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# Annual Report

## Research Activity 2020



**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 Orthopaedic s.

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 is one of twelve 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

The Division of Orthopaedic's research activity is organized into 11 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 7 Professors, 3 Associate Professors, postdoctoral fellowships, several PhD students and administrative and technical staff.

The Division has an Advisory Research Board which in 2020 consisted of: Professor Lars Nordsletten, Professor Olav Røise, Professor Jan Erik Madsen, Professor Emeritus Lars Engebretsen, Professor Harald Steen, Professor Inger Holm, Professor Magne Røkkum, Professor May Arna Risberg, Associate Professor Joachim Horn, Associate Professor Thomas Kibsgård, Finance Manager Anne-Grethe Akselsen, Division Director Rolf Riise, Consultant Olga Zaikova, Research Nurse Ida M. Bredesen and Research Nurse and Assistant Administrative Manager Kari Anne Hakestad.

In 2020 OUS had a of total 90 registered peer reviewed publications and 8 PhD dissertations.

Diakonhjemmet's department of Rheumatology registered 55 publications and 1 PhD dissertation in the same period.

*Olav Røise*





## Osteoarthritis Research Group



### Group Leader

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

### Group Members

- May Arna Risberg, Prof
- Tore K. Kvien, Prof em
- Till Uhlig, Prof
- Ida K. Haugen, Postdoc
- Gunnar Flugsrud, Senior Consultant
- Kristin Bølstad, Research coordinator
- Nina Østerås, Postdoc
- Karin Magnusson, Postdoc
- Britt Elin Øyestad, Prof
- Nina J. Kise, Postdoc
- Sonia Rojewski, PhD fellow
- Bjørnar Berg, PhD fellow
- Kristian Warholm, PhD fellow
- Tuva Moseng, Postdoc

### 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
- MRI changes with hand OA: Trapezium MRI findings compared to histology
- OMEX: RCT between training and operation in meniscal injury
- ArthroVax: The immunological impact on OA development
- HIPARTI: Hip arthroscopy vs training





## 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

## Scientific production of the research group in 2020

### Peer reviewed original research articles: 29

#### PhD:

Tuva Moseng: "Management of hip and knee osteoarthritis in primary care - Summary of evidence for exercise dose and implementation of a structured care model in primary care"

#### Selected publications:

Pishgar F, Kwee RM, Haj-Mirzaian A, et al (Haugen, I.)

"Association between Race and Radiographic, Symptomatic, and Clinical Hand Osteoarthritis: A Propensity Score-Matched Study Using Osteoarthritis Initiative Data"

Arthritis Rheumatol 2020 doi: 10.1002/art.41231

Holm I, Pripp AH, Risberg MA

"The Active with OsteoArthritis (AktivA) Physiotherapy Implementation Model: A Patient Education, Supervised Exercise and Self-Management Program for Patients with Mild to Moderate Osteoarthritis of the Knee or Hip Joint. A National Register Study with a Two-Year Follow-Up"

J Clin Med 2020;9(10) doi: 10.3390/jcm9103112

Berg B, Roos EM, Englund M, et al.

"Development of osteoarthritis in patients with degenerative meniscal tears treated with exercise therapy or surgery: a randomized controlled trial"

Osteoarthritis Cartilage 2020;28(7):897-906. doi: 10.1016/j.joca.2020.01.020

### Funding

- South-Eastern Norway Regional Health Authority
- Norwegian Extra Foundation for Health and Rehabilitation
- The Research Council of Norway
- Foundation of Sophies Minde





## 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 Niratiairak, 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"
- "Analysis of growth during temporary epiphysiodesis and hemiepiphysiodesis – a radiostereometric analysis"
- "Temporary hemiepiphysiodesis with a tensor-plate – a follow-up to maturity"
- "Correlation of skeletal age based on three different evaluation methods" (Greulich and Pyle, Sauvegrain and BoneXpert)





“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”

“Femoral lengthening might impair physical function and lead to joint cartilage degeneration in adjacent joints – a study of 10 patients with 27 to 34 years follow-up”, MSc-project, Patrick Bjørge

“Knee stability in achondroplasia after tibial lengthening with concurrent distalisation of the fibular head”

## **2. Children’s hip**

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

“The prognostic value of the head-shaft angle in children with cerebral palsy” (Terje Terjesen)

“Prognostic value of severity of dislocation in late-detected developmental dysplasia of the hip” (Terje Terjesen)

“Management of late-detected DDH in children under three years of age” (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, OUCH

## **4. Children’s foot and ankle**

“Idiopathic toewalkers: a clinical intervention study for children from 7-14 years” (Lærke Lindskov and 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)

## **6. Patient safety**

“Characteristics of malpractice claims in pediatric orthopaedics in Norway between 2012 – 2018” (Joachim Horn)





## Most important national and international collaborators

### National

- Lena Lande Wekre, MD, PhD, Norwegian National Advisory Unit on Rare Diseases
- Cecilie Rustad, MD, Department of Medical Genetics, OUH
- Cathrine Alsaker Heier, Division 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

## Funding

- Sophies Minde AS (Stefan Huhnstock)
- Innovation funds 2019 (Ola Wiig)
- Bergesenstiftelsen (Ola Wiig)
- Sophies Minde AS (Patrick Bjørge)

## Scientific production of the research group in 2020

### Completed M.Sc.

Patrick Bjørge

### Peer reviewed original research articles: 5

#### Selected publications:

Terjesen T, Horn J.

*"Management of late-detected DDH in children under three years of age – 49 children with follow-up to skeletal maturity"*

Bone & Joint Open, 2020-04, Vol.1 (4), p.55-63

Laine JC, Novotny SA, Huhnstock S, Ries AJ, Tis JE, Sankar WN, et. Al.

*"Reliability of the modified lateral pillar classification for Legg Clavé Perthes disease performed by a large group of international paediatric orthopaedic surgeons"*

J Child Orthop. 2020;14(6):529-36

Terjesen T, Horn J.

*"Prognostic value of severity of dislocation in late-detected developmental dysplasia of the hip"*

Journal of Children's Orthopaedics, 2020-08-01, Vol.14(4), p.266-272





## Biomechanics Laboratory



### Group Leader

Harald Steen, MD/DMSci, Head of Biomechanics Laboratory/Orthopaedic Consultant, Orthopaedic Division, Department for Research and Development OUH, Rikshospitalet ([hsteen@ous.no](mailto:hsteen@ous.no)) / Professor emeritus, OsloMet

### Group members

- Sanyalak Niratisairak, PhD, UiO (Head engineer)
- Jan Egil Brattgjerd, MD/PhD-cand, OUH
- Knut Strømsøe, MD/DMSci, prof em UiO/Alumni
- Jan Rune Nilssen, Eng, Norwegian Defence Research Institute (FFI)
- Jette Schack, PT/MSc/PhD, OUH, SMO, OsloMet
- Ingrid Skaaret, CPO/MSc/PhD-cand, Sophies Minde Ortopedi AS (SMO)
- Bryan Wright, MD/PhD-cand, Ringerike Hospital
- Anne Berg Breen, MD/PhD-cand, OUH
- Patrick Aleksander Bjørge, PT/MSc-cand, OUH

### Associate group members

- Jens Ivar Brox, MD/DMSci, OUH, prof UiO
- Are Hugo Pripp, MSc/PhD, OUH, prof OsloMet
- Ivan Hvid, MD/DMSci, OUH, prof em UiO
- Joachim Horn, MD/PhD, OUH
- Ragnhild Gunderson, MD, OUH

### Research profile and aims

Biomechanics lab at the Department for Research and Development, Oslo University Hospital 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 University of Oslo with 1.5 full time employees: One orthopaedic surgeon (50%) employed by the Hospital and one Engineer (100%) employed by the University.

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' (NSB) consistent with similar existing 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 was postponed in 2020.





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 put on hold for an indefinite time in 2020 because of the ongoing 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 intramedullary nails or external fixators.

