



# Annual Report

## Research Activity 2022



### 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 2022 consisted of: Professor Lars Nordsletten, Professor Olav Røise, Professor Jan Erik Madsen, Professor Emeritus Lars Engebretsen, Professor Inger Holm, Professor Magne Røkkum, Professor May Arna Risberg, Associate Professor Joachim Horn, Associate Professor Thomas Kibsgård, Consultant Joachim Thorkildsen, Research Nurse Ida M. Bredesen and Research Nurse and Assistant Administrative Manager Kari Anne Hakestad.

In 2022 OPK had a of total 70 registered peer reviewed publications and 4 PhD dissertations.

Diakonhjemmet's department of Rheumatology registered 75 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 coordinator
- Ida Marie Bredesen, Assisting professor

### 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
- QUC398: Proteinase inhibition study in knee OA with Novartis
- 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
- Novartis

## 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 2022

### PhD:

MSc Bjørnar Berg, Institute of Health and Society, UiO;

*"Long-term consequences of degenerative meniscal tears in middle-aged patients"*

**Peer reviewed original research articles: 33**





### Selected publications:

Berg, B., E. M. Roos, N. J. Kise, L. Engebretsen, I. Holm, and M. A. Risberg. 2022.

*“Muscle Strength and Osteoarthritis Progression After Surgery or Exercise for Degenerative Meniscal Tears: Secondary Analyses of a Randomized Trial”*

Arthritis Care Res (Hoboken), 74: 70-78

Gloersen, M., P. Steen Pettersen, T. Neogi, S. R. Jafarzadeh, M. Vistnes, C. S. Thudium, A. C. Bay-Jensen, J. Sexton, T. K. Kvien, H. B. Hammer, and I. K. Haugen. 2022.

*“Associations of Body Mass Index With Pain and the Mediating Role of Inflammatory Biomarkers in People With Hand Osteoarthritis”*

Arthritis Rheumatol, 74: 810-17

Tiulpin, A., S. Saarakkala, A. Mathiessen, H. B. Hammer, O. Furnes, L. Nordsletten, M. Englund, and K. Magnusson. 2022.

*“Predicting total knee arthroplasty from ultrasonography using machine learning”*

Osteoarthr Cartil Open, 4: 100319.





## 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
- Ivan Hvid, 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
- Lærke Lindskov, Certified prosthetist & orthotist (CPO), Clinical Gait Analyst
- 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







“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”

## 2. Children’s hip

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

“Risk factors for hip displacement in cerebral palsy - a population-based study of 121 non-ambulatory children” (Terje Terjesen)

## 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, Blindern” (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
- Ida Rashida Khan Bukholm, MD, Professor, Norwegian University of Life Science, The Norwegian System of Patient Injury Compensation

### International

- Ralph Sakkers, MD, PhD; 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 2022

**Peer reviewed original research articles: 7**

### Selected publications:

Weinmayer H, Breen AB, Steen H, Horn J.

*“Angular deformities after percutaneous epiphysiodesis for leg length discrepancy”*

J Child Orthop. 2022 Oct;16(5):401-408. doi: 10.1177/18632521221115059. Epub 2022 Aug 16. PMID: 36238144 Free PMC article.

Breen AB, Steen H, Pripp A, Gunderson R, Sandberg Mentzoni HK, Merckoll E, Zaidi W, Lambert M, Hvid I, Horn J.

*“A comparison of 3 different methods for assessment of skeletal age when treating leg-length discrepancies: an inter- and intra-observer study”*

Acta Orthop. 2022 Jan 11;93:222-228. doi: 10.2340/17453674.2021.1133. PMID: 35019143 Free article.

Terjesen T, Horn J.

*“Risk factors for hip displacement in cerebral palsy: A population-based study of 121 nonambulatory children”*

J Child Orthop. 2022 Aug;16(4):306-312. doi: 10.1177/18632521221113424. Epub 2022 Aug 2. PMID: 35992522 Free PMC article.





## 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





## Most important national and international collaborators

### National

- Jan Rune Nilssen, Norwegian Defence Research Establishment, Kjeller: Mechanical testing projects
- Bryan Wright, MD, Ringerike Hospital: Mechanical properties and bone mineral parameters per-trochanteric femoral fractures
- Hanna Jahr, MD, Arendal Hospital: Comparison of open and arthroscopic fixation of tendon transfer in massive rotator cuff tears
- Marek Zegzdryn, MD, Arendal Hospital: Reconstruction of anterior cruciate ligament with both tibial and femoral fixation
- Arne Kristian Aune, MD/PhD, Aleris Private Hospital: Reconstruction of anterior cruciate ligament with both tibial and femoral fixation

### International

- William MacKenzie, MD and Tariq Rahman, PhD, Neumors, Alfred I. duPont Hospital for Children, Wilmington, Delaware, USA: Experimental limb lengthening project
- Søren Kold, MD/PhD and Markus Winther Frost, Aalborg University Hospital, Denmark: Experimental limb lengthening project
- Stephen Grigg, PhD and Rhys Pullin, PhD, Cardiff School of Engineering, Cardiff University, UK
- Acoustic Emission Project

## Scientific production of the research group in 2022

**Peer reviewed original research articles: 10**

### Selected publications:

Weinmayer H, Breen AB, Steen H, Horn J.

*“Angular deformities after percutaneous epiphysiodesis for leg length discrepancy”*

J Child Orthop. 2022 Oct;16(5):401-408.

Breen AB, Steen H, Pripp A, Gunderson R, Sandberg Mentzoni HK, Merckoll E, Zaidi W, Lambert M, Hvid I, Horn J.

*“A comparison of 3 different methods for assessment of skeletal age when treating leg-length discrepancies: an inter- and intra-observer study”*

Acta Orthop. 2022 Jan 11;93:222-228.

