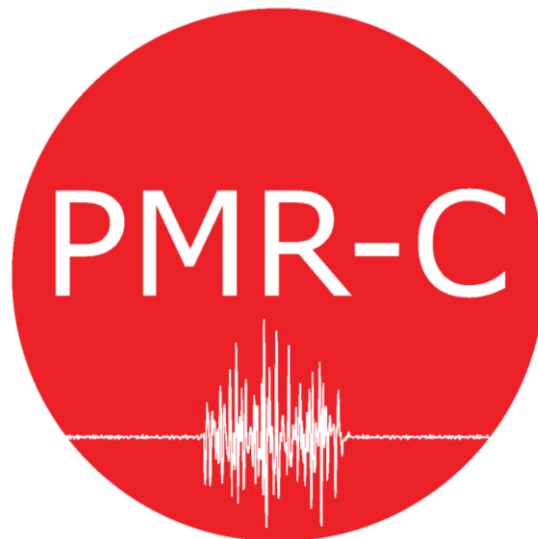


Annual report 2018

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

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1. ABOUT

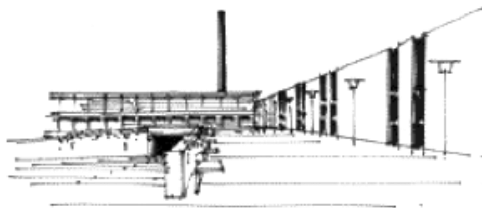
Physical Medicine & Rehabilitation Research – Copenhagen (PMR-C) is a multidisciplinary research program in physical medicine and rehabilitation, based in Copenhagen, Denmark. PMR-C is the research division of the Department of Physical- and Occupational Therapy at Copenhagen University Hospital, Amager and Hvidovre, 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, and 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 Professor Thomas Bandholm, Senior Researcher Morten Tange Kristensen and Associate Professor 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, Copenhagen University Hospital, Amager-Hvidovre, Denmark. 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 ACHIEVEMENT IN 2018

In 2018, PMR-C became part of another Clinical Academic Group: "Research OsteoArthritis Denmark (ROAD)" under Greater Copenhagen Health Science Partners (<https://chsp.dk/>). PMR-C is also part of the Clinical Academic Group: "Physical Activity and Sports in Clinical Medicine (imPAct)".



3. PEOPLE

Curriculum and list of publications of PMR-C people can be found at <https://www.hvidovrehospital.dk/pmr-c/about>

PMR-C steering committee

Thomas Bandholm: Dr. Bandholm is a senior researcher and head of research at PMR-C. He is a Professor of Clinical Exercise Physiology and Rehabilitation with the Department of Clinical Medicine, University of Copenhagen. He is responsible for research in enhanced recovery programs following total hip and knee arthroplasties and acute hospitalization for medical illnesses in older patients at PMR-C. Dr. Bandholm has published more than 100 international peer-reviewed papers since 2006.

Morten Tange Kristensen: Dr. Kristensen is a senior researcher at PMR-C. He is responsible for research in enhanced recovery programs in patients with hip fracture and lower limb amputations at PMR-C. Dr. Kristensen has published more than 60 international peer-reviewed papers since 2005.

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 more than 140 international peer-reviewed papers since 2004.

Jette Christensen: Ms. Christensen is head of the Department of Physical and Occupational Therapy, Copenhagen University Hospital, Amager and Hvidovre.

Thue Ørsnes: Dr. Ørsnes is head of the Department of Orthopedic Surgery, Copenhagen University Hospital, Amager and Hvidovre.

Ove Andersen: Professor Andersen is head of the Clinical Research Center, Copenhagen University Hospital, Amager and Hvidovre and research director for Copenhagen University Hospital, Amager and Hvidovre.

Postdocs

Mette Merete Pedersen: Dr Pedersen is a Postdoc at PMR-C and co-affiliated with Optimized Senior Patient Programme (Optimed). Her Postdoc deals with physical activity and exercise to prevent functional decline following acute hospitalization for a medical illness in older patients.

PhD-students supervised by people from PMR-C

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

Martin Wollin: Mr. Wollin was a PhD-student at La Trobe University, Melbourne, Victoria, Australia, and co-affiliated with Sports Orthopedic Research Centre - Copenhagen (SORC-C) and PMR-C. His PhD deals with athlete monitoring - including hamstring and hip strength profiles, injury and training load in elite youth football (Kristian Thorborg, co-supervisor).

Rasmus Skov Husted: Mr. Husted is a PhD-student with PMR-C and Clinical Orthopaedic Research Hvidovre (CORH). His project deals with coordinated non-surgical and surgical care of patients with end-stage knee osteoarthritis (Thomas Bandholm, main supervisor).

Tobias Wörner: Mr. Wörner is a PhD-student at Lund University, Sweden, and co-affiliated with Sports Orthopedic Research Centre - Copenhagen (SORC-C) and PMR-C. His PhD deals with current rehabilitation practice in Scandinavia and outcomes after hip arthroscopy (Kristian Thorborg, co-supervisor).

Mikkel Bek Clausen: Mr. Clausen was a PhD-student (thesis defended) co-affiliated with PMR-C and enrolled at the University of Copenhagen. His PhD dealt with shoulder impingement syndrome and rehabilitation (Kristian Thorborg, main supervisor).

