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# CURRICULUM VITAE

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**Address:** 4908 Bywood West, Edina, MN, 55436, USA

**Place of Birth:** Reykjavik, Iceland

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### Short Biography

Lars Oddsson is an experienced and renowned biomedical scientist, inventor, a visionary leader and entrepreneur. He is currently adjunct Professor in the Department of Physical Medicine and Rehabilitation, Program in Rehabilitation Science, under the Medical School at the University of Minnesota where he is also on Faculty at the Technological Leadership Institute of the College of Science & Engineering, University of Minnesota, teaching in Medical Device Innovation Master Program. Dr. Oddsson is Chairman and Co-founder of RxFunction Inc., a medical device start-up company based on Dr. Oddsson's invention that commercializes Walkasins™, a wearable balance sensory augmentation and substitution device to help at-risk fallers improve balance function and mobility. In addition, he is founder and owner of Balancera LLC, a startup that is commercializing GravityBed, a unique technology invented by Dr. Oddsson that allows functional balance training to be performed in a supine position. The technology is currently used by NASA at Johnson Space Center for their human bedrest research both as an intervention for balance function and assessment of balance control. Dr. Oddsson currently serves on the Board of Directors of LifeScience Alley, the Alley Institute and the Swedish-American Chamber of Commerce. He has a broad background in neurophysiology, engineering, rehabilitation sciences and technology development, has served as principal investigator on federal as well as private foundations grants and he has authored numerous research articles in the areas of biomedical engineering, neuromotor control and rehabilitation science. He is a Senior Fellow of the IEEE and he holds several patents. Dr. Oddsson received engineering training at Linköping University and his Ph.D. in Medical Sciences at the Karolinska Institute, both in Sweden. Later he attended graduate level courses at Boston University's School of Management and the medtech management mini-MBA program at the University of St. Thomas. Prior to moving Minnesota, Dr. Oddsson initiated and led the Injury Analysis and Prevention Lab at Boston University's Neuromuscular Research Center, where he was a faculty research professor between 1994 and 2007 following his post-doctoral fellowship in 1993. In Boston he held adjunct appointments at Harvard Medical School and at MIT, where he organized and taught a graduate course in Exercise Physiology for doctoral students in the Department of Aeronautics and Astronautics. In 2007 Dr. Oddsson was recruited to establish and lead the Sister Kenny Research Center in Minneapolis following a national search and a fund raising campaign co-chaired by Ms. Mary-Lee Dayton and Mr. Tom Borman, two highly esteemed members of the Minnesota community. He held this position through July of 2014. As Director of Research at the Sister Kenny Rehabilitation Institute, Dr. Oddsson established an academic-like research center where he mentored and engaged clinicians in the research

process, established a research faculty with more than 30 clinicians active in research; and helped disseminate Sister Kenny research in the peer-reviewed literature. In addition, he introduced a novel innovation process that utilizes the “Sister Kenny Innovation Handbook” as a tutorial, engaging Clinical Innovation Teams in a needs-driven design process termed Innovation Incubation; to systematically innovate and support local start-up companies to swiftly and cost-effectively bring new technologies to market. Dr. Oddsson has established a wide international network of researchers, inventors, institutions and business incubators. Over the past 20 years he has managed an exchange program for graduate students from some of the top universities in Sweden including the Royal Institute of Technology and Karolinska Institutet, a program that now benefits institutions in Minnesota. Dr. Oddsson is a resident of Edina, Minnesota where he lives with his wife Annette and two sons, Mattias and Lukas.

### **Degrees and Education**

2008	University of St. Thomas, Mini-MBA in Medical Technology Management
2004	Boston University, Graduate Level Course in Technology Commercialization
1993	Post Doctoral Fellow at the NeuroMuscular Research Center, Boston University.
1993	Karolinska Institute, Course in Pedagogics required for title of Docent at the Institute.
1990 Dr.Med.Sc.	Karolinska Institute, Stockholm, Sweden. (This degree is equivalent to a Ph.D.)
1981	University College of Physical Education and Sports, Stockholm, Sweden. (Phys Ed Teacher and International Level Specialized Coach Instructor - Volleyball)
1977	Pedagogic, Linköping University, Sweden.
1973-1976	Courses within Program for Engineering, Technical Physics and Electrotechnology, Linköping University, Sweden.

### **Academic Appointments**

2014-	Adjunct Professor, Department of Physical Medicine and Rehabilitation, Program in Rehabilitation Science, Medical School, University of Minnesota.
2014-	Faculty, Technological Leadership Institute, College of Science & Engineering, University of Minnesota. Teaching in Medical Device Innovation Master Program.
2014	NSBRI Investigator (National Space Biomedical Research Institute), on grant with Dr. Ajit Mulavara, Johnson Space Center, Houston.
2007-present	International Node Leader for the Swedish Product Innovation Engineering Program, PIEp.
2007	Guest Lecturer, Massachusetts Eye and Ear Infirmary, Harvard Medical School, Boston, MA
2006	Visiting Research Associate Professor, Dept of Aeronautics and Astronautics, MIT. Dr. Oddsson developed and gave a course in Exercise Physiology for doctoral students at MIT.
2003-2007	Senior Investigator in Research Program of Boston University RAND/Hartford Geriatric Health Care Center
2002-2007	Research Faculty Mentor at BU ARC (Boston University Aging Research Center), Directed by Dr. Rebecca A. Silliman
2000-2007	NSBRI Investigator (National Space Biomedical Research Institute)
2000-2007	Research Faculty, Boston University Neuroscience Graduate Program
1998-2003	Research Faculty Mentor at The Center for Measuring Rehabilitation Outcomes, funded by National Institute for Disability and Rehabilitation Research, Directed by Dr. Alan Jette.
1996-2007	Research Associate Professor at the NeuroMuscular Research Center, Boston University.
1996-2007	Supervisor of the Injury Analysis and Prevention Lab at the NeuroMuscular Research Center, Boston University.
1996-2000	Research Associate, Department of Veterans Affairs
1995-present	Over the past 19 years Dr. Oddsson has lead a graduate student exchange program between Boston University (1995-2007), Sister Kenny Rehabilitation Institute/Allina Health (2007-2014) and the Department of Mechatronics at the Royal Institute of Technology in Stockholm, Sweden. Dr. Oddsson has provided biomedical engineering projects with a mechatronic component to these graduate students. The students spend 6 months working on the project and then go back to Sweden to present and defend their Masters thesis. In addition to Boston University, Dr. Oddsson has provided student projects for Spaulding Rehabilitation Hospital and Massachusetts Eye and Ear Infirmary as well as to private industry. Dr Oddsson has functioned as local supervisor for 25 of the 31 engineering graduate students who have participated in the program to date.

1993-1996	Research Assistant Professor at the NeuroMuscular Research Center, Boston University.
1992-1993	Lecturer in human biology and sports, University College of Physical Education and Sports, Stockholm, Sweden.
1986-1991	Lecturer in human biology (including anatomy, physiology, biomechanics, neurophysiology and principles of physical training), University College of Physical Education and Sports and Department of Physiology III, Karolinska Institute, Stockholm.
1984-1987	Lecturer part time in physiology and anatomy, College of Music, Stockholm.
1981-1986	Assistant in anatomy, biomechanics, neurophysiology and ergonomics), University College of Physical Education and Sports and Department of Physiology III, Karolinska Institute, Stockholm.

