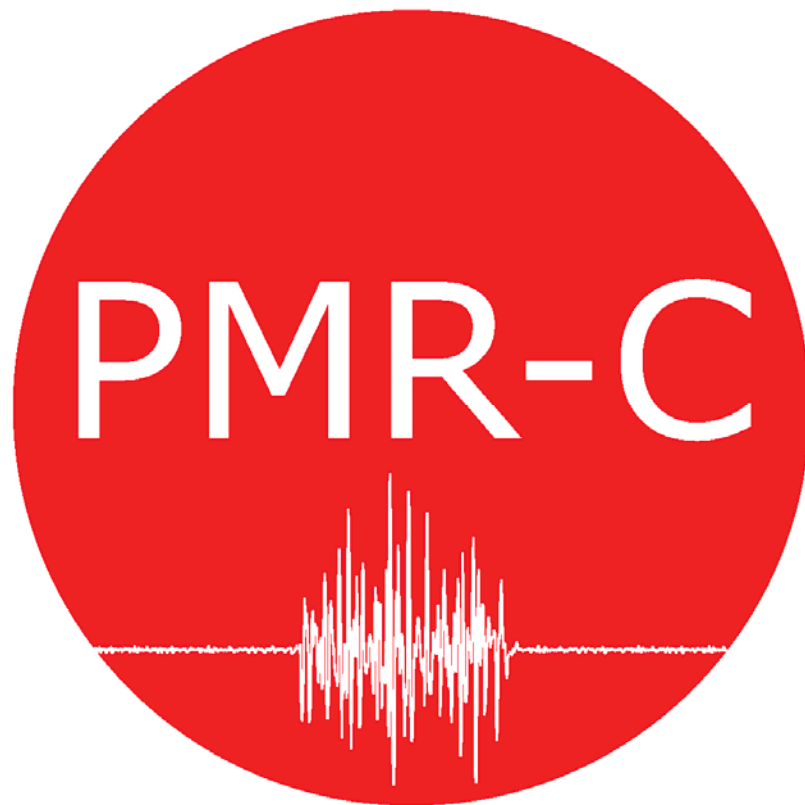


# Annual report 2014

Physical Medicine & Rehabilitation Research –  
Copenhagen (PMR-C)

[www.pmrc.dk](http://www.pmrc.dk), [twitter@PhysMed\\_CPH](https://twitter.com/PhysMed_CPH)



Hvidovre Hospital, University of Copenhagen, DENMARK

## 1. ABOUT

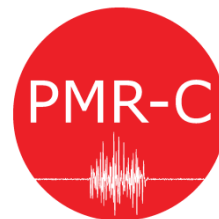
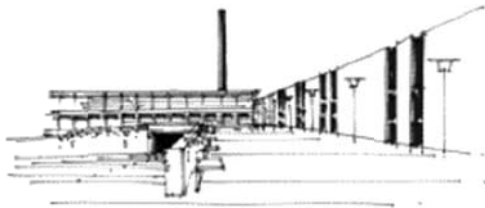
Physical Medicine & Rehabilitation Research – Copenhagen (PMR-C) is a multidisciplinary research program in physical medicine and rehabilitation, based in Copenhagen, Denmark. PMR-C is the research division of the Department of Physical- and Occupational Therapy at Hvidovre Hospital, University of Copenhagen, Denmark. The core of PMR-C is an extensive collaboration between three departments at the hospital: Department of Physical- and Occupational Therapy, Department of Orthopedic Surgery, and Clinical Research Centre. The hospital is well known for a broad clinical research within enhanced recovery after surgery, and the research focus of PMR-C is inspired by this research tradition.

**The main research focus of PMR-C is the use of physical medicine to enhance recovery in patients, or to prevent injury or disease. Our approach is clinical, but we also conduct basic research to investigate mechanisms and research to develop new outcome measures.**

PMR-C was initiated by Thomas Bandholm, Morten Tange Kristensen and Kristian Thorborg, and was formally established in 2013 in collaboration with Jette Christensen, Head of the Department of Physical- and Occupational Therapy, Peter Gebuhr, Head of the Department of Orthopedic Surgery, and Ove Andersen, Head of Clinical Research Centre, Hvidovre Hospital, University of Copenhagen. These six people form the PMR-C steering committee. Finally, four highly esteemed researchers form an advisory board that advises the steering committee in the management of PMR-C.

## 2. MAIN ACHIEVEMENTS IN 2014

Firstly, PMR-C became part of a Copenhagen-based International Olympic Committee Research Centre into Injury Prevention and Athlete Protection. Nine such centres exist worldwide. Secondly, PMR-C held its second annual research symposium in collaboration with the Metropolitan University College in Copenhagen with around 500 people attending. Finally, PMR-C head Jette Christensen was awarded the Danish Physical Therapy Organization's 2014-prize.



### 3. PEOPLE

**Jette Christensen:** Ms Christensen is Head of PMR-C and Head of the Department of Physical- and Occupational Therapy. Curriculum and list of publications can be found at [pmrc.dk/people](http://pmrc.dk/people).

