, Diseth TH, Ramstad K. Health-related quality of life in adolescents with cerebral palsy; a cross-sectional and longitudinal population-based study. *Child Care Health Dev.* 2023 Mar;49(2):373-381. doi: 10.1111/cch.13055. Epub 2022 Sep 6. PMID: 36041889; PMCID: PMC10087639





## Biomechanics Laboratory



### Group Leader

Gilbert Moatshe, MD/PhD, Head of Laboratory/Consultant Orthopaedic Surgeon, Orthopaedic Division, OUH, Associate Professor UiO  
(gilbert.moatshe@medisin.uio.no)

### Group members

- Sanyalak Niratisairak, PhD, Lab's Head engineer, UiO
- Lars Nordsetten, MD/PhD, Professor, OUH
- Jan Egil Brattgjerd, MD/PhD, OUH
- Endre Søreide, MD/PhD, OUH
- Jan Rune Nilssen, Eng, Norwegian Defence Research Institute (FFI)
- Kristin Jørgensen, MD, OUH
- Ingrid Skaaret, CPO/MSc/PhD, Sophies Minde Ortopedi AS (SMO)/OMU
- Anne Berg Breen, MD/PhD-cand, OUH
- Bryan Wright, MD/PhD-cand, Ringerike Hospital
- Marek Zegzdryn, MD/PhD cand, Arendal Hospital
- Hannah Jahr, MD/PhD cand, Arendal Hospital
- Kaare Midtgaard, MD/PhD cand, OUH

### Associate group members

- Joachim Horn, MD/PhD, OUH/UiO
- Are Hugo Pripp, MSc/PhD, OUH, prof OMU
- Are Stødle, PD/PhD, OUH

## Research profile and aims

Biomechanics lab at the Department for Research and Development, OUH Orthopaedic Clinic, functions as a service-unit and contributes as a facilitator/catalysator for accomplishment of various research projects within the orthopaedic community in the Oslo region. The laboratory was established back in the 1960'ies as a joint venture between Sophies Minde National Orthopaedic Hospital and UiO with 1.5 full time employees: One orthopaedic surgeon (50%) employed by the Hospital, and one Engineer (100%) employed by the UiO.

The laboratory previously organized the meetings of the 'Biomechanics Forum' 2-3 times a year during the periods 1996-2002 and 2013-2017, with a total of 31 meetings. 'Biomechanics Forum' was a multidisciplinary discussion group of professionals and students. The plan was to establish a new national forum called the 'Norwegian Biomechanics Society' (NBS) consistent with similar existing national societies in Denmark and Sweden, and with a future expectation of making a common Scandinavian Biomechanics Society. However, due to the Covid-19 pandemic the inauguration of the NSB has been postponed in 2020 and 2021.





The laboratory is furnished with technological equipment for mechanical and functional testing, and participates in planning, execution, analyses, and publishing of clinical and experimental studies.

Biomechanics lab was granted 1.37 mill NOK from the Hospital's Investment budget 2019 for upgrading of our mechanical testing machine (MTS, MiniBionix 858), located at the Institute for Surgical Research. The new equipment will be a high-speed digital image video camera with integrated 3D motion analysis for detailed documentation of the deformation process within the test object during mechanical testing. The procurement process started in September 2019, but was delayed by the Covid pandemic.

In daily clinical activity the Biomechanics lab has been part of the Paediatric Orthopaedics and Reconstructive Surgery Section at Rikshospitalet, mainly contributing with preoperative assessment of patients with limb length discrepancy and other deformities, and monitoring of patients operated with distraction osteogenesis/callotasis by use of external fixators or operated with epiphysiodesis. The biomechanical lab also performs studies related to implants used in orthopaedic surgery, ligament reconstruction and fracture fixation.

## Ongoing projects

- Comparison of various methods for bone age assessment (ABB/PhD Thesis in progress)
- Time planning and treatment of epiphysiodesis - Outcome of various methods (ABB/PhD Thesis in progress)
- Biomechanical studies of bone fixation (BW/PhD Thesis in progress)
- Fixation of trochanteric fractures with gliding screw and plate
- Reconstruction of anterior cruciate ligament with both tibial and femoral fixation
- Comparison of suture tape to metal wire for tension band in olecranon fractures
- Comparison of open and arthroscopic fixation of tendon transfer for massive rotator cuff tears
- Fixation of femoral derotation osteotomies with an intramedullary nail
- Testing of a new instrument for balancing medial collateral ligament in knee prosthetic surgery
- Radiostereometric (RSA) Growth-Analyses after (Hemi-)Epiphysiodeses
- Forces, Load-share and Strain in Ankle Arthrodiastasis
- Forces, Load-Share and Strain during the Callotasis Process
- The Birch Classification for Congenital Fibular Deficiency Can Predict Treatment Modality and Clinical Outcome in Young Adults Born With Lower-Limb Deficiencies
- The Influence of an Intact or Healed Osteotomized Fibula on the Measured Load-Share Value after a Tibial Lengthening Osteotomy - A Cadaver Pilot Study
- Posterior Medial Meniscal Tears: Biomechanics and Clinical Outcomes





## Most important national and international collaborators

- | National  | International  |
|---|--|
| - Jan Rune Nilssen, Norwegian Defence Research Establishment, Kjeller: Mechanical testing projects  | - William MacKenzie, MD and Tariq Rahman, PhD, Neumors, Alfred I. duPont Hospital for Children, Wilmington, Delaware, USA: Experimental limb lengthening project |
| - Bryan Wright, MD, Ringerike Hospital: Mechanical properties and bone mineral parameters per-trochanteric femoral fractures              | - Søren Kold, MD/PhD and Markus Winther Frost, Aalborg University Hospital, Denmark: Experimental limb lengthening project                                       |
| - Hanna Jahr, MD, Arendal Hospital: Comparison of open and arthroscopic fixation of tendon transfer in massive rotator cuff tears         | - Stephen Grigg, PhD and Rhys Pullin, PhD, Cardiff School of Engineering, Cardiff University, UK   |
| - Marek Zegzdryn, MD, Arendal Hospital: Reconstruction of anterior cruciate ligament with both tibial and femoral fixation                | - Acoustic Emission Project  |
| - Arne Kristian Aune, MD/PhD, Aleris Private Hospital: Reconstruction of anterior cruciate ligament with both tibial and femoral fixation |  |

## Scientific production of the research group in 2023

**Peer reviewed original research articles: 10**

### Selected publications:

1. [Injury Patterns in Posterolateral Corner Knee Injury.](#)

Toyooka S, Persson A, LaPrade RF, Engebretsen L, Moatshe G. Orthop J Sports Med. 2023 Aug 29;11(8):23259671231184468. doi: 10.1177/23259671231184468. eCollection 2023 Aug. PMID: 37663094 Free PMC article.

2. [Irreducible Posterolateral Knee Dislocation: A Case Report.](#)

Pache S, Vázquez JM, Chahla J, Moatshe G, LaPrade RF. JBJS Case Connect. 2023 Mar 16;13(1). doi: 10.2106/JBJS.CC.22.00792. eCollection 2023 Jan 1. PMID: 36928141

3. [Low rates of serious complications after open Latarjet procedure at short-term follow-up.](#)

Alfaraidy M, Alraiyes T, Moatshe G, Litchfield R, LeBel ME. J Shoulder Elbow Surg. 2023 Jan;32(1):41-49. doi: 10.1016/j.jse.2022.06.004. Epub 2022 Jul 21. PMID: 35872172





## Center for Implant and Radiostereometric Research Oslo

### Group Leader



Stephan M. Röhrli, MD, PhD, senior consultant surgeon  
(s.m.rohrl@medisin.uio.no) Division of Orthopaedic Surgery, OUH, Board  
member of the Norwegian arthroplasty Registry, (UXRHST@ous-hf.no), Vice  
president of the International Radiostereometry Society; RSA

Social media: homepage: CIRRO.no Instagram: Cirro\_norway

### Group Members

#### Senior members:

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

#### 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)

#### PhD candidates:

- Carl Erik Alm, MD, OUH
- Vinjar Brenna Hansen, MD, OUH
- Yasser Rehman, MD, Lovisenberg Hospital
- Lars Engseth, MD, OUH
- Engelke Randers, MD, OUH
- Magnus Poulsen, MD, OUH
- Wilhelm Johan Mustad, MD, OUH





## Group Members (continued)

Single project candidate:

- Magnus Høgevold, MD, Diakonhjemmet Hospital
- Trygve Glad, Rikshospitalet, MD, OUH

Radiographers:

- Alexis Hinohosa, CT and MRI Radiographer, OUH
- Mona Risdal, CT Radiographer, Application Specialist CT, OUH

Research coordinator:

- 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 orthopaedic surgery, imaging 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 as well as internationally.



## Ongoing studies in 2023

### Indication and Treatment of adult Kyphoscoliosis (INTRAKS study)

Midterm-evaluation by Vinjar Brenna- Hansen (May 2023). Oliver Grundnes, Vinjar Brenna-Hansen, Christian Hellum and Stephan Röhrl at Oslo University Hospital.

We also had several online meetings with our international colleagues in Sweden and Japan of this international multicenter study.

