The love of physical activity and sport is key to us at the Center for Health and Performance. We are developing the science of physical activity to improve sport performance. But physical activity is so much more than the hunt for milliseconds. It is also critical to our well-being as humans. Daily physical activity improves health in numerous ways and we are at the frontier of science of improving people's everyday life.

Mats Börjesson

Stefan Grau
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VISIT US
Skånegatan 14B, Gothenburg
Building: Idrottshögskolan

CONTACT US
Department of Food and Nutrition,
and Sport Science. Box 300, 405 30
GOTHENBURG, Sweden.

FOR MORE INFORMATION PLEASE VISIT
iki.gu.se/chp
THE VISION

is to advance the Center of Health and Performance into a top level multidisciplinary competence center creating innovative entrepreneurship in physical activity, health promotion and nutrition for the benefit of health and performance.

THE AIM is to further develop our center of excellence, where our top-level experts produce, disseminate and implement evidence-based knowledge.

The center will serve as a major meeting place for researchers, students and private and public actors by offering workshops, conferences and seminars. We will advance with testing and product development in our areas of expertise.

We want to enhance our strong interdisciplinary environment with a comprehensive network of national and international collaborators from academia, the health sector, business and non-profit organizations.

HEALTH

In order to promote a healthier and more sustainable lifestyle, our center is active in the area of physical activity research, both nationally and internationally. Physical activity is a cornerstone of human well-being and we are continuously conducting studies to learn more about the mechanisms involved. The ultimate aim is to provide recommendations and guidelines on safe physical activity to promote a healthy lifestyle.

FOOD AND NUTRITION

We are active in the field of food and nutrition for both health and sport performance through high-quality research and clinical application. We help athletes optimize their nutritional intake and also promote healthy dietary habits in the general population.

SPORT

We are working closely together with athletes, sport federations, teams, coaches and a worldwide network of scientists, universities and companies in the sport/health sector. Our state-of-the-art laboratories are constantly evolving and enable us to conduct high-quality research and testing in order to enhance performance and prevent overuse injuries.
THE STAFF

The team at our center consists of scientists, teachers and students that all love physical activity. Our aim is to together create an environment where ideas develop into new knowledge, new innovations and new methods.

PERMANENT AND TEMPORARY POSITIONS
Stefan Grau. Professor in Biomechanics and Movement Science.
Mats Börjesson. Professor in Sports Physiology.
Stefan Lindinger. Assoc. Prof. in Exercise Physiology/Training.
Elias Johanesson, PhD. Statistician.
Lennart Gullstrand, PhD. Lecturer in Exercise Physiology/Training.
Stefan Pettersson, PhD. Nutrition.
Magni Mohr. Visiting Assoc. Prof. in Match Analysis.
Fredrik Edin. Lab assistant; Physiology.
Mikael Gustafsson. Lab. assistant; Biomechanics.
Daniel Wennerlund. Project leader ITH/Tillväxtverket.
Evelyn Vilkman. Administration/Economy.
Per Setterberg. Support research applications (until 6/2017).

PhD/LICENTIATE POSITIONS
Elin Arvidsson, funded by ISM, Supervisors Jonsdottir/Börjesson.
Jacob Lindh, financed with external funding, supervisors Grau/Annerstedt.
Dan Fransson, funded by CIF, supervisors Mohr/Börjesson.
Jonatan Jungmalm, funded by Stena Stiftelsen, supervisors Grau/Nielsen.
Andreas Zachrisson, funded by Göteborgs Frïidrotsfôrbund, supervisors Grau/Johanesson.
Erik Lignell, financed by Frölunda Hockey, supervisors Mohr & Annerstedt.
Matilda Frisk, financed by Sahlgrenska Academy, supervisor Börjesson.
Pia Desai ("guest-PhD"), funded by Sahlgrenska Academy, supervisors Karlsson/ Grau/ Börjesson.
Solveig Hausken ("guest-PhD"), funded by CIF, supervisors Barker-Ruchti/Grau/Schubring.

STUDENT POSITIONS
VISITING RESEARCHERS & STUDENTS
Heidi Hauser, Technical University Chemnitz, Master student, exchange until 3/2017.

Florian Birk, Fachhochschule Remagen, Bachelor student, Erasmus placement.