Neil Light: Mr. Light is a PhD-student at Chichester University, England, and co-affiliated with Sports Orthopedic Research Centre - Copenhagen (SORC-C) and PMR-C. His PhD deals with groin injury in English elite youth football (Kristian Thorborg, co-supervisor).

Filip Gertz Lysdal: Mr. Lysdal is a PhD-student at Aalborg University, and co-affiliated with PMR-C. His PhD deals with prevention of ankle sprains (Kristian Thorborg, co-supervisor).

Erneste Esteve: Mr. Esteve is a PhD-student at Girona University, Spain, and co-affiliated with Sports Orthopedic Research Centre - Copenhagen (SORC-C) and PMR-C. His PhD deals with groin injury in Spanish male footballers: Incidence, prevalence, risk factors and prevention (Kristian Thorborg, main supervisor).

Signe Hulsbæk: Ms. Hulsbæk is a PhD-student at PMR-C and the Department of Physio- and Occupational Therapy, Copenhagen University Hospital, Amagerand Hvidovre. She is enrolled at the University of Copenhagen. Her PhD deals with early cross-continuum rehabilitation following hip fracture surgery and the use of muscle building medicine in rehabilitation (Morten Tange Kristensen, main supervisor).

Maria Swennergren Hansen: Mrs. Swennergren Hansen is a PhD-student at PMR-C, and co-affiliated with Sports Orthopedic Research Center-Copenhagen (SORC-C). She is enrolled at the University of Copenhagen. Her PhD deals with elongation of the Achilles tendon the first year after rupture and is focused on optimizing the treatment following Achilles tendon rupture (Morten Tange Kristensen, co-supervisor).

MSc-students supervised by people from PMR-C

Line Rokkedal Jønsson: Ms. Rokkedal Jønsson is an MSc-student at PMR-C and enrolled at the University of Southern Denmark. Her MSc deals with early and intensive mobilization to patients following Acute High-risk Abdominal surgery (AHA) (Morten Tange Kristensen, co-supervisor).

Charlotte Anker-Petersen: Ms. Anker-Petersen was an MSc-student (thesis defended) at Sports Orthopedic Research Center-Copenhagen (SORC-C) and enrolled at the University of Southern Denmark. Her MSc dealt with Achilles tendinopathy in ballet dancers (Kristian Thorborg, co-supervisor).

Mads Thorup Langelund: Mr. Langelund was an MSc-student (thesis defended) at Sports Orthopedic Research Center-Copenhagen (SORC-C) and enrolled at the Copenhagen University, Denmark. His MSc dealt with blood-flow restriction training after knee surgery (Kristian Thorborg, main supervisor).

Jack Dawkins: Mr. Dawkins is an MSc-student at PMR-C and enrolled at Bath University, England. His MSc deals with adductor strength after Copenhagen adductor exercise in footballers (Kristian Thorborg, main supervisor).

Research Assistants

Signe Hulsbæk: Ms. Hulsbæk was a research assistant with PMR-C (now a PhD student with PMR-C). Her project dealt with cross-continuum rehabilitation to enhance recovery of patients with hip fracture (project coordinator).

Stephanie Mann: Ms. Mann was a research assistant with PMR-C in collaboration with Copenhagen Center for Health Technology (CACHET). She participated in a project investigating health technology (Spraino) to reduce ankle sprains in cutting sports.

Jonas Bak: Mr. Bak is a research assistant with PMR-C in collaboration with Copenhagen Center for Health Technology (CACHET). His project deals with health technology (InjuryMap) to enhance recovery from acute ankle sprains.

Birk Mygind Grønfeldt: Mr. Grønfeldt is a research assistant with PMR-C. His project deals with coordinated non-surgical and surgical care of patients with end-stage knee osteoarthritis

Helene Sejrsen: Ms. Sejrsen was a research assistant with PMR-C. She assisted Ms. Rokkedal Jønsson with her MSc-project focusing on mobilization of patients following Acute High-risk Abdominal surgery.

Developmental and project therapists

Mette Røn Kristensen: Ms. Røn Kristensen is regional coordinator for CPOP in the capital region of Denmark and collaborates with PMR-C. She works with CPOP as a national clinical database and follow up program for children with cerebral palsy. She also takes part in research projects within the field of children with cerebral palsy.

Louise Laursen: Ms. Laursen is regional coordinator for CPOP in the capital region of Denmark and collaborates with PMR-C. She works with CPOP as a national clinical database and follow up program for children with cerebral palsy. She also takes part in research projects within the field of children with cerebral palsy and developmental projects within the field of occupational therapy.

Linette Marie Kofod: Ms. Kofod is a respiratory physiotherapist at Hvidovre Hospital and collaborates with PMR-C. She works with Pulmonary Rehabilitation and research within the field of respiratory physiotherapy.

PMR-C affiliates

Jan Arnholtz Overgaard. Mr. Overgaard is a research physical therapist at the Department of Rehabilitation in the Municipality of Lolland, Denmark. His area of expertise is patients with hip fracture.

Stays with other research environments

Thomas Bandholm: Visiting Professor, Humanitas University and Humanitas Research Hospital, School of Physiotherapy, Milan, Italy. Contact: Professor Roberto Gatti.