For more comprehensive information about the study:  
<https://www.intraks.org/>



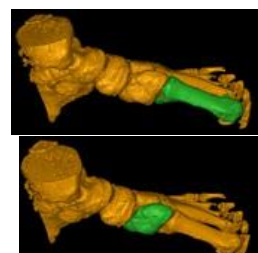
### NaKiD knee study

This study of PhD candidate Lars H. Engseth includes 3 work packages which focus on surgical technique (Ligament piercing), the design of the prosthesis (Medial pivot knees) and a new imaging technique (CT-RSA). 1 and 2- years follow ups are ongoing. The 5- year follow up for 36 patients in the cemented Medacta group with the new MP knee design are finished.



### Lisfranc study

The ongoing CT-based study of Magnus Poulsen in diagnostics of Lisfranc injuries included 21 patients in 2023. For more information please have a look at the studies homepage: [Lisfrancstudien](#)





### Trochanteric Stabilizing Plate in Pertrochanteric fractures

PhD candidate Carl Erik Alm finalizes the manuscript of his final RSA study.

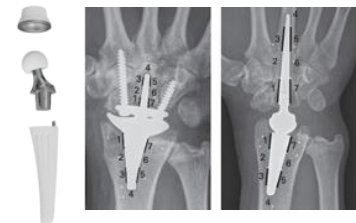


### Kinematics in Total Knee Arthroplasty

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. A new PhD candidate, Fredrik Bru, joins 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 starts in a research position to form his PhD on wrist arthroplasty with the register and a CT-RSA diagnostic study on possibly loose implants (TWIST-study). Additionally, a new CMC1 implant will be evaluated for safety and function with CT-RSA (StableTouch).



### Surgical treatment of pelvic girdle pain

PhD candidate Engelke Randers from the spinal unit at Rikshospitalet won the prestigious research prize at Eurospine 2023 for best national spine societies presentation.



## Other activities

### 15 year CIRRO anniversary

In January the CIRRO team marked 15 years since its founding. Many PhD candidates and researchers have contributed to and experienced the dynamic spirit of the group. The structures in its core have stayed the test of time. Teambuilding and brainstorming for the future was the focus of the day!





### Orthopedic Research Society 2023

Lars H. Engseth and Stephan M. Röhrl attended at the **Orthopedic Research Society 2023** meeting in Dallas. They present their experimental study on accuracy of total knee implants in a boar knee.



### IRSA 2023 conference in Nijmegen, Netherland



Magnus Poulsen presenting his RSA study on the Lisfranc joint and Lars Engseth his methodological and experimental study. Stephan was active as chairman and as board member. Frank-David Øhrn updated his knowledge for his upcoming study in knee robotics.

### NHKK spring meeting in Trondheim

CIRRO members contributed to the spring meeting of the Norwegian Hip and knee society.



### OrtoForsk KS

Kristiansund sykehus established its own orthopaedic research group and CIRRO is represented by Stephan M. Röhrl in the reference group, and Frank David Øhrn in the board.





### Cless TKA

The first 3D printed medial pivoting TKA study completed patient inclusion at Kristiansund hospital. Frank-David Øhrn and Prof. Otto Schnell Husby are satisfied to have completed the inclusion within 6 months.



### Internal CIRRO- meeting x 2

Dario Bergadano from Medacta and Frank D. Øhrn attending from Kristiansund hospital. PhD candidates present the status quo of their studies and meet to discuss common challenges during their PhD times!



### Kleivstua 2023:

4 presenters from CIRRO:

- Mid-term evaluation for *Lars H. Engseth* of the the Natural Kinematic Diagnostic (NaKiD) knee study. Special thanks to **Alex Fraser** for critical and important input to keep the study on track!
- Surgical treatment of pelvic Girdle pain by *Engelke Randers*.
- Advances in diagnosis and treatment of unstable, acute Lisfranc injury by *Magnus Poulsen*.
- Arthroplasty implants in the hand, their stability and longevity by *Wilhelm Mustad*.



### Annual meeting of Norwegian Orthopaedic Society

Strong presentation of the CIRRO group with 4 presentations on CT based RSA. Anselm Schulz presents the new possibility of muscle body composition with the help of AI on CT-RSA images. (from left to right: Stephan Röhl, Frank-David Øhrn, Anselm Schulz, Marianne Westberg, Lars H. Engseth)







### Tecres Academy on THA

Stephan M. Röhl is the invited speaker at the Tecres user meeting.



### Thank you to radiographer Alexis Hinojosa

for over 15 years with RSA and DEXA. We value many memorable moments with the CIRRO group. Thank you for outstanding help with all projects over such a long time. You helped many PhD and built up CIRRO! Good luck with your new challenges in your new position.



### Innsettings-symposium for Prof. Stephan Röhl

Prof. Nordsetten with current and former CIRRO members invited to a symposium to mark the new position of Stephan M. Röhl as a professor at the University of Oslo.



### Winner of the best CIRRO picture award 2023

Harald and Lars Engseth celebrating Lucia and CIRRO!





## 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

### 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

- 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 derformities (<https://www.intraks.org>)
- Surgical treatment of pelvic girdle pain



## 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 2023

### Dissertations:

#### **Alexander Nilsskog Fraser (25.05.23):**

“Reverse total shoulder arthroplasty in the operative treatment of displaced proximal humeral fractures”

First opponent: Consultant Orthopaedic and Trauma Surgeon, Simon Lambert, University College London Hospital, UK

Second opponent: Orthopaedic Surgeon/Ass. Professor Theis Muncholm Thillemann, Aarhus Universitetshospital, Denmark



### Peer reviewed original research articles: 13

#### Selected publications:

1. Engseth LHW, Schulz A, Pripp AH, Röhr SMH, Øhrn FD (2023) CT-based migration analysis is more precise than radiostereometric analysis for tibial implants: a phantom study on a porcine cadaver Acta Orthop, 94, 207-214 DOI 10.2340/17453674.2023.12306, PubMed 3711440

2. Poulsen M, Stødle AH, Nordsletten L, Röhr SM (2023) CT-based radiostereometric analysis for assessing midfoot kinematics: precision compared with marker-based radiostereometry Acta Orthop, 94, 366-372 DOI 10.2340/17453674.2023.16905, PubMed 37493528

3. Øhrn FD, Engseth LHW, Pripp AH, Röhr SMH, Schulz A (2023) Dose reduction does not impact the precision of CT-based RSA in tibial implants: a diagnostic accuracy study on precision in a porcine cadaver Acta Orthop, 94, 550-544 DOI 10.2340/17453674.2023.24022, PubMed 37909103



## 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
- University of Bergen





## Hand



### Group Leader

Magne Røkkum, Dept. of Orthopaedics, UiO (magne.rokkum@medisin.uio.no) /OUH (mrokkum@ous-hf.no)

### Group Members

- Hallgeir Brattberg, OUH
- Sondre Hassellund, Faculty of Medicine, UiO
- May Tove Hestmo, OUH
- Trygve Holm Glad, student, Faculty of Medicine, UiO
- Johanne Korslund, OUH
- Lars-Eldar Myrseth, OUH
- Børge Olsen, OUH
- Helle S Reiten, student, Faculty of Medicine, UiO
- Ole Reigstad, OUH
- Istvan Rigo
- Ida Neergård Sletten, OUH
- Rasmus Thorkildsen, OUH
- Frode Thu, student, Faculty of Medicine, UiO
- Tone Vaksvik, OUH
- Maria Vatne, OUH
- Kristin Wennesland Øren
- John H. Williksen, OUH
- Mona Winge, student, Faculty of Medicine, UiO
- Taran Amble, OUH
- Andreas Lødrup
- Hrönn Olafsdottir
- Anders Heverdahl Valeur

### Research profile and aims

Clinical and experimental research, related to hand, microsurgery and peripheral nerves.