**Thomas Bandholm:** Dr. Bandholm is a senior researcher and research coordinator at PMR-C, and an Associate Professor with the Department of Clinical Medicine, University of Copenhagen. He is responsible for enhanced recovery program research in patients following total hip and knee arthroplasties and acute hospitalization for medical illnesses in older patients at PMR-C. Dr. Bandholm has published more than 50 international peer-reviewed papers since 2006. Curriculum and list of publications can be found at [pmrc.dk/people](http://pmrc.dk/people).

**Morten Tange Kristensen:** Dr. Kristensen is a senior researcher at PMR-C. He is responsible for enhanced recovery program research in patients with hip fracture and lower limb amputations at PMR-C. Dr. Kristensen has published more than 30 peer-reviewed papers since 2005. Curriculum and list of publications can be found at [pmrc.dk/people](http://pmrc.dk/people).

**Kristian Thorborg:** Dr. Thorborg is a senior researcher at PMR-C and an Associate Professor with the Department of Clinical Medicine, University of Copenhagen. He is responsible for sports medicine research at PMR-C. Dr. Thorborg has published 48 peer-reviewed papers since 2010. Curriculum and list of publications can be found at [pmrc.dk/people](http://pmrc.dk/people).

#### Visiting researchers

**Professor Peter McNair:** Professor McNair visited PMR-C during 2014 to establish the collaborate work outlined for Thomas Linding Jacobsen's Post Doc. Dr. McNair is Professor at Auckland University of Technology, Auckland, New Zealand.

**Dr. David Opar:** Dr. Opar visited PMR-C during 2014 to establish collaborate work on hamstring and ACL injury prevention and rehabilitation. Dr. Opar is a researcher at the Australian Catholic University, Melbourne, Australia.

**Dr. Theresa Holmgren:** Dr. Holmgren visited PMR\_C during 2014, as an invited speaker at the 2<sup>nd</sup> PMR-C symposium on shoulder disorders. Dr. Holmgren is a researcher and clinician at Linköping University Hospital, Sweden.

#### Completed theses

**Patrocinio Ariza-Vega:** PhD-thesis, University of Granada, Spain. Project title: Hip fracture in the elderly: outcomes and associated factors (Morten Tange Kristensen, co-supervisor).

**Sonia Branci:** PhD-thesis, University of Copenhagen, Denmark. Project title: Standardised MRI evaluation of soccer players with longstanding groin pain: Evidence, development and clinical significance (Kristian Thorborg, co-supervisor).

**Louisa Wilquin:** MSc-thesis, University of Southern Denmark. Project title: Rapid knee-extensions to increase quadriceps muscle activity after total knee arthroplasty: a randomized cross-over study (Thomas Bandholm, co-supervisor).

**Nadia Ørbæk:** MSc-thesis, University of Southern Denmark. Project title: Patient experiences of the rehabilitation program provided in-hospital and municipalities in patients with hip fracture (Morten Tange Kristensen, co-supervisor).

**Linette Kofoed:** MSc-thesis, University of Southern Denmark. Project title: Resistance training with ankle weight cuffs is feasible during acute exacerbation in patients with COPD (Morten Tange Kristensen, co-supervisor).

**Elisabeth Marie Ginnerup-Nielsen:** MSc thesis, University of Copenhagen. Project title: Effect of physiotherapy on pain – a systematic review with meta-analysis. (Kristian Thorborg, faculty supervisor).

**Jan Overgaard:** MSc-thesis, University of Southern Denmark. Project title: Inter-rater reliability and agreement of the 6-minute walk test in women with hip fractures. (Morten Tange Kristensen, co-supervisor).

## PhD-students

**Lise Kronborg:** Ms Kronborg is a PhD-student at PMR-C and enrolled at University of Copenhagen. Her PhD deals with in-hospital exercise to enhance recovery following a hip fracture (Morten Tange Kristensen, faculty supervisor, Thomas Bandholm co-supervisor).

**Mette Merete Pedersen:** Ms Pedersen is a PhD-student at PMR-C, co-affiliated with Optimized Senior Patient Programme (OPTIMED), and enrolled at University of Copenhagen. Her PhD deals with exercise to prevent functional decline following acute hospitalization for a medical illness in older patients (Thomas Bandholm, faculty supervisor).

**Christine Bodilsen:** Ms Bodilsen is a PhD-student at PMR-C, co-affiliated with Optimized Senior Patient Programme (OPTIMED), and enrolled at University of Copenhagen. Her PhD deals with prediction of low functional performance following acute hospitalization for a medical illness in older patients (Thomas Bandholm, faculty supervisor).

**Dorte Melgaard:** Ms Melgaard is a PhD-student at Center for Clinical Research, Vendsyssel Hospital, Department of Clinical Medicine, Aalborg University, enrolled at University of Aalborg, and co-affiliated with PMR-C. Her PhD focuses on how a therapeutic intervention can optimize the treatment of patients with community-acquired pneumonia (Morten Tange Kristensen co-supervisor).

**Helle Gybel Juul-Larsen:** Ms. Juul-Larsen is a PhD-student with Optimized Senior Patient Programme (OPTIMED), enrolled at the University of Copenhagen, and co-affiliated with PMR-C. Her PhD deals with multimorbidity-grouping based on disease patterns to optimizing disease management programs for elderly patients with several chronic diseases (Thomas Bandholm, co-supervisor).