### **Professional Appointments**

2014	Founder of Balancera LLC, (Startup intended to commercialize GravityBed device, invented by Dr. Oddsson)
2007-2014	Director of Research and first Leader of the Sister Kenny Research Center, Sister Kenny Rehabilitation Institute, Allina Hospitals and Clinics, Minneapolis, MN.
2010-present	Co-Founder & President at RxFunction Inc
2008-2014	Founder & President at MEDkanicK LLC, (Shell company to hold IP invented by Dr. Oddsson)
1988-1993	Dr. Oddsson served as the Volleyball Color Commentator for the Swedish National Sports Television during events such as the Olympics, World and European Championships. He had to decline this function when he was offered a post-doc fellowship at the NMRC in 1993.
1988-1993	Consulting Research Engineer at Department of Physiology III, group of Biomechanics and Motor Control, Karolinska Institute.
1985-1993	Dr. Oddsson was responsible for a column and series of articles on training principles for volleyball players, youth through elite, in the official journal of the Swedish Volleyball Federation. He had to decline this function when he was offered a position at the NMRC in 1993.
1980-present	Dr. Oddsson is frequently being consulted as a lecturer and expert regarding physiological and biomechanical training principles. He has appeared several times on television in his role as an expert, primarily in Sweden but also in the US (Channel 4 News during Olympics in Atlanta in 1996 and Boston Marathon in 1998, ABC Prime Time News in 2007, ABC Channel 5 Eyewitness News in 2012, Greater MSP Business Show in 2014). He has interacted with individual elite athletes, coaches and federations from a range of different sports including basketball, casting, figure skating, handball, high dive, ice hockey, skiing, soccer, track and field and volleyball.
1978-1993	For nearly 15 years, Dr. Oddsson was coaching elite level volleyball both nationally and internationally. His coaching career included junior national team men and women as head coach and the men's senior national team as assistant coach. His team in the national league won 5 championships and 2 silver medals over the time period 1982-1991. Dr. Oddsson worked on the educational board of the Swedish Volleyball Federation and was involved in developing educational programs for volleyball coaches. Before moving to the US to focus on his academic career, in 1990-93 he was responsible for planning and teaching the highest level of coaching education in Sweden at the University College of Sports and Physical Education in Stockholm, Sweden.
1986-1987	Research engineer at Department of Physiology III, group of Biomechanics and Motor Control, Karolinska Institute.
1976-1979	Teacher of physical education from elementary to high school level.

### **Editorial Board Experience (reviewer)**

Acta Physiologica Scandinavica  
American Journal of Physical Medicine & Rehabilitation  
Brain Research Bulletin  
Clinical Biomechanics  
Clinical Physiology  
Ergonomics  
European Journal of Applied Physiology  
European Journal of Experimental Musculoskeletal Research (Consulting Editor)

Experimental Brain Research  
IEEE Transactions on Biomedical Engineering  
Journal of Applied Biomechanics  
Journal of Applied Physiology  
Journal of Electromyography and Kinesiology  
Journal of Neurophysiology  
Journal of Rehabilitation Research and Development  
Posture and Gait  
Spine

### **Assignments and Volunteer Activities**

2014 Coach in FIRST Robotics, First Lego League Team, US&BOTS  
2014 Ad-hoc member of NIH Study Section, MRS - Musculoskeletal Rehabilitation Sciences.  
2008- Support in organizing and co-chairing sessions in rehabilitation and wearable technology for the Design of Medical Devices Conference.  
2013- American Heart Association, American Stroke Association, Executive Leadership Team, Advancing Sciences Breakfast.  
2013 Board of Directors, Swedish-American Chamber of Commerce, Minnesota Chapter.  
2012-present Board of Directors at LifeScience Alley, the largest state-based life sciences trade association in the U.S. LSA has a 29-year track record of enabling business success for its members through educating workforces, providing leadership on developing good state and federal public policy, supporting advancement in research and technological innovation and fostering industry connections. The Association's membership employs approximately 250,000 Minnesotans, and its reach extends throughout the Midwest and Canada. Through a strategic affiliation, LifeScience Alley partners with The BioBusiness Alliance of Minnesota to strengthen the regional economy by assisting in the growth of established and emerging industries, and attracting new companies, talent and capital. LifeScience Alley's mission is: To establish and lead a strategic approach to improve the business environment for life science companies through dedicated support to our members, and leading programs and projects to develop new industries, accelerate the evolution of existing industries, and to implement capabilities required to ensure a healthy business climate and a stronger community.  
2010-present Board of Directors at Alley Institute, a 501(c)3 subsidiary of LifeScience Alley, convening the broad expertise of LifeScience Alley member organizations to address public health concerns and working cooperatively to serve the public good.  
2010 Ad-hoc member of NIH Study Section, MRS - Musculoskeletal Rehabilitation Sciences.  
2010 Ad-hoc member of NIH Study Section, MRS - Musculoskeletal Rehabilitation Sciences.  
2008 Chairman at XVIIth International Society for Electrophysiological Kinesiology in Niagara Falls, Canada. Scientific session Postural Control  
2008 Conference Chair, Design Medical Device Conference 2008, University of Minnesota, Minneapolis, MN. Session: Advanced Rehabilitation Technologies.  
2008 Member of Organizing Committee XVIIth International Society for Electrophysiological Kinesiology in Niagara Falls, Canada. Role, reviewer  
2007 Member of International Program Committee for "Virtual Rehabilitation 2007", Sept 27-29, Venice, Italy.  
2006 Ad-hoc member of NIH Study Section, MRS - Musculoskeletal Rehabilitation Sciences.  
2004 Chairman at XVth International Society for Electrophysiological Kinesiology in Boston, USA. Two scientific sessions; Augmented and Virtual Reality in Rehabilitation, Postural Control  
2004 Member of Organizing Committee of XVth International Society for Electrophysiological Kinesiology in Boston, USA.  
2002 Chairman at XIVth International Society for Electrophysiological Kinesiology in Vienna, Austria.  
2002 Member of Organizing Committee of XIVth International Society for Electrophysiological Kinesiology in Vienna, Austria.  
1995-present Dr. Oddsson maintains a graduate student exchange program with the Department of Mechatronics at the Royal Institute of Technology in Stockholm. These highly skilled students spend 6 months working on a biomedical Masters Thesis project which they present and defend when they go back to Sweden. This interaction has resulted in several devices for use in clinics as well as in biomedical research.

- 1996-2005 Coordinator of the NeuroMuscular Research Center Seminar Series  
 1995 Chairman and organizer of session in Ergonomics and Sports at the Annual Fall Meeting of the Biomedical Engineering Society, Boston, USA.  
 1994 Chairman at Xth ISEK Congress in Charleston, South Carolina, USA.  
 1993 Chairman at XIVth International Congress on Biomechanics, Paris, France.  
 1991 Chairman at XIIIth International Congress on Biomechanics, Perth, Australia.

### **Awards and Honors**

- 2013 Co-Founder and President of medical device startup RxFunction Inc. that reaches **finals** of MN Cup, the largest business plan competition in the US.  
 2013 Nominated and received status of Senior Fellow status of the IEEE.  
 2013 Co-Founder and President of medical device startup RxFunction Inc. that reaches **semifinals** of MN Cup, the largest business plan competition in the US.  
 2012 Co-Founder and President of medical device startup RxFunction Inc. that reaches **semifinals** of MN Cup, the largest business plan competition in the US.  
 2011 Co-Founder and President of medical device startup RxFunction Inc. that reaches **semifinals** of MN Cup, the largest business plan competition in the US.  
 2011 Co-Founder and President of medical device startup RxFunction Inc. that wins New Technology Showcase at the LifeScience Alley annual Conference.  
 2006 Award by The Vestibular Disorders Association “for outstanding contributions toward improving the lives of people with Vestibular Disorders” Sept 16  
 2006 Nominated Fellow of AIMBE (American Institute for Medical and Biological Engineering)  
 2005-pres Marquis Who's Who in Science and Engineering  
 2002 Shared the “Preis der Dr. Heinz und Helene Adam-Stiftung” as Co-Author of paper “Sensory-motor control of the lower back: Implications for rehabilitation”  
 2001-2002 Honored member of Strathmore’s Who’s Who  
 2001-pres Marquis Who’s Who in America  
 1996-2000 Marquis Who’s Who in the East  
 1996 International Track and Field Coaches Association, Honorary Award, at the Olympics in Atlanta.  
 1993 Swedish-Japanese Association Travel/Research Award.  
 1989 Coach of the year award, Swedish Volleyball Association.  
 1988 Klarenborn Foundation Research Award, Swedish Volleyball Association.  
 1985 Leadership in Sports Honor, Swedish Sports Federation.