### Ongoing projects

- Bratberg H: Prospective randomized trial between Percutan Needle Fasciotomy and Clostridium Histolyticum injection for Dupuytren's Contracture
- Williksen JH et al.: Complications and secondary surgeries after volar plating of distal radius fractures
- Williksen JH et al: Radiological results and clinical outcomes after operative treatment of distal radius fractures
- Korslund J: Outcomes after finger replantation







- Korslund J: Monitoring of the vascularisation in replantated fingers
- Hestmo MT: Replantation in children
- Olsen B: Pins vs. VLP for A2, A3 and C1 wrist fractures
- Vaksvik T: Early practise of use of video consultations in rehabilitation of hand injuries in children and adults. Content, acceptability and cost effectiveness
- Eriksen BK and Vaksvik T: Activity limitations due to cold hypersensitivity in patients with hand injuries
- Amer A, Eliasson AC, Vaksvik T, Mailleux L, Hermansson L: International validation of Children's Hand use Questionnaire
- Rosales C, Vaksvik T, Hansbø S: Rehabilitation of flexor tendon injuries in the hand. A longitudinal study with 12-month follow-up.
- Reiten HS, Risum K, Røkkum M, Bolstad IH, Stavenes AB, Thorkildsen RD, Vaksvik T: Translation and validation of the Brachial Plexus Outcome Measure in Norwegian Children with Obstetrical Brachial Plexus Palsy
- Reiten HS, Risum K, Røkkum M, Thorkildsen RD, Vaksvik T: Shoulder function, activity performance and self-reported outcomes one year after subscapular tendon release and LD/TM tendon transfers
- Anders Heyerdahl Valeur: Body structure, Body Function, Activity, and Participation in Children and Adolescents with Brachial Plexus Birth Injuries: A cross-sectional study based on the International Classification of Functioning, Disability, and Health (ICF)
- Amble TE, Røkkum M, Vaksvik T: Recovery 6 and 12 months after digital nerve repair in complex handinjuries. A prospective cohort study over eight years
- Thorkildsen R: Nerve transfer for proximal injuries of the ulnar nerve
- Thorkildsen R: Follow-up of 50 ARPE trapeziometacarpal arthroplasties
- Olafsdottir, H: Continuous real time monitoring of pCO<sup>2</sup> and temperature in free vascularized head and neck flaps with an implanted miniaturized sensor (The EDIR study) (The DIMESION study)
- Vaksvik T and Stavenes AB: Norwegian contribution to International validation of Children's Hand Use Questionnaire (CHEQ)
- Winge MI: Mirror hand – ulnar dimelia. Follow-up of 8 European centres
- Reigstad O: Follow-up of wrist prostheses
- Reigstad O: Intercarpal Arthrodes
- Reigstad O: Darrach's procedure versus arthroplasty for radioulnar osteoarthritis (The Nordurr study)
- Sletten IN, Jokihaara J, Stavenes AB, Winge MI: Satisfactory thumb joint stability after flexor digitorum superficialis opponensplasty in children with radial longitudinal deficiency (submitted)





- Pyörny J, Luukinen P, Sletten IN, Reito A, Leppänen O, Jokihaara J.: Patient-reported outcomes of replantation surgery and revision amputation in traumatic hand amputation (submitted)
- Sletten IN, Klungsøyr K, Garratt A, Jokihaara J. Upper limb function, quality of life, and prosthesis wear in persons with congenital upper extremity transverse reduction deficiencies at and above the wrist level: A national cross-sectional 50-year cohort study (draft finished)
- Sletten IN, Jokihaara J, Klungsøyr K. Epidemiology of upper extremity transverse reduction deficiencies at and above the wrist level: A national cross-sectional 50-year cohort study (data analyses finished)
- Libberrecht K, Sletten IN, Hestmo MT, Hessman P, Björkman A. Outcomes after early resection of exostoses in the forearm in children with multiple hereditary exostoses: A comparison of two surgical strategies in two university hospitals.
- Sletten et al. Application of PROMIS Upper Extremity Function in children with congenital upper limb anomalies or brachial plexus birth injuries.
- Sletten et al. Epidemiology in a consecutive cohort of 500 patients included in a prospective research registry for congenital upper limb anomalies.
- Sletten IN, Jokihaara J, Klungsøyr K. Epidemiology and risk factors for congenital transverse deficiency above the wrist: A national cohort study.
- Pyörny J, Sletten IN, Jokihaara J. Concurrent validity of DASH and QuickDASH in patients with traumatic upper extremity amputation

#### PhD:

- Andreas Lødrup: Nerve injuries due to paediatric elbow and forearm fractures
- Trygve Holm Glad: Randomized controlled trial between two total wrist arthroplasties. A clinical, radiostereometric and DEXA study
- Ole-Gunnar Olsen: Continuous real time monitoring of pCO<sup>2</sup> and temperature in replanted fingers with an implanted miniaturized sensor (The EDIR study)
- Helle S Reiten: Shoulder function, activity and patient reported outcomes after surgery and rehabilitation in children and adolescents with obstetrical brachial plexus palsy
- Frode Thu: Injuries of the plexus brachialis





## Most important national and international collaborators

### National

- Prof. Jan Erik Madsen, MD, PhD, UiO/OUH
- Dept. of Otorhinolaryngology, Head and Neck Surgery, OUH
- Prof. Kari Klungsøyr, MD, PhD, Medical Birth Registry of Norway and UiB
- Andrew Garratt, PhD, the Norwegian Institute of Public Health

### International

- Prof. Carina B Johansson, Dept. of Biomaterials, University of Gothenburg, Sweden
- Prof. Jarkko Jokihaara, MD, PhD, Tampere University Hospital and University of Tampere, Finland
- Prof. Marianne Arner, MD, PhD Södersjukhuset and Karolinska Institutet, Stockholm, Sweden
- Katleen Libberecht, Sahlgrenska University Hospital, Gothenburg, Sweden
- Karina Liv Hansen, MD, Odense University Hospital and Copenhagen University Hospital, Denmark
- Wiebke Hülsemann, MD, Wilhelmstift, Hamburg, Germany
- The CoULD group, USA
- Fredrik Roos, Södersjukhuset, Stockholm
- Professor Liselotta Hermansson, University Healthcare Research Center, Örebro University, Örebro, Sweden

## Scientific production of the research group in 2023

**PhD:** Sondre Hassellund: Dorsally displaced distal radius fractures in the elderly

**Peer reviewed original research articles: 10**

**Other publications: 3**

**Invited lectures at international congresses: 7**

**Selected publications:**

Hassellund SS, Oftebro I, Williksen JH, Søreide E, Madsen JE, Frihagen F. Closed reduction of dorsally displaced distal radius fractures in the elderly provided improved final radiographic results. J Orthop Surg Res. 2023 Mar 27;18(1):247. doi: 10.1186/s13018-023-03733-5. PMID: 36967433; PMCID: PMC10041711.





Vaksvik T, Støme LN, Føllesdal J, Tvedte KA, Melum L, Wilhelmsen CR, Kværner KJ.

Early practice of use of video consultations in rehabilitation of hand injuries in children and adults:

Content, acceptability, and cost-effectiveness. *J Hand Ther.* 2023.

<https://doi.org/10.1016/j.jht.2023.05.010>

Sletten IN, Winge MI, Hellevuo C, Stavenes AB, Bolstad IH, Jokihara J. Validity and reliability of the

Thumb Grasp and Pinch Assessment (T-GAP) for children after reconstruction of congenital hypoplastic

thumbs. *J Hand Surg Am* 2023 Feb 10;S0363-5023(23)00026-6. doi: 10.1016/j.jhsa.2022.12.017.

### Funding

- Sophies Minde Ortopedi AS
- Fysioterapeutforbundet
- The Norwegian Professional Network for Congenital Limb Anomalies





## Orthopaedic oncology



### Group Leader

Joachim Thorkildsen, MB ChB PhD, Division of orthopaedics, Dept of orthopaedic oncology, OUH (jthork@vestreviken.no)

### Group Members

- Ole-Jacob Norum, MD, PhD, OUH
- Olga Zaikova, MD, PhD, OUH
- Simen Sellevold, MD, PhD, OUH
- Merethe Lia Johansen, BSc, OUH
- Joachim Thorkildsen MBChB, PhD, OUH/VVHF

### Research profile and aims

Sarcoma is a rare cancer with multidisciplinary care. This reflects the need for extensive cooperation between research groups.

Our strategy is to contribute to national and international research projects, as well as to work for strongly integrated clinical research in the everyday running of our department. We aim to take part in a wide spectrum of research projects from basic- and translational research to prospective clinical studies and retrospective quality control studies.

### Ongoing projects

- A study of epidemiology and outcome in chondrosarcoma, A post PhD study
- SACRO Sacral Chordoma: a Randomized & Observational study on surgery versus definite radiation therapy in primary localized disease. A multinational clinical trial
- NEO STS a prospective observational study looking at the safety and effect of sequential neoadjuvant chemotherapy for high grade STS
- A study of strength, balance and gait in patients with bone sarcoma around the knee
- Functional outcome after surgery for tumor in pelvic bone
- Nordic Megaprosthesis Register
- National Register for Sarcoma





## Most important national and international collaborators

### National

- Dept of Oncology, OUH
- Norwegian school of Sports Sciences
- Cancer Registry of Norway

### International

- Scandinavian Sarcoma Group (SSG)
- European Musculo-Skeletal Oncology Society (E.M.S.O.S)
- European Reference Network ERN EURACAN
- Birmingham Orthopaedic Oncology Meeting (BOOM)

## Scientific production of the research group in 2023

**Peer reviewed original research articles: 4**

### Selected publications:

Johansen, M. L., et al. (2023). "Muscle strength characteristics following megaprosthesis knee reconstruction for bone sarcoma." Surg Oncol **48**: 101944.

Laitinen, M. K., et al. (2023). "Intraosseous conventional central chondrosarcoma does not metastasise irrespective of grade in pelvis, scapula and in long bone locations." J Bone Oncol **43**: 100514.

Thorkildsen, J. and T. Myklebust (2023). "The national incidence of chondrosarcoma of bone; a review." Acta Oncol **62**(2): 110-117.