Robert Grenz, Fachhochschule Remagen, Bachelor student, Erasmus placement.


Dr. Jan Brönd, University of Southern Denmark, Odense, Post-doc, 8/2017 – 7/2019.


Dr. Mathias Wernbom, Lecturing and Research.

Dr Hampus Luning, Sahlgrenska Univ Hospital, Risks of endurande running, ST-project.

Dr Julia Magnusson, Sahlgrenska Univ Hospital, Runners in SCAPIS, ST-project.
THE EDUCATION

Our education provide tools for students to get a deeper understanding and practical skills in performing and evaluating measurements of diet, food habits and physical activity. The aim is that our students will be strong contributors to society and will promote and build a sustainable healthy lifestyle for all of us. The center is also an important part in the education of tomorrow’s elite athletes by teaching within Riksidrottuniversitét.

BACHELOR LEVEL (SPORT COACHING, HEALTH PROMOTION)
Anatomy, Physiology, Biomechanics, Training Science 1 and Sports Medicine.

Free standing courses BA-level
Training- and Match Analysis in Team-sports, Assessment of Human Performance I and Training Science 2.

MASTER LEVEL (INTERNATIONAL MASTER PROGRAM)
Measurement methods 1, Measurement methods 2 and Sports Medicine in Health and Performance and Biomechanical and physiological measurement methods.

CHP is also a part in the development of new classes in the International Master in Sport Science.

TEACHING HOURS
Anatomy, Physiology, Biomechanics and Exercise Physiology for Teacher education.

Teaching hours in the BA program in Nutrition, Health Economics.

Teaching advanced level courses at University of Southern Denmark, Odense, Denmark.

TEACHING FOR SAHLGRENSSKA ACADEMY
Exercise Physiology Lab-demo
Medical students (140 students)
Dentist students (70 students)
Pharmacology student (70 students)
Physiotherapist students (2 x 35 students)
THE RESEARCH

We received numerous invitations to present our research to the public; locally, nationally and internationally. Personnel at CHP travelled to conferences all around the world and all together the scientific year can be summarized to:

30 Presentations at Scientific Conferences
29 Public/Invited Presentations
25 Peer-Reviewed Publications in Scientific Journals, published
10 Peer-Reviewed Publications in Scientific Journals, in press/accepted
19 Peer-Reviewed Publications in Scientific Journals, under review
8 Book chapter publications & 3 other publications

PRESENTATIONS AT SCIENTIFIC CONFERENCES

Arvidsson, D.: “More high intensity physical activity in the population with new method to process ActiGraph accelerometer data”. International Conference on Ambulatory Monitoring of Physical Activity and Movement (ICAMPAM), USA, June 2017.

Arvidsson, D.: “Frequency filtering and the aggregation of raw accelerometer into ActiGraph counts”. International Conference on Ambulatory Monitoring of Physical Activity and Movement (ICAMPAM), USA, June 2017.


Börjesson M. “Screening of athletes- evolving with the goal to save lives”, Danish Sports Medicine Annual Congress, Copenhagen, Feb 2017.

Börjesson M. “Safety in arenas...team doctor’s role and more”, Football Managers Associations Annual meeting, Birmingham, 22 march 2017.

Börjesson M. “Emergency response planning-the arena study”, Master Course Cardiology, London St George’s, March 2017.

Börjesson M. “Quantifying risks in master athletes: practical approach or wishful thinking?”, Europrevent, Malaga, April, 2017.


Börjesson M. “Exercise, health and disease-The promotion of physical activity in ambulatory care”, SGAIMHK (Primary Health Care Congress); Berne, Sep, 2017 (keynote).


PUBLIC/INVITED PRESENTATIONS


Börjesson M. ”Förmasksflimmer”, Länsföreningen Hjärtlung, VGR, Göteborg, 26 Sep 2017.


Wernbom, M.: Studies on muscle hypertrophy and damage mechanisms with ischemic strength training. Presentation/seminar at the University of Southern Denmark, Odense, May 2017.