### **Professional Society Memberships and Activities**

Initiator of the Foundation for Exercise and Sports Research at Department of Physiology III, Karolinska Institute  
 Board Member of the University College of Sports, Stockholm, Sweden  
 Organizer of the NeuroMuscular Research Center Seminar Series  
 Initiator of Master’s Exchange Program in Mechatronics between Royal Institute of Technology, Stockholm and Boston University  
 Consultant in Biomechanics for Biomotions Inc. in Boston  
 Senior Member IEEE  
 Member ISEK  
 Member of the Collaborative  
 Member of LifeScience Alley  
 Nominated member of the Swedish Society

### **Patents**

- #6,119,530 (Issued) Force Sensing Device/Oddsson L.I.E. & Cardoza C.M.  
 #8,235,918 (Issued) Control and Integration of Sensory Substitution/Oddsson L.I.E., Meyer P.M. & Wall C  
 #8,529,477 (Issued) Control and Integration of Sensory Substitution/Oddsson L.I.E., Meyer P.M. & Wall C  
 #8,727,785 (Issued) Method for gravity-like stimulation of natural balance movements during rehabilitation, training and leisure activities/Oddsson, L.I.E.

- #8,851,897 (Issued) Method for gravity-like stimulation of natural balance movements during rehabilitation, training and leisure activities/Oddsson, L.I.E.
- #20,050,131,317 (Allowed) Sensory Prosthetic for Improved Balance Control/Oddsson L.I.E. & Meyer P.M.
- #20,110,296,306 (Pending) Methods and Systems for Personal Support Assistance/Oddsson; Nilsson; Radomski; White
- #29/419,937 (Pending) Balance Feedback Device/Nilsson, Oddsson, Leach

### **Grants as Principal Investigator<sup>9</sup>**

#### ***Karolinska Institute Research Funds***

- 1983 Control of voluntary trunk movements - effects on the equilibrium during standing. 5000 Skr
- 1984 Activation patterns during initiation of trunk movements in standing. 6000 Skr
- 1985 Control of voluntary trunk movements in standing - primary and associated movements. 6000 Skr
- 1986 Is preactivation of postural muscles needed during symmetrical movements performed in standing? 7000 Skr
- 1987 Control of head balance during voluntary trunk movements in standing. 7000 Skr
- 1988 Modulation of the H-reflex during trunk movements and balancing in standing. 8000 Skr
- 1989 Continued studies of H-reflex modulation during trunk movements and balancing in standing. 8000 Skr
- 1990 Position of centre of pressure during voluntary trunk movements in standing - a test of dynamic equilibrium control. 12 000 Skr
- 1991 Displacement of the centre of pressure and centre of gravity during voluntary trunk movements in standing. 12 000 Skr
- 1992 Dynamic balance control during walking and voluntary trunk movements in standing. 12 000 Skr

#### ***Swedish Sports Research Council***

- 1987 Factors of importance for maximal jumping height - development of objective test methods. 15 000 Skr
- 1988 Factors of importance for maximal jumping height - test methods and training models. 20 000 Skr
- 1989 Test methods and training models for maximal jumping height - Effects of age and gender. 25 000 Skr
- 1990 Development and evaluation of training models for maximal jumping height. 30 000 Skr
- 1991 Individual-specific training of jumping performance. 35 000 Skr
- 1992 Vertical jumping performance - Effects of fatigue and individual-specific training models. 40 000 Skr
- 1993 Optimal training models for vertical jumping ability. 40 000 Skr

#### ***University College of Physical Education and Sports, Stockholm***

- 1988 A comparative study of coordination, muscle function and movement efficiency in children and adults. 8000 Skr

#### ***NASA***

- 1999-2002 Graduate Student fellowship for Peter M. Meyer. \$28,000/year

#### ***NASA-NSBRI (National Space Biomedical Research Institute)***

- 2005-2006 A Ground-Based Research Analog for Spaceflight Effects on Gait and Balance – Development of Evidence-Based Rehabilitation \$100,000

#### ***NIH***

- 2005-2007 Treatment of Motor Function and Balance - A New Tool. \$424,138.00
- 2010-2011 A Wearable Balance Booster, SBIR Phase I \$160,000
- 2013-2015 A Wearable Balance Booster – moving closer to the market, SBIR Phase II \$1,100,000

#### ***USRA/Johnson Space Center***

- 2001-2002 Design and Development of “BALDERINI”, a Portable Device for Controlled Perturbation of Gait and Posture in Astronauts. \$62, 622

<sup>9</sup> Please note that some amounts are given in Swedish currency, \$1 ~ 7.50 Skr

2006-2007 Design and Development of "WEMSYS", a wearable system for assessment of mobility for the Functional Mobility Test in astronauts. \$50,000

#### ***Sister Kenny Foundation***

2007-20014 Dr. Oddsson was fully supported under a grant with the Sister Kenny Foundation for his position as Director of the Sister Kenny Research Center that also included his related research activities.

#### ***Technology Development Awards, Boston University***

2005 A Foot Pressure Sensory Substitution Device –Manufacturing a Wearable Prototype for Clinical Testing. \$20,000  
2006 A Foot Pressure Sensory Substitution Device – Refining the Technology. \$28,000

#### ***The Retirement Research Foundation***

2001-2003 Improving Gait and Balance Function in Elderly Individuals. \$204,115

#### ***The Veteran's Administration***

1996-1999 A minimal effort test procedure for patients in pain using the Back Analysis System. \$546,182  
1997-2000 Preventing Falls in the Elderly - Effects of Simple Biomechanical Interventions. \$632,572

#### ***The Whitaker Foundation***

1995-1998 A novel mechatronic device for mapping of balance skills and deficiencies. \$209,448

### **Grants as Co-Principal Investigator or Co-Investigator**

#### ***Karolinska Institute research funds***

1988 Studies of mechanical efficiency in children and adults, probable differences in the utilization of elastic energy (P.I. Dr. Alf Thorstensson). 20 000 Skr  
1989 Contractile properties, electromechanical delay and H-reflex modulation of the triceps surae muscles. A comparison between children and adults. (P.I. Dr. Alf Thorstensson). 20 000 Skr

#### ***NASA-NSBRI (National Space Biomedical Research Institute)***

1998-2000 Advanced Techniques for Assessment of Postural and Locomotor Ataxia, Spatial Orientation, and Gaze Stability. P.I. on subcontract through Dr. Conrad Wall and National Space Biomedical Research Institute. \$42,000  
2001-2003 Advanced Techniques for Assessment of Postural and Locomotor Ataxia, Spatial Orientation, and Gaze Stability. P.I. on subcontract through Dr. Conrad Wall and National Space Biomedical Research Institute. \$92,000 for 2001

#### ***NIH***

2001-2006 Motion sensor array for vestibular deficient individuals. R01 Subcontract with MEEI, PI Conrad Wall \$259,950.00

#### ***Swedish Sport Research Council***

1988 Movement efficiency in children and adults - Differences in contractile properties of muscles and ability to store elastic energy? (P.I. Prof. P-O Åstrand). 25 000 Skr  
1989 Development of the ability to store elastic energy in the muscles from children to adults. (P.I. Prof. P-O Åstrand). 25 000 Skr  
1990 A longitudinal study of movement efficiency in girls and boys, especially with respect to storage and utilization of elastic energy. (P.I. Dr. Alf Thorstensson). 20 000 Skr