Vivacqua T, Vakili S, Willing R, Moatshe G, Degen R, Getgood AM.

*“Biomechanical Assessment of Knee Laxity After a Novel Posterolateral Corner Reconstruction Technique”*

Am J Sports Med. 2022 Mar;50(4):962-967.





## 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

### Group Members

#### Senior members:

- Anselm Schultz, MD, PhD, OUH
- Vera Halvorsen, MD, OUH
- Marianne Westberg MDT/PhD, OUH
- Jan Egil Brattgjerd, MD, 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)

#### PhD candidates:

- Trygve Glad, MD, OUH
- Alexander Fraser, MD, Diakonhjemmet Hospital
- 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





## Group Members (continued)

Single project candidate:

- Magnus Høgevoid, MD, Diakonhjemmet Hospital

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 2022

### **INTRAKS study**

An international multicenter study on kyphoscoliosis in adults. Around 75 patients are included so far. We have had zoom meetings with the group from Sweden, Japan and in Norway. Another meeting regarding the conservative group together with Marit Fure and Åsa Axelsson both physiotherapists at Rikshospitalet we had in September.

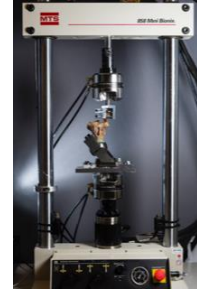
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### **NaKiD knee study**

This study 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). In the Medacta uncemented TKR part we have 1 and 2- years follow ups ongoing. Phantom study on a porcine knee Group Members (continued) Single project candidate: Magnus Høgevoid, Radiographers: Alexis Hinohosa and Mona Risdal, OUH Research coordinator: Marte Traae Magnusson, 3 for the ligament piercing and to ensure precision of CTRSA are performed in 2022. The 5- year follow up for 36 patients in the cemented Medacta group with the new MP knee design are almost finished. Articles are in preparation at least one submitted. The

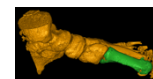
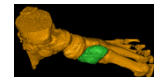
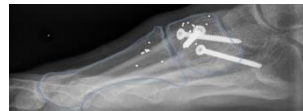


project has been presented at the national Norwegian congress and at the international European orthopaedic congress (EFORT)



### Lisfranc study

Magnus Poulsen used 2022 to sum up his RSA study on Lisfranc injuries. Aside he performed a methodological CT RSA versus standard RSA study.



### Trochanteric Stabilizing Plate in Ptertrochanteric fractures

A literature overview was accepted in Acta Orthopædica. Another manuscript about stability of PTFP operated with a trochanteric stabilizing plate is in preparation to be submitted by Carl Erik Alm.

### Kinematics in Total Knee Arthroplasty

Our collaboration project with Yasser Rehman from Lovisenberg hospital was analysed and put into writing.

### Wrist Arthroplasty

Trygve Holm Glad from the hand surgery unit at Rikshospital submitted his final paper for his PhD thesis on 2 different wrist arthroplasties. He used RSA and DEXA to evaluate the fixation and effect on bone morphology.

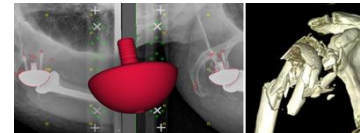






### Reversed Shoulder Arthroplasty (RSA) evaluated with Radiostereometry Analysis (RSA)

This ambitious project embedded in the DELPHI research group at OUH, led by Tore Fjalestad, MD PhD, won prizes at international conferences. Alex Fraser is in the final stage of PhD and has submitted his thesis for evaluation.



### Surgical treatment of pelvic girdle pain

Engelke Randers from the spinal unit at Rikshospital presented her PhD project at the annual research meeting. The sham study on surgical fixation of the IS joint is finalized and put into writing.

#### Other activities:

A clear statement in February!  
Social media homepage: CIRRO.no  
Instagram: cirro\_norway



**CIRRO-meeting with Sectra** in September with visitors from Sweden: Olof Sandberg and Peter Mattsson.

**CIRRO- meeting with Are Hugo Pripp** in February

**Kleivstua 2022:** 3 presenters from CIRRO:

- Midterm-evaluation for Magnus Poulsen  
Advances in diagnosis and treatment of unstable, acute Lisfranc injury
- The Natural Kinematic Diagnostic (NaKiD) knee study: Improving surgical technique, design, and diagnostics in total knee arthroplasty by Lars Engseth
- Indication and treatment of adult kyphoscoliosis (INTRAKS) by Vinjar Brenna Hansen
- Surgical treatment of pelvic Girdle pain by Engelke Randers

CIRRO members attending at the **hip symposium from Depuy** on the Corail in Hamburg, Germany

CIRRO members Lars Engseth, Magnus Poulsen, presented at **EFORT**, Lisbon, Portugal.

### Annual meeting of Norwegian Orthopaedic Society

Several CIRRO members presented their Work and Lars Engseth receives the price for best paper of the Norwegian Society for Hip and Knee surgery.