PEER-REVIEWED PUBLICATIONS IN SCIENTIFIC JOURNALS, PUBLISHED


PEER-REVIEWED PUBLICATIONS IN SCIENTIFIC JOURNALS, IN PRESS/ACCEPTED


Peer-Reviewed Publications in Scientific Journals, under review


Gripeteg L, **Arvidsson D.** Johannesson E, Larsson C, Sjöberg A, Ekblom Ö, Bergström Gm, **Börjesson M.** Concomitant associations of healthy food intake and cardiorespiratory fitness with the development of coronary artery calcification. *Am J cardiology.*

Wennmann H, Zou D, **Arvidsson D.** Ekblom Ö, Grote L, **Börjesson M.** Hender J. Insomnia and cardiorespiratory fitness in a middle-aged population: the SCAPIS pilot study. *Sleep Medicine.*


Pelliccia A, Solber E, Papadakis M, **Börjesson M** et al. Recommendations for participation in competitive and leisure time sports in athletes with cardiomyopathies, myocarditis and pericarditis. *Eur Heart J,* under revision.

Schwellnus M, Swanevelder S, Jordaan E, Derman W, **Börjesson M.** Schwabe K. Medical screening and education reduce medical events in runners: SAFER VII. Submitted.


**Maiwald, Ch.**, Mayer, T.A., Milani, T.L.: Alterations of plantar pressure patterns and foot shape after long distance military marching *Footwear Science (Special Edition Occupational Footwear).* Submitted Nov. 2017

Koska, D., Guadel, J., Hein, T., **Maiwald, Ch.:** Validation of an inertial measurement unit for the quantification of rearfoot kinematics during running. Submitted to Gait & Posture (Dec. 2017)


**BOOK CHAPTER PUBLICATIONS**


OTHER PUBLICATIONS


**Lindh, J. (2017)**. A Blended Learning Project Report to Modernize Natural Science Courses in Sport Science at the Department of Food and Nutrition and Sports Science (IKI) and at the Center for Health and Human Performance (CHP). Publication-ID252751.


**MEDIA**

Interview Grau for “Der Spiegel” about running shoes. Nov. 2017

Interview Grau “MåBra” about running injuries. March 2017

Interview Zachrisson for “SVT - Sportspelgeln” in conjunction with Elite track & field project Test round 2. March 2017


COLLABORATION RESEARCH PROJECTS

**SCAPIS-project**—pilot study and methods development (Swedish Cardiopulmonary Bioimage Study). Collaboration with Sahlgrenska Academy, GIH Stockholm and Odense University.


Militär-SCAPIS. Substudy, in collaboration with profs Rosengren, Thoren and Bergström, Sahlgrenska academy. Fitness at military service and changes, in relation to cardiovascular and pulmonary imaging.

Kognition-SCAPIS. Substudy, in collaboration with prof Wallin, Minnesmottagningen.

Actisleep: a SCAPIS substudy, in collaboration with prof Hedner, Sahlgrenska Academy.

Swedeheart, epidemiological study of PA in pats with MI, in collaboration with GIH and Uppsala University, n=55 000.
“Oxygen uptake, fat oxidation and isometric strength in women with prior gestational diabetes”. Collaboration with Sahlgrenska Academy.

“Effects of foam rolling on ROM & Muscle flexibility”. Collaboration projects with Technical University of Chemnitz, Germany.

“Carbohydrate oxidation rates, performance and gastrointestinal comfort ingesting a novel carbohydrate supplement during running”.

“Prevention of overuse injuries in elite track & field athletes”. Collaboration with Göteborg’s Friidrottsförbund.

“Validation of an effect sensor for cross-country skiing”. Collaboration with Chalmers University of Technology, Institutionen för Mikroteknologi och nanovetenskap.

“Leisure athletes at risk of medical complications”, in collaboration with Univ of Pretoria, South Africa.


“Influence of individual workload on autonomic function across the season in professional male football players”. Study with University of Porto and IF Elfsborg.

Method development of PA assessment, collaboration with GIH and Odense. “Putting accelerations into context in elite football” Collaboration with IF Elfsborg, Sogndal and Swedish FA.

**Bunkeflo project** (physical activity and health in children), Ass Prof Magnus Dencker group coordinator, Lund University.

**VISIT project** (promoting healthy behaviors in supporters of soccer and ice hockey clubs), Ass Prof Matti Leijon project coordinator, Region Östergötland.