## Orthopaedic traumatology



### Group Leader

Jan Erik Madsen, Professor, Dept. of Orthopaedics (j.e.madsen@medisin.uio.no)/  
Consultant, Orthopaedic Trauma, OUH (UXJMAD@ous-hf.no)

### Senior Group Members

- Tone Bere, Research Coordinator, PhD
- Jan Egil Brattgjerd, PhD
- John Clarke- Jenssen, Consultant PhD
- Sigbjørn Dimmen, Consultant, PhD
- Martine Enger, Consultant, PhD
- Wender Figved, Consultant, PhD
- Tore Fjalestad, Consultant, PhD
- Gunnar Flugsrud, Consultant, PhD
- Frede Frihagen, Consultant, PhD
- Alexander Fraser, Consultant, PhD
- Johan Hellund, Consultant, PhD
- Elisabeth Ellingsen Husebye, Consultant, PhD
- Kjetil Hvaal, Consultant, PhD
- Lene Solberg, Consultant, PhD
- Jan Erik Madsen, Professor UiO / Consultant OUH
- Lars Nordsletten, Professor UiO / Consultant OUH
- Olav Røise, Professor UiO
- Mads Sundet, Consultant, PhD

### Research profile and aims

The Orthopaedic Trauma Research Group aims to initiate and conduct clinical and experimental trials at a high international level related to Orthopaedic Trauma. 15–25 continuously ongoing PhD projects, mainly externally financed, provide the main scientific production. Local and national registries on pelvic fractures, hip fractures and polytrauma are major contributors to high quality clinical studies.

### Ongoing PhD projects

- “Does the trochanteric stabilizing plate increase stability in trochanteric hip fractures?”  
Carl Erik Alm
- “Aspects on unstable distal radius”  
Morten Eikrem
- “Complex fractures around the elbow”  
Kristin Jørgensen
- “Primary and secondary total hip arthroplasty following acetabular fractures”  
Ragnhild Kirkebø





- “Fracture- dislocations of the elbow”  
Kaare Midtgaard
- “Advances in diagnosis and treatment of unstable, acute Lisfranc injury”  
Magnus Poulsen
- “Proximal hamstring avulsions – prognosis and treatment”  
Anne Mari Rosenlund
- “Non-operative versus operative treatment of suprasyndesmotic ankle fractures”  
Ola Saatvedt
- “Incidence, classification, and follow-up of acromioclavicular joint injuries”  
Stein Arve Skjaker
- “Improvements in osteotomy techniques based on 3D print technology”  
Geir Solberg
- “Function and complications in hip fractures”  
Stian Svenøy
- “The effect of salmon bone meal on bone healing in rats”  
Ole Tomelthy

### Ongoing postdoc projects

- “The Hip Fracture Surgical Approach Trial”  
Mads Sundet
- “Operative treatment of proximal humerus fractures with RTSA – long term results”  
Alexander Fraser

### Most important national and international collaborators

#### National

- Akershus University Hospital (AHUS)
- Asker & Bærum Hospital
- Diakonhjemmet Hospital
- Institute for Surgical Research, OUH
- Gjøvik Hospital
- Lovisenberg Diaconal Hospital
- Martina Hansens Hospital
- Norwegian School of Sport Sciences
- Sunnaas Rehabilitation Hospital
- The Norwegian Arthroplasty Register
- Østfold Hospital Health Authority

#### International

- University of Tampere, Finland
- Aarhus University Hospital, Denmark
- AO Trauma
- New Royal Adelaide Hospital, Australia
- Sahlgrenska University Hospital, Gothenburg, Sweden
- Steadman Philippon Research Institute, Colorado, USA
- Uppsala University Hospital, Sweden
- ISOPS (International Society of Pelvic Surgeons)







## Scientific production of the research group in 2023

### PhD dissertations:

#### **Cand. Med. Alexander Nilsskog Fraser**

*“Reverse total shoulder arthroplasty in the operative treatment of displaced proximal humeral fractures”*. Utgår fra Institutt for klinisk medisin. Disputas 25.5.2023.

#### **Cand. Med. Ingrid Kvello Stake**

*“On the Treatment of Unstable Ankle Fractures”*

Utgår fra Institutt for klinisk medisin. Disputas 29.9.2023

#### **Cand. Med. Sondre Stafsnes Hassellund**

*“Dorsally displaced distal radius fractures in the elderly”*

Utgår fra Institutt for klinisk medisin. Disputas 19.1.2023

#### **Cand. Med. Fredrik André Nilsen** *“Non-surgical offloading in diabetic foot syndrome”*. Utgår fra

Institutt for klinisk medisin. Disputas 3.2.2023

### Peer reviewed original research articles: 17

### Invited lectures at international congresses: Numerous

### Selected publications:

1. Stake IK, Ræder BW, Gregersen MG, Molund M, Wang J, Madsen JE, Husebye EE (2023) Higher complication rate after nail compared with plate fixation of ankle fractures in patients aged 60 years or older: a prospective, randomized controlled trial  
Bone Joint J, 105-B (1), 72-81  
DOI [10.1302/0301-620X.105B1.BJJ-2022-0595.R1](https://doi.org/10.1302/0301-620X.105B1.BJJ-2022-0595.R1), PubMed [36587258](https://pubmed.ncbi.nlm.nih.gov/36587258/)
2. Kirkeboe RL, Nordsletten L, Madsen JE, Dybvik E, Lie SA, Hallan G, Clarke-Jenssen J (2023) Long-term follow-up and survival of delayed total hip arthroplasty following acetabular fracture: a matched cohort study of 552 cases from the Norwegian Arthroplasty Register  
Hip Int, 34 (3), 396-401  
DOI [10.1177/11207000231212884](https://doi.org/10.1177/11207000231212884), PubMed [37990005](https://pubmed.ncbi.nlm.nih.gov/37990005/)
3. Poulsen M, Stødle AH, Nordsletten L, Röhrli SM (2023) CT-based radiostereometric analysis for assessing midfoot kinematics: precision compared with marker-based radiostereometry  
Acta Orthop, 94, 366-372  
DOI [10.2340/17453674.2023.16905](https://doi.org/10.2340/17453674.2023.16905), PubMed [37493528](https://pubmed.ncbi.nlm.nih.gov/37493528/)

### Funding

- South-Eastern Norway Regional Health Authority
- UiO
- OUH
- Endowment and funds





## Oslo Sports Trauma Research Center - OSTRC



### Group Leaders

Lars Engebretsen, Professor, UiO (lars.engebretsen@medisin.uio.no), MD/PhD



Roald Bahr (Co-chair) Professor, NIH (roald.bahr@nih.no), MD/PhD

### Group Members

- Grethe Myklebust, PT/PhD, Professor, OSTRC/NIH
- Tron Krosshaug, MSc/PhD, Professor, OSTRC/NIH
- Thor Einar Andersen, MD/PhD, Professor, OSTRC
- Morten Wang Fagerland, PhD, Associate Professor OSTRC/NIH
- Kathrin Steffen, MSc/PhD, Research Scientist, OSTRC
- Asbjørn Årøen, MD/PhD, Professor, Ahus
- Håvard Moksnes, PT/PhD, Research Scientist, OSTRC/Olympiatoppen
- Ben Clarsen, PT/PhD, Research Scientist, OSTRC
- Sverre Løken, MD/PhD, OUH
- Robert LaPrade, MD/PhD, Twin Cities Orthopaedics, Edina-Eagan, Minnesota
- Truls Straume-Næsheim, MD/PhD, Ahus
- Rune B Jakobsen, MD/PhD, Ahus
- Aasne Fenne Hoksrud, MD/PhD, Olympiatoppen
- Hilde Moseby Berge, MD/PhD, Research Scientist OSTRC/Olympiatoppen
- Tonje Reier-Nilsen, MD/PhD, Olympiatoppen
- John Bjørneboe, MD/PhD, OUH
- Håvard Visnes, MD/PhD, Sørland sykehus
- Christine Holm Moseid, MD/PhD, Research Scientist, OSTRC
- Stian Sandmo, MD/PhD, OUH
- Gilbert Moatshe, MD/PhD, OUH
- Guri R Ekås, MD/PhD, Ahus
- Per-Henrik Randsborg MD/PhD
- Sophie Steenstrup PT/PhD
- Arnlaug Wangensteen, PT/PhD
- Joar Harøy, PT/PhD
- Marc Jacob Strauss, MD/PhD fellow
- Christopher Skazalski, PT/PhD fellow, Aspetar
- Stian Kjennevold, MD/Phd fellow, Ahus
- Cecilie B Isnern, MD/PhD fellow, OUH, Ahus
- Torstein Dalen-Lorentsen, PhD fellow, OSTRC
- Hilde Fredriksen, PT/PhD fellow, OSTRC
- Nils F Holm Moseid, MD/PhD fellow, OSTRC
- Hege Heiestad, PT/MSc, OSTRC