**Derek Curtis:** Mr. Curtis is a PhD-student at PMR-C, co-affiliated with Gait Analysis Laboratory, Department of Orthopedic Surgery, Copenhagen University Hospital, Hvidovre, and enrolled at University of Copenhagen. His PhD deals with exercise to improve functional performance in children with cerebral palsy (external supervisors).

**Ilija Ban:** Mr. Ban is a PhD-student at Clinical Orthopedic Research Hvidovre (CORH), Department of Orthopedic Surgery, Copenhagen University Hospital, Hvidovre, enrolled at University of Copenhagen, and co-affiliated with PMR-C. His PhD deals with examination of the optimal treatment of patients with displaced midshaft clavicle fractures (Morten Tange Kristensen, co-supervisor).

**Christian Wied:** Mr. Wied is a PhD-student at Clinical Orthopedic Research Hvidovre (CORH), Department of Orthopedic Surgery, Copenhagen University Hospital, Hvidovre, enrolled at University of Copenhagen, and co-affiliated with PMR-C. His PhD deals with examination of peri-operative bleeding and effect of blood-sparing interventions in patients with lower extremity amputations (Morten Tange Kristensen, co-supervisor).

### **MSc-students**

**Maria Svennergren:** Ms Svennergren is an MSc-student at PMR-C, and enrolled at Lund University. Her MSc deals with the development of a measure of Achilles tendon length (Morten Tange Kristensen, faculty-supervisor).

#### **4. ADVISORY BOARD**

The PMR-C is proud to have an advisory board of highly esteemed researchers to advise the management of PMR-C. The members of the PMR-C advisory board are listed below. Their biographies can be found at [pmrc.dk/advisory-board/](http://pmrc.dk/advisory-board/)

**Per Hölmich, Associate Professor, MD**

Professor Hölmich is Head of Arthroscopic Centre Amager, Hvidovre Hospital, Copenhagen, Denmark.

**Henrik Kehlet, Professor, Dr Med Sci**

Professor Kehlet is Head of The Lundbeck Foundation Centre for Fast-Track Hip and Knee Arthroplasty and Section of Surgical Pathophysiology, Rigshospitalet, Copenhagen, Denmark.

**Michael Kjær, Professor, Dr Med Sci**

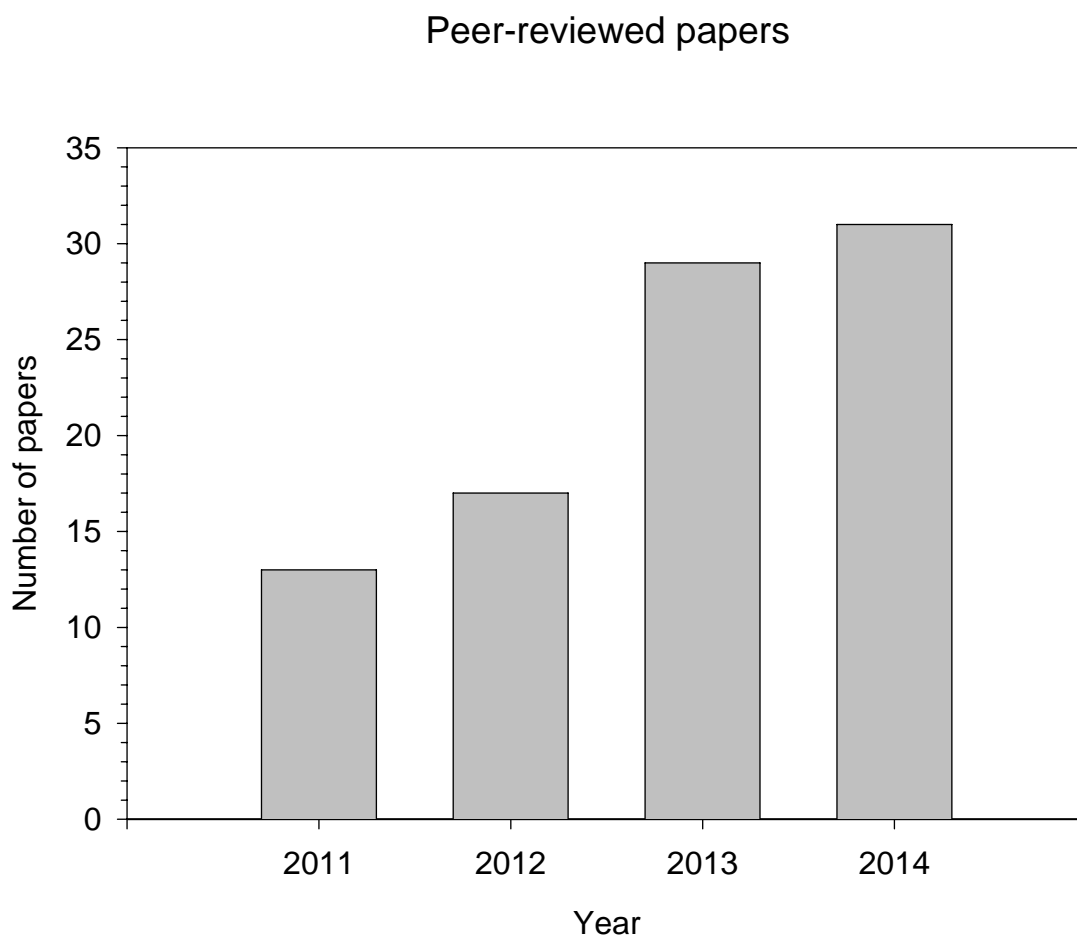
Professor Kjær is Head of Institute of Sports Medicine – Copenhagen, Bispebjerg Hospital, Copenhagen, Denmark.