## Ongoing projects

- Biomechanics of locking plates in femoral neck fixation (JEB/PhD Thesis will be defended January 20, 2021)
- Children with cerebral palsy: The impact of ankle-foot orthoses on gait function after lower limb surgery (IS/PhD Thesis will be defended April 23, 2021)
- Biomechanical studies of bone fixation (BW/PhD Thesis in progress)
- Planning and treatment of epiphysiodesis - Outcome of various methods (ABB/PhD Thesis in progress)
- Comparison of various methods for bone age assessment
- Radiostereometric (RSA) Growth-Analyses after (Hemi-)Epiphysiodeses
- Predictors for long-term curve progression after Boston brace treatment of idiopathic scoliosis
- Forces, Load-share and Strain in Ankle Arthrodesis
- Contribution of Soft and Hard Tissue Resistance during Limb Lengthening Procedures
- The Birch Classification for Congenital Fibular Deficiency Can Predict Treatment Modality and Clinical Outcome in Young Adults Born With Lower-Limb Deficiencies
- Forces, Load-Share and Strain during the Callotasis Process
- Radiostereometric (RSA) Monitoring in Orthopaedic Reconstructive Surgery
- The Influence of an Intact or Healed Osteotomized Fibula on the Measured Load-Share Value after a Tibial Lengthening Osteotomy - A Cadaver Pilot Study
- Radiationless Bone Age assessment by MRI





## 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

### 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
- Martin Urschler, PhP and Darko Stern, MSc Ludwig Boltzmann Gesellschaft GmbH, Austria, Medical University of Graz, Austria:  
Radiationless Bone Age assessment by MRI
- Stephen Grigg, PhD and Rhys Pullin, PhD, Cardiff School of Engineering, Cardiff University, UK
- Acoustic Emission Project

## Scientific production of the research group in 2020

### Doctoral PhD dissertation:

Jette Schack PT, MS/PhD: "Assessment of Mobility and Prefrontal Cortical Activity by use of functional Near-Infrared Spectroscopy (fNIRS) in Persons with Lower Limb Amputation" OsloMet, Nov 13 2020

### M.Sc dissertation:

Patrick A. Bjørge PT, Ms: "Femoral lengthening might impair physical function and lead to structural changes in adjacent joints: 10 patients with 27 to 34 years' follow-up" OsloMet, June 18 2020

### Peer-Reviewed Publications (original research articles): 5

#### Selected publications:

Brattgjerd JE, Niratisairak S, Steen H, Strømsøe K:  
*"Interlocked Pins Increase Strength by a Lateral Spread of Load in Femoral Neck Fixation: A Cadaver Study"*  
Acta Chir Orthop et Traum čech, accepted Dec 28, 2020

Wright BJ, Grigg S, Bergsaker AS, Brattgjerd JE, Steen H, Pullin R:  
*"Real time monitoring of screw insertion using acoustic emission can predict screw stripping in human cancellous bone"*  
Clin Biomech, 76 2020 105026; <https://doi.org/10.1016/j.clinbiomech.2020.105026>

Steen H, Pripp AH, Lange JE, Brox JI:  
*"Predictors for long-term curve progression and quality of life after Boston brace treatment of idiopathic scoliosis"*  
Eur J Phys Rehab Med, 2020, 57(1):101-109, 2021





## Center for Implant and Radiostereometric Research Oslo – CIRRO

### Group Leaders



Stephan M. Röhrl, (s.m.rohrl@medisin.uio.no) MD, PhD

Division of Orthopaedic Surgery, OUH, Head of the Norwegian Society for Hip and Knee Surgery, Board member of the Norwegian arthroplasty Registry



Lars Nordsletten, Prof., Dept of Orthopaedics, UiO

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

### Group Members

#### Senior members:

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

#### Alumni (PhD):

- Wender Figwed, MD/PhD Bærum Hospital
- Berte Bøe, MD/PhD, OUH
- Einar Lindalen, MD/PhD Lovisenberg Hospital
- Jon Dahl, MD/PhD, OUH
- Thomas Kibsgård, MD/PhD, UiO and OUH
- Bernhard Flatøy, MD/PhD, Diakonhjemmet hospital
- Eirik Aunan, MD, Lillehammer hospital
- Justin van Leeuwen, MD, Helse Førde Lerdal hospital
- Gunnar Petursson, MD, Lovisenberg Hospital

#### PhD candidates:

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





## Group Members (continued)

Single project candidate:

- Magnus Høgevold, MD, Diakonhjemmet Hospital
- Mathilde Kvamme, OUH

Radiographers:

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

Research coordinators:

- Marte Traae Magnusson, PT, Master, OUH

## Research profile and aims

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

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

## 2020

### Planned projects:

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

### Ongoing studies:

INTRAKS study on kyphoscoliosis in adults started inclusion in September 2020. We had several research meetings with collaboratin cites in Sweden and Japan over zoom. Collaboration with the Department of Fysiotherapy was established with RIKS Hospital, OUH. They are supporting the nonsurgical cohort.

A new diagnostic tool was established for CIRRO group. CTMA (Computer Tomography Motion Analysis) and IMA (Image Motion Analysis) are CT based methods that use similar algorithms as Radiostereometric Analysis. Pilot projects are started. Feasibility studies (MK) are started also for clinical use.





One PhD candidate (MP) has started to perform comparative studies between RSA and IMA and is now certified to perform analysis with this new technique. We are in close collaboration with the software developer and our intention is to become the main national center for this new technology.

CIRRO arranged a meeting for the PhD-candidates, radiographers and coordinators with a presentation regarding CT-based RSA method by Olof Sandberg, Sectra AB, Lindköping, Sweden

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



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

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

CIRRO research coordinator Marte Traae Magnusson also attended in GCP courses. Facilitating datacollection of PROMS for the Norwegian Arthroplasty Register. Participating in several different ongoing projects [INTRAKS](#) and [PHACT](#). Supervisor for a PT group in developing a national guideline for [rehabilitation after elbow surgery](#).





All PhD students continued their studies. Half time evaluations were carried out for the following:

- Frank David Øhrn; «*In vivo kinematics and performance of contemporary knee arthroplasty*» on zoom med from Kristiansund sykehus. External evaluator: Ass. Prof. Tina Wiik, NTNU.



- Yasser Rehmans; "A randomized trial to study the effect of different implant designs on knee function and kinematics after knee arthroplasty" Opponent Stig Heir, Martina Hansens Hospital.



- Peder Thoen; "Advance in THR in at risk patients" Bernhard Flatøy and Lars Nordsletten present.





## Ongoing projects

### Hip projects

- Randomized study between operation with pins with or without plate for undisplaced dislocated femoral neck fracture. Radio stereogrammetric analysis (RSA) of stability and fracture healing and clinical endpoints. (The Pinloc Study)
- RCT on the function of the Trochanteric Support Plate (TSP) in combination with the Dynamic Hip Screw (DHS)
- Solutions for patients at risk: dislocation (PhD program)
- The value of minimal invasive approaches for THP compared to traditional ones

### Knee projects

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

### Methodological projects

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

### Ankle and foot projects

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

### Shoulder project

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

### Hand project

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

### Spinal project

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

### Funding

- South-Eastern Norway Regional Health Authority (PhD program)
- University of Oslo (2 PhD program)
- Medacta International AG
- Sophies Minde Health Fund (PhD program)





## Most important national and international collaborators

### National

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

### International

- Umeå University Hospital, Arthroplasty unit, Sweden
- UmRSA Biomedical, Sweden
- Leiden University, The Netherlands
- Kyoto University Orthopaedic Association, Japan
- Skåne University, Sweden

## Scientific production of the research group in 2020

Peer reviewed original research articles: 18

### Selected publications:

Øhrn FD, Gøthesen Ø, Låstad Lygre SH, Peng Y, Lian ØB, Lewis PL, Furnes O, Röhrl SM (2020)  
*“Decreased Survival of Medial Pivot Designs Compared with Cruciate-retaining Designs in TKA Without Patellar Resurfacing”*

Clin Orthop Relat Res, 478 (6), 1207-1218 DOI 10.1097/CORR.0000000000001120, PubMed 31977446

Thoen PS, Nordsletten L, Pripp AH, Röhrl SM (2020)

*“Results of a randomized controlled trial with five-year radiostereometric analysis results of vitamin E-infused highly crosslinked versus moderately crosslinked polyethylene in reverse total hip arthroplasty”*

Bone Joint J, 102-B (12), 1646-1653 DOI 10.1302/0301-620X.102B12.BJJ-2020-0721.R1, PubMed 33249906

Röhrl SM (2020)

*“Great balls on fire:” known algorithm with a new instrument?”*

Acta Orthop, 91 (6), 621-623 DOI 10.1080/17453674.2020.1840029, PubMed 33143497





## 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
- Trond Refsnaes, student, Faculty of Medicine, UiO
- Ole Reigstad, OUH
- Istvan Rigo
- Ida Neergård Sletten, OUH
- Rasmus Thorkildsen, student, Faculty of Medicine, UiO
- 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

### 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 Dupuytrens 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
- Hassellund S: Pinning of unstable distal radius fractures gives acceptable long term clinical results
- Hassellund S: Treatment of distal radius fractures in patients over 65 years, a health economic analyses
- Hassellund S: Effect of reposition of wrist fractures in patients over 65 years





- Hassellund S: Corticosteroids in addition to plexus blockades
- Korslund J: Outcomes after finger replantation
- Korslund J: Monitoring of the vascularisation in replanted 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 T: Continued decrease in cold hypersensitivity after surgery for complex hand injuries:  
A prospective cohort study over eight years
- Refsnaes T: Dysesthesia of the upper extremity
- Thorkildsen R: Proximal injuries of the ulnar nerve
- Thorkildsen R: Nerve complications after elbow fractures in children
- Thorkildsen R: Follow-up of 50 ARPE trapeziometacarpal arthroplasties
- Størseth M, Eriksen BK, Kindgren LMC, Vaksvik T: Assessment of activity challenges in patients with hand injuries using Measure of Activity Performance of the Hand (MAP-hand)
- Vaksvik T and Stavnes AB: Norwegian contribution to International validation of Children's Hand Use Questionnaire (CHEQ)
- Eriksen BK and Vaksvik T: Activity problems related to cold hypersensitivity in patients with hand injuries
- Vaksvik T, Røkkum M, Holm I: Use of strategies to limit cold-related symptoms 7 years after hand injury
- Reigstad O: Follow-up of wrist prostheses
- Reigstad O: Intercarpal Arthrodes
- Reigstad O: Darrach's procedure versus arthroplasty for radio-ulnar osteoarthritis (The Nordurr study)