### Group Members (continued)

- Eirik Halvorsen Wik, PT/PhD fellow, Aspetar
- Markus Vagle, PhD fellow, Univ. Sørøst-Norge
- Anine Nordstrøm, MD/PhD fellow, Sykehuset Innlandet HF
- Roar Amundsen, PhD fellow, OSTRC
- Solveig Thorarinsdottir, PT/PhD fellow, OSTRC
- Lena Bache-Mathiesen, PhD fellow, OSTRC
- Hege Grindem, PT/PhD, Research Scientist, OSTRC
- Merete Møller, PT/PhD, Research Scientist, OSTRC
- Julie Stang, PhD, Research Scientist, NIH
- Trine Stensrud, PhD, Professor NIH
- Andreas Persson, MD/PhD, OUH
- Solveig Hausken, MSc, Research Scientist, OSTRC
- Lasse Mausehund, MSc/PT, PhD fellow, OSTRC/NIH
- Christian Moen, MSc/PT, PhD fellow, OSTRC
- Emilie Scholten Sjølie, MSc/PT, PhD fellow, OSTRC
- Caroline Kooy Tveiten, MD/PhD fellow
- Ingrid Trøan, PT/PhD fellow
- Monica Holmsve, MD/PhD fellow, OSTRC
- Sara Dahlén, MD/PhD fellow, OSTRC
- Ingvild Kåshagen, MSc/PhD fellow, OSTRC
- Axel Száva Petterson, MD/PhD fellow, Ahus
- Maren Gundersen, MD/PhD fellow, Ahus
- Tor Kristian M Andresen, MD/PhD fellow, Ahus

### Associated group members

- Tone Øritsland, MSc/Research coordinator, OSTRC
- Adeleide Bergsaker, MSc, OSTR3
- Emilie Bratt Jakhelln, MSc, OSTRC
- Erling Hisdsal, MSc, OSTRC
- Ingrid Eir Thorp Eythorsdottir, MSc, OSTRC

### Research profile and aims

The Oslo Sports Trauma Research Center was established in May 2000 at the Norwegian School of Sport Sciences as a joint research venture between the Department of Orthopaedic Surgery (Oslo University Hospital), and the Department of Sports Medicine (Norwegian School of Sport Sciences). The aim is to prevent injuries and other health problems in sports through research on risk factors, injury mechanisms and prevention methods, with a particular emphasis on football, team handball and alpine skiing/snowboarding. In addition to primary injury prevention research, our cartilage and ligament research group is focused on secondary prevention, i.e. surgical and nonsurgical treatment options to prevent future osteoarthritis.





The goal of the center is to strengthen Norwegian health research by providing a catalyst for innovation among highly-ranked researchers and delivering superior research training and mentorship. The emphasis is not only on the production of new knowledge, but also the translation of research findings into improvements in the health of Norwegians and the Norwegian health care system.

## Ongoing projects

In 2023 the Oslo Sports Trauma Research Center has published 68 articles in international journals with peer review. 16 master's students have defended their master's degrees and 2 PhD student has defended his dissertation. By the end of 2023 the Center had 135 ongoing projects, 1 accepted and 23 submitted articles. In addition, 36 projects were in the planning stage and 7 projects were temporarily on hold. You can find a complete list of projects in the Center's annual rapport for 2023.

## Most important national and international collaborators

### National

- The Norwegian Olympic and paralympic committee and confederation of sports

### International

- Steadman Philippon Research Institute, Vail, US
- International Olympic Committee (IOC)
- International Ski Federation
- Federation Internationale de Football Association
- Federation Internationale de Volleyball
- Aspetar, Doha, Qatar

## Scientific production of the research group in 2023

**Peer reviewed original research articles: 68**

**Other publications: 12**

**Invited lectures at international congresses/webinar: 50**

### Doctoral thesis:

Bache-Mathiesen, Lena Kristin.

*"Improving the methodology of training load and injury risk research - an analysis of analyses"*.

Norges idrettshøgskole 2023. ISBN 978-82-502-0610-6

Skazalski, Christopher.

*"Understanding volleyball injuries - the etiology and burden associated with the sport's most common injuries"*. Norges idrettshøgskole 2023. ISBN 978-82-502-0609-0





### Selected publications:

Amundsen, Roar; Thorarinsdottir, Solveig; Clarsen, Benjamin Matthew; Andersen, Thor Einar; Møller, Merete; Bahr, Roald.

#ReadyToPlay - health problems in women's football-a two-season prospective cohort study in the Norwegian premier league. *British Journal of Sports Medicine* 2023; 58(1), 4-11

Birkenes, Thomas; Furnes, Ove Nord; Lygre, Stein Håkon Låstad; Solheim, Eirik Johan; Årøen, Asbjørn; Knutsen, Gunnar; Drogset, Jon Olav; Heir, Stig; Engebretsen, Lars; Løken, Sverre Bertrand; Visnes, Håvard.

The long-term risk of knee arthroplasty in patients with arthroscopically verified focal cartilage lesions - a linkage study with the Norwegian Arthroplasty Register, 1999 to 2020. *Journal of Bone and Joint Surgery. American volume* 2023; 105(12), 951-961

Mountjoy, Margo; Ackerman, Kathryn E.; Bailey, David M.; Burke, Louise M.; Constantini, Naama; Hackney, Anthony C.; Heikura, Ida A.; Melin, Anna; Pensgaard, Anne Marte; Stellingwerff, Trent; Sundgot-Borgen, Jorunn; Torstveit, Monica Klungland; Jacobsen, Astrid Uhrenholdt; Verhagen, Evert ALM; Budgett, Richard; Engebretsen, Lars; Erdener, Uğur.

2023 International Olympic Committee's (IOC) consensus statement on Relative Energy Deficiency in Sport (REDs). *British Journal of Sports Medicine* 2023; 57(17), 1073-1097

### Funding

- Norwegian Ministry of Culture
- The Research Council of Norway
- International Olympic Committee
- Norwegian Olympic and Paralympic Committee and Confederation of Sports
- Norwegian School of Sport Sciences
- Smith & Nephew
- The Savings Bank Foundation DNB
- Stiftelsen DAM
- Den norske legeforening - Fond til kvalitetsforbedring og pasientsikkerhet
- UEFA
- Various grants from other sources





## Research group SPINE



### Group Leader

Christian Hellum, MD/PhD, Dept of Orthopaedics (chrhel@ous-hf.no)

### Group Members

- Thomas Kibsgård, MD/PhD
- Jon Dahl, MD/PhD
- Kjetil Kivle, MD, PhD-cand
- Ellen Aksnes, MD
- Roger Trana, MD
- Ole Rasmus Robak, MD
- Mads Peder Rolfsen, MD, PhD-cand
- Torstein Schrøder-Aasen, MD/PhD
- Engelke Randers, MD, PhD-cand
- Filip Dolatowski, MD, PhD
- Svend Vinje, MD
- Jon Olav Rigsby, MD
- Rolf Riise, MD
- Vinjar Hansen, MD

### Associate Group Members

- Kjersti Storheim, Professor
- Jens Ivar Brox, Professor
- Kari Indrekvam, Professor
- Oliver Grundnes, MD/PhD
- Tore Solberg, MD/PhD
- Britt Stuge, Physical therapist, PhD
- Inger Holm, Professor
- Ivar Austevoll, MD, PhD-cand
- Håvard Furunes, MD, PhD-cand
- Erland Hermansen, MD, PhD-cand
- Frode Rekeland, MD, PhD-cand
- Stephan Röhrli MD/PhD
- Ansgar Espeland MD/PhD
- Hasan Banitalebi MD
- Karianne Gammelsrud MD/PhD
- Sverre Mjønes MD
- Paul Gerdhem, Professor
- Helena Brisby, Professor





## Research profile and aims

The main intention of the group is to promote clinical spine research.

## Ongoing projects

### National multicentre studies and PhD:

- NORDSTEN-study – clinical trials comparing the efficacy of different surgical methods for spinal stenosis and degenerative spondylolisthesis and spinal stenosis. Most hospitals in Norway performing spine surgery participate, including orthopaedic and neurosurgical departments. Christian Hellum is the leader of the scientific committee. He has been the supervisor of Ivar Austevoll and co-supervisor for Frode Rekeland and Hasan Banitalebi.
- Modic study – started in May 2015 (financed by NFR, The Western Norway Regional Health Authority and Central Norway Regional Health Authority, and including 3 doctoral students ). This is a double-blind clinical trial evaluating the effectiveness of antibiotics in selected patients with back pain and altered endplate morphology. Main outcomes published in 2019. Furthermore a biopsy study on patients with Modic changes was planned in 2016, and started in 2018. Mads Peder Rolfsen is a PhD candidate in this project, supervised by Christian Hellum. AHUS, Stavanger University Hospital and Haukeland University Hospital participate in the biopsy study. This collaboration also include the department of Microbiology by Karianne Gammelsrud, Pathology and Medical Genetics at Oslo University Hospital.
- A study on patients with chronic low back pain is in planning comparing non surgical treatment with fusion surgery. The study is financed by Central Norway Regional Health Authority. Sverre Mjønes is the PhD candidate supervised by Christian Hellum and Philip Dolotowski. This is a multicenter study in collaboration with Haukeland University Hospital and AHUS. Inclusion of patients planned for 2024.
- SIFSO study – (Sacrollilac Fusion vs Sham Operation) The inclusion was finalized in october 2021. This is a double blinded randomized controlled trial comparing sacroiliac joint fusion vs sham surgery. Engelke Randers is the PhD candidate and the project is supervised by Britt Stuge, Stephan Røhrl and Lars Nordsletten. This is a collaboration with prof. Gerdhem in Karolinska Hospital in Stockholm, Sweden.
- Improving the diagnostic accuracy, reproducibility and clinical usefulness of MRI and X-ray in patients with lumbar spinal stenosis (Data from the NORDSTEN-study)  
PhD student Hasan Banitalebi  
Supervisor: Anne Negård, Christian Hellum, Ansgar Espeland  
Status: Study started
- Study on Thoracolumbar Burst Fractures (SunBurst): Multinational RCT investigating the effect of operative vs. conservative treatment on vertebral burst fractures (A3 and A4 type fracture without neurological deficit). This Trial was designed and initiated by the Swedish Fracture Register and Professor Paul Gerhem is the guarantor. Main site investigator: Dr Filip Dolotowski, MD PhD.
- Study of adjacent level degeneration after fusion surgery of the spine. The study is a multicenter randomized register study. The study is in planning. Simran Kaur is affiliated to SIV and Formi at OUS and planned to be PhD candidate.