**Jens Bo Nielsen, Professor, Dr Med Sci**

Professor Nielsen is Head of Neural Control of Movement – Copenhagen, University of Copenhagen, Copenhagen, Denmark.

## 5. PUBLICATIONS

People from PMR-C published 32 papers in 2014. Thank you to all our collaborators. Please see [pmrc.dk/collaborators](http://pmrc.dk/collaborators) for a list.



**Figure 1:** Trend in peer-reviewed papers. Status per January 1<sup>st</sup>, 2015.

## Published peer-review papers

Reiman MP, Goode AP, Cook CE, Hölmich P, Thorborg K (2014). Diagnostic accuracy of clinical tests for the diagnosis of hip femoroacetabular impingement/labral tear: a systematic review with meta-analysis. *Br J Sports Med* (Epub ahead of print).

Branci S, Thorborg K, Bech BH, Boesen M, Nielsen MB, Hölmich P (2014). MRI findings in soccer players with long-standing adductor-related groin pain and asymptomatic controls. *Br J Sports Med* (Epub ahead of print).

Branci S, Thorborg K, Bech BH, Boesen M, Magnussen E, Court-Payen M, Nielsen MB, Hölmich P (2014). The Copenhagen Standardised MRI protocol to assess the pubic symphysis and adductor regions of athletes: outline and intratester and intertester reliability. *Br J Sports Med* (Epub ahead of print).

Curtis DJ, Butler P, Saavedra S, Bencke J, Kallemose T, Sonne-Holm S, Woollacott M (2014). The central role of trunk control in the gross motor function of children with cerebral palsy: a retrospective cross-sectional study. *Dev Med Child Neurol* (Epub ahead of print).

Rathleff MS, Thorborg K, Rode LA, McGirr K, Sørensen AS, Bøggild A, Bandholm T (2014). Adherence to commonly prescribed, home-based strength training exercises for the lower extremity can be objectively monitored using the Bandcizer. *J Strength Cond Res* (Epub ahead of print).

Reiman MP, Thorborg K (2014). Clinical examination and physical assessment of hip joint-related pain in athletes. *Int J Sports Phys Ther* 9: 737-755.

Mikkelsen LR, Mechlenburg I, Søballe K, Jørgensen LB, Mikkelsen S, Bandholm T, Petersen AK (2014). Effect of early supervised progressive resistance training compared to unsupervised home-based exercise after fast-track total hip replacement applied to patients with preoperative functional limitations. A single-blinded randomised controlled trial. *Osteoarthritis Cartilage* 22: 2051-2058.

Jakobsen TL, Kehlet H, Husted H, Petersen J, Bandholm T (2014). Early progressive strength training to enhance recovery after fast-track total knee arthroplasty: a randomized controlled trial. *Arthritis Care Res* 66: 1856-1866.

Kristensen MT, Aagesen M, Hjerrild S, Larsen PLS, Hovmand B, Ban I (2014). Reliability and agreement between two strength devices used in the newly modified and standardized Constant score. *J Shoulder Elbow Surg* 23: 1806-12.

Curtis D, Bencke J, Mygind B (2014). The effect of training in an interactive dynamic stander on ankle dorsiflexion and gross motor function in children with cerebral palsy. *Dev Neurorehabil* 17: 393-397.

Holm B, Bandholm T, Lunn TH, Husted H, Aalund PK, Hansen TB, Kehlet H (2014). Role of preoperative pain, muscle function and activity level on discharge readiness after fast-track hip and knee arthroplasty. *Acta Orthop* 85: 488-492.



Ariza-Vega P, Jiminez-Moleon J, Kristensen MT (2014). Non Weight-Bearing Status Compromises the Functional Level up to 1 Yr after Hip Fracture Surgery. *Am J Phys Med Rehabil* 93: 641-648.

Jensen J, Bandholm T, Hölmich P, Thorborg K (2014). Acute and sub-acute effects of repetitive kicking on hip adduction torque in elite youth soccer players. *J Sports Sci* 32: 1357-1364.

Sundstrup E, Jakobsen MD, Andersen CH, Bandholm T, Thorborg K, Zebis MK, Andersen LL (2014). Evaluation of elastic bands for lower-extremity resistance training in adults with and without musculoskeletal pain. *Scand J Med Sci Sports* 24: e353-359.

Rathleff M, Richter C, Brushøj C, Bencke, J, Bandholm T, Hölmich P, Thorborg K (2014). Increased medial foot loading during drop jump in subjects with patellofemoral pain. *Knee Surg Sports Traumatol Arthrosc* 22: 2301-2307.