#### ***Swedish Work Environment Foundation***

1982-1989 Motor control of the trunk during changing load and degree of fatigue - relationship to back pain. (P.I. Dr. Alf Thorstensson). 2, 000 000 Skr  
1989-1992 Load on the back and injury risks during dynamic lifts and sudden changes in load. (P.I. Dr. Alf Thorstensson). 1, 000 000 Skr

1992-1995 Effects of lifting technique, balance perturbations, training and fatigue on the trunk musculature and load on the spine. (PI Dr. Alf Thorstensson). 2,000,000 Skr

### *Other*

1999-2000 Contracted research work in the area of balance control and low back pain between the NMRC and University of Medicine and Dentistry in New Jersey. (PI Dr. Carlo De Luca, Co-PI Dr. Serge Roy)

### **Grants as Consultant**

#### *NASA-NSBRI (National Space Biomedical Research Institute)*

1997-1999 Neurovestibular Team, PI Dr. Conrad Wall

### **Invited Lectures and Seminars**

- 1986 International Society for Biomechanics in Sports, Athens, Greece. Invited by Organizing Committee
- 1986 University of Waterloo, Waterloo, Canada. Invited together with Dr. Alf Thorstensson by Dr. Bob Norman to give a seminar.
- 1991 International Society for Biomechanics in Sports, Ames Iowa. Invited by Organizing Committee to give two presentations.
- 1991 Biomechanics in Sports Congress in Cadiz Spain, Invited by Organizing Committee to give lecture and work shop
- 1991 RS Dow Institute, Portland Oregon. Invited by Dr. Fay Horak to present seminar.
- 1991 Stanford University, Rehabilitation Research and Development Center Invited by Director Dr. Felix Zajac to present seminar.
- 1993 NMRC Seminar Series, Boston University. Invited by Dr. Jim Collins to present seminar
- 1994 World Congress in Biomechanics, Invited by Organizing Committee through Dr. Maarten Bobbert to give two presentations
- 1994 National Rehabilitation Center for the Disabled, Tokorozawa City, Japan. Invited by Director of Center to give seminar
- 1994 University of Hiroshima, Department of Sports and Health Sciences, Hiroshima, Japan. Invited by Dr. Tatsuya Kasai to give seminar.
- 1994 University of Kyoto, The Graduate School of Human and Environmental Studies, Laboratory of Applied Physiology, Kyoto, Japan. Invited by Dr. Toshio Moritani to give seminar
- 1994 University of Quebec in Montreal (UQAM). Invited by Dr. Rejean Dubuc to give seminar
- 1995 Track and Field World Championships Gothenburg Invited by Organizing Committee to give one presentation and one lecture.
- 1995 Occupational and Industrial Orthopaedic Center, Hospital for Joint Diseases Orthopaedic Institute, NYU. Invited by Director Dr. Margareta Nordin to give seminar
- 1996 Occupational and Industrial Orthopaedic Center, Hospital for Joint Diseases Orthopaedic Institute, NYU Invited by Director Dr. Margareta Nordin to give seminar
- 1996 University of Guelph, Invited by to give seminar
- 1996 International Track & Field Coaches Association, meeting at the Olympics in Atlanta. Invited by President and Founder George Dales to give lecture.
- 1998 Identifying Control Mechanisms for Postural Behaviors. A Satellite meeting to the Society for Neuroscience Meeting, Los Angeles, CA, USA. Invited by Organizing committee to give lecture.
- 1999 Karolinska Institute and University College of Sports, Stockholm, Sweden, Aug Invited by Dr. Alf Thorstensson to give seminar.
- 1999 University of Kyoto, The Graduate School of Human and Environmental Studies, Laboratory of Applied Physiology, Kyoto, Japan. Invited by Dr. Toshio Moritani to give seminar
- 1999 University of Queensland, Department of Physiotherapy, Brisbane, Australia, Invited by Dr. Joanne Bullock-Saxton to give seminar



- 2001 Occupational and Industrial Orthopaedic Center, Hospital for Joint Diseases Orthopaedic Institute, NYU Invited by Director Dr. Margareta Nordin to give seminar
- 2002 Joslin-Beth Israel Deaconess Foot Center. Invited by Research Director Dr. Aristidis Veves to give seminar.
- 2002 NASA Johnson Space Center. Invited by Dr. Jacob Bloomberg to give seminar and demo of BALDERINI, a portable Balance platform.
- 2002 MIT Leglab. Invited by Dr. Hugh Herr to give seminar presentation
- 2003 University of Massachusetts at Amherst, Department of Exercises Science, Invited by Dr. J Hamill to give seminar
- 2003 Boston University Medical Center Invited by Dr. Silliman
- 2004 Boston University Medical Center, Department of Rehabilitation. Invited by Dr. Williams to give Grand Rounds
- 2006 Invited Keynote Speaker at 7th International Workshop on Research and Education in Mechatronics, Stockholm, Sweden. "Bridging Mechatronics and Biomedical Engineering in an Educational Research Environment". Invited by Dr. Mats Hanson.

## **Student Supervision**

### ***Undergraduate Research Projects***

During his time at the University College of Physical Education and Sports, Stockholm, Sweden, Dr. Oddsson supervised an uncounted number of undergraduate students mainly conducting projects in exercise physiology and biomechanics. In addition, he supervised physical therapists conducting post-graduate projects in biomechanics and motor control.

### ***NeuroMuscular Research Center, Boston University, Biomedical Engineering Program***

Biomedical Engineering students at Boston University are required to perform a thesis-like research project during their senior year. During the first semester the students write a proposal and during the second they conduct the actual research which is presented at the Biomedical Engineering Senior Students Conference Day. Dr. Oddsson has supervised the following students in this program.

1. Sydney R Lillard, Valerie A Forner (1996) Short-term Cross-Correlation Analysis of Biomechanical Signals
2. Todd K O'Buckley (1997) Muscle Synergies as a Predictor of fatigue in the Shoulder Joint
3. Anoli Borad, Esther Wong (1998) Characterization of Muscle Synergies during fatiguing contractions
4. Veronica Negron (1998) A Psychophysical and Mechanical Analysis of Balance Control during Quiet Stance and Dynamic Perturbations
5. Piper Dollarhide (1999) Mechanisms of Muscle Injury: Models for in vivo testing
6. Ashini Desai (1999) Proprioceptive Sensitivity and Stochastic Resonance in the Postural Control System
7. Alana Smith (2000) Subjective and Objective Measurements of Balance and Muscle Power in Athletes
8. Nick Patronik (2000) Evaluation of a sensory substitution system for eliciting postural responses
9. Dan Keogh (2001) Linear synergy in the swing phase of unconstrained gait.
10. Stephanie Townsend, Dominic Uchikura (2002) Balance Training under artificial gravity conditions: A model of space flight.
11. Mukesh Singhal (2003) The use of foot pressure related feedback to improve balance function
12. Sagar Patel, Jesse Muir (2004)
13. Theresa Di Paolo, Matthew Christensen (2005)
14. Amanda Dwyer (2006) Strengthening Balance while Balancing Strength: A Postural Balance and Strength Training Study in a Microgravity Environment

### ***Graduate Student projects from the University of Applied Sciences, Hamburg, Germany for the degree of Diploma Engineer***

1. Eilert Klatte (2001)
2. Thomas Weber (2005-06) Design of a Wearable Wireless Balance System for Patients with Peripheral Neuropathy.

### ***Higher course projects in Mechatronics involving students and faculty of the Royal Institute of Technology in Stockholm, Sweden.***

Dr. Oddsson has organized an exchange program between NMRC and undergraduate and graduate student projects for the Department of Mechatronics at the Royal Institute of Technology in Stockholm, Sweden. The program involves students from Sweden visiting the NMRC for a Master's thesis project. Live video conferences are held on a regular basis over the Internet between the NMRC and KTH Mechatronics Department in Stockholm during these projects.