**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





## Most important national and international collaborators

### National

- Prof. Jan Erik Madsen, MD, PhD
- Dept. of Otorhinolaryngology, Head and Neck Surgery, OUH

### International

- Prof. Carina B Johansson, Dept. of Biomaterials, University of Gothenburg, Sweden

## Scientific production of the research group in 2020

Peer reviewed original research articles: 7

Other publications: 2

Invited lectures at international congresses: 3

### Selected publications:

Holm-Glad T, Godang K, Bollerslev J, Røkkum M, Reigstad O (2020)  
*"Assessing Periprosthetic Bone in Total Wrist Arthroplasty: The Validity of DXA"*  
J Clin Densitom (in press)  
DOI 10.1016/j.jocd.2020.10.006, PubMed 33172804

Reigstad O, Grimsgaard C, Holm-Glad T, Korslund J, Thorkildsen RD, Røkkum M (2020)  
*"Satisfactory function 12 years after triscapoid arthrodesis for chronic scapholunate ligament injury"*  
J Plast Surg Hand Surg, 54 (4), 233-239  
DOI 10.1080/2000656X.2020.1756835, PubMed 32410479

Thorkildsen RD, Johansson CB, Hogmalm J, Johansson PH, Røkkum M.  
*"Early Cup Loosening After Metal-on-Metal Total Joint Replacement of the Trapeziometacarpal Joint: A Retrieval Study"*  
J Hand Surg Am. 2020 Mar;45(3):213-222. doi: 10.1016/j.jhsa.2019.06.020. Epub 2019 Sep 17., PubMed 31537396

### Funding

- Sophies Minde Ortopedi AS





## Norwegian research center for Active Rehabilitation – NAR



### Group Leader

May Arna Risberg, Professor, The Norwegian School of Sport Sciences  
(m.a.risberg@nih.no) / Division of Orthopaedic Surgery, OUH (marisb@ous-hf.no)

### Group Members and affiliated members

- Hege Grindem, PT, PhD, Nimi/The Norwegian School of Sport Sciences
- Britt Elin Øiestad, PT, PhD, OsloMET
- Marie Pedersen, PT, MSc, PhD student
- Bjørnar Berg, PT, PhD student
- Kristian Marstrand Warholm, MD, PhD student
- Kristin Bølstad, MSc, Nimi
- Marte Lund, PT, MSc, Nimi
- Odd-Einar Svinøy, PT, PhD student
- Guri R. Ekås, MD, PhD student
- Lars Nordsletten, MD, PhD, professor, OUH and Faculty of Medicine, UiO
- Lars Engebretsen, MD, PhD, professor, OUH and Faculty of Medicine, UiO
- Inger Holm, PT, PhD, professor, OUH and Faculty of Medicine, UiO
- Lynn Snyder-Mackler, PT, PhD, professor, University of Delaware, USA
- Joanne Kemp, PT, PhD, LaTrobe University, Melbourne, Australia
- Ewa Roos, PT, PhD professor, University of Southern Denmark, Odense, Denmark
- Nina Østerås, PT, PhD, NKRR, Diakonhjemmet Hospital

### Research profile and aims

The vision of the group is to be an internationally leading research center within the field of active rehabilitation of musculoskeletal injuries and disorders.

#### Main Goals

Active rehabilitation of patients with musculoskeletal injuries and disorders

- Clinical research
- Implementation of the research to evidence based practice

Our current research areas include active rehabilitation of knee and hip injuries and knee and hip osteoarthritis (OA). Each research area consists of a research team with senior researchers, PhD fellows, clinicians and a research coordinator.





## Ongoing projects

### Knee

- Dynamic stability of the ACL-deficient knee (Delaware Oslo ACL Cohort). A research collaboration with the University of Delaware, USA
- The OMEX Study: The effect of arthroscopic partial meniscectomy or exercise therapy as treatment of degenerative meniscus tears in middle-aged patients. A Randomized controlled trial
- Efficacy of strength training and cycling on physical function and cartilage health in patients with knee osteoarthritis – A randomized controlled trial
- Prospective cohort study of ACL injured children under the age of 13 years
- Is good muscle function a protective factor for early features of knee osteoarthritis after ACL reconstruction? A prospective cohort study. Shield Study

### Hip

- HIPARTI (Hip Arthroscopy International) and HARP (Hip Arthroscopy Prospective)
- Better before – better after: Efficacy of prehabilitation for older patients with osteoarthritis awaiting total hip replacement – A randomized controlled trial

### Osteoarthritis

- Active A - Active living with osteoarthritis ([www.aktivmedartrose.no](http://www.aktivmedartrose.no))

## Most important national and international collaborators

### National

- Martina Hansens Hospital
- Akershus University Hospital
- Diakonhjemmet Hospital
- Norwegian School of Sport Sciences
- Nimi

### International

- University of Delaware, US
- University of Southern Denmark (SDU), Denmark
- LaTrobe University, Melbourne, Australia

## Scientific production of the research group in 2020 (not included affiliated members)

Peer reviewed original research articles: 14

Invited lectures at international congresses: 4

Grindem H. Rehab hacks to disrupt pathways to posttraumatic osteoarthritis. Science in Action 2020, Odense, Denmark. Digital conference. December 2nd, 2020

Grindem H. Evidence-based anterior cruciate ligament rehabilitation. Swiss Sports Physio Association Annual Conference, Bern, Switzerland. Digital conference. November 13th, 2020





Grindem H. Rehab hacks to disrupt pathways to posttraumatic osteoarthritis. Scandinavian Congress of Medicine and Science in Sports, Copenhagen, Denmark. January 30- February 1st, 2020

Risberg MA. Pathways to PTOA and Risk factors after ACL injury. Scandinavian Congress of Medicine and Science in Sports, Copenhagen, Denmark. January 30- February 1, 2020

#### Selected publications:

Berg B, Roos EM, Englund M, Kise NJ, Tiulpin A, Saarakkala S, Engebretsen L, Eftang CN, Holm I, Risberg MA.

*"Development of osteoarthritis in patients with degenerative meniscal tears treated with exercise therapy or surgery: a randomized controlled trial"*

Osteoarthritis Cartilage. 2020 Jul;28(7):897-906. doi: 10.1016/j.joca.2020.01.020. Epub 2020 Mar 14. PMID: 32184135

Grindem H, Engebretsen L, Axe M, Snyder-Mackler L, Risberg MA.

*"Activity and functional readiness, not age, are the critical factors for second anterior cruciate ligament injury - the Delaware-Oslo ACL cohort study"*

Br J Sports Med. 2020 Sep;54(18):1099-1102. doi: 10.1136/bjsports-2019-100623. Epub 2020 Feb 11. PMID: 32046955

Pedersen M, Johnson JL, Grindem H, Magnusson K, Snyder-Mackler L, Risberg MA.

*"Meniscus or Cartilage Injury at the Time of Anterior Cruciate Ligament Tear Is Associated With Worse Prognosis for Patient-Reported Outcome 2 to 10 Years After Anterior Cruciate Ligament Injury: A Systematic Review"*

J Orthop Sports Phys Ther. 2020 Sep;50(9):490-502. doi: 10.2519/jospt.2020.9451. Epub 2020 Aug 1. PMID: 32741324

#### Funding

- South-Eastern Norway Regional Health Authority
- National Institutes of Health (NIH) # R37HD037985E
- Sophies Minde Foundation





## Oncological Orthopaedic



### Group Leader

Olga Zaikova, Dept. of Orthopaedics, OUH ([OLGAZ@ous-hf.no](mailto:OLGAZ@ous-hf.no))

### Group Members

Ole-Jacob Norum, MD, PhD, OUH  
Simen Sellevold, MD, OUH  
Joachim Thorkildsen, MD, OUH  
Thale Marie Asp Strøm, MD, OUH  
Trygve Wessel-Aas, MD, OUH

### Research profile and aims

The treatment of sarcoma is multidisciplinary, and this is reflected in the need of extensive cooperation between several research groups. The aim is to participate in the multidisciplinary research on sarcoma.

The strategy is to build up research networks, both nationally and internationally, and to participate in a wide spectrum of research projects from basic research and translational research to clinical studies and retrospective quality studies.