Thomas Bandholm: Visiting Professor, Auckland University of Technology, Department of Physiotherapy, Auckland, New Zealand. Contact: Professor Peter McNair.

Thomas Bandholm: Visiting Professor, University of Otago, School of Physiotherapy, Dunedin, New Zealand. Contact: Senior Lecturer Cathy Chapple.

4. ADVISORY BOARD

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 <https://www.hvidovrehospital.dk/pmr-c/about/Pages/People.aspx>

Per Hölmich, Professor, Dr Med Sci

Professor Hölmich is Head of Sports Orthopaedic Research Center – Copenhagen (SORC-C), Amager and Hvidovre Hospital, University of 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 Laboratory, University of Copenhagen, Denmark.

5. PUBLICATIONS

Published papers

People from PMR-C published 59 papers, and students, supervised by people from PMR-C, successfully defended 3 PhD's and 2 MSc's in 2018. Thank you to all our collaborators.

Ussing A, Dahn I, Due U, Sørensen M, Petersen J, Bandholm T. Efficacy of Supervised Pelvic Floor Muscle Training and Biofeedback vs Attention-control Treatment in Adults with Fecal Incontinence. *Clin Gastroenterol Hepatol*. 2018 Dec 20. pii: S1542-3565(18)31391-0. doi: 10.1016/j.cgh.2018.12.015. [Epub ahead of print].

Rycroft SS, Quach L, Ward RE, Pedersen MM, Grande L, Bean JF. The Relationship between Cognitive Impairment and Upper Extremity Function in Older Primary Care Patients. *J Gerontol A Biol Sci Med Sci* 2018 Oct 25. doi: 10.1093/gerona/gly246. [Epub ahead of print].

Christensen KB, Thorborg K, Hölmich P, Clausen MB. Rasch validation of the Danish version of the shoulder pain and disability index (SPADI) in patients with rotator cuff-related disorders. *Qual Life Res*. 2018 Nov 19. doi: 10.1007/s11136-018-2052-8. [Epub ahead of print].

Ishøi L, Aagaard P, Nielsen MF, Thornton KB, Krommes KK, Hölmich P, Thorborg K. The Influence of Hamstring Muscle Peak Torque and Rate Of Torque Development for Sprinting Performance in Football Players: A Cross-Sectional Study. *Int J Sports Physiol Perform*. 2018 Nov 14:1-27. doi: 10.1123/ijsspp.2018-0464. [Epub ahead of print].

Boudreau SA, Royo AC, Matthews M, Graven-Nielsen T, Kamavuako EN, Slabaugh G, Thorborg K, Vicenzino B, Rathleff MS. Distinct patterns of variation in the distribution of knee pain. *Sci Rep*. 2018 Nov 8;8(1):16522.

Bandholm T, Husted RS, Jakobsen TL. Letter to the editor regarding 'Is it necessary to perform prehabilitation exercise for patients undergoing total knee arthroplasty: meta-analysis of randomized controlled trials'. *Phys Sportsmed*. 2018 Nov 2:1.

Harøy J, Pope D, Clarsen B, Wiger EG, Øyen MG, Serner A, Thorborg K, Hölmich P, Andersen TE, Bahr R. Infographic. The Adductor Strengthening Programme prevents groin problems among male football players. *Br J Sports Med*. 2019 Jan;53(1):45-46.

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Bandholm T, Wainwright TW, Kehlet H. Rehabilitation strategies for optimisation of functional recovery after major joint replacement. *J Exp Orthop*. 2018 Oct 11;5(1):44.

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Bricca A, Juhl CB, Bizzini M, Andersen TE, Thorborg K. There are more football injury prevention reviews than randomised controlled trials. Time for more RCT action! *Br J Sports Med*. 2018 Nov;52(22):1477-1478.

Bandholm T, Henriksen M, Treweek S, Thorborg K. Make it REAL: four simple points to increase clinical relevance in sport and exercise medicine research. *Br J Sports Med*. 2018 Nov;52(22):1407-1408.

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Thorborg K, Kraemer O, Madsen AD, Hölmich P. Patient-Reported Outcomes Within the First Year After Hip Arthroscopy and Rehabilitation for Femoroacetabular Impingement and/or Labral Injury: The Difference Between Getting Better and Getting Back to Normal. *Am J Sports Med*. 2018 Sep;46(11):2607-2614.

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O'Neill S, Radia J, Bird K, Rathleff MS, Bandholm T, Jorgensen M, Thorborg K. Acute sensory and motor response to 45-s heavy isometric holds for the plantar flexors in patients with Achilles tendinopathy. *Knee Surg Sports Traumatol Arthrosc*. 2018 Jul 4. doi: 10.1007/s00167-018-5050-z. [Epub ahead of print].

Perracini MR, Kristensen MT, Cunningham C, Sherrington C. Physiotherapy following fragility fractures. *Injury*. 2018 Aug;49(8):1413-1417.

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Zebis MK, Thorborg K, Andersen LL, Møller M, Christensen KB, Clausen MB, Hölmich P, Wedderkopp N, Andersen TB, Krstrup P. Effects of a lighter, smaller football on acute match injuries in adolescent female football: a pilot cluster-randomized controlled trial. *J Sports Med Phys Fitness*. 2018 May;58(5):644-650.

