Herman van der Kooij, Ph. D.

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Biomechanical Engineering (MIRA,CTW)
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ADDRESS INFORMATION

Name : Van der Kooij, Herman
Day of birth : April 25, 1970
Place of birth : Rotterdam (The Netherlands)
Gender : Male

INTERESTS

- Human motor control, adaptation, and learning.
- Rehabilitation robots.
- Diagnostic robotics.
- Virtual reality.
- Rehabilitation medicine.
- Neuro computational modeling.
- Neural mechanics.

EDUCATION

- Dept. of Applied Physics, University of Twente, Enschede (1989-1990).
- Dept. of Mechanical Engineering, University of Twente, Enschede (1990-1995).
- Major: Biomechanical Engineering.
- Master's thesis: Muscle force predictions during human gait.
- Dept. of Philosophy of Science, Technology and Society (1993-1995).
- Courses:
  - DISC DMSC (1998)
  - Educational DUIT course (2001)
  - Prospective Academic Leadership for associate professors (2006-2007) –Subjects: Effective communication, situational leadership, intervision and coaching, conducting difficult interviews, career and competence development, change management, giving feedback.

POSITIONS HELD

- PhD-student Laboratory for Biomechanical Engineering, ,WB, University of Twente, Enschede,1995-1999.
- Junior researcher at Dept. of biomechanical engineering, BMTI, University of Twente, 2000-2002.
- Assistant Professor at Dept. of biomechanical engineering, CTW, University of Twente, 2002-2008.
- Associate Professor at Dept. of biomechanical engineering (0.8 FTE), CTW, University of Twente, 2008-2010.
- Associate Professor at Dept. of biomechanical engineering (0.2 FTE), 3mE, Delft University of Technology, 2008-2011.
- Full professor Biomechatronics and rehabilitation technology at Dept. of biomechanical engineering (0.8 FTE), CTW, University of Twente, 2010-present.
- Full Professor at Dept. of biomechanical engineering (0.2 FTE), 3mE, Delft University of Technology, 2011-present.
- Visiting Professor at Biorobotics Laboratory, EPFL, Lausanne, Switzerland. August 2011-August 2012.

FUNDING

Past Funding

Title: A contribution towards the cost of the human performance virtual reality lab — **PI**: H. van der Kooij
Number: NA — **Period:** 2001 — **Effort:** NA
Source: VIRTUAL VALLEY TWENTE — **Funded:** 100.000,- NLG — **Role:** PI

Title: EXOZORG — **PI**: H. Hermens
Number: ICT doorbraak — **Period:** 2002-2006 — **Effort:** 20 %
Source: TS SENTER GRANT — **Funded:** 1.1257.956,- NLG — **Role:** Project Co-PI
Description: The goal of the ExoZorg project is to develop knowledge about technology for ambulatory training and assessment for human motor control in the home or work environment. Additionally, there is supervision of the training via a telematic link. This new technology will allow extra-mural training and assessment of motor control during daily activities in the daily environment during the whole day in stead of a few hours per week in a rehabilitation centre or physiotherapy institute.

Title: DEVELOPMENT OF A LOWER EXTREMITY POWERED EXOSKELETON (LOPES). — **PI**: H. van der Kooij
Number: 016027011 — **Period:** 2002-2007 — **Effort:** 50%
Source: NWO-VIDI — **Funded:** 1.500.000,- NLG — **Role:** PI
Description: The goal of the LOPES project (LOwer-extremity Powered ExoSkeleton) is to design and implement a gait rehabilitation robot for treadmill training. At first the target group consists of people who have suffered a stroke and have impaired motor control.

Title: ACTIVE REHABILITATION (AR) — **PI**: G. Nijebanning (BAAT)
Number: TSGE2050 — **Period:** 2003-2008 — **Effort:** 20 %
Source: TS SENTER GRANT — **Funded:** 655.745,- EURO — **Role:** Project Co-PI
Description: The Active Rehabilitation Project wishes to resolve the question if robotics can actually improve the functional recovery of upper limb function of stroke patients. And if so, how to achieve the optimal results.