**Winner of the CIRRO best picture award 2022:**  
Magnus Poulsen at Besseggen



## Ongoing projects

### 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 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

### 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
- Surgical treatment of pelvic girdle pain





## Most important national and international collaborators

### National

- Norwegian Arthroplasty register (NAR)
- Diakonhjemmet Hospital
- Lovisenberg Diaconal Hospital
- 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 Orthopaedic Association, Japan
- Skåne University, Sweden
- SECTRA, Sweden

## Scientific production of the research group in 2022

### Dissertations:

Peder Thoen *“Advancements in Total Hip Arthroplasty – polyethylene, articulation and factors associated with dislocation”*

Frank David Øhrn *“Contemporary total knee arthroplasty: Design and surgical methods”*

### Peer reviewed original research articles: 15

#### Selected publications:

Holm-Glad T, Røkkum M, Röhrli SM, Roness S, Godang K, Reigstad O (2022)

*“A randomized controlled trial comparing two modern total wrist arthroplasties : improved function with stable implants, but high complication rates in non-rheumatoid wrists at two years”*

Bone Joint J, 104-B (10), 1132-114, DOI 10.1302/0301-620X.104B10.BJJ-2022 0201.R2, PubMed 36177637

Rehman Y, Koster LA, Röhrli SM, Aamodt A (2022)

*“Comparison of the in-vivo kinematics of three different knee prosthesis designs during a step-up movement”*

Clin Biomech (Bristol, Avon), 100, 105824 DOI 10.1016/j.clinbiomech.2022.105824, PubMed 36435077

Thoen PS, Lygre SHL, Nordsletten L, Furnes O, Stigum H, Hallan G, Röhrli SM (2022)

*“Risk factors for revision surgery due to dislocation within 1 year after 111,711 primary total hip arthroplasties from 2005 to 2019: a study from the Norwegian Arthroplasty Register”*

Acta Orthop, 93, 593-601 DOI 10.2340/17453674.2022.3474, PubMed 35770369

### 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

### 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
- Vatne M: Hand function in Hurler's disease



- Hestmo MT: Replantation in children
- Olsen B: Pins vs. VLP for A2, A3 and C1 wrist fractures
- Vaksvik Tand Stavenes AB: Norwegian contribution to International validation of Children´s Hand Use Questionnaire (CHEQ)
- 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
- Amble TE, Røkkum M, Vaksvik T: Recovery 6 and 12 months after digital nerve repair in complex hand injuries. A prospective cohort study over eight years
- Thorkildsen R: Nerve transfer for proximal injuries of the ulnar nerve
- Thorkildsen R: Nerve complications after elbow fractures in children
- Thorkildsen R: Follow-up of 50 ARPE trapeziometacarpal arthroplasties
- 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 (data collection finished April 2023)





- Sletten et al. Application of PROMIS Upper Extremity Function in children with congenital upper limb anomalies or brachial plexus birth injuries (data collection in progress)
- Sletten et al. Epidemiology in a consecutive cohort of 500 patients included in a prospective research registry for congenital upper limb anomalies (data collection finished May 2023)

**PhD:**

- Sondre Hassellund: Unstable distal radius fractures in patients over 65 years. Conservative treatment vs operative treatment with volar locking plate. RCT
- Rasmus Thorkildsen: Total joint replacement or interpositional arthroplasty for the treatment of carpometacarpal thumb arthritis
- Mona Winge: Is calcium phosphate bone cement an alternative to bone graft?
- Trygve Holm Glad: Randomized controlled trial between two total wrist arthroplasties. A clinical, radiostereometric and DEXA study
- Frode Thu: Injuries of the plexus brachialis
- Helle S Reiten: 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





## Scientific production of the research group in 2022

Peer reviewed original research articles: 7

Other publications: 2

Invited lectures at international congresses: 2

### Selected publications:

Sletten IN, Winge MI, Hülsemann W, Arner M, Hansen KL, Jokihaara J (2022)

*“Inter- and intra-rater reliability of the Oberg-Manske-Tonkin classification of congenital upper limb anomalies”*

J Hand Surg (E) Epub 2022 Jun 23

Holm-Glad T, Røkkum M, Röhrli SM, Roness S, Godang K, Reigstad O.

*“A randomized controlled trial comparing two modern total wrist arthroplasties : improved function with stable implants, but high complication rates in non-rheumatoid wrists at two years”*

Bone Joint J. 2022;104-b(10):1132-41.

Ole Reigstad, Trygve Holm-Glad, Johanne Korslund, Christian Grimsgaard, Rasmus Thorkildsen and Magne Røkkum

*“15-20 Year Follow-up After Wrist Arthroplasty Surgery - Revisiting the Development and Introduction of a New Prototype Concept for Total Wrist Arthroplasty”*

J Hand Surg Asian Pac Vol. 2022 Dec;27(6):945-951. doi: 10.1142/S242483552250093X. PMID: 36606350

### Funding

- Sophies Minde Ortopedi AS
- 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@ous-hf.no)

### Group Members

- Ole-Jacob Norum, MD, PhD, OUH
- Olga Zaikova, MD, PhD, OUH
- Simen Sellevold, MD, PhD, OUH
- Merethe Lia Johansen, BSc, OUH
- Trygve Wessel Aas, MD, Diakonhjemmet hospital

### 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

## Scientific production of the research group in 2022

### Peer reviewed original research articles: 6

#### Selected publications:

J. Thorkildsen, T.A. Strøm, N.J. Strøm, S. Sellevold, O.J. Norum  
*"Megaprosthesis for Metastatic Bone Disease-A Comparative Analysis"*  
Curr. Oncol. 29(5) (2022) 3460-3471

K. Boye, I. Lobmaier, M.R. Kobbeltvedt, J. Thorkildsen, I. Taksdal, B. Bjerkehagen, S. Bruland Ø, O. Zaikova, K. Sundby Hall, I. Hompland  
*"Real-world evidence on perioperative chemotherapy in localized soft tissue sarcoma of the extremities and trunk wall; a population-based study"*  
Acta Oncol. (2022) 1-8

I. Acem, W.J. van Houdt, D.J. Grünhagen, W.T.A. van der Graaf, A.J. Rueten-Budde, H. Gelderblom, C. Verhoef, M.A.J. van de Sande  
*"The role of perioperative chemotherapy in primary high-grade extremity soft tissue sarcoma: a risk-stratified analysis using PERSARC"*  
Eur. J. Cancer 165 (2022) 71-80