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Tak I, Tijssen M, Schamp T, Sierevelt I, Thorborg K, Kerkhoffs G, Stubbe J, van Beijsterveldt AM, Haverkamp D. The Dutch Hip and Groin Outcome Score: Cross-cultural Adaptation and Validation According to the COSMIN Checklist. *J Orthop Sports Phys Ther*. 2018 Apr;48(4):299-306.

Ferriero G, Kristensen MT, Invernizzi M, Salgovic L, Bravini E, Sartorio F, Vercelli S. Psychometric properties of the Cumulated Ambulation Score: a systematic review. *Eur J Phys Rehabil Med*. 2018 Oct;54(5):766-771.

Mosler AB, Weir A, Serner A, Agricola R, Eirale C, Farooq A, Bakken A, Thorborg K, Whiteley RJ, Hölmich P, Bahr R, Crossley KM. Musculoskeletal Screening Tests and Bony Hip Morphology Cannot Identify Male Professional Soccer Players at Risk of Groin Injuries: A 2-Year Prospective Cohort Study. *Am J Sports Med*. 2018 May;46(6):1294-1305.

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Kirk JW, Bodilsen AC, Tjørnhøj-Thomsen T, Pedersen MM, Bandholm T, Husted RS, Poulsen LK, Petersen J, Andersen O, Nilsen P. A tailored strategy for designing the Walk-Copenhagen (WALK-Cph) intervention to increase mobility in hospitalised older medical patients: a protocol for the qualitative part of the WALK-Cph project. *BMJ Open*. 2018 Mar 8;8(3):e020272.

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Serner A, Pope D, Weir A, Tol JL, Thorborg K, Roemer FW, Guermazi A, Hölmich P. Infographic. Can standardised clinical examination of athletes with acute groin injuries predict the presence and location of MRI findings? *Br J Sports Med*. 2018 Jul;52(14):892-893.

Jacobsen JS, Hölmich P, Thorborg K, Bolvig L, Jakobsen SS, Søballe K, Mechlenburg I. Muscle-tendon-related pain in 100 patients with hip dysplasia: prevalence and associations with self-reported hip disability and muscle strength. *J Hip Preserv Surg*. 2017 Nov 17;5(1):39-46.

Wied C, Foss NB, Tengberg PT, Holm G, Troelsen A, Kristensen MT. Avoidable 30-day mortality analysis and failure to rescue in dysvascular lower extremity amputees. *Acta Orthop*. 2018 Apr;89(2):246-250.

Jønsson LR, Ingelsrud LH, Tengberg LT, Bandholm T, Foss NB, Kristensen MT. Physical performance following acute high-risk abdominal surgery: a prospective cohort study. *Can J Surg*. 2018 Feb;61(1):42-49.

Esteve E, Rathleff MS, Vicens-Bordas J, Clausen MB, Hölmich P, Sala L, Thorborg K. Preseason Adductor Squeeze Strength in 303 Spanish Male Soccer Athletes: A Cross-sectional Study. *Orthop J Sports Med*. 2018 Jan 11;6(1):2325967117747275.

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Wollin M, Thorborg K, Pizzari T. Monitoring the effect of football match congestion on hamstring strength and lower limb flexibility: Potential for secondary injury prevention? *Phys Ther Sport*. 2018 Jan;29:14-18.

Vicens-Bordas J, Esteve E, Fort-Vanmeerhaeghe A, Bandholm T, Thorborg K. Is inertial flywheel resistance training superior to gravity-dependent resistance training in improving muscle strength? A systematic review with meta-analyses. *J Sci Med Sport*. 2018 Jan;21(1):75-83.

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Wollin M, Pizzari T, Spagnolo K, Welvaert M, Thorborg K. The effects of football match congestion in an international tournament on hip adductor squeeze strength and pain in elite youth players. *J Sports Sci*. 2018 May;36(10):1167-1172.

Mosler AB, Weir A, Eirale C, Farooq A, Thorborg K, Whiteley RJ, Hölmich P, Crossley KM. Epidemiology of time loss groin injuries in a men's professional football league: a 2-year prospective study of 17 clubs and 606 players. *Br J Sports Med*. 2018 Mar;52(5):292-297.

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Curtis DJ, Woollacott M, Bencke J, Lauridsen HB, Saavedra S, Bandholm T, Sonne-Holm S. The functional effect of segmental trunk and head control training in moderate-to-severe cerebral palsy: A randomized controlled trial. *Dev Neurorehabil*. 2018 Feb;21(2):91-100.

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Hansen MS, Barfod KW. Dansk Akillessenedatabase: Kvalitetssikring, forskning og anbefaling til træning efter akillesseneruptur. *Dansk Sportsmed* 2018 Maj;22(2): 28-33.

Defended theses - supervised by people from PMR-C

Mikkel Bek Clausen: PhD-thesis, University of Copenhagen. Main affiliation: Sports Orthopedic Research Centre - Copenhagen (SORC-C), co-affiliated with PMR-C and University College Copenhagen. Thesis title: Clinical assessment and rehabilitation of patients with subacromial impingement syndrome (Kristian Thorborg, main supervisor).