Title: SCOOTMOBIEL SIMULATOR (SCOMISI) — **PI**: M.J.A. Jannink (RRD)
Number: ICT/2004/04 — **Period:** 2004-2005 — **Effort:** 5%
Source: INNOVATIVE ACTIONS OVERIJSEL — **Funded:** 10.010,-EURO — **Role:** Co-PI
Description: Development and evaluation of virtual reality simulator for a scoot mobile.

Title: Brain Gain — **PI**: P. Desain (Radboud)
Number: SSM06011 — **Period:** 2007-2011 — **Effort:** 10 %
Source: SMART-MIX — **Funded:** € 244.441 — **Role:** Project Co-PI
Description: Radboud University in Nijmegen, together with the universities of Maastricht and Twente, the Dutch organisation for applied research, and several industrial partners and patient organizations are combining their expertise in Brain-Computer and Computer-Brain Interfacing. Their mission is to apply recent developments in the area of analysing and influencing brain activity to the improvement of quality of life and performance for both patients and healthy users.

Title: VIRTUROB — **PI**: M.J.A. Jannink (RRD)
Number: NA — **Period:** 2007-2011 — **Effort:** 10 %
Source: PIDON — **Funded:** 518.705,- EURO — **Role:** Project Co-PI
Description: Combination of robotics and virtual reality to enhance the training and diagnosis of neuro motor disorders

Title: EVRYON — **PI**: E. Guglielmelli (Unicampus)
Number: FP 7 ICT 2007.8.5 — **Period:** 2009-2011 — **Effort:** 5 %
Source: EU STREP — **Funded:** 313.000,- EURO (UT) 303.000,- EURO (TUD) — **Role:** Project Co-PI
Description: The goal of the project is to develop a novel approach for the design of wearable robots, e.g.

exoskeletons, prosthesis, and other wearable mechatronic devices that can be used for a variety of applications, such as rehabilitation, personal assistance, human augmentation and more.

Title: ROBOTIC GAIT TRAINER **PI**: B. Screever (Demcon)
Number: NA **Period:** 2009-2013 **Effort:** 5 %
Source: PIDON **Funded:** 375.623,- EURO **Role:** Project Co-PI
Description: Follow up project of LOPES. Development of robotic gait trainer suited for a clinical setting and which will be evaluated within the project period by a multi centre randomized clinical trial with acute stroke survivors.

Title: MIAS **PI**: M. Jannink (RRD)
Number: NA **Period:** 2009-2012 **Effort:** 7%
Source: EUREGIO **Funded:** 320.697,- EURO **Role:** Project Co-PI
Description: Development and evaluation of hybrid robotic functional electrical therapy system for domestic use.

Title: ROBOTIC ARM FOR NEURO NAVIGATION **PI**: M. van Burik (ANT)
Number: NA **Period:** 2009-2012 **Effort:** 5 %
Source: PIDON **Funded:** 349.913,- EURO **Role:** Project Co-PI
Description: Development and evaluation of a robotic arm to position a TMS coil and track human head movements.

Title: MINDWALKER **PI**: M. Ilzkovitz, (SpaceApps)
Number: FP7 ICT-2009.7.2 **Period:** 2009-2012 **Effort:** 5 %
Source: EU-STREP **Funded:** ~ 355.000,- EURO (UT) **Role:** Project Co-PI
~ 408.321,- EURO (TUD)
Description: Development and testing of mind controlled orthosis and VR training environment for walking empowering.

Title: Xpeds **PI**: H. van der Kooij
Number: NA **Period:** 2010-2011 **Effort:** 5 %
Source: CONTRACT RESEARCH **Funded:** 75.000,- EURO (UT) **Role:** PI
75.000,- EURO (TUD)
Description: Development and evaluation of wearable exoskeletons to support walking.

Ongoing Funding

Title: BALROOM **PI**: H. van der Kooij
Number: 10737 **Period:** 2010-2015 **Effort:** 5 %
Source: STW **Funded:** 750.000,- EURO **Role:** PI

Description: Development and evaluation of balance test room to diagnose balance disorders and predict falling.