## 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
- Johan Hellund, Consultant, PhD
- Elisabeth Ellingsen Husebye, Consultant, PhD
- Kjetil Hvaal, Consultant, PhD
- Lene Solberg, Consultant, PhD
- Endre Søreide, Consultant, PhD
- Jan Erik Madsen, Professor UiO / Consultant OUH
- Lars Nordsletten, Professor UiO / Consultant OUH

### 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
- “Reversed arthroplasty in the treatment of proximal humerus fractures. Randomized controlled trial and evaluation of glenoid component migration by RSA”  
Alexander Fraser
- “Conservative versus operative treatment of distal radius fractures”  
Sondre Hassellund
- “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
- “Treatment of Charcot neuropathy of the foot”  
Fredrik Nilsen
- “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
- “Biomechanics of the unstable ankle fracture”  
Ingrid Kvello Stake
- “Road traffic injuries at a large referral hospital in Malawi: elucidating strategies for prevention”  
Mads Sundet
- “Function and complications in hip fractures”  
Stian Svenøy
- “The effect of salmon bone meal on bone healing in rats”  
Ole Tomelthy
- “Surgical treatment and complications in fractures of the distal radius”  
John Williksen

### 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

- Akerhus 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 / Orthopaedic Trauma Association classification committee
- New Royal Adelaide Hospital, Australia
- Sahlgrenska University Hospital, Gothenburg, Sweden
- Steadman Philippon Research Institute, Colorado, USA
- Uppsala University Hospital, Sweden

## Scientific production of the research group in 2022

### PhD dissertation:

Mads Sundset:

*“Road traffic injuries in Lilongwe, Malawi»*

May 3, 2022

Ola Lars Hammer:

*«Surgical treatment of distal radius fractures – Clinical Outcome And Health Economics»*

March 11, 2022

### Peer reviewed original research articles: 32

### Invited lectures at international congresses: Numerous

### Selected publications:

Frihagen F, Comeau-Gauthier M, Axelrod D, Bzovsky S, Poolman R, Heels-Ansdell D, Bhandari M, Sprague S, Schemitsch E, Health Investigators.

*“Who, if anyone, may benefit from a total hip arthroplasty after a displaced femoral neck fracture?: a post hoc subgroup analysis of the HEALTH trial”*

Bone Jt Open, 3 (8), 611-7, 2022. <https://www.ncbi.nlm.nih.gov/pubmed/35909342>

Rosenlund AMN, Søreide E, Madsen JE, Flugsrud GB, Douglass BW, Midtgaard KS.

*“Outcomes and complications after open reduction and internal fixation of distal humeral fractures with precontoured locking plates”*

OTA International, e220, 1-7, 2022. <https://www.ncbi.nlm.nih.gov/pubmed/36569109>





Bjørndal J, Fraser AN, Wagle TM, Kleven L, Lien OA, Eilertsen L, Mader K, Apold H, Larsen LB, Madsen JE, Fjalestad T.

*“A cost-effectiveness analysis of reverse total shoulder arthroplasty compared with locking plates in the management of displaced proximal humerus fractures in the elderly: the DelPhi trial”*

*JSES*, 10, 2187-95, 2022 <https://www.ncbi.nlm.nih.gov/pubmed/35781083>

### 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

- Ingar Holme, Professor, OSTRC/NIH
- 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





### 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
- Dustin Nabhan, PhD fellow, OSTRC
- 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
- Anders Randa, 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
- Kaja Funnemark, PT/MSc, OSTRC
- Hege Heiestad, PT/MSc, OSTRC
- 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 2022 the Oslo Sports Trauma Research Center has published 63 articles in international journals with peer review. 8 master's students have defended their master's degrees and 1 PhD student has defended his dissertation. By the end of 2022 the Center had 113 ongoing projects, 4 accepted and 11 submitted articles. In addition, 26 projects were in the planning stage and 6 projects were temporarily on hold. You can find a complete list of projects in the Center's annual rapport for 2022.

## 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 2022

**Peer reviewed original research articles: 63**

**Other publications: 24**

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

### Doctoral thesis:

Nabhan, Dustin.

*"Preventive medicine in elite sport - the role of the periodic health evaluation"*

Norges idrettshøgskole 2022. ISBN: 978-82-502-0600-7

### Selected publications:

Martin, Richard Kyle; Wastvedt, Solvejg; Pareek, Ayoosh; Persson, Andreas; Visnes, Håvard; Fenstad, Anne Marie; Moatshe, Gilbert; Wolfson, Julian; Engebretsen, Lars.

*"Predicting subjective failure of ACL reconstruction – a machine learning analysis of the Norwegian Knee Ligament Register and patient reported outcomes"*

Journal of ISAKOS: Joint Disorders & Orthopaedic Sports Medicine 2022; 7(3), 1-9







Nilsen, Daniel Hoseth; Furnes, Ove Nord; Kroken, Gard; Robsahm, Trude Eid; Johnsen, Marianne Bakke; Engebretsen, Lars; Nordsletten, Lars; Bahr, Roald; Lie, Stein Atle.

*“Risk of total hip arthroplasty after elite sport - linking 3304 former world-class athletes with the Norwegian Arthroplasty Register”*

British Journal of Sports Medicine 2022; 57(1), 33-39

Palmer, Debbie; Cooper, Dale; Whittaker, Jackie L; Emery, Carolyn; Batt, Mark E; Engebretsen, Lars; Schamasch, Patrick; Shroff, Malav; Soligard, Torbjørn; Steffen, Kathrin; Budgett, Richard.

*“Prevalence of and factors associated with osteoarthritis and pain in retired Olympians, with comparison to the general population – Part 1 - the lower limb”*

British Journal of Sports Medicine 2022; 56(19), 1123 - 1131

## Funding

- Norwegian Ministry of Culture
- The Research Council of Norway
- International Olympic Committee
- Norwegian Olympic and Paralympic Committee and Confederation of Sports
- International Ski Federation
- Norwegian School of Sport Sciences
- Smith & Nephew
- The Savings Bank Foundation DNB
- EU (Erasmus+ via University of Zagreb)
- Fysiofondet
- 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





## 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.
- SIFSO study – (Sacrolliac 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 Dolatowski, MD PhD.