### Other studies and PhD:

- “Sacroiliac joint fusion for treatment of sacroiliac pain”  
PhD student: Engelke Randers, resident  
Supervisors: Britt Stuge, Stephan Røhrl and Lars Nordsletten  
Status: Study started
- “The gluteal muscles in severe osteoarthritis of the hip”  
PhD student: Kjetil Kivle, consultant  
Supervisors: Lars Nordsletten, Svein Svenningsen  
Status: One article published, two articles about to be written
- “Scoliosis in patients with cerebral palasy”  
PhD student: Sven Vinje  
Supervisors: Thomas Johan Kibsgård, Terje Terjesen, Reidun Jahnsen  
Status: Study started
- “Indications and Treatment of Adult Kypho- Scoliosis” (INTRAKS Study)  
PhD student: Vinjar Hansen  
Supervisors: Stephan Røhrl, Thomas Kibsgård og Christian Hellum  
Status: Inclusion of patients completed.

### Manuscripts in preparation:

- In planning of thoracolumbar fracture study, OUH, Orthpaedic department  
“Scoliosis in patients with cerebral palasy” Svend Vinje, T. Terjesen, T.J. Kibsgård
- “New insights in the prevalence of scoliosis and musculoskeletal asymmetries in adolescents with esophageal atresia” U.I. Møinichen, A. Mikkelsen, R. Gunderson, T.J. Kibsgård, L. Mørkrid, H. IJsselstjin, R. Emblem

### Most important national and international collaborators

#### National

- NORDSTEN and MODIC studies/Biopsy study of Modic changes, include most spine surgical departments and out patient clinic in phys med & rehab, and some spine out patient clinics (reuma in Norway). Further Radiological departments at OUH, AHUS and Haukeland University Hospital, Departments of Microbiology, Pathology and Medical Genetics, OUH
- Thomas Natvik, Haukeland University Hospital, derformity register and Erik Aunan, Lillehammer
- The Norwegian Registry for spine surgery

#### International

- Helena Brisby, Dept. of Orthopaedics, Sahlgrenska University Hospital, Sweden
- Bungo Otsuki, Kyoto Nakagyo Ward, Japan
- Paul Gerhem, Karolinska sjukhuset, Stockholm, Sweden
- Fredrik Stromqvist, Orthopaedic dept., Skåne University Hospital, Sweden







## Scientific production of the research group in 2023

Peer reviewed original research articles: 14

### Selected publications:

Predictors for failure after surgery for lumbar spinal stenosis: a prospective observational study  
OK Alhaug, FC **Dolatowski**, TK Solberg, G Lønne  
The Spine Journal 23 (2), 261-270

Incidental dural tears associated with worse clinical outcomes in patients operated for lumbar spinal stenosis  
OK Alhaug, F **Dolatowski**, I Austevoll, S Mjønes, G Lønne  
Acta Neurochirurgica 165 (1), 99-106

**Hellum**, Christian, et al. "Surgery in degenerative spondylolisthesis: does fusion improve outcome in subgroups? A secondary analysis from a randomized trial (NORDSTEN trial)." The Spine Journal 23.11 (2023): 1613-1622.

### Funding

- South-Eastern Norway Regional Health Authority
- Western Norway Regional Health Authority
- Central Norway Regional Health Authority
- Sophies Minde Foundation





## REMEDY – Center for treatment of Rheumatic and Musculoskeletal Diseases



### Group Leader

Espen A. Haavardsholm, Professor in Rheumatology, UiO, Head of Research and Innovation, Diakonhjemmet Hospital, and Center director REMEDY  
(e.a.haavardsholm@medisin.uio.no)

### Group Members

- Hilde Berner Hammer, Professor/consultant, MD
- Till Uhlig, Professor/consultant, MD
- Tore Kvien, Professor emeritus/MD
- Siri Lillegraven, Senior researcher, Head of clinical research unit, MD
- Silje Syversen, Associate professor/consultant, MD
- Guro Løvik Goll, Associate professor/consultant, MD
- Ida K Haugen, Senior researcher, MD
- Nina Østerås, Professor, PT
- Anne Therese Tveter, Professor, PT
- Anne Grete Semb, Senior researcher, MD (cardiologist)
- Sella Provan, Professor/consultant, MD
- Ingvild Kjekken, Professor/OT
- Hanne Dagfinrud, Professor/PT
- Marte Schrumf Heiberg, Senior researcher/consultant, MD
- Anna Birgitte Aga, Senior researcher /consultant, MD
- Nina Sundlisæter, Senior researcher /MD
- Silvia Rollefstad, Senior researcher /MD
- Rikke Moe, Senior researcher/PT
- Karen Fagerli, Postdoctoral fellow/MD
- Alexander Mathiessen, Postdoctoral fellow/MD
- Inger Jorid Berg, Postdoctoral fellow/MD
- Ulf Sundin, Postdoctoral fellow/MD
- Lena Nordberg, Postdoctoral fellow/MD
- Pernille Steen Pettersen, Postdoctoral fellow/MD

### Research profile and aims

REMEDY - Center for treatment of Rheumatic and Musculoskeletal Diseases is a “Centre for Clinical Treatment Research”. It was established in 2022 with funding from the Research Council of Norway (128 million NOK) as a targeted, long-term investment to strengthen and further develop outstanding research and innovation environments to improve treatment. In addition, REMEDY is supported by a generous grant from the Olav Thon Foundation (32 million NOK). Diakonhjemmet Hospital is the host institution for the research center. In addition, four institutions are involved as partners - Oslo University Hospital, University of Oslo, Norwegian Rheumatism Association and the MAGIC Foundation.





Our aim is to evolve patient care in the field of rheumatology and musculoskeletal diseases (RMDs). RMDs constitute a heterogeneous group of diseases associated with significant morbidity, reduced quality of life, and increased mortality. The conditions have major consequences for society and the individual.

We seek to develop novel therapies and excellent treatment strategies by adopting a comprehensive research approach to the field, organized in seven workpackages. We strive to conduct clinical studies that have the potential to change clinical practice.

Please see [the REMEDY annual report for 2023](#)

## Ongoing projects

- NOR-DRUM study (Therapeutic drug monitoring RCT)
- NOR-DMARD study (longitudinal follow-up after drug intervention)
- ARCTIC-REWIND (Drug tapering in RA, RCT)
- MERINO (first-line treatment of Hand osteoarthritis)
- NOR-CACTUS (comparing treatment strategies for Carpal Tunnel Syndrome)
- The Norwegian part of NORD-STAR (first-line treatment of RA, RCT)
- NOR-GOUT (longitudinal study on gout patients)
- ATACC-RA (cardiovascular risk in RA)
- SURF-RA (cardiovascular risk in RA and related diseases)
- NORA
- NOKAR-project (Prevention of cardiovascular disease in RA)
- Nor-vaC
- RIMRA
- ARCTIC-FORWARD
- NOR-SPRINT
- ReMonit
- NOR-CACTUS
- A number of other ongoing projects and trials, for complete overview follow this [link](#)

## Most important national and international collaborators

### National

- All Norwegian rheumatological departments
- Several rehabilitation institutions

### International

- Prof. Daniel H. Solomon, Boston, USA
- Prof. Desiree van der Heijde, Leiden, Netherlands
- Prof. Johan Askling, Stockholm, Sweden
- Prof. Ronald F. van Vollenhoven, Amsterdam, Netherlands
- Prof. Merete Lund Hetland, Copenhagen, Denmark
- Prof. Mikkel Østergaard, Copenhagen, Denmark
- MD, PhD Lene Terslev, Copenhagen, Denmark
- Prof. Nicola Dalbeth, Auckland, New Zealand





## Funding

- Southern and Eastern Norway Regional Health Authority
- The Research Council of Norway
- The Olav Thon Foundation
- KLINBEFORSK
- Horizon Europe
- For complete overview of funding see our [the REMEDY annual report for 2023](#) (page 58)