Title: MIRIAM **PI**: S. Misra (UT)
Number: NA **Period:** 2010-2015 **Effort:** 5 %
Source: PIDON **Funded:** 310.000.- EURO **Role:** Project Co-PI
Description: Development of MRI compatible device for prostate biopsy.

Title: Ambu Lopes **PI**: H. van der Kooij
Number: NA **Period:** 2011-2013 **Effort:** 5 %
Source: CONTRACT RESEARCH **Funded:** 624.000.- EURO **Role:** PI
Description: Development of ambulant robotic gait trainer

Title: BALANCE **PI**: J. Veneman (Technalia)
Number: FP7 ICT2011.2.1 **Period:** 2013-2017 **Effort:** 5 %
Source: EU-STREP **Funded:** 588.000.- EURO **Role:** Project co-PI
Description: Development of algorithms that improve stability of wearable exoskeletons and their users.

Title: EmBALANCE **PI**: L. Luxon(University College London)
Number: FP7 ICT-2013.5.2 **Period:** 2013-2016 **Effort:** 5 %
Source: EU-STREP **Funded:** 330.202.- EURO **Role:** Project co-PI

Description: Development of diagnostic tools for subjects with balance disorders.

Title: Symbitron		**PI**: H. van der Kooij
Number: FP7 ICT-2013.2.1	**Period:** 2013-2017	**Effort:** 10 %
Source: EU-STREP	**Funded:** XXX.- EURO	**Role:** coordinator

Description: Development personalized exoskeletons for spincal cord injured subjects.

Title: AWARD		**PI**: H. van der kooij
Number: NA	**Period:** 2013-2017	**Effort:** 5 %
Source: STW	**Funded:** 454.000.- EURO	**Role:** Project co-PI

Description: Development diagnostic modules for the gait trainer LOPES.

AWARDS, RECOGNITION AND SERVICE

- PhD-degree cum laude at the University of Twente. Promotors: Prof.dr.ir. H.J. Grootenboer, Prof.dr. F.C.T. van der Helm. Title PhD-thesis: Balance control in standing and walking.
- Personal Grant (VIDI 2001).

INTERNATIONAL RESEARCH TRAINING AND COLLABORATION

- Lab visit OHSU granted by the NIH, USA (2005, two months).
- Neurologische Klinik, Neurozentrum Freiburg, Germany (Prof. Dr. Th. Mergner).
- Neurological Sciences Institute, Oregon Health Sciences University, Portland, USA (Dr. R. J. Peterka).
- University of Maryland, College Park, Maryland, USA (Prof. J. Jeka).
- Physical Med & Rehab.; Biomedical Engineering, Northwestern University, Chicago, USA (Dr. J.P.A. deWald).
- University of British Columbia (Dr. Mark Carpenter).
- Institute of Automatic Control Engineering, Technical University Munich (Ing. H. Valery).
- Biorob, EPFL, Switserland (Prof. Auke Ijspeert)

MENTORING

Graduate advisor of Phd Students:

- 2002-2007: Jan Veneman (LOPES project, University of Twente).
  PhD thesis: Design and evaluation of the gait rehabilitation robot lopes (6 December 2007, assistant promoter).
- 2002-2008: Edwin van Asseldonk (LOPES project, University of Twente).
  PhD thesis: Restitution and compensation in the recovery of function in the lower extremities of stroke survivors (20 March 2008, assistant promoter).
- 2003-2008: Arno Stienen (Active Rehabilitation, University of Twente).
  PhD thesis: Development of novel devices for supper extremity rehabilitation (29 January 2009, assistant promoter).
- 2008-2013 Tjitske Boonstra (BrainGain, University of Twente).
  PhD thesis: The contribution of each leg to bipedal balance control (6 June 2013, promoter)
- 2009-2014: Ard Westerveld (MIAS, University of Twente).
  PhD thesis: Robotics combined with electrical simulation (13 March 2014, promoter)
- 2009-present: Floor Campfens (TG, University of Twente).
- 2008-present: Bram Koopman (Evryon, University of Twente).
- 2009-present: Jos Meuleman (robotic gait trainer, MOOG/ University of Twente).
- 2009-present: Alexander Otten (Virturob, University of Twente)
- 2009-present: Wietse van Dijk (Evryon/ Xpeds, Delft University of Technology).
- 2010-present: Shiqian Wang (MindWalker Delft University of technology).
- 2010-present: Letian Wang (Mindwalker, University of Twente)
- 2010-present: Bertine Fleerkotte (Robotic gait trainer Roessingh Research & Development)
- 2011-present: Denise Engelhart (Balroom, University of Twente)
- 2012-present: Arvid Keemink (Hhaptics: Lifting aid, University of Twente)
- 2012-present: Serdar Ates (Script, University of Twente)
- 2013-present: Mark Vlutters (Balance, University of Twente)
- 2013-present: Juliet Haarman (Safe, Roessingh Research & Development)
- 2013-present: Alexander Kuck (Neuras, University of Twente)
- 2013-present: Rick Bosveld (Award, University of Twente)
- 2013-present: Amber Emmens (Symbitron, University of Twente)

TEACHING

- Lectures on the Twente Summer School (2000).
- Supervision of master students and bachelor students in final thesis research (2000-present).
- Lecturer on and coordinator of 'Human motion control' biomechanical engineering/ biomedical technology master course (2000-present).
- Lecturer on 'Biomechatronics' biomechanical engineering/ biomedical technology master course (2002- present).
- Lecturer on 'Biomechanics' biomechanical engineering master course (2000-2002).
- Lecturer on and coordinator of 'Identification of human motor control' Technical Medicine master course (2007-present).
- Lectures on 'Human locomotor system' Technical Medicine bachelor course (2005-2006).
- Lectures on BEAM D, a Matlab programming course for first year Bachelor students Mechanical Engineering (2009-present).
- Organization and lectures on the NeuroSipe Summer School (20-24 September 2010).
- Lectures on human and robot locomotion (2013-present)

REVIEWER

- Biological Cybernetics
- Human Movement Science
- Journal of Physiology
- Journal of Neurophysiology
- Journal of Biomechanics
- Muscle and Nerve
- IEEE Transactions on Neural Systems & Rehabilitation Engineering
- Experimental Brain research
- Neural Networks
- Neuroscience Letters
- Physical letters A
- Annals of biomedical engineering
- Reviewer for research councils/ foundations (NWO, IWT-Vlaanderen, Swiss National Science Foundation,

- IEEE Transactions on Mechatronics

FWO, STW), European Research Council, European Union.

COMMITTEES AND PROFESIONAL DEVELOPMENTS ACTIVITIES

- Initiator and manager of the human performance virtual reality lab (opened in the autumn of 2002).
- Scientific mentor of the TOP company KISS (2003-2005).
- Chair Balance control, ESB 2004, Den Bosch Netherlands.
- Member of Scientific Review Committee ICORR, June 28th-July1th, 2005, Chicago, USA.
- Chair Neurophysiology, Dutch Biomedical Conference, 18 & 19 januari 2007, Egmond aan Zee.
- Chair Therapy Robotics , ICORR, June 13-15, 2007, Noordwijk, The Netherlands.
- Member of Scientific Program Committee, ICORR, July 14th-18th, 2007, Noordwijk, The Netherlands.
- Member of Scientific Committee ISPGR, 2007, Vermont, USA.
- Member of International Program Committee IASTED Assistive Technologies, April 16th-18th 2008, Baltimore, USA.
- Member of Program committee of the BioRob, October 19-22, 2008 Scottsdale, Arizona, USA.
- Member of the IEEE-EMBS-Technical Committee for Biorobotics.
- Member of the scientific committee IEEE 11th International Conference on Rehabilitation Robotics, Kyoto, Japan, 2009.
- Member of the International Program Committee for Telehealth and Assistive Technology (TAT 2009).
- Member of the program committee of the STW funded Perspective Program NeuroSipe (Diagnostic tools for neurological disorders).
- Member of the scientific committee IEEE 12th International Conference on Rehabilitation Robotics, Zurich, Switzerland, 2011.
- COST ACTION
- Organizer and speaker on symposium Advanced control methods to identify balance control mechanisms in stance and gait. ISPGR
- Organizer cost symposium
- Werobb