### 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 Nordsetten, 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 Röhr, Christian Hellum  
Status: study started

#### Manuscripts in preparation:

- In planning of thoracolumbar fracture study, OUH, Orthopaedic 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
- 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 2022

Peer reviewed original research articles: 8

### Selected publications:

Alhaug OK, Dolatowski FC, Solberg TK, Lønne G (2022)

*“Predictors for failure after surgery for lumbar spinal stenosis: a prospective observational study”*

Spine J, 23 (2), 261-270

DOI [10.1016/j.spinee.2022.10.010](https://doi.org/10.1016/j.spinee.2022.10.010), PubMed [36343913](https://pubmed.ncbi.nlm.nih.gov/36343913/)

Hermansen E, Austevoll IM, Hellum C, Storheim K, Myklebust TÅ, Aaen J, Banitalebi H, Anvar M, Rekeland F, Brox JI, Franssen E, Weber C, Solberg TK, Furunes H, Grundnes O, Brisby H, Indrekvam K (2022)

*“Comparison of 3 Different Minimally Invasive Surgical Techniques for Lumbar Spinal Stenosis: A Randomized Clinical Trial”*

JAMA Netw Open, 5 (3), e224291

DOI [10.1001/jamanetworkopen.2022.4291](https://doi.org/10.1001/jamanetworkopen.2022.4291), PubMed [35344046](https://pubmed.ncbi.nlm.nih.gov/35344046/)

Kristoffersen PM, Vetti N, Grøvle L, Brox JI, Haugli Bråten LC, Grotle M, Julsrud Haugen A, Rolfsen MP, Froholdt A, Skouen JS, Lutro O, Marchand GH, Anke A, Zwart JA, Storheim K, Assmus J, Espeland A (2022)

*“Amoxicillin Did Not Reduce Modic Change Edema in Patients With Chronic Low Back Pain: Subgroup Analyses of a Randomised Trial (the AIM Study)”*

Spine (Phila Pa 1976), 48 (3), 147-154

DOI [10.1097/BRS.0000000000004513](https://doi.org/10.1097/BRS.0000000000004513), PubMed [36223435](https://pubmed.ncbi.nlm.nih.gov/36223435/)

### 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
- Sella Provan, Professor/consultant, MD
- Anne Grete Semb, Senior researcher, MD (cardiologist)
- Ingvild Kjekken, Professor/OT
- Hanne Dagfinnrud, Professor/PT
- Ida K Haugen, Senior researcher, MD
- Silje Syversen, Senior researcher/consultant, MD
- Guro Løvik Goll, Senior researcher/consultant, MD
- Marte Schrumf Heiberg, Senior researcher/consultant, MD
- Anna Birgitte Aga, Postdoctoral fellow/consultant, MD
- Nina Sundlisæter, Postdoctoral fellow/MD
- Eirik Klami Kristianslund, Postdoctoral fellow/MD
- Karen Fagerli, Postdoctoral fellow/MD
- Silvia Rollefstad, 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
- Rikke Moe, Researcher/PT
- Numerous PhD fellows

### 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 2022](#)

## 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)
- 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-CACTUS (comparing treatment strategies for Carpal Tunnel Syndrome)
- MERINO (first-line treatment of Hand osteoarthritis)
- 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 se our [annual report](#) (page 90)

## Scientific production of the research group in 2022

**Peer reviewed original research articles: 78**

### Selected publications:

Jyssum I, Kared H, Tran TT, Tveter AT, Provan SA, Sexton J, Jørgensen KK, Jahnsen J, Kro GB, Warren DJ, Vaage EB, Kvien TK, Nissen-Meyer LH, Anderson AM, Grødeland G, Haavardsholm EA, Vaage JT, Mjaaland S, Syversen SW, Lund-Johansen F, Munthe LA, Goll GL.

[Humoral and cellular immune responses to two and three doses of SARS-CoV-2 vaccines in rituximab-treated patients with rheumatoid arthritis: a prospective, cohort study.](#)

Lancet Rheumatol. 2022 Mar;4(3):e177-e187. doi: 10.1016/S2665-9913(21)00394-5. Epub 2021 Dec 23.

Brun MK, Goll GL, Jørgensen KK, Sexton J, Gehin JE, Sandanger Ø, Olsen IC, Klaasen RA, Warren DJ, Mørk C, Kvien TK, Jahnsen J, Bolstad N, Haavardsholm EA, Syversen SW.

[Risk factors for anti-drug antibody formation to infliximab: Secondary analyses of a randomised controlled trial.](#)

J Intern Med. 2022 Sep;292(3):477-491. doi: 10.1111/joim.13495. Epub 2022 Apr 26.

Uhlig T, Eskild T, Karoliussen LF, Sexton J, Kvien TK, Haavardsholm EA, Dalbeth N, Hammer HB.

[Two-year reduction of dual-energy CT urate depositions during a treat-to-target strategy in gout in the NOR-Gout longitudinal study.](#)

Rheumatology (Oxford). 2022 Apr 18;61(SI):SI81-SI85. doi: 10.1093/rheumatology/keab533.