Mike Reiman: PhD-thesis, University of Copenhagen. Main affiliation: Duke University, USA, co-affiliated with Sports Orthopedic Research Centre - Copenhagen (SORC-C). Thesis title: Diagnosing Femoroacetabular Impingement (Kristian Thorborg, co-supervisor).

Martin Wollin: PhD-thesis, La Trobe University, Melbourne, Australia. Main affiliation: La Trobe University, Melbourne, Australia, co-affiliated with Sports Orthopedic Research Centre - Copenhagen (SORC-C). Thesis title: Athlete monitoring in football: Secondary prevention strategy of hamstring and groin injuries (Kristian Thorborg, co-supervisor).

Charlotte Anker-Petersen: Master's thesis, University of Southern Denmark. Main affiliation: Sports Orthopedic Research Centre - Copenhagen (SORC-C). Thesis title: Achilles tendinopathy in ballet dancers (Kristian Thorborg, co-supervisor).

Mads Thorup Langelund: Master's thesis, University of Copenhagen. Main affiliation: Section for Orthopedic and Sports Rehabilitation (SOS-R), Health Centre Nørrebro, City of Copenhagen, Denmark, co-affiliated with PMR-C. Thesis title: Rehabilitation with blood-flow restriction training after knee surgery (Kristian Thorborg, main supervisor).

6. RESEARCH GRANTS

With PMR-C acting as main or co-applicant, we received a total of 3,892,267 DKK (521,388 Euro) in 2018 from a variety of funding bodies. Thank you very much for the support. The funding bodies included:

The Capital Region of Denmark, cross-continuum funds: Coordinated conservative and surgical care of patients with end-stage knee osteoarthritis: a pragmatic approach. Main applicant: Thomas Bandholm, enclosed CV from PMR-C: Rasmus Skov Husted and Kristian Thorborg (500,000 DKK).

The Capital Region of Denmark, cross-continuum funds: Physically active older patients during and after an acute medical hospitalization. Main applicant: Mette Merete Pedersen (400,000 DKK).

The Danish Physical Therapist Organization, Postdoc-stipend: Physically active older patients during and after an acute medical hospitalization. Main applicant: Mette Merete Pedersen (450,000 DKK).

The Danish Physical Therapist Organization, PhD-stipend: Does rehabilitation after total hip arthroplasty "work"? Main applicant: Merete Nørgaard Madsen, enclosed CV from PMR-C: Thomas Bandholm (400,000 DKK).

The Research Foundation (strategic funds), Amager and Hvidovre Hospital: Coordinated conservative and surgical of patients with end-stage knee osteoarthritis: a pragmatic approach. Main applicant: Rasmus Skov Husted (330,000 DKK).

The Research Foundation (strategic funds), Amager and Hvidovre Hospital: TREATright: The right treatment for the right patient at the right time – A prospective cohort study of 5,000 patients with knee osteoarthritis. Main applicant: Anders Troelsen, enclosed CV from PMR-C: Thomas Bandholm (316,896 DKK).

The Capital Region of Denmark, cross-continuum funds: Early cross-continuum rehabilitation following surgery for hip fracture - exploration of a new multimodal intervention. Main applicant: Signe Hulsbæk. Enclosed CV from PMR-C: Morten Tange Kristensen (300,000 DKK).

The Danish Physical Therapist Organization (Fysioterapipraksisfonden): Reduced elongation of the Achilles tendon after rupture is considered the key to optimized treatment. Main applicant: Maria Swennergren Hansen, enclosed CV from PMR-C, Morten Tange Kristensen (250,000 DKK).

Næstved-Slagelse-Ringsted Hospitals' local fund: TREATright: The right treatment for the right patient at the right time – A prospective cohort study of 5,000 patients with knee osteoarthritis. Main applicant: Henrik Schrøder, enclosed CV from PMR-C: Thomas Bandholm (250,000 DKK).

The Danish Rheumatism Association (PhD Intro stipend): Does rehabilitation after total hip arthroplasty "work"? Main applicant: Merete Nørgaard Madsen, enclosed CV from PMR-C: Thomas Bandholm (250,000 DKK).

The Research Foundation (strategic funds), Amager and Hvidovre Hospital: Early cross-continuum rehabilitation following surgery for hip fracture – current knowledge and exploration of a new multimodal intervention. Main applicant: Morten Tange Kristensen (166,371 DKK).

The Danish Rheumatism Association: Does rehabilitation after total hip arthroplasty "work"? Main applicant: Merete Nørgaard Madsen, enclosed CV from PMR-C: Thomas Bandholm (150,000 DKK).

The Research Foundation (strategic funds), Amager and Hvidovre Hospital: TREATright: The right treatment for the right patient at the right time – A prospective cohort study of 5,000 patients with knee osteoarthritis. Main applicant: Anders Troelsen, enclosed CV from PMR-C: Thomas Bandholm (120.000 DKK).

The Research Foundation, Amager and Hvidovre Hospital: Reduced elongation of the Achilles tendon after rupture is considered the key to optimized treatment. Main applicant: Maria Swennergren Hansen, enclosed CV from PMR-C, Morten Tange Kristensen (90,000 DKK).

Research Foundation, Amager-Hvidovre Hospital: Early cross-continuum rehabilitation following surgery for hip fracture – current knowledge and exploration of a new multimodal intervention. Main applicant: Signe Hulsbæk (69,000 DKK).