Ariza-Vega P, Jiminez-Moleon J, Kristensen MT (2014). Change of residence and functional status within three months and one year following hip fracture surgery. *Disabil Rehabil* 36: 685-690.

Kronborg L, Bandholm T, Palm H, Kehlet H, Kristensen MT (2014). Feasibility of progressive strength training implemented in the acute ward after hip fracture surgery. *PLoS One* 9: e93332.

Thorborg K, Branci S, Stensbirk F, Jensen J, Hölmich P (2014). Copenhagen hip and groin outcome score (HAGOS) in male soccer: Reference values for hip and groin injury-free players. *Br J Sports Med* 48: 557-559.

Petersen J, Thorborg K, Nielsen MB, Skjødt T, Bang N, Hölmich P (2013). The Diagnostic and Prognostic Value of Ultrasonography in Soccer Players with Acute Hamstring Injuries. *Am J Sports Med* 42: 399-404.

Thomeé R, Jónasson P, Thorborg K, Sansone M, Ahldén M, Thomeé C, Karlsson J, Baranto A (2014). Cross-cultural adaptation to Swedish and validation of the Copenhagen Hip and Groin Outcome Score (HAGOS) for pain, symptoms and physical function in patients with hip and groin disability due to femoro-acetabular impingement. *Knee Surg Sports Traumatol Arthrosc* 22: 835-842.

Dippmann C, Thorborg K, Kraemer O, Winge S, Holmich P (2014). Symptoms of nerve dysfunction after hip arthroscopy: An under-reported complication? *Arthroscopy* 30: 202-207.

Thorborg K and Holmich P (2014). Measurement qualities of hip and groin outcome scores: letter to the editor. *Am J Sports Med* 42: NP7-10.

Kristensen MT, Nielsen AØ, Topp UM, Jakobsen B, Nielsen KJ, Juul-Larsen HG, Jakobsen TL (2014). Number of test trials needed for performance stability and

interrater reliability of the one leg stand test in patients with a major non-traumatic lower limb amputation. *Gait Posture* 39: 424-429.

Bandholm T, Thorborg K, Lunn TH, Kehlet H, Jakobsen TL (2014). Knee pain during strength training shortly following total knee arthroplasty: a cross-sectional study. *PLoS One* 9: e91107.

Thorborg K (2014). What are the risk factors for hamstring muscle injury? *Clin J Sports Med* 24: 160-161.

Stensbirk F, Thorborg K, Konradsen L, Jørgensen U, Hölmich P (2014). Iliotibial band autograft versus Bone-patella-tendon-bone autograft, a possible alternative for ACL-reconstruction: A 15-year prospective randomized controlled trial. *Knee Surg Sports Traumatol Arthrosc* 22: 2094-2101.

Hölmich P, Thorborg K, Dehlendorff C, Gluud C (2014). Incidence and clinical presentation of groin injuries in sub-elite male soccer. *Br J Sports Med* 48: 1245-1250.

Hölmich P, Thorborg K, Nyvold P, Klit J, Nielsen MB, Troelsen A (2014). Does bony hip morphology affect the of treatment for patients with adductor-related groin pain? – Long term results of a randomized controlled trial. *Br J Sports Med* 48: 1240-1244.

Jensen J, Hölmich P, Bandholm T, Zebis MK, Andersen LL, Thorborg K (2014). Eccentric strengthening effect of training with elastic bands in soccer players: a randomized controlled trial. *Br J Sports Med* 48: 332-338.

Serner A, Jakobsen MD, Andersen LL, Hölmich P, Sundstrup E, Thorborg K (2014). EMG evaluation of hip adduction exercises for soccer players: implications for exercise selection in prevention and treatment of groin injuries. *Br J Sports Med* 48: 1108-1114.

Rathleff MS, Bandholm T, Ahrendt P, Olesen JL, Thorborg K (2014). Novel stretch-sensor technology allows quantification of adherence and quality of home-exercises: a validation study. *Br J Sports Med* 48: 724-728.

Thorborg K, Branci S, Nielsen MP, Tang L, Nielsen MB, Hölmich P. Eccentric and Isometric hip adduction strength in male soccer players with and without adductor-related groin pain. An assessor-blinded comparison. *Orthop J Sports Med* 2014; 2: 25–31.

## Book Chapters

Hölmich P and Thorborg K. Epidemiology of Groin injuries in Athletes. Sports hernia and athletic pubalgia. Diagnosis and treatment (eds.) Diduch DR and Brunt LM, 2014. Springer.

Twaddle B and Thorborg K. Groin Injuries. In Orthopedic rehabilitation of the Athlete (eds.) Reider, Davies and Provencher, 2014. Elsevier.

Thorborg K and Twaddle B. Non-operative rehabilitation of longstanding groin injury. Orthopedic rehabilitation of the Athlete (eds.) Reider, Davies and Provencher, 2014. Elsevier.

Twaddle B and Thorborg K. Post-operative rehabilitation after adductor release. Orthopedic rehabilitation of the Athlete (eds.) Reider, Davies and Provencher, 2014. Elsevier.