### Ongoing projects

- A study of epidemiology and outcome in chondrosarcoma, PhD project (Joachim Thorkildsen)
- SACRO Sacral Chordoma: a Randomized & Observational study on surgery versus definite radiation therapy in primary localized disease. A multinational clinical trial (Ole-Jacob Norum)
- A study of muscle strength, balance and gait function in patients with tumor in the knee joint - a pilot study (MAGUS) (Merethe Lia Johansen, OUH)
- Functional outcome after surgery for tumor in pelvic bone (Trygve Wessel-Aas)
- Nordic Megaprostheses Register (Olga Zaikova)
- National Register for Sarcoma (Olga Zaikova)

### Most important national and international collaborators

#### National

- Norwegian National Advisory Unit for Sarcomas
- Department of Oncology, OUH
- Department of Tumor Biology, Institute for Cancer Research, OUH

#### 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 2020

Peer reviewed original research articles: 3

*"Risk stratification for central conventional chondrosarcoma of bone: A novel system predicting risk of metastasis and death in the Cancer Registry of Norway cohort"*

Thorkildsen J, Taksdal I, Bjerkehagen B, Norum OJ, Myklebust TA, Zaikova O. J Surg Oncol. 2020 Jun;121(7):1115-1125. doi: 10.1002/jso.25883. Epub 2020 Mar 5.  
PMID: 32141094

*"Chondrosarcoma local recurrence in the Cancer Registry of Norway cohort (1990-2013): Patterns and impact"*

Thorkildsen J, Norum OJ, Myklebust TA, Zaikova O. J Surg Oncol. 2020 Dec 14. doi: 10.1002/jso.26308. Online ahead of print. PMID: 33314135

*"Pan-cancer analysis of whole genomes. ICGC/TCGA Pan-Cancer Analysis of Whole Genomes Consortium.ICGC/TCGA Pan-Cancer Analysis of Whole Genomes Consortium"*

Nature. 2020 Feb;578(7793):82-93. doi: 10.1038/s41586-020-1969-6. Epub 2020 Feb 5.Nature. 2020. PMID: 32025007 Free PMC article





## 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)

### Group Members

- Geir Andreassen, Consultant
- Tone Bere, Research Coordinator, PhD
- Jan Egil Brattgjerd, PhD
- John Clarke- Jenssen, Consultant PhD
- Sigbjørn Dimmen, 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
- Jan Erik Madsen, Professor UiO / Consultant OUH
- Lars Nordsletten, Professor UiO / Consultant OUH
- Olav Røise, Professor UiO / Consultant OUH
- Harald Steen, Professor OsloMet

### 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 projects

- “Does the trochanteric stabilizing plate increase stability in trochanteric hip fractures?”  
Carl Erik Alm
- “Biomechanical studies of the effect of different fixations upon stability of hip fractures”  
Jan Egil Brattgjerd
- “Reversed arthroplasty in the treatment of proximal humerus fractures. Randomized controlled trial and evaluation of glenoid component migration by RSA”  
Alexander Fraser
- “Surgical treatment of the distal radius fracture”  
Ola-Lars Hammer





- “Conservative versus operative treatment of distal radius fractures”  
Sondre Hassellund
- “Primary and secondary total hip arthroplasty following acetabular fractures”  
Ragnhild Kirkebø
- “Fracture- dislocations of the elbow”  
Kaare Midtgård
- “Treatment of the unstable syndesmosis in ankle fractures”  
Lise Benedicte Wendt Ræder
- “Treatment of Charcot neuropathy of the foot”  
Fredrik Nilsen
- “Complex fractures around the elbow”  
Anne-Mari Rosenlund
- “Non-operative versus operative treatment of suprasyndesmotic ankle fractures”  
Ola Saatvedt
- “Biomechanics of the unstable ankle fracture”  
Ingrid Kvello Stake
- “Acute injuries to the Lisfranc joint complex”  
Are Stødle
- “Road traffic injuries at a large referral hospital in Malawi: elucidating strategies for prevention”  
Mads Sundet
- “Function and complications in hip fractures”  
Stian Svenøy
- “Surgical treatment and complications in fractures of the distal radius”  
John Williksen

## Most important national and international collaborators

### National

- Akerhus University Hospital (AHUS)
- Asker & Bærum Hospital
- Institute for Surgical Research, OÜH
- Gjøvik Hospital
- Lovisenberg Diaconal 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 2020

### PhD dissertation:

Marius Molund:

*"Gastrocnemius recession in foot disorder"*

June 10 2020, zoom

Geir Hjorthaug:

*"Effects of inhibition of bone resorption and cyclooxygenase on bone and tendon-to-bone healing - Experimental studies of fracture and tendon-to-bone healing in the rat"*

May 26 2020, zoom

Endre Søreide:

*"On Aspects of Intra-Articular Ligament Reconstruction"*

June 24 2020, zoom

### Peer reviewed original research articles: 34

### Invited lectures at international congresses: Numerous

### Selected publications:

Fraser AN, Bjørndal J, Wagle TM, Karlberg AC, Lien OA, Eilertsen L, Mader K, Apold H, Larsen LB, Madsen JE, Fjalestad T (2020)

*"Reverse Shoulder Arthroplasty Is Superior to Plate Fixation at 2 Years for Displaced Proximal Humeral Fractures in the Elderly: A Multicenter Randomized Controlled Trial"*

J Bone Joint Surg Am, 102 (6), 477-485

DOI 10.2106/JBJS.19.01071, PubMed 31977825

Frihagen F, Madsen JE, Sundfeldt M, Flugsrud GB, Andreassen JS, Andersen MR, Andreassen GS (2020)

*"Taylor Spatial Frame or Reamed Intramedullary Nailing for Closed Fractures of the Tibial Shaft: A Randomized Controlled Trial"*

J Orthop Trauma, 34 (11), 612-619

DOI 10.1097/BOT.0000000000001802, PubMed 33065663

Ræder BW, Stake IK, Madsen JE, Frihagen F, Jacobsen SB, Andersen MR, Figved W (2020)

*"Randomized trial comparing suture button with single 3.5 mm syndesmotic screw for ankle syndesmosis injury: similar results at 2 years"*

Acta Orthop, 91 (6), 770-775

DOI 10.1080/17453674.2020.1818175, PubMed 32907456

### 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
- Kathrin Steffen, MSc/PhD, Research Scientist, OSTRC
- Asbjørn Årøen, MD/PhD, Professor, Ahus
- Håvard Moksnes, PT/PhD, Research Scientist, OSTRC/Olympiatoppen
- Agnetha Nilstad, PT/PhD
- Ben Clarsen, PT/PhD, Research Scientist, OSTRC
- Sverre Løken, MD/PhD, OUH
- Robert LaPrade, MD/PhD, Twin Cities Orthopaedic s, 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
- Cathrine N Engen Eftang, MD/PhD, Ahus
- Håvard Visnes, MD/PhD, Sørlande sykehus
- Cathrine Aga, MD/PhD, Martina Hansens Hospital
- Christine Holm Moseid, MD/PhD, Research Scientist, OSTRC
- Stian Sandmo, MD/PhD, Vestre Viken Hospital Trust
- Gilbert Moatshe, MD/PhD, OUH
- Guri R Ekås, MD/PhD, Ahus
- Per-Henrik Randsborg MD/PhD
- Svend Ulstein MD/PhD, Ahus
- Sophie Steenstrup PT/PhD
- Arnlaug Wangensteen, PT/PhD
- Joar Harøy, PT/PhD
- Marc Jacob Strauss, MD/PhD fellow, OUH
- Christopher Skazalski, PT/PhD fellow, Aspetar
- Katherine Wang, Stud.med., UiO





## Group Members (continued)

- 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
- Eirik Halvorsen Wik, PT/PhD fellow, Aspetar
- Markus Vagle, PhD fellow, Univ. Sørøst-Norge
- Monica Sailer, MD/PhD fellow, Ahus
- 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
- Nicholas DePhillipo, PhD, 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, Martina Hansens Hospital

## Associated group members

- Inge Andersen, Database developer, MSc, OSTRC
- Tone Ørtsland, MSc/Research coordinator, OSTRC
- Kaja Funnemark, PT/MSc, OSTRC
- Hege Heiestad, PT/MSc, OSTRC
- Emilie Bratt Jakhelln, MSc, OSTRC
- Erling Hisdal, MSc, OSTRC

## Research profile and aims

The Oslo Sports Trauma Research Center is established 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 2020 the Oslo Sports Trauma Research Center has published 73 articles in international journals with peer review. Four master's students have defended their master's degrees and four PhD students have defended their dissertation. By the end of 2020 the Center had 109 ongoing projects, 5 accepted and 25 submitted articles. In addition, 39 projects were in the planning stage and 4 projects were temporarily on hold. You can find a complete list of projects in the Center's annual rapport for 2020.

## 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 2020

**Peer reviewed original research articles: 73**

**Other publications: 25**

**Invited lectures at international congresses/webinar: 22**

### Doctoral thesis:

DePhillipo, Nicholas.

Meniscal ramp lesions - anatomy, biomechanics, and clinical outcomes. Oslo: Norwegian School of Sport Sciences 2020 (ISBN 978-82-502-0577-2)

Ekås, Guri Ranum.

Pediatric anterior cruciate ligament injuries – management, treatment rationale and long-term outcomes. Faculty of Medicine, University of Oslo 2020 (ISBN 978-82-8377-596-9)

Moseid, Christine Holm.

Injury and illness in youth elite athletes. Faculty of Medicine, University of Oslo 2020 (ISBN 978-82-8377-605-8)

Sandmo, Stian Bahr.

Repetitive head impacts in football – quantifying exposure and assessing outcomes. Faculty of Medicine, University of Oslo 2020 (ISBN 978-82-8377-753-6)





### Selected publications:

Bahr, Roald; Clarsen, Benjamin Matthew; Derman, Wayne; Dvorak, Jiří; Emery, Carolyn A.; Finch, Caroline F.; Hägglund, Martin; Junge, Astrid; Kemp, Simon; Khan, Karim; Marshall, Stephen W.; Meeuwisse, Willem; Margo, Mountjoy; Orchard, John W.; Pluim, Babette M.; Quarrie, Kenneth L.; Reider, Bruce; Schwellnus, Martin; Soligard, Torbjørn; Stokes, Keith; Timpka, Toomas; Verhagen, Evert; Bindra, Abhinav; Budgett, Richard; Engebretsen, Lars; Erdener, Uğur; Chamari, Karim.