Children with congenital heart disease (physical activity), Professor Jan Sunnegårdh project coordinator, University of Gothenburg/Region Västra Götaland.

Substrate utilization during whole-body exercise in a cold environment with and without carbohydrate intake in elite male and female winter sport athletes. Collaboration with SOK and Mittuniversitetet Östersund.

The influence of three commercially available 14% carbohydrate-electrolyte beverages on substrate utilization and dental health during prolonged exercise. Collaboration with Dep Odontology, SU.

Effects of rapid weight loss on Oxidative stress in male Japanese wrestlers (Nishimaki, Pettersson, Sakomoto). Collaboration with Univ Tokyo, Japan.

Continued studies on acute effects and long-term neuromuscular adaptations to blood-flow restricted resistance exercise.

Several project collaborations with the Norwegian School of Sport Sciences (Oslo, Norway), the University of Agder (Kristiansand, Norway), and the University of Aarhus (Aarhus, Denmark).

Studies on muscle fiber degeneration-regeneration and inflammation processes, and possible new muscle fiber formation with strenuous low-load ischemic resistance exercise. Collaboration with Norwegian School of Sport Sciences (Oslo, Norway) and research groups in Muscle Physiology and Myositis at the Karolinska Institute, Stockholm.


**NEW RESEARCH PROJECTS**

- “Effect of baseline tissue stiffness on ROM and muscle flexibility after foam-rolling”.
- “Intra-day, inter-day and in-between test leader reliability of shearwave elastography”.
- “Injuries in Swedish youth football. FIT PhD project”. Collaboration with Änglagårdssolan, asperödsskolan och IFK Academy.
THE TEST-LAB

Our high tech laboratory provides opportunities for advanced testing of products and evaluation and development of athlete performance. We can also do different kinds of analysis in order for example prevent injuries. Over all we conducted 89 Clinical tests, 66 2D/3D Movement, 90 Strength, 71 Physiological, 44 iDXA Scans and 4 Nutrition Analyses during 2017.

PHYSIOLOGICAL TESTS
Riksidrottsuniversitetet, Figure skating, Swedish Ice-Skating Federation, Swedish Youth Elite runners, Swedish Elite runners, Boxing, Rowing

iDXA TESTS
Riksidrottsuniversitetet, SOK

CLINICAL BIOMECHANICAL TESTS
Sahlgrenska HIITS, Riksidrottsuniversitetet, Swedish Youth Elite Runners, Swedish Elite Runners, Swedish Elite Throwers, Swedish Elite Speed Skaters
THE STRATEGIC WORK 2017

This year the Center of Health and Performance became an official center at the university of Gothenburg and we also got a project application to Tillväxtverket approved: Innovationsarena –Idrott, Teknik och Hälsa (ITH-project). We have established local, national and international collaborations and completed essential recruitments.

INTERNATIONAL COLLABORATIONS
Technical University of Chemnitz, Germany, Fachhochschule Remagen, Germany.

Formal collaboration with SEMLI Sports and Exercise Medicine & Lifestyle Institute, University of Pretoria, Prof. Sshwellnus.

Further development of Scandinavian Network in Elite Sport - collaboration project with Aarhus, Oslo and Jyväskylä.

NATIONAL COLLABORATIONS
Further development of collaboration with Swedish School of Sport and Health Sciences (GIH), Sahlgrenska Academy and Odense University Hospital, in the project SCAPIS.

LOCAL COLLABORATIONS
Further development of GU Collaborations within the faculty and between other faculties and Chalmers.

Start of new collaboration processes with different Sport Federations (Tennis, Speed-Skating, Basketball, Innebandy) who are particularly interested in working closely with us.

OFFICE SPACES
Plans for 19 new office boxes in the building.
THE FUTURE

We will continue the work and development in our main thematic areas:
1. Teaching and Learning
2. Biomechanics/Movement
3. Sports Medicine/Nutrition
4. Exercise Physiology
5. Physical Activity for Health
6. Match Analysis

Further we will continue to develop our collaborations with universities, sport clubs and federations as well as with the health and business sector.

The ITH-project is under progress and we look forward to contribute and see it grow. Furthermore, will work hard with the application to become a VINNOVA-center and this will be submitted in January 2019.

The issue with the deficit in the budget must be solved by additional external funding.