### ***Master Theses***

1. Rudi JC Buijs (1993) Automated Spectral EMG Evaluation of Erector Spinae Musculature  
3rd reader, NeuroMuscular Research Center, Boston University
2. Johan E. Giphart (1994) Development of test protocols and parameters for EMG evaluation of back musculature  
Supervisor, NeuroMuscular Research Center, Boston University
3. Ann E Pavlik (1997) Time-Varying Galvanic Vestibular Stimulation  
2nd reader, NeuroMuscular Research Center, Boston University

### ***Master Student projects from the Department of Mechatronics at the Royal Institute of Technology in Stockholm, Sweden***

Over the past 19 years Dr. Oddsson has led a graduate student exchange program between Boston University and the Department of Mechatronics at the Royal Institute of Technology in Stockholm, Sweden. Dr. Oddsson has provided biomedical engineering projects with a mechatronic component, usually meaning that they incorporate real-time control of an electromechanical device, to these students. The students spend 6 months working on the project and then go back to Sweden to present and defend their Masters thesis. In addition to Boston University, Dr. Oddsson has provided student projects for Spaulding Rehabilitation Hospital and Massachusetts Eye and Ear Infirmary as well as the private industry. The following Masters Thesis projects have been conducted so far. Projects that Dr. Oddsson have been directly involved with are indicated with \*.

4. \*Göran Eklund (1995) A Mechatronic Solution to Surface EMG Electrode Placement on the Lower Back
5. Per Bergman (1996) The Stability Analysis System - a system to measure balance control in upright stance.
6. \*Robert Söderholm (1997) Inverted pendulum control design for implementation on BALDER, a BALance DisturbER platform used for human postural control research
7. \*Niklas Olsson, Johan Dahlin (1998) Virtual Balance - a mechatronic and Virtual Reality system to study human postural control
8. \*Nickolas Zervos, Ola Hellström (1999) Design of a mechatronic device for muscle injury studies - an *in vivo* approach
9. \*Rikard Birgersson (1999) BALDERINA - an inverted pendulum model for real time balance.
10. Martin Salen, Stefan Lundgren (1999) Mechanical Stimulation to Enhance the human Postural Control System by Aperiodic Stochastic Resonance
11. \*Johnny Sundblom (2000) Implementation of a mechatronic device for muscle injury studies
12. Andreas Johansson (2000) (Spaulding Rehab Hospital) Development of a real time control system for single muscle fiber experiments
13. \*Mats Freding (2001) Design of artificial sensory systems for feet
14. Daniel Garmen, Mattias Andreas Harrison, Mikael Setterberg (2001) Development of an AI system for detection of single motor units
15. \*Jimmy Robertsson, Magnus Johansson (2002) BALDERINI - BALance DisturbER mINIature for test of the vestibular system during gait.
16. Fredrik Persson (2002) (MEEI) A mechatronic device for training a monkey to indicate sense of vertical.
17. \*Robin Karlsson, Daniel Zackrisson (2003) Balance Prosthesis for Postural Control - Measuring Tilt and Sway with Real-time Implementations.
18. \*Martin Eriksson (2006). Design of a foot pressure sensory substitution system to be worn at night.
19. \*Ten graduate students under the Sister Kenny research Center umbrella, 2007-2013 (further details on request).

### ***Doctoral Dissertation***

1. Johan E. Giphart (2000) Effects of Sudden visual Stimuli on Posture  
Supervisor, NeuroMuscular Research Center, Boston University
2. Peter Meyer (2002) Effects of Foot Sole Anesthesia on postural control  
Supervisor, NeuroMuscular Research Center, Boston University

3. Robert Burgess,
4. Kathleen Sienko (PhD Candidate MIT 2004). Advisor not on Committee.
5. Kevin Duda (PhD Candidate MIT 2005-2007) Exercise during short-radius centrifugation: Biomechanics and physiological responses. Committee member
6. Jessica Edmonds (PhD Candidate MIT 2005- 2007) Physiological Benefits of Stair-Stepping Exercise in Artificial Gravity. Committee member

### *Post Doctoral Fellows*

1. Dr. Josef Kollmitzer, University Hospital of Vienna, Währinger Gürtel 18-20, 1090 Vienna, Austria. (1999) NeuroMuscular Research Center, Boston University
2. Dr. Gerold Ebenbichler University Hospital of Vienna, Währinger Gürtel 18-20, 1090 Vienna, Austria. (1999) NeuroMuscular Research Center, Boston University
2. Dr. Itzik Melzer, Dept Phys Therapy, Faculty of Health Sci, Ben-Gurion University of the Negev, Israel. NIDRR fellowship (2001-2003) NeuroMuscular Research Center, Boston University.
3. Dr. Erika Zemkova Dept. of Sports Medicine, Faculty of Physical Education and Sports, Comenius University, Bratislava, Slovakia. (2006) Fulbright Fellow NeuroMuscular Research Center, Boston University

### **Participation in Scientific Conferences**

Participated with presentation\* (see list of abstracts below)

Feb 26-27 1982	Swedish Sport Research Council, congress on Children-Youth-Sport, Stockholm, Sweden
May 12-16 1982	Spring meeting of the Swedish Society of Sports Medicine, Ronneby, Sweden
Aug 29-31 1982*	Scandinavian Congress of Physiology and Pharmacology, in Reykjavik, Iceland
Aug 7-12 1983*	IXth International Congress of Biomechanics, Waterloo, Canada.
March 15-16 1984*	Swedish Sport Research Council, Congress on Muscle Strength, Stockholm, Sweden
July 12-15 1984	McMasters International Symposium on Human Muscle Power, Hamilton, Canada.
July 9-13 1985*	Xth International Congress of Biomechanics, Umeå, Sweden
July 13-18 1986*	International Union of Physiological Sciences XXXth Congress, Vancouver, Canada.
Jan 22-24 1987	Swedish Sport Research Council, congress on Conditioning Training, Stockholm, Sweden
March 27-28 1987*	The Physiological Society, University College London/Middlesex meeting, London, England
March 29-April 1 1987	Satelite meeting of the Scandinavian Society of Physiology Applied Human Physiology Symposium, Birmingham, England
Jun 29-Jul 3 1987*	XIth International Congress of Biomechanics, Amsterdam, Holland
July 13-17 1987*	International Symposium on Biomechanics in Sports, iAthens, Greece
May 29-June 1 1988*	International Society for Postural and Gait Research, IXth International Symposium, Marseille, France
June 20-23 1988*	International Society of Electrophysiological Kinesiology (ISEK), VIIIth Congress, Enschede, Holland
June 26-30 1989*	XIIth International Congress of Biomechanics, Los Angeles, USA
May 17-20 1990*	Spring meeting of the Swedish Society of Sports Medicine, Stockholm, Sweden
Aug 12-16 1990*	International Society of Electrophysiological Kinesiology (ISEK), VIIIth Congress, Baltimore, USA
Sept 2-6 1990	International Society for Postural and Gait Research, Xth International Symposium, Munich, Germany
Sept 8-12 1990	13th annual meting of the European Neuroscience Association and 22nd annual meeting of the European Brain and Behaviour Society, Stockholm, Sweden
Nov 21-23 1990*	Nordic Congress on overuse injuries, Stockholm, Sweden
June 29-July 3 1991*	IXth International Symposium on Biomechanics in Sports, Ames, Iowa, USA
July 3-6 1991*	IIIrd National Symposium on Teaching Kinesiology and Biomechanics in Sports, Ames, Iowa, USA
Oct 25 1992	Scandinavian Symposium on Dynamic dynamometry in research and clinical work, at the Karolinska Institute.
Dec 9-13 1991	XIIIth International congress on biomechanics, Perth, Australia
May 23-27 1992	International Society for Postural and Gait Research, XIth International Symposium, Portland, Oregon, USA