*"International Olympic Committee consensus statement: Methods for recording and reporting of epidemiological data on injury and illness in sport 2020 (including STROBE Extension for Sport Injury and Illness Surveillance (STROBE-SIIS))"*

British Journal of Sports Medicine 2020; 54(7), 372-389 & Orthopaedic Journal of Sports Medicine (OJSM) 2020. E-pub 2020

Berge, Bjørnar; Roos, Ewa M.; Englund, Martin; Kise, Nina Jullum; Tiulpin, Aleksei; Saarakkala, Simo; Engebretsen, Lars; Eftang, Cathrine N; Holm, Inger; Risberg, May Arna.

*"Development of osteoarthritis in patients with degenerative meniscal tears treated with exercise therapy or surgery – a randomized controlled trial"*

Osteoarthritis and Cartilage 2020; 28(7), 897-906

Ekås, Guri Ranum; Ardern, Clare L.; Grindem, Hege; Engebretsen, Lars.

*"Evidence too weak to guide surgical treatment decisions for anterior cruciate ligament injury – a systematic review of the risk of new meniscal tears after anterior cruciate ligament injury"*

British Journal of Sports Medicine 2020; 54(9), 520-527

### 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

### 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
- Ragnhild Molland, PhD-cand
- Ivar Austevoll, MD, PhD-cand
- Håvard Furunes, MD, PhD-cand
- Erland Hermansen, MD, PhD-cand
- Frode Rekeland, MD, PhD-cand
- Stephan Röhrl MD/PhD
- Vinjar Myklevold MD
- Anvar Masoud 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 is also the main supervisor for Ivar Austevoll and co-supervisor for Frode Rekeland and co-supervised Erlend Hermansen, who had his dissertation in 2019.
- 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 and Haukeland University Hospital participate in the biopsy study. Furhter Bærum Hospital and the University Hospital of Stavenger will include patients in 2020. This collaboration also include the department of Microbiology by Karianne Gammelsrud, Pathology and Medical Genetics at Oslo University Hospital.
- SIFSO study – (Sacrolilac Fusion vs Sham Operation) Started the inclusion of patients in august 2018. 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 Thomas Kibsgård and John Dahl. This is a collaboration with prof. Gerdhem in Karolinska Hospital in Stockholm, Sweden.
- Improving the diagnostic accuracy, reproducibility and clinical usefulness og MRI and X-ray in patients with lumbar spinal stenosis (Data from the NORDSTEN-study)  
PhD student Hasan Banitalebi  
Supervisor: Anne Negård, Christian Hellum, Anvar Masoud  
Status: Protocol in planning

### Other studies and PhD:

- “Physical activity, motor function, lung function and quality of life in children with early onset scoliosis treated with non-fusion spine correction”  
PhD student: Ragnhild Molland, physical therapist  
Supervisors: Thomas Kibsgård, Jens Ivar Brox, Britt Stuge, Inger Holm  
Status: One article published and data collection finished. Second paper written but not submitted.
- “Sacroiliac joint fusion for treatment of sacroiliac pain”  
PhD student: Engelke Randers, resident  
Supervisors: Thomas Kibsgård, John Dahl, Britt Stuge  
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 palsy”  
PhD student: Ted Patrick Lundgren  
Supervisors: Thomas Johan Kibsgård, Terje Terjesen, Reidun JahnSEN  
Status: Protocol in planning
- “Indications and Treatment of Adult Kypho- Scoliosis” (INTRAKS Study)  
PhD student: Vinjar Myklevold  
Supervisors: Stephan Röhrl, Christian Hellum  
Status: study started

#### Manuscripts in preparation:

- “Health Related Quality of Life and Physical Activity after Early Onset Scoliosis Surgeries”  
Ragnhild Susanne Molland, PT, MSc, Britt Stuge, PT, PhD, Inger Holm, PT, Jens Ivar Brox, MD, PhD,  
Rolf Bjarne Riise, MD, Thomas Johan Kibsgard, MD, PhD
- “Rapid recovery pathway reduces the length of stay after surgery for adolescent idiopathic scoliosis”  
Marit Fure, PT, Øyvind Grimsrud, PT, Thomas Kibsgård, PhD
- Planning of a study on low back pain in collaboration with Sverre Mjønes, AHUS
- Furhter planning a study on Stemcells and bony healing in patients operated on with fusion in  
collaboration with Valdemar Karlsson, Skien Hospital
- In planning of thoracolumbar fracture study, OUH, Orthopaedic department

#### 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, deformity register
- Erik Aunan, Lillehammer
- SIMEG (Sacro iliac medical expert group); leader Thomas Kibsgård
- The Norwegian Registry for spine surgery

##### International

- Paul Herdheim, Karolinska University Hospital, Sweden
- 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 2020

### Peer reviewed original research articles: 4

Ivar Magne Austevoll, MD; Rolf Gjestad, PhD; Tore Solberg, MD, PhD; Kjersti Storheim, PT; Jens Ivar Brox, MD; Erland Hermansen, MD, PhD; Frode Rekeland, MD; Kari Indrekvam, MD, PhD; Christian Hellum, MD, PhD

*"Comparative Effectiveness of Microdecompression Alone vs Decompression Plus Instrumented Fusion in Lumbar Degenerative Spondylolisthesis"*

JAMA Netw Open, sept 10 2020

Per Martin Kristoffersen & Lars C. H. Bråten & Nils Vetti & Lars Grøvle & Christian Hellum& Kjersti Storheim & John-Anker Zwart & Jörg Assmus & Ansgar Espeland

*"Oedema on STIR modified the effect of amoxicillin as treatment for chronic low back pain with Modic changes—subgroup analysis of a randomized trial"*

European Radiology, Nov 2020

Lars Christian Haugli Bråten\* , Lars Grøvle , Ansgar Espeland, Are Hugo Pripp , Margreth Grotle, Christian Hellum , Anne Julsrød Haugen , Anne Froholdt , Mads Peder Rolfsen, Øystein Petter Nygaard, Olav Lutro, Per Martin Kristoffersen, Audny Anke1, Elina Iordanova Schistad, Jan Sture Skouen, Jens Ivar Brox, John-Anker Zwart, Kjersti Storheim and The AIM-study group

*"Clinical effect modifiers of antibiotic treatment in patients with chronic low back pain and Modic changes - secondary analyses of a randomised, placebocontrolled trial (the AIM study)"*

BMC, Musculoskeletal Disorders, 2020

Erland Hermansen · Ivar Magne Austevoll · Christian Hellum · Kjersti Storheim · Tor Åge Myklebust · Jørn Aaen· Hasan Banitalebi · Masoud Anvar · Frode Rekeland · Jens Ivar Brox · Eric Franssen ·

Clemens Weber · Tore Solberg · Knut Jørgen Haug· Oliver Grundnes · Helena Brisby · Kari Indrekvam.

*"Comparable increases in dural sac area after three different posterior decompression techniques for lumbar spinal stenosis: radiological results from a randomized controlled trial in the NORDSTEN study"*

Eur Spine Journal 2020.

### Funding

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





# Research in rheumatological diseases – Diakonhjemmet Hospital



## Group Leaders

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

## Group Members

- Hilde Berner Hammer, Professor/consultant, MD
- Till Uhlig, Professor/MD
- Tore Kvien, Professor/MD
- Siri Lillegraven, Senior researcher, Head of clinical research unit, MD
- Sella Provan, Professor/consultant, MD
- Anne Grete Semb, senior researcher, MD (cardiologist)
- Ingvild Kjeken, Professor/OT
- Hanne Dagfinnrud, Professor/PT
- Ida K Haugen, Senior researcher, MD
- Anna Birgitte Aga, Postdoctoral fellow/consultant, MD
- Silje Syversen, Postdoctoral fellow/consultant, MD
- Guro Løvik Goll, Postdoctoral fellow/consultant, MD
- Marte Schrumf Heiberg, 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
- Heidi Zangi, researcher/RN
- Rikke Moe, researcher/PT
- Numerous PhD fellows

## Research profile and aims

The research group's main interests are inflammatory joint disease and hand osteoarthritis. The focus is on development and evaluation of novel treatment and treatment strategies. In addition, the group aims to expand the knowledge of the disease and treatment associated outcomes.

The research aim is to improve the lives of people with rheumatic diseases through innovative, patient-centered research. The vision is to conduct patient-centered research to advance clinical practice. Through high-quality clinical trials, that evaluate the effect of personalized treatment strategies, novel drugs, surgical procedures, intra-articular injections and non-pharmacological interventions, the research group looks to improve patient care and treatment outcomes.





## 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)
- Post-hoc analyses from many observational and RCT studies
- NOKAR-project (Prevention of cardiovascular disease in RA)

## Most important national and international collaborators

### National

- Most rheumatological departments

### 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

## Scientific production of the research group in 2020

### Dissertation:

Nina Beate Paulshus Sundlisæter; "*Remission in early rheumatoid arthritis - Predictors, definitions and treatment*"

Peer reviewed original research articles: 53

### Selected publications:

Hammer HB, Karoliussen L, Terslev L, Haavardsholm EA, Kvien TK, Uhlig T. (2020) "Ultrasound shows rapid reduction of crystal depositions during a treat-to-target approach in gout patients: 12-month results from the NOR-Gout study" Ann Rheum Dis. 2020 Nov;79(11):1500-1505. doi:10.1136/annrheumdis-2020-217392. Epub 2020 Jul 15. PMID: 32669301.