## Publication list OPK research groups 2022

### (original articles or review articles)

Adachi T, Katagiri H, An JS, **Engebretsen L**, Tateishi U, Saida Y, Koga H, Yagishita K, Onishi K, Forster BB (2022)

**Imaging-detected bone stress injuries at the Tokyo 2020 summer Olympics: epidemiology, injury onset, and competition withdrawal rate**

BMC Musculoskelet Disord, 23 (1), 763

DOI [10.1186/s12891-022-05725-8](https://doi.org/10.1186/s12891-022-05725-8), PubMed [35948918](https://pubmed.ncbi.nlm.nih.gov/35948918/)

Alfaraidy M, Alraiyes T, **Moatshe G**, Litchfield R, LeBel ME (2022)

**Low rates of serious complications after open Latarjet procedure at short-term follow-up**

J Shoulder Elbow Surg, 32 (1), 41-49

DOI [10.1016/j.jse.2022.06.004](https://doi.org/10.1016/j.jse.2022.06.004), PubMed [35872172](https://pubmed.ncbi.nlm.nih.gov/35872172/)

Alhaug OK, **Dolatowski F**, Austevoll I, Mjønes S, Lønne G (2022)

**Incidental dural tears associated with worse clinical outcomes in patients operated for lumbar spinal stenosis**

Acta Neurochir (Wien), 165 (1), 99-106

DOI [10.1007/s00701-022-05421-5](https://doi.org/10.1007/s00701-022-05421-5), PubMed [36399189](https://pubmed.ncbi.nlm.nih.gov/36399189/)

Alhaug OK, **Dolatowski FC**, Solberg TK, Lønne G (2022)

**Predictors for failure after surgery for lumbar spinal stenosis: a prospective observational study**

Spine J, 23 (2), 261-270

DOI [10.1016/j.spinee.2022.10.010](https://doi.org/10.1016/j.spinee.2022.10.010), PubMed [36343913](https://pubmed.ncbi.nlm.nih.gov/36343913/)

Alhaug OK, **Kaur S**, **Dolatowski F**, Småstuen MC, Solberg TK, Lønne G (2022)

**Accuracy and agreement of national spine register data for 474 patients compared to corresponding electronic patient records**

Eur Spine J, 31 (3), 801-811

DOI [10.1007/s00586-021-07093-8](https://doi.org/10.1007/s00586-021-07093-8), PubMed [34989877](https://pubmed.ncbi.nlm.nih.gov/34989877/)

Anderssen Ø, **Engebretsen L**, Larmo A (2022)

**[Stress fracture of the calcaneus]**

Tidsskr Nor Laegeforen, 142 (4)

DOI [10.4045/tidsskr.21.0613](https://doi.org/10.4045/tidsskr.21.0613), PubMed [35239271](https://pubmed.ncbi.nlm.nih.gov/35239271/)

Arhos EK, Thoma LM, Grindem H, Logerstedt D, **Risberg MA**, Snyder-Mackler L (2022)

**Association of Quadriceps Strength Symmetry and Surgical Status With Clinical Osteoarthritis Five Years After Anterior Cruciate Ligament Rupture**

Arthritis Care Res (Hoboken), 74 (3), 386-391

DOI [10.1002/acr.24479](https://doi.org/10.1002/acr.24479), PubMed [33026698](https://pubmed.ncbi.nlm.nih.gov/33026698/)





Banitalebi H, Espeland A, Anvar M, Hermansen E, **Hellum C**, Brox JI, Myklebust TÅ, Indrekvam K, Brisby H, Weber C, Aaen J, Austevoll IM, Grundnes O, Negård A (2022)

**Reliability of preoperative MRI findings in patients with lumbar spinal stenosis**

BMC Musculoskelet Disord, 23 (1), 51

DOI [10.1186/s12891-021-04949-4](https://doi.org/10.1186/s12891-021-04949-4), PubMed [35033042](https://pubmed.ncbi.nlm.nih.gov/35033042/)

Banitalebi H, Aaen J, Storheim K, Negård A, Myklebust TÅ, Grotle M, **Hellum C**, Espeland A, Anvar M, Indrekvam K, Weber C, Brox JI, Brisby H, Hermansen E (2022)

**A novel MRI index for paraspinal muscle fatty infiltration: reliability and relation to pain and disability in lumbar spinal stenosis: results from a multicentre study**

Eur Radiol Exp, 6 (1), 38

DOI [10.1186/s41747-022-00284-y](https://doi.org/10.1186/s41747-022-00284-y), PubMed [35854201](https://pubmed.ncbi.nlm.nih.gov/35854201/)

Bartels S, Kristensen TB, Gjertsen JE, Frihagen F, Rogmark C, **Dolatowski FC**, Figved W, Benth JŠ, Utvåg SE (2022)

**Total Hip Arthroplasty Leads to Better Results After Low-Energy Displaced Femoral Neck Fracture in Patients Aged 55 to 70 Years: A Randomized Controlled Multicenter Trial Comparing Internal Fixation and Total Hip Arthroplasty**

J Bone Joint Surg Am, 104 (15), 1341-1351

DOI [10.2106/JBJS.21.01411](https://doi.org/10.2106/JBJS.21.01411), PubMed [35700073](https://pubmed.ncbi.nlm.nih.gov/35700073/)

Berg B, Roos EM, Kise NJ, **Engebretsen L**, **Holm I**, **Risberg MA** (2022)

**Muscle Strength and Osteoarthritis Progression After Surgery or Exercise for Degenerative Meniscal Tears: Secondary Analyses of a Randomized Trial**

Arthritis Care Res (Hoboken), 74 (1), 70-78

DOI [10.1002/acr.24736](https://doi.org/10.1002/acr.24736), PubMed [34151533](https://pubmed.ncbi.nlm.nih.gov/34151533/)

**Berg B**, Urhausen AP, Øiestad BE, Whittaker JL, Culvenor AG, Roos EM, Crossley KM, Juhl CB, **Risberg MA** (2022)

**What tests should be used to assess functional performance in youth and young adults following anterior cruciate ligament or meniscal injury? A systematic review of measurement properties for the OPTIKNEE consensus**