May 28-June 3 1992*	American College of Sports Medicine, Dallas, Texas, USA
June 15-19 1992*	Xth International Symposium on Biomechanics in Sports, Milano, Italy
June 28-July 2 1992	International Society of Electrophysiological Kinesiology (ISEK), IXth Congress, Florence, Italy
July 4-July 8 1993*	XIVth International Congress of Biomechanics, Paris, France.
Nov 7-12 1993	23rd Annual Meeting, Society for Neuroscience, Washington, USA.
June 21-24 1994*	International Society of Electrophysiological Kinesiology (ISEK), Xth Congress Xth, Charleston, South Carolina, USA.
July 10-15 1994**	IInd World Congress of Biomechanics, Amsterdam, The Netherlands.
Aug 15-19 1994*	12th triennial Congress of the International Ergonomics Association, Toronto, Canada.
Aug 1994	Muscle Research Retreat, New Hampton, New Hampshire, USA.
Oct 3-7 1994*	12th Congress of International Symposium on Posture and Gait, Matsumoto, Japan.
Aug 1- 3 1995**	Int. Congr. in Sports Med. & Soc. Science in Athletics, at the World Championships in Athletics, Gothenburg, Sweden
Aug 12- 17 1995	American Physical Therapy Association Motor Control Retreat, New Hampton, New Hampshire.
Sept 24-28 1995*	Second International Scientific Conference on Prevention of Work-related Musculoskeletal Disorders, Montreal, Canada
Oct 6 8 1995*	Annual Fall Meeting of the Biomedical Engineering Society, Boston, USA.
June 25-29 1996	International Society for Study of the Lumbar Spine, Burlington, Vermont, USA.
July 20-27 1996*	International Track and Field Coaches Association Congress at the Olympics in Atlanta, USA.
Aug 21-24 1996	Canadian Society for Biomechanics, IXth Biennial Conference, Vancouver, Canada.
Oct 27-30 1996*	The International Society of Electrophysiological Kinesiology, Eleventh Congress, Enschede, The Netherlands.
July 11-13, 1997	The Whitaker Foundation Biomedical Engineering Research Conference, Snowbird, UT, USA
Oct 15-17, 1997*	National Occupational Injury Research Symposium, Morgantown, WV, USA
March 2-5, 1998*	International Conference on Mechanics in Medicine and Biology, Hawaii, USA
June 27-30, 1998*	The International Society of Electrophysiological Kinesiology, Twelfth Congress, Montreal, Canada.
Aug 14-16, 1998*	The Whitaker Foundation Biomedical Engineering Research Conference, La Jolla, CA, USA
Oct 1-3, 1998*	1 <sup>st</sup> National Meeting, VA Rehabilitation Research & Development Service, Washington DC, USA.
Nov 6-7, 1998*	Satellite to Neuroscience on Postural Control Mechanisms, Los Angeles, CA, USA.
Nov 1-3, 1999*	2 <sup>nd</sup> National Meeting, VA Rehabilitation Research & Development Service, Washington DC, USA.
June 22-25, 2002*	The International Society of Electrophysiological Kinesiology, Fourteenth Congress, Vienna, Austria.
June 18-21, 2004*	The International Society of Electrophysiological Kinesiology, Fifteenth Congress, Boston, USA.
Jan 10-12, 2005*	Bioastronautics Investigators Workshop, Galveston, Texas, USA
Feb27-Mar1, 2006*	NSBRI Investigator Retreat, League City, Texas, USA
June 7-9, 2006	7th Symposium on the Role of the Vestibular Organs in Space Exploration, Noordwijk, the Netherlands
June 15-16, 2006*	7 <sup>th</sup> International Workshop on Research and Education in Mechatronics, Stockholm, Sweden.
Aug 29-30, 2006 *	International Workshop on Virtual Rehabilitation, New York City, NY.
Nov 28, 2006*	Platform presentation at MTTC, Massachusetts Technology Transfer Center. "Fall Prevention in Hospitals – Taking a Safer Step Forward", First presentation by a BU faculty member
Feb 16, 2007*	Workshop at the APTA in Boston, MA, USA together with Drs. Diane Wrisley and Conrad Wall on the use of Wearable Balance Prosthetic Devices.
2007-2014	1-2 additional conferences/year, further details on request.

## **Bibliography**

### ***Internal Reports***

1. Basics of injury prevention - An introduction to biomechanics and muscle physiology. 1990, School of Physical Education, Stockholm.
2. Developing team spirit. Educational material on coaching written for use in sports and business. 1990.
3. Motor control, development and learning - an overview. 1991, Department of Physiology III, Karolinska Institute.
4. Technique and Biomechanics of Downhill Skiing. 1993, Swedish University of Sport, Stockholm.

### ***Original Reports***

1. Thorstensson A, Oddsson L & Carlson H. (1985) Motor control of voluntary trunk movements in standing. *Acta Physiol Scand* 125, 309-321.
2. Oddsson L, Thorstensson A. (1986) Fast voluntary trunk flexion movements in standing: Primary movements and associated postural adjustments. *Acta Physiol Scand* 128, 341-349.
3. Oddsson L, Thorstensson A. (1987) Fast voluntary trunk flexion movements in standing: Motor patterns. *Acta Physiol Scand* 129, 93-106.
4. Oddsson L. (1988) Coordination of a simple voluntary multi-joint movement with postural demands: Trunk extension in standing. *Acta Physiol Scand*, 134, 109-118.
5. Moritani T, Fuchi T, Oddsson L, Andersson E. (1988). Applications of fast Fourier transform (FFT) in noninvasive physiological measurements in sport sciences. *J Sports Medicine & Science*, Vol 2:1, 27-42.
6. Oddsson L. (1989). Motor patterns of a fast voluntary postural task in man: Trunk extension in standing. *Acta Physiol Scand*, 136, 47-58.
7. Moritani T, Oddsson L, Thorstensson A, Åstrand P-O. (1989) Neural and biomechanical differences between men and young boys during a variety of motor tasks. *Acta Physiol Scand* 137, 347-355,
8. Moritani T, Oddsson L, Thorstensson A (1990) Differences in modulation of the gastrocnemius and soleus H-reflexes during hopping in man. *Acta Physiol Scand* 138, 575-576.
9. Moritani T, Oddsson L, Thorstensson A (1990) Electromyographic evidence of selective fatigue during eccentric phase of stretch-shortening cycles in man. *Eur J Appl Physiol* 60, 425-429.
10. Oddsson L.I.E. (1990) Control of voluntary trunk movements in man - Mechanisms for postural equilibrium during standing. *Acta Physiol Scand* 140 Suppl 595 (Dissertation).
11. Moritani T, Oddsson L, Thorstensson A (1991) Activation patterns of the soleus and gastrocnemius muscles during different motor tasks. *J Electromyogr Kinesiol* 1:81-88
12. Moritani T, Oddsson L, Thorstensson A (1991) Phase dependent preferential activation of the soleus and gastrocnemius muscles during hopping in man. *J Electromyogr Kinesiol* 1:34-40
13. Bonnard M, Sirin AV, Oddsson L, Thorstensson A (1994) Different strategies to compensate for the effects of fatigue revealed by neuromuscular adaptation processes in humans. *Neuroscience Letters*, 166:101-105,
14. Cresswell A, Oddsson L, Thorstensson A. (1994) The influence of sudden perturbations on trunk muscle activity and intra-abdominal pressure while standing. *Experimental Brain Research* 1994, 98(2):336-341.
15. Andersson E, Oddsson L, Grundström H, Thorstensson A. (1995) The role of psoas and iliacus for stability and movement of the lumbar spine, pelvis and hip. *Scandinavian Journal of Medicine and Science in Sports*, 5, 10-16
16. Andersson E, Grundström H, Nilsson J, Oddsson L, Thorstensson A. (1996) EMG activities of the quadratus lumborum and erector spinae muscles during flexion-relaxation and other motor tasks. *Clin Biomech* 1996, 11:7, 392-400.
17. Oddsson L.I.E. (1996) Neuromuscular and Biomechanical Aspects of Jump training - An Overview of Science and Reality. *Proceedings of the International Track & Field Coaches Association, XIV Congress, Atlanta Georgia, USA, July 22-25, 22-28.*
18. Oddsson L, Giphart JE, Buijs RC, Roy SH, Taylor HP, De Luca CJ (1997) Development of New Protocols and Analysis Procedures for the Assessment of LBP by Surface EMG Techniques. *J Rehabilitation Research and Development* Oct;34(4):415-26
19. Roy SH, De Luca CJ, Emley M, Oddsson LI, Buijs RC, Newcombe DS, Jabre JF. (1997) Classification of Back Muscle Impairment Based on the Surface Electromyographic Signal. *J Rehabilitation Research and Development*, 34:4, 405-414.
20. Roy SH, Oddsson LI (1998) Classification of Paraspinal Muscle Impairment by Surface Electromyographic Procedures, *Journal of Physical Therapy*, Aug;78(8):838-51
21. Pavlik AE, Inglis JT, Lauk M, Oddsson L, Collins JJ. (1999) The effects of stochastic galvanic vestibular stimulation on human postural sway. *Exp Brain Res* 124:3, 273-280.