Goll GL, Kvien TK. (2020)

"What Next after Biologic Therapy Fails in Rheumatoid Arthritis?"

N Engl J Med. 2020 Oct 15;383(16):1588-1589.

doi: 10.1056/NEJM2026142.PMID: 33053290

Hetland ML, Haavardsholm EA, Rudin A, Nordström D, Nurmohamed M, Gudbjornsson B, Lampa J, Hørslev-Petersen K, Uhlig T, Grondal G, Østergaard M, Heiberg MS, Twisk J, Lend K, Krabbe S, Hyldstrup LH, Lindqvist J, Hultgård Ekwall AK, Grøn KL, Kapetanovic M, Faustini F, Tuompo R, Lorenzen T, Cagnotto G, Baecklund E, Hendricks O, Vedder D, Sokka-Isler T, Husmark T, Ljoså MA, Brodin E, Ellingsen T, Söderbergh A, Rizk M, Olsson ÅR, Larsson P, Uhrenholt L, Just SA, Stevens DJ, Laurberg TB, Bakland G, Olsen IC, van Vollenhoven R; NORD-STAR study group. (2021)

*"Active conventional treatment and three different biological treatments in early rheumatoid arthritis: phase IV investigator initiated, randomised, observer blinded clinical trial"*

BMJ. 2020 Dec 2;371:m4328.

doi: 10.1136/bmj.m4328.PMID: 33268527

## Funding

- Southern and Eastern Norway Regional Health Authority
- The Research Council of Norway
- KLINBEFORSK





## Publication list OPK research groups 2020

Aae TF, Lian ØB, Årøen A, Engebretsen L, Randsborg PH (2020)  
Compensation claims after knee cartilage surgery is rare. A registry-based study from Scandinavia from 2010 to 2015  
BMC Musculoskelet Disord, 21 (1), 287  
DOI [10.1186/s12891-020-03311-4](https://doi.org/10.1186/s12891-020-03311-4), PubMed [32384890](https://pubmed.ncbi.nlm.nih.gov/32384890/)

Aase K, Guise V, Billett S, Sollid SJM, Njå O, Røise O, Manser T, Anderson JE, Wiig S (2020)  
Resilience in Healthcare (RiH): a longitudinal research programme protocol  
BMJ Open, 10 (10), e038779  
DOI [10.1136/bmjopen-2020-038779](https://doi.org/10.1136/bmjopen-2020-038779), PubMed [33109657](https://pubmed.ncbi.nlm.nih.gov/33109657/)

Abdalkader M, Guermazi A, Engebretsen L, Roemer FW, Jarraya M, Hayashi D, Crema MD, Mian AZ (2020)  
MRI-detected spinal disc degenerative changes in athletes participating in the Rio de Janeiro 2016 Summer Olympics games  
BMC Musculoskelet Disord, 21 (1), 45  
DOI [10.1186/s12891-020-3057-3](https://doi.org/10.1186/s12891-020-3057-3), PubMed [31959161](https://pubmed.ncbi.nlm.nih.gov/31959161/)

Acharya RS, Tveter AT, Grotle M, Khadgi B, Koju R, Eberhard-Gran M, Stuge B (2020)  
Cross-Cultural Adaptation and Validation of the Nepali Version of the Pelvic Girdle Questionnaire  
J Manipulative Physiol Ther, 43 (3), 257-265  
DOI [10.1016/j.jmpt.2019.04.009](https://doi.org/10.1016/j.jmpt.2019.04.009), PubMed [32739042](https://pubmed.ncbi.nlm.nih.gov/32739042/)

Afaq S, O'Hara NN, Schemitsch EH, Bzovsky S, Sprague S, Poolman RW, Frihagen F, Heels-Ansdel D, Bhandari M, Swionkowski M, Slobogean GP, FAITH Investigators, HEALTH Investigators (2020)  
Arthroplasty Versus Internal Fixation for the Treatment of Undisplaced Femoral Neck Fractures: A Retrospective Cohort Study  
J Orthop Trauma, 34 Suppl 3, S9-S14  
DOI [10.1097/BOT.0000000000001940](https://doi.org/10.1097/BOT.0000000000001940), PubMed [33027160](https://pubmed.ncbi.nlm.nih.gov/33027160/)

Ahmad Z, Murakami AM, Engebretsen L, Jarraya M, Roemer FW, Guermazi A, Kompel AJ (2020)  
Knee cartilage damage and concomitant internal derangement on MRI in athletes competing at the Rio de Janeiro 2016 Summer Olympics  
Eur J Radiol Open, 7, 100258  
DOI [10.1016/j.ejro.2020.100258](https://doi.org/10.1016/j.ejro.2020.100258), PubMed [32984449](https://pubmed.ncbi.nlm.nih.gov/32984449/)

Arhos EK, Thoma LM, Grindem H, Logerstedt D, Risberg MA, Snyder-Mackler L (2020)  
Association of Quadriceps Strength Symmetry and Surgical Status with Clinical Osteoarthritis 5 Years after Anterior Cruciate Ligament Rupture  
Arthritis Care Res (Hoboken) (in press)  
DOI [10.1002/acr.24479](https://doi.org/10.1002/acr.24479), PubMed [33026698](https://pubmed.ncbi.nlm.nih.gov/33026698/)





Austevoll IM, Gjestad R, Solberg T, Storheim K, Brox JI, Hermansen E, Rekeland F, Indrekvam K, Hellum C (2020)

Comparative Effectiveness of Microdecompression Alone vs Decompression Plus Instrumented Fusion in Lumbar Degenerative Spondylolisthesis

JAMA Netw Open, 3 (9), e2015015

DOI [10.1001/jamanetworkopen.2020.15015](https://doi.org/10.1001/jamanetworkopen.2020.15015), PubMed [32910195](#)

Axelrod D, Comeau-Gauthier M, Bzovsky S, Schemitsch EH, Poolman RW, Frihagen F, Guerra-Farfán E, Heels-Ansdell D, Bhandari M, Sprague S, HEALTH Investigators (2020)

What Predicts Health-Related Quality of Life for Patients With Displaced Femoral Neck Fractures Managed With Arthroplasty? A Secondary Analysis of the HEALTH Trial

J Orthop Trauma, 34 Suppl 3, S29-S36

DOI [10.1097/BOT.0000000000001933](https://doi.org/10.1097/BOT.0000000000001933), PubMed [33027163](#)

Basso T, Dale H, Langvatn H, Lønne G, Skråmm I, Westberg M, Wik TS, Witsø E (2020)

Virus transmission during orthopaedic surgery on patients with COVID-19 - a brief narrative review

Acta Orthop, 91 (5), 534-537

DOI [10.1080/17453674.2020.1764234](https://doi.org/10.1080/17453674.2020.1764234), PubMed [32408845](#)

Berg B, Roos EM, Englund M, Kise NJ, Tiulpin A, Saarakkala S, Engebretsen L, Eftang CN, Holm I, Risberg MA (2020)

Development of osteoarthritis in patients with degenerative meniscal tears treated with exercise therapy or surgery: a randomized controlled trial

Osteoarthritis Cartilage, 28 (7), 897-906

DOI [10.1016/j.joca.2020.01.020](https://doi.org/10.1016/j.joca.2020.01.020), PubMed [32184135](#)

Blankstein M, Schemitsch EH, Bzovsky S, Axelrod D, Poolman RW, Frihagen F, Bhandari M, Swiontkowski M, Sprague S, Schottel PC, FAITH Investigators, HEALTH Investigators (2020)

The FAITH and HEALTH Trials: Are We Studying Different Hip Fracture Patient Populations?