## Scientific production of the research group in 2023

Peer reviewed original research articles: 58

### Selected publications:

**Lillegraven S, Paulshus Sundlisæter N, Aga AB, Sexton J, Olsen IC, Lexberg ÅS, Madland TM, Fremstad H, Høili CA, Bakland G, Spada C, Haukeland H, Hansen IM, Moholt E, Uhlig T, Solomon DH, van der Heijde D, Kvien TK, Haavardsholm EA.** Effect of tapered versus stable treatment with tumour necrosis factor inhibitors on disease flares in patients with rheumatoid arthritis in remission: a randomised, open label, non-inferiority trial. *Ann Rheum Dis.* 2023 Nov;82(11):1394-1403. doi: 10.1136/ard-2023-224476. Epub 2023 Aug 22. PMID: 37607809;

Østergaard M, van Vollenhoven RF, Rudin A, Hetland ML, **Heiberg MS**, Nordström DC, Nurmohamed MT, Gudbjornsson B, Ørnberg LM, Bøyesen P, Lend K, Hørslev-Petersen K, **Uhlig T**, Sokka T, Grondal G, Krabbe S, Lindqvist J, Gjertsson I, Glinatsi D, Kapetanovic MC, Aga AB, Faustini F, Parmanne P, Lorenzen T, Giovanni C, Back J, Hendricks O, Vedder D, Rannio T, Grenholm E, Ljoså MK, Brodin E, Lindegaard H, Söderbergh A, Rizk M, Kastbom A, Larsson P, Uhrenholt L, Just SA, Stevens DJ, Bay Laurbjerg T, Bakland G, Olsen IC, **Haavardsholm EA\***, Lampa J\*; NORD-STAR study group. Certolizumab pegol, abatacept, tocilizumab or active conventional treatment in early rheumatoid arthritis: 48-week clinical and radiographic results of the investigator-initiated randomised controlled NORD-STAR trial. *Ann Rheum Dis.* 2023 Oct;82(10):1286-1295. doi: 10.1136/ard-2023-224116. Epub 2023 Jul 9. PMID: 37423647.  
*\*Shared last authors.*

**Brun MK, Bjørlykke KH, Viken MK, Stenvik GE, Klaasen RA, Gehin JE, Warren DJ, Sexton J, Sandanger Ø, Kvien TK, Mørk C, Haavardsholm EA, Jahnsen J, Goll GL, Lie BA, Bolstad N, Jørgensen KK, Syversen SW.** HLA-DQ2 is associated with anti-drug antibody formation to infliximab in patients with immune-mediated inflammatory diseases. *J Intern Med.* 2023 May;293(5):648-655. doi: 10.1111/joim.13616. Epub 2023 Feb 26. PMID: 36843323.





## Publication list OPK research groups 2023

### (original articles or review articles)

**Alhaug OK, Dolatowski FC, Thyraug AM, Mjølnes S, Dos Reis JABPR, Austevoll I (2023)**

Long-term comparison of anterior (ALIF) versus transforaminal (TLIF) lumbar interbody fusion: a propensity score-matched register-based study

**Eur Spine J, 33 (3), 1109-1119**

DOI [10.1007/s00586-023-08060-1](https://doi.org/10.1007/s00586-023-08060-1), PubMed [38078979](https://pubmed.ncbi.nlm.nih.gov/38078979/)

Andreasen C, Dahl C, **Solberg LB**, Borgen TT, Wisløff T, Gjertsen JE, Figved W, Stutzer JM, Nissen FI, **Nordsletten L**, Frihagen F, Bjørnerem Å, Omsland TK (2023)

**Epidemiology of forearm fractures in women and men in Norway 2008-2019**

Osteoporos Int, 35 (4), 625-633

DOI [10.1007/s00198-023-06990-6](https://doi.org/10.1007/s00198-023-06990-6), PubMed [38085341](https://pubmed.ncbi.nlm.nih.gov/38085341/)

Arhos EK, Pohlig RT, Di Stasi S, **Risberg MA**, Snyder-Mackler L, Silbernagel KG (2023)

**Clinically Relevant Subgroups Among Athletes Who Have Ruptured Their Anterior Cruciate Ligaments: A Delaware-Oslo Cohort Study**

Arthritis Care Res (Hoboken), 75 (9), 1914-1924

DOI [10.1002/acr.25089](https://doi.org/10.1002/acr.25089), PubMed [36645015](https://pubmed.ncbi.nlm.nih.gov/36645015/)

Birkenes T, Furnes O, Laastad Lygre SH, Solheim E, Aaroen A, Knutsen G, Drogset JO, Heir S, **Engebretsen L, Loken S**, Visnes H (2023)

**The Long-Term Risk of Knee Arthroplasty in Patients with Arthroscopically Verified Focal Cartilage Lesions: A Linkage Study with the Norwegian Arthroplasty Register, 1999 to 2020**

J Bone Joint Surg Am, 105 (12), 951-961

DOI [10.2106/JBJS.22.01174](https://doi.org/10.2106/JBJS.22.01174), PubMed [37104554](https://pubmed.ncbi.nlm.nih.gov/37104554/)

**Breen AB, Steen H, Pripp A, Hvid I, Horn J (2023)**

**Comparison of Different Bone Age Methods and Chronological Age in Prediction of Remaining Growth Around the Knee**

J Pediatr Orthop, 43 (6), 386-391

DOI [10.1097/BPO.0000000000002397](https://doi.org/10.1097/BPO.0000000000002397), PubMed [36941111](https://pubmed.ncbi.nlm.nih.gov/36941111/)

**Bøe B (2023)**

**Nonoperative Anterior Cruciate Ligament Injury Treatment**

Clin Sports Med, 43 (3), 343-354

DOI [10.1016/j.csm.2023.08.003](https://doi.org/10.1016/j.csm.2023.08.003), PubMed [38811114](https://pubmed.ncbi.nlm.nih.gov/38811114/)

**Cuevas-Østrem M, Thorsen K, Wisborg T, Røise O, Helseth E, Jeppesen E (2023)**

**Care pathways and factors associated with interhospital transfer to neurotrauma centers for patients with isolated moderate-to-severe traumatic brain injury: a population-based study from the Norwegian trauma registry**

Scand J Trauma Resusc Emerg Med, 31 (1), 34

DOI [10.1186/s13049-023-01097-7](https://doi.org/10.1186/s13049-023-01097-7), PubMed [37365649](https://pubmed.ncbi.nlm.nih.gov/37365649/)





Dahl C, Ohm E, Solbakken SM, Anwar N, Holvik K, Madsen C, Frihagen F, Bjørnerem Å, Igland Nissen F, **Solberg LB**, Omsland TK (2023)

**Forearm fractures - are we counting them all? An attempt to identify and include the missing fractures treated in primary care**

Scand J Prim Health Care, 41 (3), 247-256

DOI [10.1080/02813432.2023.2231028](https://doi.org/10.1080/02813432.2023.2231028), PubMed [37417884](https://pubmed.ncbi.nlm.nih.gov/37417884/)

DeClercq MG, Martin MD, Whalen RJ, Cote MP, **Midtgaard KS**, Peebles LA, Di Giacomo G, Provencher MT (2023)

**Postoperative Radiographic Outcomes Following Primary Open Coracoid Transfer (Bristow-Latarjet) Vary in Definition, Classification, and Imaging Modality: A Systematic Review**

Arthroscopy, 40 (4), 1311-1324.e1

DOI [10.1016/j.arthro.2023.09.032](https://doi.org/10.1016/j.arthro.2023.09.032), PubMed [37827435](https://pubmed.ncbi.nlm.nih.gov/37827435/)

Ellis HB, Zak TK, Jamnik A, Lind DRG, Dabis J, Losito M, Wilson P, **Moatshe G** (2023)

**Management of Pediatric Anterior Cruciate Ligament Injuries: A Critical Analysis**

JBJS Rev, 11 (8)

DOI [10.2106/JBJS.RVW.22.00223](https://doi.org/10.2106/JBJS.RVW.22.00223), PubMed [37535763](https://pubmed.ncbi.nlm.nih.gov/37535763/)

**Engseth LHW**, Grønsund J, Aunan E, **Brattgjerd JE**, Schulz A, **Moatshe G**, **Röhrl SM** (2023)

**A novel instrument for ligament balancing: a biomechanical study in human cadaveric knees**

J Exp Orthop, 10 (1), 83

DOI [10.1186/s40634-023-00643-7](https://doi.org/10.1186/s40634-023-00643-7), PubMed [37584812](https://pubmed.ncbi.nlm.nih.gov/37584812/)

**Engseth LHW**, Schulz A, Pripp AH, **Röhrl SMH**, Øhrn FD (2023)

**CT-based migration analysis is more precise than radiostereometric analysis for tibial implants: a phantom study on a porcine cadaver**

Acta Orthop, 94, 207-214

DOI [10.2340/17453674.2023.12306](https://doi.org/10.2340/17453674.2023.12306), PubMed [37114404](https://pubmed.ncbi.nlm.nih.gov/37114404/)

Espeland A, Kristoffersen PM, Bråten LCH, Grøvle L, Grotle M, Haugen AJ, **Rolfsen MP**, **Hellum C**, Zwart JA, Storheim K, Assmus J, Vetti N (2023)