7. INVITED TALKS

Research OsteoArthritis Denmark (ROAD) CAG symposium, Copenhagen, Denmark. Title: Peri-operative exercise to enhance recovery after total hip and knee replacements (Thomas Bandholm).

Research OsteoArthritis Denmark (ROAD) CAG symposium, Copenhagen, Denmark. Title: Coordinated exercise and surgical care of patients with end-stage knee osteoarthritis: A pragmatic approach (Rasmus Skov Husted).

Humanitas University and Humanitas Research Hospital, Milan, Italy. Title: Exercise to enhance recovery following total hip and knee replacements course (Thomas Bandholm).

Humanitas University and Humanitas Research Hospital, Milan, Italy. Title: Strength training in musculoskeletal rehabilitation (Thomas Bandholm).

Auckland University of Technology, Auckland, New Zealand. Title: Exercise to enhance recovery following total hip and knee replacements (Thomas Bandholm).

Auckland University of Technology, Auckland, New Zealand. Title: Strength training in musculoskeletal rehabilitation (Thomas Bandholm).

University of Otago, Dunedin, New Zealand. Title: Enhancing the quality and transparency of health research (Thomas Bandholm).

14th Scandinavian Congress of Medicine & Science in Sports (#sportskongres) 2018, Copenhagen, Denmark. Inaugural Professor lecture. Title: Physical activity and exercise to enhance clinical recovery in patients (Thomas Bandholm).

Danish Physical Therapist Congress (#fagkongres) 2018, Odense, Denmark. Title: Safety aspects of blood flow restricted exercise (Thomas Bandholm).

Danish Physical Therapist Congress (#fagkongres) 2018, Odense, Denmark. Title: The importance of early out of bed mobilization after hip fracture (Morten Tange Kristensen).

Danish Physical Therapist Congress (#fagkongres) 2018, Odense, Denmark. Title: Easily applicable measurements to assess signs of sarcopenia in daily clinical practice (Morten Tange Kristensen).

Danish Physical Therapist Congress (#fagkongres) 2018, Odense, Denmark. Title: Knee-extensor exercise for patients with end-stage knee OA (Rasmus Skov Husted).

1st National seminar for learning and quality improvement for treatment of patients with hip fracture, Horsens, Denmark. Title: Mobilization and training after hip fracture (Morten Tange Kristensen).

7th Fragility Fracture Network Global Congress, Dublin Ireland (pre-congress day). Title: Physical activity and how to enhance it after hip fracture (Morten Tange Kristensen).

7th Fragility Fracture Network Global Congress, Dublin Ireland (pre-congress day). Title: American Physical Therapy Association Guidelines for Hip Fracture (Jan Arnholtz Overgaard).

BACPAR, British Amputee Congress, Wolverhampton, UK (keynote). Title: Basic Amputee Mobility Score (BAMS)/outcome measures (Morten Tange Kristensen).

2nd National seminar for learning and quality improvement for treatment of patients with hip fracture, Odense, Denmark. Title: Mobilization and training after hip fracture (Morten Tange Kristensen).

Danish Physical Therapist Congress (#fagkongres) 2018, Odense, Denmark. Title: Optimal loading in prevention and treatment of sports injuries (Kristian Thorborg).

Danish Physical Therapist Congress (#fagkongres) 2018, Odense, Denmark. Title: Treatment algorithms and exercise descriptors (Kristian Thorborg).

Science in Action, University of Southern Denmark, 2018, Odense, Denmark. Title: Treatment options in Denmark for patients with FAI (Kristian Thorborg).

Danish Physical Therapist Congress (#fagkongres) 2018, Odense, Denmark. Title: Treatment algorithms and exercise descriptors (Kristian Thorborg).

Norwegian Sports Medicine Congress, 2018, Bergen, Norway. Title: Age-specific injury prevention – how to specialize when? (Kristian Thorborg).

Norwegian Sports Medicine Congress, 2018, Bergen, Norway. Title: Management of hip and groin pain in athletes (Kristian Thorborg).

Norwegian Sports Medicine Congress, 2018, Bergen, Norway. Title: Hip and groin pain in athletes – diagnostics (Kristian Thorborg).

Swiss Sports Medicine Congress, 2018, Bern, Switzerland. Title: Hip and groin pain management in team sports (Kristian Thorborg).

Football Medicine Congress, 2018, Barcelona, Spain. Title: Hamstring injury prevention: Are we winning? (Kristian Thorborg).

Greek Sports Physiotherapy Congress, 2018, Athens, Greece. Title: Etiology of muscle injuries (Kristian Thorborg).

8. MAIN TEACHING AND COURSE ACTIVITIES

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

6 weeks of tutoring and lecturing. MSc-course: Physical activity. Cand.Scient.San., University of Copenhagen (Thomas Bandholm).

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

6 weeks of course leading. MSc course: Rehabilitation of tendon injuries. University of Southern Denmark, Odense, Denmark (Kristian Thorborg).

Single lecture. MSc-course: Physical activity. Cand.Scient.San., University of Copenhagen. Topic: What is problem-based learning? (Kristian Thorborg).

Single lecture. MSc-course: Physical activity. Cand.Scient.San., University of Copenhagen. Topic: Levels of evidence (Kristian Thorborg).