J Orthop Trauma, 34 Suppl 3, S1-S8

DOI [10.1097/BOT.0000000000001930](https://doi.org/10.1097/BOT.0000000000001930), PubMed [33027159](#)

Blankstein M, Schemitsch EH, Bzovsky S, Poolman RW, Frihagen F, Axelrod D, Heels-Ansdell D, Bhandari M, Sprague S, Schottel PC, HEALTH Investigators (2020)

What Factors Increase Revision Surgery Risk When Treating Displaced Femoral Neck Fractures With Arthroplasty: A Secondary Analysis of the HEALTH Trial

J Orthop Trauma, 34 Suppl 3, S49-S54

DOI [10.1097/BOT.0000000000001936](https://doi.org/10.1097/BOT.0000000000001936), PubMed [33027166](#)

Bråten LCH, Grøvle L, Espeland A, Pripp AH, Grotle M, Hellum C, Haugen AJ, Froholdt A, Rolfsen MP, Nygaard ØP, Lutro O, Kristoffersen PM, Anke A, Schistad EI, Skouen JS, Brox JI, Zwart JA, Storheim K, AIM-study group (2020)

Clinical effect modifiers of antibiotic treatment in patients with chronic low back pain and Modic changes - secondary analyses of a randomised, placebo-controlled trial (the AIM study)

BMC Musculoskelet Disord, 21 (1), 458

DOI [10.1186/s12891-020-03422-y](https://doi.org/10.1186/s12891-020-03422-y), PubMed [32660517](#)





Brattgjerd JE, Steen H, Strømsøe K (2020)

Increased stability by a novel femoral neck interlocking plate compared to conventional fixation methods. A biomechanical study in synthetic bone

Clin Biomech (Bristol, Avon), 76, 104995

DOI [10.1016/j.clinbiomech.2020.104995](https://doi.org/10.1016/j.clinbiomech.2020.104995), PubMed [32416403](#)

Bredesen IM (2020)

Interface Pressures of New and Worn Standard and Viscoelastic Hospital Mattresses: A Comparative Study

Wound Manag Prev, 66 (8), 26-31

DOI [10.2527/wmp.2020.8.2631](https://doi.org/10.2527/wmp.2020.8.2631), PubMed [32732440](#)

Brox JI, Skare Ø, Mowinckel P, Brox JS, Reikerås O, Schrøder CP (2020)

Sick leave and return to work after surgery for type II SLAP lesions of the shoulder: a secondary analysis of a randomised sham-controlled study

BMJ Open, 10 (4), e035259

DOI [10.1136/bmjopen-2019-035259](https://doi.org/10.1136/bmjopen-2019-035259), PubMed [32241790](#)

Bzovsky S, Comeau-Gauthier M, Schemitsch EH, Swionkowski M, Heels-Ansdell D, Frihagen F, Bhandari M, Sprague S, FAITH Investigators, HEALTH Investigators (2020)

Factors Associated With Mortality After Surgical Management of Femoral Neck Fractures

J Orthop Trauma, 34 Suppl 3, S15-S21

DOI [10.1097/BOT.0000000000001937](https://doi.org/10.1097/BOT.0000000000001937), PubMed [33027161](#)

Christensen L, Vøllestad NK, Veierød MB, Jakobsen VE, Stuge B, Bakke ES, Cabri J, Robinson HS (2020)

Trunk, pelvic and hip kinematics during the Stork test in pregnant women with pelvic girdle pain, asymptomatic pregnant and non-pregnant women

Clin Biomech (Bristol, Avon), 80, 105168

DOI [10.1016/j.clinbiomech.2020.105168](https://doi.org/10.1016/j.clinbiomech.2020.105168), PubMed [32920251](#)

Cuevas-Østrem M, Røise O, Wisborg T, Jeppesen E (2020)

Epidemiology of geriatric trauma patients in Norway: A nationwide analysis of Norwegian Trauma Registry data, 2015-2018. A retrospective cohort study

Injury, 52 (3), 450-459

DOI [10.1016/j.injury.2020.11.007](https://doi.org/10.1016/j.injury.2020.11.007), PubMed [33243523](#)

Cuevas-Østrem M, Røise O, Wisborg T, Jeppesen E (2020)

Geriatric Trauma - A Rising Tide. Assessing Patient Safety Challenges in a Vulnerable Population Using Norwegian Trauma Registry Data and Focus Group Interviews: Protocol for a Mixed Methods Study

JMIR Res Protoc, 9 (4), e15722

DOI [10.2196/15722](https://doi.org/10.2196/15722), PubMed [32352386](#)

Dale H, Høvdig P, Tveit SM, Graff JB, Lutro O, Schrama JC, Wik TS, Skråmm I, Westberg M, Fenstad AM, Hallan G, Engesaeter LB, Furnes O (2020)

Increasing but levelling out risk of revision due to infection after total hip arthroplasty: a study on 108,854 primary THAs in the Norwegian Arthroplasty Register from 2005 to 2019

Acta Orthop

DOI [10.1080/17453674.2020.1851533](https://doi.org/10.1080/17453674.2020.1851533), PubMed [33228428](#)





DePhillipo NN, Dornan GJ, Dekker TJ, Aman ZS, Engebretsen L, LaPrade RF (2020)  
Clinical Characteristics and Outcomes After Primary ACL Reconstruction and Meniscus Ramp Repair  
Orthop J Sports Med, 8 (4), 2325967120912427  
DOI [10.1177/2325967120912427](https://doi.org/10.1177/2325967120912427), PubMed [32426400](https://pubmed.ncbi.nlm.nih.gov/32426400/)

Diermeier T, Rothrauff BB, Engebretsen L, Lynch AD, Ayeni OR, Paterno MV, Xerogeanes JW, Fu FH, Karlsson J, Musahl V, Svantesson E, Hamrin Senorski E, Rauer T, Meredith SJ, Panther Symposium ACL Treatment Consensus Group (2020)  
Treatment after anterior cruciate ligament injury: Panther Symposium ACL Treatment Consensus Group  
Knee Surg Sports Traumatol Arthrosc, 28 (8), 2390-2402  
DOI [10.1007/s00167-020-06012-6](https://doi.org/10.1007/s00167-020-06012-6), PubMed [32388664](https://pubmed.ncbi.nlm.nih.gov/32388664/)

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Br J Sports Med, 55 (1), 14-22  
DOI [10.1136/bjsports-2020-102200](https://doi.org/10.1136/bjsports-2020-102200), PubMed [32661128](https://pubmed.ncbi.nlm.nih.gov/32661128/)

Eiding H, Røise O, Kongsgaard UE (2020)  
Potentially Severe Incidents During Interhospital Transport of Critically Ill Patients, Frequently Occurring But Rarely Reported: A Prospective Study  
J Patient Saf (in press)  
DOI [10.1097/PTS.0000000000000769](https://doi.org/10.1097/PTS.0000000000000769), PubMed [32910036](https://pubmed.ncbi.nlm.nih.gov/32910036/)

Ekås GR, Ardern CL, Grindem H, Engebretsen L (2020)  
Evidence too weak to guide surgical treatment decisions for anterior cruciate ligament injury: a systematic review of the risk of new meniscal tears after anterior cruciate ligament injury  
Br J Sports Med, 54 (9), 520-527  
DOI [10.1136/bjsports-2019-100956](https://doi.org/10.1136/bjsports-2019-100956), PubMed [31959673](https://pubmed.ncbi.nlm.nih.gov/31959673/)

Fosdahl MA, Jahnsen R, Pripp AH, Holm I (2020)  
Change in popliteal angle and hamstrings spasticity during childhood in ambulant children with spastic bilateral cerebral palsy. A register-based cohort study  
BMC Pediatr, 20 (1), 11  
DOI [10.1186/s12887-019-1891-y](https://doi.org/10.1186/s12887-019-1891-y), PubMed [31914961](https://pubmed.ncbi.nlm.nih.gov/31914961/)

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Reverse Shoulder Arthroplasty Is Superior to Plate Fixation at 2 Years for Displaced Proximal Humeral Fractures in the Elderly: A Multicenter Randomized Controlled Trial  
J Bone Joint Surg Am, 102 (6), 477-485  
DOI [10.2106/JBJS.19.01071](https://doi.org/10.2106/JBJS.19.01071), PubMed [31977825](https://pubmed.ncbi.nlm.nih.gov/31977825/)





Frihagen F, Madsen JE, Sundfeldt M, Flugsrud GB, Andreassen JS, Andersen MR, Andreassen GS (2020) Taylor Spatial Frame or Reamed Intramedullary Nailing for Closed Fractures of the Tibial Shaft: A Randomized Controlled Trial  
*J Orthop Trauma*, 34 (11), 612-619  
DOI [10.1097/BOT.0000000000001802](https://doi.org/10.1097/BOT.0000000000001802), PubMed [33065663](https://pubmed.ncbi.nlm.nih.gov/33065663/)

Furunes H, Berg L, Espeland A, Thoresen H, Neckelmann G, Brøgger HM, Småstuen MC, Brox JI, Storheim K, Hellum C (2020)  
Facet Arthropathy Following Disc Replacement Versus Rehabilitation: A Prospective Study With 8-Year Follow-Up  
*Spine (Phila Pa 1976)*, 45 (21), 1467-1475  
DOI [10.1097/BRS.0000000000003600](https://doi.org/10.1097/BRS.0000000000003600), PubMed [32694494](https://pubmed.ncbi.nlm.nih.gov/32694494/)

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Activity and functional readiness, not age, are the critical factors for second anterior cruciate ligament injury - the Delaware-Oslo ACL cohort study  
*Br J Sports Med*, 54 (18), 1099-1102  
DOI [10.1136/bjsports-2019-100623](https://doi.org/10.1136/bjsports-2019-100623), PubMed [32046955](https://pubmed.ncbi.nlm.nih.gov/32046955/)

Grün W, Molund M, Nilsen F, Stødle AH (2020)  
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DOI [10.1016/j.clinbiomech.2020.105026](https://doi.org/10.1016/j.clinbiomech.2020.105026), PubMed [32388494](https://pubmed.ncbi.nlm.nih.gov/32388494/)

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## Publication list Diakonhjemmet hospital 2020

1. PMID: 33268527

Active conventional treatment and three different biological treatments in early rheumatoid arthritis: phase IV investigator initiated, randomised, observer blinded clinical trial.