Br J Sports Med, 56 (24), 1454-1464

DOI [10.1136/bjsports-2022-105510](https://doi.org/10.1136/bjsports-2022-105510), PubMed [35697502](https://pubmed.ncbi.nlm.nih.gov/35697502/)

Bjørndal J, **Fraser AN**, **Wagle TM**, Kleven L, Lien OA, Eilertsen L, Mader K, Apold H, Larsen LB, **Madsen JE**, **Fjalestad T** (2022)

**A cost-effectiveness analysis of reverse total shoulder arthroplasty compared with locking plates in the management of displaced proximal humerus fractures in the elderly: the DelPhi trial**

J Shoulder Elbow Surg, 31 (10), 2187-2195

DOI [10.1016/j.jse.2022.05.022](https://doi.org/10.1016/j.jse.2022.05.022), PubMed [35781083](https://pubmed.ncbi.nlm.nih.gov/35781083/)

Borgen TT, **Solberg LB**, Lauritzen T, Apalset EM, Bjørnerem Å, Eriksen EF (2022)

**Target Values and Daytime Variation of Bone Turnover Markers in Monitoring Osteoporosis Treatment After Fractures**

JBMR Plus, 6 (6), e10633

DOI [10.1002/jbm4.10633](https://doi.org/10.1002/jbm4.10633), PubMed [35720666](https://pubmed.ncbi.nlm.nih.gov/35720666/)





Boye K, Lobmaier I, Kobbeltvedt MR, **Thorkildsen J**, Taksdal I, Bjerkehagen B, Bruland ØS, **Zaikova O**, Sundby Hall K, Hompland I (2022)

**Real-world evidence on perioperative chemotherapy in localized soft tissue sarcoma of the extremities and trunk wall; a population-based study**

Acta Oncol, 61 (7), 793-800

DOI [10.1080/0284186X.2022.2082259](https://doi.org/10.1080/0284186X.2022.2082259), PubMed [35698755](https://pubmed.ncbi.nlm.nih.gov/35698755/)

**Breen AB, Steen H**, Pripp A, **Gunderson R**, Sandberg Mentzoni HK, Merckoll E, Zaidi W, Lambert M, **Hvid I, Horn J** (2022)

**A comparison of 3 different methods for assessment of skeletal age when treating leg-length discrepancies: an inter- and intra-observer study**

Acta Orthop, 93, 222-228

DOI [10.2340/17453674.2021.1133](https://doi.org/10.2340/17453674.2021.1133), PubMed [35019143](https://pubmed.ncbi.nlm.nih.gov/35019143/)

**Bøe B, Støen RØ, Blich I, Moatshe G, Ludvigsen TC** (2022)

**Learning Curve for Arthroscopic Shoulder Latarjet Procedure Shows Shorter Operating Time and Fewer Complications with Experience**

Arthroscopy, 38 (8), 2391-2398

DOI [10.1016/j.arthro.2022.01.042](https://doi.org/10.1016/j.arthro.2022.01.042), PubMed [35157966](https://pubmed.ncbi.nlm.nih.gov/35157966/)

**Bønnes I**, Karlberg AC, **Liljeholm M**, Fraser AN, **Madsen JE, Fjalestad T** (2022)

**Pegs not superior to screws for fixation of fractures of the proximal humerus**

J Orthop Surg Res, 17 (1), 66

DOI [10.1186/s13018-022-02947-3](https://doi.org/10.1186/s13018-022-02947-3), PubMed [35109905](https://pubmed.ncbi.nlm.nih.gov/35109905/)

Cuevas-Østrem M, Wisborg T, **Røise O**, Jeppesen E (2022)

**Differences in time-critical interventions and radiological examinations between adult and older trauma patients: A national register-based study**

J Trauma Acute Care Surg, 93 (4), 503-512

DOI [10.1097/TA.0000000000003570](https://doi.org/10.1097/TA.0000000000003570), PubMed [35137729](https://pubmed.ncbi.nlm.nih.gov/35137729/)

**Dara K, Bere T**, Hellund JC, **Flugsrud GB, Røise O** (2022)

**Long-term results after isolated iliac wing fractures**

Injury, 53 (11), 3795-3799

DOI [10.1016/j.injury.2022.08.033](https://doi.org/10.1016/j.injury.2022.08.033), PubMed [36057487](https://pubmed.ncbi.nlm.nih.gov/36057487/)

Douglass BW, **Midgaard KS**, Nolte PC, Elrick BP, Tanghe KK, Brady AW, Provencher MT (2022)

**Neurovascular Anatomic Locations and Surgical Safe Zones When Approaching the Posterior Glenoid and Scapula: A Quantitative and Qualitative Cadaveric Anatomy Study**

Arthrosc Sports Med Rehabil, 4 (3), e943-e947

DOI [10.1016/j.asmr.2022.01.006](https://doi.org/10.1016/j.asmr.2022.01.006), PubMed [35747623](https://pubmed.ncbi.nlm.nih.gov/35747623/)

Eiding H, **Røise O**, Kongsgaard UE (2022)

**Potentially Severe Incidents During Interhospital Transport of Critically Ill Patients, Frequently Occurring But Rarely Reported: A Prospective Study**

J Patient Saf, 18 (1), e315-e319

DOI [10.1097/PTS.0000000000000769](https://doi.org/10.1097/PTS.0000000000000769), PubMed [32910036](https://pubmed.ncbi.nlm.nih.gov/32910036/)





Familiari F, Compagnoni R, Bait C, Grassi A, Pieroni A, **Moatshe G**, Zaffagnini S, Randelli P, SIAGASCOT Arthroscopy Committee (2022)

**International cooperation needed to improve national anterior cruciate ligament registries**

Knee Surg Sports Traumatol Arthrosc, 31 (1), 235-247

DOI [10.1007/s00167-022-07091-3](https://doi.org/10.1007/s00167-022-07091-3), PubMed [35945462](https://pubmed.ncbi.nlm.nih.gov/35945462/)