Thorborg K and Twaddle B. Beyond basic rehabilitation: Return to football (soccer) after treatment of acute groin injury. Orthopedic rehabilitation of the Athlete (eds.) Reider, Davies and Provencher, 2014. Elsevier.

## 6. IMPLEMENTATION OF RESEARCH

The Cumulated Ambulation Score developed by Morten Tange Kristensen and collaborators to assess basic mobility in patients with hip fracture was implemented in 2014 as a mandatory national hip fracture register-score (CAS is freely available via <http://bit.ly/1x4ZQpd>).

The Copenhagen Hip and Groin Outcome Score (HAGOS), developed by Kristian Thorborg and collaborators to assess patients' perception about their hip and/or groin disability and associated problems was translated to Arabic, Dutch, French, and Swedish in 2014 (HAGOS is freely available via [www.koos.nu](http://www.koos.nu)).

Kristian Thorborg was a member of the Consensus and Agreement Group, and Meeting in Doha 2014, for nomenclature and terminology of groin pain in athletes. The results of this meeting will be published in the British Journal of Sports Medicine in 2015.

## 7. RESEARCH GRANTS

With PMR-C acting as main or co-applicant, we received a total of 7,248,719.60 DKK (974,381 Euro) in 2014 from a variety of funding bodies. Thank you very much for the support. The funding bodies included:

The International Olympic Committee (IOC): 4-year grant to form a Copenhagen-based Research Centre for Injury Prevention and Athlete Protection. Co-applicants: Kristian Thorborg and Thomas Bandholm (2,400,000 DKK).

Danish Research Council: Multidimensional diagnostics and effect of activity modification in young adolescents with Patellofemoral Pain. Co-applicant: Kristian Thorborg (2,236,584 DKK).

University of Copenhagen (full PhD-scholarship): Epidemiological strategies for adapting Disease Management Programs to older persons with multimorbidity. Main applicant: Helle Gybel Juul-Larsen, enclosed CV from PMR-C supervisor: Thomas Bandholm (1,543,093 DKK).

The Research Foundation for Cross-Sectorial Research (Tværs-puljen): Exercise to enhance recovery from an acute medical admission in older patients. Main applicant: Thomas Bandholm (503,772.60 DKK).

The Lundbeck Foundation (UCSF): Quadriceps muscle inhibition after total knee arthroplasty: mechanisms and perspectives. Main applicant: Thomas Linding Jakobsen, enclosed CV from PMR-C supervisor: Thomas Bandholm (250,000 DKK).

The Rheumatism Association: Quadriceps muscle inhibition after total knee arthroplasty: mechanisms and perspectives. Main applicant: Thomas Bandholm (75,000 DKK).

Danish Physiotherapist Foundation: Compliance in adolescents with patellafemoral pain. Co-applicant: Kristian Thorborg (68,270 DKK).

Danish Association of Rheumatism: Adolescents with patellafemoral pain – what is the underlying pathology. Co-applicant: Kristian Thorborg (50,000 DKK).

Bevica Fondation: Adolescents with patellafemoral pain – what is the underlying pathology. Co-applicant: Kristian Thorborg (50,000 DKK).

The Danish Physical Therapist Organization: Quadriceps muscle inhibition after total knee arthroplasty: mechanisms and perspectives. Main applicant: Thomas Linding Jakobsen, enclosed CV from PMR-C supervisor: Thomas Bandholm (28,500 DKK).

The Danish Physical Therapist Organization: Pelvic floor muscle exercise therapy to reduce fecal incontinence. Main applicant: Anja Ussing, enclosed CV from PMR-C supervisor: Thomas Bandholm (28,500 DKK).

The Danish Physical Therapist Organization: Quadriceps muscle inhibition after total knee arthroplasty: mechanisms and perspectives. Main applicant: Thomas Bandholm (15,000 DKK).

## **8. INVITED LECTURES**

Annual symposium of the PhD-graduate program: Basic and Clinical Research in Musculoskeletal and Oral Sciences, University of Copenhagen, Snekkersten, Denmark. Title: Rehabilitation research in fast-track total knee arthroplasty (Thomas Bandholm).

Danish Sports Medicine Congress 2014, Copenhagen, Denmark. Title: Strength training in prevention and rehabilitation: describing the drug-of-choice (Thomas Bandholm).

Danish Sports Medicine Congress 2014, Copenhagen, Denmark. Title: Exercise following total knee arthroplasty (Thomas Bandholm).

CPOP Day 2014, Fredericia, Denmark. Title: Current research in trunk control in children with CP (Derek Curtis).

Fragility Fracture Network Global Congress 2014, Madrid, Spain - Physio SIG Workshop. Title: Community-based rehabilitation after acute hip fracture surgery in Denmark (Lise Kronborg).

Fragility Fracture Network Global Congress 2014, Madrid, Spain - Physio SIG Workshop. Title: In-hospital physiotherapy after acute hip fracture Surgery in Denmark (Morten Tange Kristensen).

Danish Sports Medicine Congress 2014, Copenhagen, Denmark. Title: Etiology of Muscle injuries (Kristian Thorborg).