22. Oddsson LIE, Persson, T, Cresswell AG, Thorstensson A. (1999) Interaction between Voluntary and Postural Motor Commands during Perturbed Lifting. *Spine*, Mar 15;24(6):545-52.
23. Kollmitzer J, Oddsson L, Postural Responses During Manual Material Handling: Preliminary Data; in *Electrophysiology and Kinesiology*, Editors: Yukio Mano, Morihiko Okada, Monduzzi Editore Bologna Italy 2000, pp: 531-534. ISBN 88-323-0625-5
24. Ebenbichler GR, Oddsson LIE. Kollmitzer J, Erim Z. (2001) Sensory-motor control of the lower back: implications for rehabilitation. *Med Sci Sports Exerc.* 2001 Nov; 33(11):1889-98
25. Kollmitzer J, Oddsson L, Ebenbichler GR, Giphart JE, De Luca CJ. (2002) Postural control during lifting, *Journal of Biomechanics*, 35(5):585-594
26. Dederig Å, Oddsson L, Harms-Ringdahl K, Nemeth G, (2002) Electromyography and ratings of lumbar muscle fatigue using a four-level staircase protocol. *Clin Biomech* 17:3,171-176
27. Oddsson LIE, De Luca CJ (2003) Activation imbalances in lumbar spine muscles in the presence of chronic low back pain. *J Appl Physiol* 94: 1410-1420.
28. Meyer PF, Oddsson LIE (2003) Alternating-Pulse Iontophoresis: Application to Cutaneous Foot Sole Anesthesia. *Neuroscience Methods J Neurosci Methods* May 30; 125 (1-2):209-14)
29. C. Wall, III, L.I. Oddsson, N. Patronik<sup>c</sup> and E. Kentala (2003) Recovery Trajectories of Vestibulopathic Subjects after Perturbations during Locomotion. *J Vestib Res* 12, 239-253
30. Oddsson LIE, Wall III C, McPartland MD, Krebs DE, Tucker CA, (2004) Recovery from perturbations during paced walking. *Gait and Posture* Jan; 19(1): 24-34
31. Meyer PF, Oddsson LIE, De Luca CJ. (2004) The role of plantar cutaneous sensation in unperturbed stance. *Exp Brain Res* Jun;156(4):505-12
32. Meyer PF, Oddsson LIE, De Luca CJ. (2004) Reduced plantar sensitivity alters postural responses to lateral perturbations of balance *Exp Brain Res* Aug;157(4):526-36. Epub 2004 Mar 17
33. Melzer I Oddsson LIE. (2004) The effect of a cognitive task on voluntary step execution in healthy young and elderly individuals *J Am Geriatr Soc*, Aug;52(8):1255-62.
34. Applications of vibrotactile display of body tilt for rehabilitation. Wall C 3rd, Oddsson LE, Horak FB, Wrisley DW, Dozza M. *Conf Proc IEEE Eng Med Biol Soc.* 2004;7:4763-5.
35. Oddsson LIE, Boissy P. Melzer I. (2007) How to Improve Gait and Balance Function in Elderly Individuals – Compliance with Principles of Training. *Eur Rev Aging Phys Activity* Volume 4, Number 1 / April, 15-23.
36. Melzer I, Shtilman I, Rosenblatt N, Oddsson LIE. (2007) Reliability of Voluntary Step Execution Behavior under Single and Dual Task Conditions *J Neuroengineering Rehabil.* 2007 May 29;4:16.
37. Melzer I, Kurtz I, Shahar D, Levi M, Oddsson LIE. (2007) Application of the Voluntary Step Execution Test to Identify Elderly Fallers, *Age Ageing.* 2007 Jun 1
38. Oddsson L.I.E., Konrad J., Williams, S.R., Karlsson R., Ince S, Zemkova, E. (2007) A Rehabilitation Tool for Functional Balance using Altered Gravity and Virtual Reality, *J Neuroengineering Rehabil* 2007, 4:25 (10 July 2007)
39. Melzer I, Elbar O, Tzedek I, Oddsson L. A water-based training program that include perturbation exercises to improve stepping responses in older adults: study protocol for a randomized controlled cross-over trial. *BMC Geriatr.* 2008 Aug 17;8(1):19.
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41. Burgess RJ, Hillier S, Keogh D, Kollmitzer J, Oddsson L. Multi-segment trunk kinematics during a loaded lifting task for elderly and young subjects. *Ergonomics.* 2009 Feb;52(2):222-31. PubMed PMID: 19296316.
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44. Oddsson LI, Radomski MV, White M, Nilsson D. A robotic home telehealth platform system for treatment adherence, social assistance and companionship - an overview. *Conf Proc IEEE Eng Med Biol Soc.* 2009; 1:6437-40.
45. Melzer I, Liebermann DG, Krasovsky T, Oddsson LI. Cognitive Load Affects Lower Limb Force-Time Relations During Voluntary Rapid Stepping in Healthy Old and Young Adults. *J Gerontol A Biol Sci Med Sci.* 2009 Nov 25. [Epub ahead of print] PubMed PMID: 19939911.