Familiari F, Palco M, Russo R, **Moatshe G**, Simonetta R (2022)

**Arthroscopic Repair of Posterior Root Tears of the Lateral Meniscus with All-Suture Anchor**

Arthrosc Tech, 11 (5), e781-e787

DOI [10.1016/j.eats.2021.12.037](https://doi.org/10.1016/j.eats.2021.12.037), PubMed [35646560](https://pubmed.ncbi.nlm.nih.gov/35646560/)

Finstad J, Clausen T, Rosseland LA, **Røise O**, Havnes IA (2022)

**Patient Experiences after Physical Trauma: The Negative Effect of the COVID-19 Pandemic on Recovery**

Int J Environ Res Public Health, 19 (19)

DOI [10.3390/ijerph191912258](https://doi.org/10.3390/ijerph191912258), PubMed [36231553](https://pubmed.ncbi.nlm.nih.gov/36231553/)

Ganokroj P, **Midtgaard K**, Elrick BP, Dey Hazra RO, Douglass BW, Nolte PC, Peebles AM, Fossum BW, Brown JR, Millett PJ, Provencher MT (2022)

**Qualitative and Quantitative Anatomy of the Humeral Attachment of the Pectoralis Major Muscle and Structures at Risk: A Cadaveric Study**

Orthop J Sports Med, 10 (9), 23259671221121333

DOI [10.1177/23259671221121333](https://doi.org/10.1177/23259671221121333), PubMed [36157089](https://pubmed.ncbi.nlm.nih.gov/36157089/)

Grunbeck IA, Teatini A, Kumar RP, Elle OJ, **Wiig O** (2022)

**Evaluation and Comparison of Target Registration Error in Active and Passive Optical Tracking Systems**

Annu Int Conf IEEE Eng Med Biol Soc, 2022, 3476-3480

DOI [10.1109/EMBC48229.2022.9871591](https://doi.org/10.1109/EMBC48229.2022.9871591), PubMed [36085841](https://pubmed.ncbi.nlm.nih.gov/36085841/)

**Grün W**, Hansen EJJ, **Andreassen GS**, **Clarke-Jenssen J**, **Madsen JE** (2022)

**Functional outcomes and health-related quality of life after reconstruction of segmental bone loss in femur and tibia using the induced membrane technique**

Arch Orthop Trauma Surg, 143 (8), 4587-4596

DOI [10.1007/s00402-022-04714-9](https://doi.org/10.1007/s00402-022-04714-9), PubMed [36460763](https://pubmed.ncbi.nlm.nih.gov/36460763/)

Gursli S, Quittner A, Jahnsen RB, Skrede B, **Stuge B**, Bakkeheim E (2022)

**Airway clearance physiotherapy and health-related quality of life in cystic fibrosis**

PLoS One, 17 (10), e0276310

DOI [10.1371/journal.pone.0276310](https://doi.org/10.1371/journal.pone.0276310), PubMed [36256673](https://pubmed.ncbi.nlm.nih.gov/36256673/)

Hermansen E, Austevoll IM, **Hellum C**, Storheim K, Myklebust TÅ, Aaen J, Banitalebi H, Anvar M, Rekeland F, Brox JI, Franssen E, Weber C, Solberg TK, Furunes H, Grundnes O, Brisby H, Indrekvam K (2022)

**Comparison of 3 Different Minimally Invasive Surgical Techniques for Lumbar Spinal Stenosis: A Randomized Clinical Trial**

JAMA Netw Open, 5 (3), e224291

DOI [10.1001/jamanetworkopen.2022.4291](https://doi.org/10.1001/jamanetworkopen.2022.4291), PubMed [35344046](https://pubmed.ncbi.nlm.nih.gov/35344046/)





Holm-Glad T, Røkkum M, Röhrl SM, Roness S, Godang K, Reigstad O (2022)

**A randomized controlled trial comparing two modern total wrist arthroplasties : improved function with stable implants, but high complication rates in non-rheumatoid wrists at two years**

Bone Joint J, 104-B (10), 1132-1141

DOI [10.1302/0301-620X.104B10.BJJ-2022-0201.R2](https://doi.org/10.1302/0301-620X.104B10.BJJ-2022-0201.R2), PubMed [36177637](https://pubmed.ncbi.nlm.nih.gov/36177637/)

Husebye EE, Stødle AH (2022)

**Arthroscopic Repair of Chronic Plantar Plate Tears of the First Metatarsophalangeal Joint: A New Surgical Technique With Patient Outcomes**

Orthop J Sports Med, 10 (12), 23259671221137558

DOI [10.1177/23259671221137558](https://doi.org/10.1177/23259671221137558), PubMed [36582934](https://pubmed.ncbi.nlm.nih.gov/36582934/)

Johansen E, Bredeesen IM, Jónasdóttir RJ, Lind R (2022)

**ABCD before E-verything else-Intensive care nurses' knowledge and experience of pressure injury and moisture-associated skin damage**

Int Wound J, 20 (2), 285-295

DOI [10.1111/iwj.13872](https://doi.org/10.1111/iwj.13872), PubMed [35746849](https://pubmed.ncbi.nlm.nih.gov/35746849/)

Johnson JL, Boulton AJ, Spindler KP, Huston LJ, Spalding T, Asplin L, Risberg MA, Snyder-Mackler L (2022)  
**Creating Crosswalks for Knee Outcomes After ACL Reconstruction Between the KOOS and the IKDC-SKF**

J Bone Joint Surg Am, 104 (8), 723-731

DOI [10.2106/JBJS.20.02233](https://doi.org/10.2106/JBJS.20.02233), PubMed [35192570](https://pubmed.ncbi.nlm.nih.gov/35192570/)

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