Annual Swedish Football Symposium for physiotherapists 2014, Stockholm, Sweden. Title: Injuries in female football - where do we set in? (Kristian Thorborg).

Annual Swedish Football Symposium for physiotherapists 2014, Stockholm, Sweden. Title: Injuries in female football – epidemiology and risk factors (Kristian Thorborg).

Annual Groningen Sports Medicine Symposium 2014, Groningen, The Netherlands. Title: Gender differences in soccer related medical problems (Kristian Thorborg).

Sports injury prevention lecture 2014. Aspire, Aspetar, Doha, Qatar (KristianThorborg).

IOC Injury Prevention Congress 2014, Monaco. Title: The role of specific strength-deficits related to injury (Kristian Thorborg).

IOC Injury Prevention Congress 2014, Monaco. Title: What exercises are relevant for groin injury prevention (Kristian Thorborg).

Rehabilitation of ACL injury 2014, Göteborg, Sweden. Title: Prevention of ACL injuries in women (Kristian Thorborg).

Rehabilitation of ACL injury 2014, Göteborg, Sweden. Title: Which PROs should we use? (Kristian Thorborg).

Rehabilitation of ACL injury 2014, Göteborg, Sweden. Title: Return to sport after ACL injury (Kristian Thorborg).

Muscle Injury Symposium 2014, Luxembourg. Title: Hamstring and groin injury prevention in football (Kristian Thorborg).

Hip and Groin Day 2014, Artro Clinic, Stockholm. Title: Athletic hip and groin pain – Injury mechanism, rehab and prevention (Kristian Thorborg).

Hip and Groin Day 2014, Artro Clinic, Stockholm. Title: Athletic hip and groin pain – Outcome evaluation (Kristian Thorborg).

European Groin Pain day 2014, Bordeaux, France. Title: Strength measurements in groin pain (Kristian Thorborg).

1<sup>st</sup> World congress on groin pain in athletes 2014, Aspetar, Doha, Qatar. Title: Exercise based treatment (Kristian Thorborg).

1<sup>st</sup> World congress on groin pain in athletes 2014, Aspetar, Doha, Qatar. Title: Patient-reported outcome measures for athletes with groin pain (Kristian Thorborg).

1<sup>st</sup> World congress on groin pain in athletes 2014, Aspetar, Doha, Qatar. Title: Hip muscle function and strength testing (Kristian Thorborg).

## 9. MAIN TEACHING AND COURSE ACTIVITIES

6 weeks of course leading and lecturing. Course: Physical activity. Cand.Scient.San., University of Copenhagen (Kristian Thorborg).

4 weeks of course leading and lecturing. Course: Rehabilitation of muscle and tendon injuries. Cand.Scient.Phys., University of Southern Denmark and Section of Sports Physical Therapists (Kristian Thorborg).

4 days of course leading and teaching. Course: Exercise in clinical practice. Post-graduate PT level, Copenhagen. Danish Physical Therapist Organization (Thomas Bandholm).

4 days of course leading and teaching. Course: Exercise in clinical practice. Post-graduate PT level, Middelfart. Danish Physical Therapist Organization (Thomas Bandholm).

2 days of course leading and lectures. Course: Exercise and movement. Pre-graduate PT-level, Copenhagen. Metropolitan University College. Topic: Physical activity in health and rehabilitation, vertebral column (Lise Kronborg).

1 day of lecturing. Course: Level I course (Sports Medicine Diploma). Post-graduate MD level, Danish Sports Medicine Society. Topic: Hip and groin (Kristian Thorborg).

1 day of lecturing. Course: Level II course (Sports Medicine Diploma). Post-graduate MD level, Swedish Sports Medicine Society. Topic: Hip and groin (Kristian Thorborg).

4 lectures. Course: Movement Science. Pre-graduate PT-level, Zanzibar College of Health Sciences. Topic: Exercise therapy (Lise Kronborg).

2 lectures. Residence Course: Tests of functional performance in the geriatric patient. Post-graduate MD level, Gentofte Hospital, Danish Health and Medicines Authority. (Christine Bodilsen).

2 lectures. Course: Exercise in clinical practice. Post-graduate PT level, Copenhagen. Danish Physical Therapist Organization. Topic: Rehabilitation of older medical patients. (Christine Bodilsen).

2 lectures, Course: Exercise in clinical practice. Post-graduate PT level, Copenhagen. Danish Physical Therapist Organization (Morten Tange Kristensen).

Single lecture. Course: Physical activity. Cand.Scient.San., University of Copenhagen. Topic: Basic exercise physiology (Thomas Bandholm).

Single lecture. Course: Biomechanics and Motor Control, University of Copenhagen. Topic: Clinical exercise physiology and motor control (Thomas Bandholm).

Single lecture. Healthcare Science Seminar, Manchester Metropolitan University, UK. Topic: Analysis and training of postural control using a segmental approach - current thoughts and evidence: (Derek Curtis).

Single lecture. Course: Physical activity. Cand.Scient.San., University of Copenhagen.  
Topic: The "sick" joint – Arthrosis and arthritis (Kristian Thorborg).

Single lecture. Course: Physical activity. Cand.Scient.San., University of Copenhagen.  
Topic: Problem-based learning (Kristian Thorborg).