Hetland ML, Haavardsholm EA, Rudin A, Nordström D, Nurmohamed M, Gudbjornsson B, Lampa J, Hørslev-Petersen K, Uhlig T, Grondal G, Østergaard M, Heiberg MS, Twisk J, Lend K, Krabbe S, Hyldstrup LH, Lindqvist J, Hultgård Ekwall AK, Grøn KL, Kapetanovic M, Faustini F, Tuompo R, Lorenzen T, Cagnotto G, Baecklund E, Hendricks O, Vedder D, Sokka-Isler T, Husmark T, Ljoså MA, Brodin E, Ellingsen T, Söderbergh A, Rizk M, Olsson ÅR, Larsson P, Uhrenholt L, Just SA, Stevens DJ, Laurberg TB, Bakland G, Olsen IC, van Vollenhoven R; NORD-STAR study group.*BMJ*. 2020 Dec 2;371:m4328. doi: 10.1136/bmj.m4328. PMID: 33268527 **Free PMC article.** Clinical Trial.

2. PMID: 33227175

Secukinumab Provides Sustained Reduction in Fatigue in Patients with Ankylosing Spondylitis: Long-term Results of Two Phase III Randomized Controlled Trials.

Kvien TK, Conaghan PG, Gossec L, Strand V, Østergaard M, Poddubnyy D, Williams N, Porter B, Shete A, Gilloteau I, Deodhar A. *Arthritis Care Res (Hoboken)*. 2020 Nov 23. doi: 10.1002/acr.24517. Online ahead of print. PMID: 33227175

3. PMID: 33214326

Trajectories of fatigue in actively treated patients with established rheumatoid arthritis starting biologic DMARD therapy.

Provan SA, Michelsen B, Sexton J, Uhlig T, Hammer HB. *RMD Open*. 2020 Nov;6(3):e001372. doi: 10.1136/rmdopen-2020-001372. PMID: 33214326 **Free PMC article.**

4. PMID: 33087100

The effect of infliximab in patients with chronic low back pain and Modic changes (the BackToBasic study): study protocol of a randomized, double blind, placebo-controlled, multicenter trial.

Gjefsen E, Bråten LCH, Goll GL, Wigemyr M, Bolstad N, Valberg M, Schistad EI, Marchand GH, Granviken F, Selmer KK, Froholdt A, Haugen AJ, Dagestad MH, Vetti N, Bakland G, Lie BA, Haavardsholm EA, Nilsen AT, Holmgard TE, Kadar TI, Kvien T, Skouen JS, Grøvle L, Brox JI, Espeland A, Storheim K, Zwart JA. *BMC Musculoskelet Disord*. 2020 Oct 21;21(1):698. doi: 10.1186/s12891-020-03720-5. PMID: 33087100 **Free PMC article.**

5. PMID: 33053290

What Next after Biologic Therapy Fails in Rheumatoid Arthritis?

Goll GL, Kvien TK. *N Engl J Med*. 2020 Oct 15;383(16):1588-1589. doi: 10.1056/NEJMMe2026142. PMID: 33053290 No abstract available.





6. PMID: 33040226

Fatigue is cross-sectionally not associated with objective assessments of inflammation, but changes in fatigue are associated with changes of disease activity assessments during biologic treatment of patients with established rheumatoid arthritis.

Hammer HB, Michelsen B, Sexton J, Uhlig T, Provan SA. *Clin Rheumatol*. 2020 Oct 11. doi: 10.1007/s10067-020-05402-y. Online ahead of print. PMID: 33040226

7. PMID: 32994160

Response to: 'Correspondence on 'Ultrasound shows rapid reduction of crystal depositions during a treat-to-target approach in gout patients: 12-month results from the NOR-Gout study' by Hung et al.  
Hammer HB, Karoliussen LF, Terslev L, Haavardsholm EA, Kvien TK, Uhlig T. *Ann Rheum Dis*. 2020 Sep 29:annrheumdis-2020-218908. doi: 10.1136/annrheumdis-2020-218908. Online ahead of print. PMID: 32994160 No abstract available.

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Ranganath VK, Hammer HB, McQueen FM. *Best Pract Res Clin Rheumatol*. 2020 Dec;34(6):101593. doi: 10.1016/j.bepr.2020.101593. Epub 2020 Sep 26. PMID: 32988757 Review.

9. PMID: 32965617

Efficacy and Safety of CT-P13 in Inflammatory Bowel Disease after Switching from Originator Infliximab: Exploratory Analyses from the NOR-SWITCH Main and Extension Trials.

Jørgensen KK, Goll GL, Sexton J, Bolstad N, Olsen IC, Asak Ø, Berset IP, Blomgren IM, Dvergsnes K, Florholmen J, Frigstad SO, Henriksen M, Hagfors J, Huppertz-Hauss G, Haavardsholm EA, Klaasen RA, Moum B, Noraberg G, Prestegård U, Rydning JH, Sagatun L, Seeberg KA, Torp R, Vold C, Warren DJ, Ystrøm CM, Lundin KEA, Kvien T, Jahnsen J. *BioDrugs*. 2020 Oct;34(5):681-694. doi: 10.1007/s40259-020-00438-7. PMID: 32965617 **Free PMC article.**

10. PMID: 32950963

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Michelsen B, Lindström U, Codreanu C, Ciurea A, Zavada J, Loft AG, Pombo-Suarez M, Onen F, Kvien TK, Rotar Z, Santos MJ, Iannone F, Hokkanen AM, Gudbjornsson B, Askling J, Ionescu R, Nissen MJ, Pavelka K, Sanchez-Piedra C, Akar S, Sexton J, Tomsic M, Santos H, Sebastiani M, Österlund J, Geirsson AJ, Macfarlane G, van der Horst-Bruinsma I, Georgiadis S, Brahe CH, Ørnberg LM, Hetland ML, Østergaard M. *RMD Open*. 2020 Sep;6(3):e001280. doi: 10.1136/rmdopen-2020-001280. PMID: 32950963 **Free PMC article.**





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[Attainment of the Patient-acceptable Symptom State in 548 patients with rheumatoid arthritis: Influence of demographic factors.](#)

Duarte C, Santos E, Kvien TK, Dougados M, de Wit M, Gossec L, da Silva JAP. *Joint Bone Spine*. 2021 Jan;88(1):105071. doi: 10.1016/j.jbspin.2020.09.003. Epub 2020 Sep 10. PMID: 32920168

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Meisters R, Putrik P, Ramiro S, Hifinger M, Keszei AP, van Eijk-Hustings Y, Woolf AD, Smolen JS, Stamm TA, Stoffer-Marx M, Uhlig T, Moe RH, de Wit M, Tafaj A, Mukuchyan V, Studenic P, Verschueren P, Shumnalieva R, Charalambous P, Vencovský J, Varvouni M, Kull M, Puolakka K, Gossec L, Gobejishvili N, Detert J, Sidiropoulos P, Péntek M, Kane D, Scirè CA, Arad U, Andersone D, van de Laar M, van der Helm-van Mil A, Głuszko P, Cunha-Miranda L, Berghea F, Damjanov NS, Tomšič M, Carmona L, Turesson C, Ciurea A, Shukurova S, Inanc N, Verstappen SM, Boonen A; Working group. *Ann Rheum Dis*. 2020 Nov;79(11):1423-1431. doi: 10.1136/annrheumdis-2020-217520. Epub 2020 Sep 1. PMID: 32873554

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[Considerations for improving quality of care of patients with rheumatoid arthritis and associated comorbidities.](#)

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[Synovial hypertrophy without Doppler in the feet changes during treatment: results from a longitudinal study of rheumatoid arthritis patients initiating biological treatment.](#)

Terslev L, Østergaard M, Sexton J, Hammer HB.*Rheumatology (Oxford)*. 2020 Jul 1;59(7):1796. doi: 10.1093/rheumatology/keaa024. PMID: 32073642 No abstract available.

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[Therapeutic drug monitoring of infliximab compared to standard clinical treatment with infliximab: study protocol for a randomised, controlled, open, parallel-group, phase IV study \(the NOR-DRUM study\).](#)

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[Associations Between Radiographic and Ultrasound-Detected Features in Hand Osteoarthritis and Local Pressure Pain Thresholds.](#)

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[Outcomes and Findings of the International Rheumatoid Arthritis \(RA\) BIODAM Cohort for Validation of Soluble Biomarkers in RA.](#)

Maksymowych WP, FitzGerald O, Østergaard M, Homik J, van der Heijde D, Lambert RG, Elkayam O, Ramiro S, Thorne JC, Larché MJ, Ferraccioli G, Backhaus M, Burmester GR, Boire G, Combe B, Schaeverbeke T, Saraux A, Dougados M, Rossini M, Govoni M, Sinigaglia L, Cantagrel A, Barnabe C, Bingham CO 3rd, Tak PP, van Schaardenburg D, Hammer HB, Paschke J, Dadashova R, Hutchings E, Sepriano A, Landewé R. *J Rheumatol*. 2020 Jun 1;47(6):796-808. doi: 10.3899/jrheum.190302. Epub 2019 Sep 1. PMID: 31474600

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Fjellstad CM, Mathiessen A, Slatkowsky-Christensen B, Kvien TK, Hammer HB, Haugen IK. *Arthritis Care Res (Hoboken)*. 2020 Nov;72(11):1530-1535. doi: 10.1002/acr.24047. PMID: 31421023

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