Single lecture. Course: Outcome measures for occupational and physical therapist. The Capital Region of Denmark, Copenhagen, Denmark. Topic: Reliability of outcome measures (Morten Tange Kristensen).

Single lecture. MSc-course: Physical activity. Cand.Scient.San., University of Copenhagen. Topic: Outcome measures – Theory and Practice (Morten Tange Kristensen).

Single lecture. MSc-course: Cand. Scient. Fys., University of Southern Denmark, Odense. Topic: Quality development, assurance and implementation (Jan Arnholtz Overgaard).

Single lecture. MSc-course: Cand. Scient. Fys., University of Southern Denmark, Odense. Topic: Epidemiology of muscle injuries (Kristian Thorborg).

Single lecture. MSc-course: Cand. Scient. Fys., University of Southern Denmark, Odense, Denmark. Topic: Hip and groin injuries (Kristian Thorborg).

9. SYMPOSIA, COMPETITIONS, AND WORKSHOPS

PMR-C was the organizer or co-organizer of the following in 2018:

Symposium: PMR-C Science & Fun

The symposium was a scientific and social event for PMR-C and collaborators (Jonas Bak, Stephanie Mann, Rasmus Skov Husted and Thomas Bandholm).

Symposium: Annual Snekkersten Symposium

The 2-day symposium marked the end of the year for the PhD graduate program Basic and Clinical Research in Musculoskeletal Sciences (MUSKOS), University of Copenhagen. Speakers included Professor Ylva Hellsten and Professor Franco Carli (Thomas Bandholm).

Oral presentation competition: Snekkersten PhD Cup

The oral presentation competition was part of the annual 2-day symposium for the PhD graduate program: Basic and Clinical Research in Musculoskeletal Sciences (MUSKOS), University of Copenhagen, held in Snekkersten, Denmark. The 5 best rated abstracts were presented using a "how simple can you go-format" with 3 minutes to present and without any audiovisuals. Invited judges were: Rhetorian Thea Sejr Hansen, Professor Ylva Hellsten, Rhetorian Mads Højlyng, Professor Carl-Johan Boraxbekk, Professor James Hull, Professor Neil Millar, and Professor Martin Halle. (Kristian Thorborg and Thomas Bandholm).

Oral presentation competition: 14th Scandinavian Congress of Medicine & Science in Sports

The oral presentation competition was part of the 14th Scandinavian Congress of Medicine & Science in Sports (#sportskongres) 2018 in Copenhagen, Denmark. The 6 best rated international conference abstracts were presented and formed a competition symposium. Invited judges were: Associate Professor Karin Silbernagel (US), Professor Karim Khan (Editor-in-chief, Br J Sports Med), Professor Jon Karlsson (Editor-in-chief, Knee Surg Sports Traumatol Arthrosc), Professor Stephen Harridge (Editor-in-chief, Scand J Med Sci Sports), and Professor Thomas Gustafsson (Thomas Bandholm and Kristian Thorborg).

Symposium: Blood flow restricted exercise after surgery or disease

The symposium was part of the Danish Physical Therapist Congress (#fagkongres) 2018, Odense, Denmark. Invited speakers were Associate Professor Jeremy Loenneke (US), Thomas Linding Jakobsen, and Professor Thomas Bandholm (Thomas Bandholm).

Symposium: Load-based treatment of musculoskeletal pain

The symposium was part of the Danish Physical Therapist Congress (#fagkongres) 2018, Odense, Denmark. Invited speakers were Associate Professor Kristian Thorborg, Associate Professor Michael Skovdal Rathleff, PhD-candidate Henrik Riel, PhD-candidate Mikkel Bek Clausen, and PhD-candidate Rasmus Skov Husted (Kristian Thorborg and Thomas Bandholm).

Symposium: What is sarcopenia and how can we handle it?

The symposium was part of the Danish Physical Therapist Congress (#fagkongres) 2018, Odense, Denmark. Invited speakers were Professor Tommy Cederholm, Senior Researcher Morten Tange Kristensen, and Physical Therapist Niklas Grundt Hansen (Morten Tange Kristensen).

Symposium: Hamstring injuries

The symposium was part of the 14th Scandinavian Congress of Medicine & Science in Sports (#sportskongres) 2018, Copenhagen, Denmark. Invited speakers were Associate Professor Abigail Mackey, and Physical Therapist Jurdan Mendigutchia (Kristian Thorborg).

Symposium: Optimal loading in prevention and treatment of sports injuries

The symposium was part of the Danish Physical Therapist Congress (#fagkongres) 2018, Odense, Denmark. Invited speakers were Associate Professor Kristian Thorborg, Postdoc Rasmus Ø. Nielsen, and Assistant Professor Merete Møller (Kristian Thorborg).

Symposium: How do patients, relatives and health care professionals perceive physical activity and mobility during hospitalization?

The symposium was part of the Danish Physical Therapist Congress (#fagkongres) 2018, Odense, Denmark. Invited speakers were Physical Therapist Camilla Rams Rathleff, Associate Professor Jane Andreasen, and Postdoc Jeanette Wassar Kirk (Mette Merete Pedersen).

Workshop: Rehabilitation of the injured overhead athlete - What to do in daily practice?