Single lecture. Course: Physical activity. Cand.Scient.San., University of Copenhagen.  
Topic: Study designs and evidence hierarchy (Kristian Thorborg).

## **10. SYMPOSIA**

PMR-C was the organizer or co-organizer of the following symposia in 2014:

### **Symposium: 2<sup>nd</sup> PMR-C research symposium**

The symposium marked the second year of PMR-C and was held at the Metropolitan University College in Copenhagen in collaboration with the Metropolitan University College. Around 500 people attended the symposium, which included a talk by all-star anatomist Finn Bojsen-Møller.

### **Symposium: Clinical examination and outcome measures in groin pain**

This symposium was part of the 1<sup>st</sup> World Congress on Groin pain, Aspetar, Doha, Qatar. Invited speakers included: Anthony Schache, Michael Reiman, Eamonn Delahunt, Timothy Tyler, Per Hölmich, Sumon Huq and Michael Drew (Kristian Thorborg).

### **Symposium: Hamstring muscle injury**

The symposium was part of the annual symposium of the PhD-graduate program: Basic and Clinical Research in Musculoskeletal and Oral Sciences, University of Copenhagen. Invited speakers included: Mette Zebis, Abigail Mackey, Kasper Krommes, and Kieran O'Sullivan (Kristian Thorborg and Thomas Bandholm).

### **Symposium: Muscle injury**

The symposium was part of the annual national sports medicine congress in Kolding, Denmark. Invited speakers included: Jesper Petersen, Per Hölmich, Gustaaf Reurink (Kristian Thorborg).



## **Symposium: Simple strength training interventions**

The symposium was part of the annual national sports medicine congress in Kolding, Denmark. Invited speakers included: Thomas Bandholm, Mette Zebis, Per Aagaard (Kristian Thorborg).

## **Symposium: The use of PRO questionnaires in Sports Medicine**

The symposium was part of the annual national sports medicine congress in Kolding, Denmark. Invited speakers included: Margrethe Grotle, Michael Krogsaard (Kristian Thorborg).

## **11. CONGRESSES**

PMR-C helped organize of the following congresses in 2014:

Danish Sports Medicine Congress 2014. Scientific board member (Kristian Thorborg and Thomas Bandholm).

1<sup>st</sup> World congress on Groin Pain in Athletes, Doha, Qatar. Scientific board member (Kristian Thorborg).

## **12. PEER REVIEWING OF RESEARCH**

**Editorial board work:** British Journal of Sports Medicine, World Journal of Orthopedics, and PLoS One (Kristian Thorborg, Morten Tange Kristensen, Thomas Bandholm).

**Ad-hoc reviewing:** Am J Phys Med Rehabil, Br J Sports Med, PLoS One, Sports Med, J Gerontol Biol Med Sci A, J Aging Phys Act, J Rehabil Med, Clin Orthop Relat Res, J Rheumatol, Clin Interv Ageing, Disabil Rehabil, BMJ Open, BMC Geriatr, Prosthet Orthot Int, Age Ageing, BMC Anaesthesiol (Christine Bodilsen, Mette Merete Pedersen, Morten Tange Kristensen, Kristian Thorborg, Thomas Bandholm, Thomas Linding Jakobsen).

**Grant reviewing:** The Lundbeck Foundation (UCSF) (Thomas Bandholm), Research Foundation of the Danish Physical Therapy Organization (Kristian Thorborg), and Practice Foundation, Danish Regions (Kristian Thorborg).

**External review of PhD-protocols prior to enrolment:** Blinded (University) (Thomas Linding Jakobsen).

**External review of PhD-progress during enrolment:** University of Copenhagen (Morten Tange Kristensen, Thomas Linding Jakobsen, and Thomas Bandholm).

### **13. ADVISORY OR OTHER BOARD-WORK**

Advisory board member for physical therapy research in Denmark, the Danish Physical Therapy Organization (Thomas Bandholm).

Advisory board member for the development of clinical guidelines for perioperative care in relation to total hip and knee arthroplasty, Enhanced Recovery after Surgery Society (ERAS), United Kingdom (Thomas Bandholm).

Board member for the PhD-graduate program: Basic and Clinical Research in Musculoskeletal and Oral Sciences, University of Copenhagen (Thomas Bandholm).

Board member for the development of Clinical Practice Guidelines for the physical therapy management of persons with fragility fracture of the hip. A collaboration between the Academy of Geriatric Physical Therapy and the Orthopaedic Section of the American Physical Therapy Association's (Morten Tange Kristensen and Jan Overgaard)

Evaluation committee member for Associate Professorship at Weil Cornell University, New York, USA (Kristian Thorborg).

Board member for education and courses offered under the Danish Association of Sportsphysiotherapists. Responsible for implementation of new educational structure for Danish Sportsphysiotherapists from 2013- (40 ECTS) (Kristian Thorborg).

Board Member for the Research Foundation of the Danish Physical Therapy Organization (Kristian Thorborg).

Evaluation committee member for the Johannes Lindhart Prize and the Ove Bøje Prize. Associations of Danish Sports Medicine and Danish Sportsphysiotherapy (Kristian Thorborg).