**Longitudinal Relationship Between Reduced Modic Change Edema and Disability and Pain in Patients With Chronic Low Back Pain**

Spine (Phila Pa 1976), 48 (24), 1699-1708

DOI [10.1097/BRS.0000000000004837](https://doi.org/10.1097/BRS.0000000000004837), PubMed [37759351](https://pubmed.ncbi.nlm.nih.gov/37759351/)

Familiari F, Madonna V, Mercurio M, Cinque ME, Gasparini G, Galasso O, **Moatshe G** (2023)

**Outcomes and complications of inlay versus onlay patellofemoral arthroplasty: A systematic review**

Knee, 41, 124-136

DOI [10.1016/j.knee.2023.01.001](https://doi.org/10.1016/j.knee.2023.01.001), PubMed [36680866](https://pubmed.ncbi.nlm.nih.gov/36680866/)

**Fosdahl MA**, Berg B, **Risberg MA**, Øiestad BE, **Holm I** (2023)

**Body Mass Index, Quality of Life and Activity Limitation Trajectories over 2 Years in Patients with Knee or Hip Osteoarthritis: A Dual Trajectory Approach Based on 4265 Patients Included in the AktivA Quality Register**

J Clin Med, 12 (22)

DOI [10.3390/jcm12227094](https://doi.org/10.3390/jcm12227094), PubMed [38002706](https://pubmed.ncbi.nlm.nih.gov/38002706/)





**Hassellund SS, Oftebro I, Williksen JH, Søreide E, Madsen JE, Frihagen F (2023)**

**Closed reduction of dorsally displaced distal radius fractures in the elderly provided improved final radiographic results**

J Orthop Surg Res, 18 (1), 247

DOI [10.1186/s13018-023-03733-5](https://doi.org/10.1186/s13018-023-03733-5), PubMed [36967433](https://pubmed.ncbi.nlm.nih.gov/36967433/)

**Hellum C, Rekeland F, Småstuen MC, Solberg T, Hermansen E, Storheim K, Brox JI, Furunes H, Franssen E, Weber C, Brisby H, Grundnes O, Algaard KRH, Böker T, Banitalebi H, Indrekvam K, Austevoll IM (2023)**  
**Surgery in degenerative spondylolisthesis: does fusion improve outcome in subgroups? A secondary analysis from a randomized trial (NORDSTEN trial)**

Spine J, 23 (11), 1613-1622

DOI [10.1016/j.spinee.2023.06.386](https://doi.org/10.1016/j.spinee.2023.06.386), PubMed [37355044](https://pubmed.ncbi.nlm.nih.gov/37355044/)

Hermansen E, Myklebust TÅ, Weber C, Brisby H, Austevoll IM, **Hellum C**, Storheim K, Aaen J, Banitalebi H, Brox JI, Grundnes O, Rekeland F, Solberg T, Franssen E, Indrekvam K (2023)

**Postoperative Dural Sac Cross-Sectional Area as an Association for Outcome After Surgery for Lumbar Spinal Stenosis: Clinical and Radiological Results From the NORDSTEN-Spinal Stenosis Trial**

Spine (Phila Pa 1976), 48 (10), 688-694

DOI [10.1097/BRS.0000000000004565](https://doi.org/10.1097/BRS.0000000000004565), PubMed [36809364](https://pubmed.ncbi.nlm.nih.gov/36809364/)

Holtedahl R, **Bøe B**, Brox JI (2023)

**The clinical impact of retears after repair of posterosuperior rotator cuff tears: a systematic review and meta-analysis**

J Shoulder Elbow Surg, 32 (6), 1333-1346

DOI [10.1016/j.jse.2023.01.014](https://doi.org/10.1016/j.jse.2023.01.014), PubMed [36796715](https://pubmed.ncbi.nlm.nih.gov/36796715/)

Homlong EG, Kumar RP, Elle OJ, **Wiig O** (2023)

**Automated structuring of gait data for analysis purposes - A deep learning pilot example**

Annu Int Conf IEEE Eng Med Biol Soc, 2023, 1-5

DOI [10.1109/EMBC40787.2023.10340938](https://doi.org/10.1109/EMBC40787.2023.10340938), PubMed [38083029](https://pubmed.ncbi.nlm.nih.gov/38083029/)

**Høiness PR, Medbøe A** (2023)

**Surgical Treatment of Congenital Muscular Torticollis: Significant Improvement in Health-related Quality of Life Among a 2-year Follow-up Cohort of Children, Adolescents, and Young Adults**

J Pediatr Orthop, 43 (9), e769-e774

DOI [10.1097/BPO.0000000000002480](https://doi.org/10.1097/BPO.0000000000002480), PubMed [37493035](https://pubmed.ncbi.nlm.nih.gov/37493035/)

Indrekvam K, Bånerud IF, Hermansen E, Austevoll IM, Rekeland F, Guddal MH, Solberg TK, Brox JI, **Hellum C**, Storheim K (2023)

**The Norwegian degenerative spondylolisthesis and spinal stenosis (NORDSTEN) study: study overview, organization structure and study population**

Eur Spine J, 32 (12), 4162-4173

DOI [10.1007/s00586-023-07827-w](https://doi.org/10.1007/s00586-023-07827-w), PubMed [37395780](https://pubmed.ncbi.nlm.nih.gov/37395780/)

Johansen ML, Eriksrud O, **Thorkildsen J**, **Norum OJ**, Wisløff T, Taksdal I, Nilsen TS (2023)

**Muscle strength characteristics following megaprosthesis knee reconstruction for bone sarcoma**

Surg Oncol, 48, 101944

DOI [10.1016/j.suronc.2023.101944](https://doi.org/10.1016/j.suronc.2023.101944), PubMed [37062091](https://pubmed.ncbi.nlm.nih.gov/37062091/)







Kaur S, Alhaug OK, Dolatowski FC, Solberg TK, Lønne G (2023)

**Characteristics and outcomes of patients who did not respond to a national spine surgery registry**

BMC Musculoskelet Disord, 24 (1), 164

DOI [10.1186/s12891-023-06267-3](https://doi.org/10.1186/s12891-023-06267-3), PubMed [36871007](https://pubmed.ncbi.nlm.nih.gov/36871007/)

Kirkeboe RL, Nordsletten L, Madsen JE, Dybvik E, Lie SA, Hallan G, Clarke-Jenssen J (2023)

**Long-term follow-up and survival of delayed total hip arthroplasty following acetabular fracture: a matched cohort study of 552 cases from the Norwegian Arthroplasty Register**

Hip Int, 34 (3), 396-401

DOI [10.1177/11207000231212884](https://doi.org/10.1177/11207000231212884), PubMed [37990005](https://pubmed.ncbi.nlm.nih.gov/37990005/)

Kooy CEVW, Jakobsen RB, Fenstad AM, Persson A, Visnes H, Engebretsen L, Ekås GR (2023)

**Major Increase in Incidence of Pediatric ACL Reconstructions From 2005 to 2021: A Study From the Norwegian Knee Ligament Register**

Am J Sports Med, 51 (11), 2891-2899

DOI [10.1177/03635465231185742](https://doi.org/10.1177/03635465231185742), PubMed [37497771](https://pubmed.ncbi.nlm.nih.gov/37497771/)

Laitinen MK, Thorkildsen J, Morris G, Kurisunkal V, Stevenson JD, Parry MC, Jeys LM (2023)

**Intraosseous conventional central chondrosarcoma does not metastasise irrespective of grade in pelvis, scapula and in long bone locations**

J Bone Oncol, 43, 100514

DOI [10.1016/j.jbo.2023.100514](https://doi.org/10.1016/j.jbo.2023.100514), PubMed [38033413](https://pubmed.ncbi.nlm.nih.gov/38033413/)

Martin RK, Wastvedt S, Pareek A, Persson A, Visnes H, Fenstad AM, Moatshe G, Wolfson J, Lind M, Engebretsen L (2023)

**Ceiling Effect of the Combined Norwegian and Danish Knee Ligament Registers Limits Anterior Cruciate Ligament Reconstruction Outcome Prediction**

Am J Sports Med, 51 (9), 2324-2332

DOI [10.1177/03635465231177905](https://doi.org/10.1177/03635465231177905), PubMed [37289071](https://pubmed.ncbi.nlm.nih.gov/37289071/)

Martinez-Cano JP, Familiari F, Vinagre G, Moatshe G, Gomez-Sierra MA, Marín Fermín T (2023)

**Instrument-based anterolateral rotatory laxity assessment of the knee has a high intra-observer and inter-observer reliability: a systematic review**

J ISAKOS, 9 (2), 221-226

DOI [10.1016/j.jisako.2023.07.007](https://doi.org/10.1016/j.jisako.2023.07.007), PubMed [37495018](https://pubmed.ncbi.nlm.nih.gov/37495018/)

Mikkelsen E, Ingebrigtsen T, Thyraug AM, Olsen LR, Nygaard ØP, Austevoll I, Brox JI, Hellum C, Kolstad F, Lønne G, Solberg TK (2023)

**The Norwegian registry for spine surgery (NORspine): cohort profile**

Eur Spine J, 32 (11), 3713-3730

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