The workshop was part of the 14th Scandinavian Congress of Medicine & Science in Sports (#sportskongres) 2018. Invited speaker was Associate Professor Ann Cools (Thomas Bandholm).

Workshop: Hamstring avulsion rehabilitation – A practical approach

The workshop was part of the 14th Scandinavian Congress of Medicine & Science in Sports (#sportskongres) 2018. Invited speaker was Dr. Carl Askling (Thomas Bandholm).

Workshop: Hamstring injuries

The workshop was part of the 14th Scandinavian Congress of Medicine & Science in Sports (#sportskongres) 2018, Copenhagen, Denmark. Invited speaker was Physical Therapist Jurdan Mendigutchia (Kristian Thorborg).

Workshop: Blood flow restricted exercise in clinical practice

The workshop was part of the Danish Physical Therapist Congress (#fagkongres) 2018, Odense, Denmark. Invited speakers were Associate Professor Jeremy Loenneke and Physical Therapists Christina Ramos Stavngaard, Esben Kjeldgaard Jensen and Jakob Fisker (Thomas Bandholm).

Workshop: Hand-held dynamometry in clinical practice

The workshop was part of the Danish Physical Therapist Congress (#fagkongres) 2018, Odense, Denmark. Invited speaker were Associate Professor Kristian Thorborg and Physical Therapist Andre Niemeijer (Kristian Thorborg).

10. CONGRESSES

PMR-C helped organize the following congresses in 2018:

14th Scandinavian Congress of Medicine & Science in Sports (#sportskongres) 2018, Copenhagen, Denmark. Chairman of the scientific committee (Thomas Bandholm).

14th Scandinavian Congress of Medicine & Science in Sports (#sportskongres) 2018, Copenhagen, Denmark. Scientific board member (Kristian Thorborg).

Danish Physical Therapist Congress (#fagkongres) 2018, Odense, Denmark. Scientific board member (Thomas Bandholm).

11. ACADEMIC EVALUATION

Positions

Assessment of full Professorship in Physiatics, committee member. University of Eastern Finland, Kuopio, Finland (Thomas Bandholm).

Assessment of Associate Professorship in Physical Therapy, committee member. University of Otago, Dunedin New Zealand (Thomas Bandholm).

Assessment of external Associate Professorship, committee members. University of Copenhagen, Denmark (Kristian Thorborg and Thomas Bandholm).

Theses

Assessment of PhD Thesis, committee chair. University of Copenhagen, Copenhagen, Denmark (Thomas Bandholm).

Assessment of PhD Thesis, committee member. Dublin City University, Ireland (Kristian Thorborg).

PhD progress evaluation, external assessor. University of Copenhagen, Denmark (Thomas Bandholm).

Assessment of PhD-application, University of Southern Denmark, Odense, Denmark (Morten Tange Kristensen).

Editorial board work

British Journal of Sports Medicine, International Journal of Sports Physical Therapy, and PLOS ONE (Kristian Thorborg, and Thomas Bandholm).

Ad-hoc peer-review work

Br J Sports Med, Eur J Phys Rehabil Med, Injury, Disabil and Rehabil, BMC Geriatrics, Geriatrics, Arch Phys Med Rehabil (Mette Merete Pedersen, Morten Tange Kristensen, and Thomas Bandholm).

12. ADVISORY OR OTHER BOARD-WORK

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

Steering committee member, the National Database of Geriatrics (Mette Merete Pedersen).

Board member, Board of research, Amager and Hvidovre Hospital (Thomas Bandholm).

Executive committee member, Board of research, Amager and Hvidovre Hospital (Thomas Bandholm).

Executive board member and vice-president, The International Federation of Sports Physical Therapy (Kristian Thorborg).

Advisory board member, IOC Diploma in Sports Physical Therapies (Kristian Thorborg).

Steering committee member, IOC Sports Medicine Copenhagen: Center for Injury Prevention and Protection of Athlete Health (Thomas Bandholm and Kristian Thorborg).

Steering committee member, Clinical Academic Group: Research OsteoArthritis Denmark (ROAD), Greater Copenhagen Health Science Partners (Thomas Bandholm).

Steering committee member, Clinical evidence and guidance in sports physiotherapy-catalogues. Danish Society for Sports Physiotherapists (Thomas Bandholm, Kristian Thorborg, and Rasmus Skov Husted).

Board member, Board for education and courses offered under the Danish Society for Sports Physiotherapists. Responsible for implementation of new educational structure for Danish Sports Physiotherapists from 2013 (40 ECTS) (Kristian Thorborg).

Board member, Board of education, University College Metropol, Copenhagen (Kristian Thorborg).

Working group member, working group 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, US (Morten Tange Kristensen and Jan Arnholtz Overgaard).

Steering committee member, The Nationwide Danish Multidisciplinary Hip Fracture Database (Morten Tange Kristensen).

Expert group member, National expert group for improving quality of hip fracture treatment in Denmark (Morten Tange Kristensen and Jan Arnholtz Overgaard).

Advisory board member, National clinical guidelines developed by the Danish Health Authorities (Morten Tange Kristensen).

Steering committee member, networking group for development Physio – and Occupational Therapists in the eastern municipalities in Denmark (Jan Arnholtz Overgaard).