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48. Melzer I, Krasovsky T, Oddsson LI, Liebermann DG. Age-related differences in lower-limb force-time relation during the push-off in rapid voluntary stepping. *Clin Biomech (Bristol, Avon).* 2010 Dec;25(10):989-94. Epub 2010 Aug 17. PMID: 20724044
49. Melzer I, Kurz I, Shahar D, Oddsson LI. Do voluntary step reactions in dual task conditions have an added value over single task for fall prediction? A prospective study. *Aging Clin Exp Res.* 2010 Oct-Dec;22(5-6):360-6. PMID: 21422793
50. Gimmon Y, Rimer R, Oddsson L, Melzer I. The effect of plantar flexor muscle fatigue on postural control. *J Electromyogr Kinesiol.* 2011 Dec;21(6):922-8. Epub 2011 Sep 13 PMID: 21917475
51. Halvarsson A, Oddsson, L, Olsson E, Farén E, Pettersson A, Ståhle A. Effects of new, individually adjusted, progressive balance group training for elderly people with fear of falling and tend to fall: a randomized controlled trial. *Clin Rehabil.* 2011 Nov;25(11):1021-31.(see author change in **CORRIGENDUM**, *Clin Rehabil* Nov 2012)
52. Shorer Z, Becker B, Jacobi-Polishook T, Oddsson L, Melzer I. Postural control among children with and without attention deficit hyperactivity disorder in single and dual conditions. *Eur J Pediatr.* 2012 Feb 16. [Epub ahead of print], PMID: 22350284
53. Oddsson LIE, Melzer I, Improving Balance Control and Self-Reported Lower Extremity Function in Community Dwelling Older Adults: A Randomized Control Trial, *Clinical Rehabilitation*, Mar;27(3):195-206. doi: 10.1177/0269215512450295. Epub 2012 Jul 26 [Selected for presentation in OrthoEvidence]
54. Wall C, Wrisley D, Oddsson L, Vibrotactile feedback of mediolateral trunk tilt or foot pressure increases locomotor performance in healthy older adults - a pilot study *Conf Proc IEEE Eng Med Biol Soc.* 2012
55. Halvarsson A, Franzén E, Farén E, Olsson E, Oddsson L, Ståhle A. Long-term effects of new progressive group balance training for elderly people with increased risk of falling - a randomized controlled trial. *Clin Rehabil.* 2012 Oct 31. [Epub ahead of print]
56. Kurz I, Oddsson L, Melzer I. Characteristics of balance control in older persons who fall with injury - A prospective study. *J Electromyogr Kinesiol.* 2013 May 10. doi:pii: S1050-6411(13)00076-X. 10.1016/j.jelekin.2013.04.001. [Epub ahead of print] PMID: 23669557
57. Kathleen H. Sienko, M. David Balkwill, Lars I. E. Oddsson and Conrad Wall III. The effect of vibrotactile feedback on postural sway during locomotor activities *Journal of NeuroEngineering and Rehabilitation* 2013, 10:93, 10.1186/10.1186/1743-0003-10-93.

### ***Original Reports in Submission or Manuscript Format:***

#### ***In submission***

1. *Itshak Melzer, Lars I.E. Oddsson, Altered Characteristics of Balance Control in Obese Older Adults, Obesity Research & Clinical Practice*
2. *Sienko KH, Statler K, Oddsson L, Wall III C. Providing cues of verticality for a balance-compromised patient using vibrotactile sensory substitution (Am J Phys Med & Rehab)*
3. *Alexandra Halvarsson, Lars Oddsson, Erika Franzén, Agneta Ståhle, Long-term effects of a progressive and specific balance-training programme with multi-task exercises for older adults with osteoporosis – a randomised controlled study, Clinical Rehabilitation*
4. *Kathleen H Sienko, M. David Balkwill, Lars I.E. Oddsson, Conrad Wall III. Dynamic gait in vestibulopathic and age-matched control subjects during perturbed and non-perturbed walking. Gait & Posture*

#### ***Manuscripts***

1. *Oddsson LIE, Patronik N, Sienko K, Wall C. Indirect Detection of Heelstrike from Kinematic Parameters of Gait without using Foot Switches*
2. *Oddsson LIE., Kentala E. Meyer PF., Kubert H, Wall III C Effects of Vibrotactile Feedback on Balance Control in Vestibulopathic Individuals during Continuous Horizontal Surface Perturbations (J Vestib Res)*

***Long Abstracts in Reviewed Proceedings: (\*Presented by Dr. Oddsson)***

1. \*Oddsson LIE, Thorstensson A, Andersson E, Arvidsson Å (1985). Balance in muscle strength between agonist and antagonist muscles of the trunk. In Biomechanics IX-B, (Ed. D.A. Winter, R.W. Norman, R.P. Wells, K.C. Hayes and A. E. Patla) Human Kinetics Publ. Champaign, Illinois. pp 15-20,
2. \*Oddsson LIE, Thorstensson (1987) A Reaction time and pattern of muscle activation in trunk flexion and extension movements. In Biomechanics X-A, (Ed. B. Jonsson) Human Kinetics Publ. Champaign Illinois. pp, 431-436
3. \*Oddsson L. (1987) What factors determine vertical jumping ability? In Proceedings of International Society of Sports Biomechanics V, Athens, Greece.
4. \*Oddsson L. (1989) Reaction time and postural responses during arm movements in the frontal and sagittal planes. XIIth Int Congress of Biomechanics, Los Angeles. Congress Proceedings, Abstract 253.
5. Oddsson LIE, Moritani T, Thorstensson A (1989) Modulation of the gastrocnemius and soleus H-reflex during hopping. XIIth International Congress of Biomechanics, Los Angeles, 1989, Congress proceedings, Abstract 271.
6. Oddsson LIE, Moritani T, Thorstensson A (1990) Observations on the H-reflex and EMG changes of the human soleus and gastrocnemius muscles during locomotion. In: Disorders of Posture and Gait (Ed. Brandt, T, Paulus, W, Bles, W, Dietrich, M, Krafczyk, S and Straube, A), G. Thieme Verlag, Stuttgart, 1990, 103-106.
7. \*Oddsson LIE, Andersson E, Moritani T, Thorstensson (1991) Differences between males and females in EMG and fatiguability of lumbar back muscles. In: Elsevier Science Publishers B.V. (Biomedical division) Electromyographical Kinesiology, 295-298. Eds, Anderson P.A., Hobart D.J. & Danoff J.V.
8. \*Oddsson LIE, Westing S (1991) Jumping height can be accurately predicted from selected measurements of muscle strength and biomechanical parameters. In Biomechanics in Sports IX, 1991, 29-33. Eds, C.L. Tant, P.E. Patterson, S.L. York.
9. Andersson E, Oddsson L, Grundström H, Thorstensson A (1991) Psoas and iliacus muscles act in concert or selectively during natural movements in man. In: Book of Abstracts, XIIIth International Congress on Biomechanics, 254-255
10. Cresswell A, Oddsson L, Thorstensson A (1992) Compensatory responses to sudden perturbations of the trunk during standing. I: Posture and Gait Control Mechanisms, pp 380-384, Eds. Woolacott, M. & Horak, F.
11. \*Oddsson LIE, Moritani T (1992) Double twitch characteristics of the triceps surae muscles - relationship to fatiguability during maximal hopping. Proceedings of Xth International Symposium of Biomechanics in Sports.
12. Bonnard M, Sirin A, Oddsson L, Thorstensson A (1993) Submaximal hopping prolonged until exhaustion: Adaptation of motor patterns and neuromuscular strategies. In: Book of Abstracts, XIVth International Congress on Biomechanics in Paris, 1993, 198-199
13. \*Oddsson LIE, Stokes VPS, Ariel G, Penny A (1993) A quality index of dynamic equilibrium control during locomotion and voluntary trunk movements in standing. In: Book of Abstracts, XIVth International Congress on Biomechanics in Paris, 1993, 974-975
14. Stokes VPS, Penny A, Hickner R, Ariel G (1993) A bilateral drift index for treadmill locomotion. In: Book of Abstracts, XIVth International Congress on Biomechanics in Paris, 1993, 1292-1293.
15. \*Oddsson LIE, Roy SH, Giphart JE, Emley M, Levins JA, De Luca CJ (1994) Influence of different contraction levels on surface EMG spectral parameters of back muscles. In: Book of Abstracts, Tenth Congress of ISEK, Charleston, South Carolina, pp 60-61, 1994
16. Roy SH, De Luca CJ, Emley M, Oddsson L, Buijs, RJC, Gilmore LD (1994) Performance evaluation of back muscles by surface EMG spectral analysis. In: Proceedings of the 12th triennial Congress of the International Ergonomics Association 1994:3, 113-115.
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19. \*Oddsson L, Cresswell A, Thorstensson A (1994) Conflict between Voluntary and Postural Motor Programs during Perturbed Lifting - a Potential Injury Mechanism. XIIth International Symposium on Posture and Gait, Matsumoto, Japan 1994.



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