EDITORIAL BOARD

- 2008-present: review editor Frontiers in Neurorobotics.
- 2010-2013: Associate editor IEEE TBME (ISSN 1558-2531).
- 2013-present: Member of editorial board IEEE TBME (ISSN 1558-2531)
- 2011: Associate editor for IEEE EMBC conference, Boston, USA .
- 2011: Quest editor of special issue (Volume 2, Issue 4) of Paladyn. Journal of Behavioral Robotics **(**ISSN 2081-4836).
- 2012-present: Member of editorial board Actuators (ISSN 2076-0825).

PATENT

1. Behrens, S.M., Voort, H.C., Stienen, A.H.A., Aldakkan, K.A. **& Kooij, H. van der**, "Walk training apparatus, and use thereof" EP13196260 (9-12-2013).
2. Hekman, E.E.G.; Stienen, A.H.A.; **Van der Kooij H**. "Friction Force Control Device" WO2008043509 (A8). Publication data: 17-04-2008.
3. Stienen, A.H.A.; Hekman, E.E.G.; **Van der Kooij H**, " Orthesis". WO2008043508 A1. Publication data: 17-04-2008.

TECHNOLOGY TRANSFER

- Freeball technology sold to Hocoma.
- Lopes technology licensed to MOOG.
- Contract research for large international companies.

PUBLICATIONS

Peer-reviewed journal articles

1. Engelhart, D., Pasma, J.H., Schouten, A.C., Meskers, C.G.M., Maier, A.B., Mergner, T., **van der Kooij, H**. Impaired Standing Balance in Elderly: A New Engineering Method Helps to Unravel Causes and Effects (2014) Journal of the American Medical Directors Association, 15 (3), pp. 227.e1-227.e6.
2. Westerveld, A.J., Schouten, A.C., Veltink, P.H., **Van Der Kooij, H**. Control of thumb force using surface functional electrical stimulation and muscle load sharing (2013) Journal of NeuroEngineering and Rehabilitation, 10 (1), art. no. 104, .

3. Campfens, S.F., Schouten, A.C., Van Putten, M.J.A.M., **Van Der Kooij, H**. Quantifying connectivity via efferent and afferent pathways in motor control using coherence measures and joint position perturbations (2013) Experimental Brain Research, 228 (2), pp. 141-153.
4. Meuleman, J.H., Van Asseldonk, E.H.F., **Van Der Kooij, H**. The effect of directional inertias added to pelvis and ankle on gait
5. (2013) Journal of NeuroEngineering and Rehabilitation, 10 (1), art. no. 40, .
6. Boonstra, T.A., Schouten, A.C., **Van Der Kooij, H**. Identification of the contribution of the ankle and hip joints to multi-segmental balance control (2013) Journal of NeuroEngineering and Rehabilitation, 10 (1), art. no. 23, .
7. Koopman, B., Van Asseldonk, E.H.F., **Van Der Kooij, H**. Selective control of gait subtasks in robotic gait training: Foot clearance support in stroke survivors with a powered exoskeleton (2013) Journal of NeuroEngineering and Rehabilitation, 10 (1), art. no. 3, .
8. Fluit, R., van der Krogt, M.M., **van der Kooij, H**., Verdonschot, N., Koopman, H.F.J.M. A simple controller for the prediction of three-dimensional gait (2012) Journal of Biomechanics, 45 (15), pp. 2610-2617.
9. Pasma, J.H., Boonstra, T.A., Campfens, S.F., Schouten, A.C., **Van der Kooij, H**. Sensory reweighting of proprioceptive information of the left and right leg during human balance control (2012) Journal of Neurophysiology, 108 (4), pp. 1138-1148.
10. Nederhand, M.J., Van Asseldonk, E.H.F., **Der Kooij, H.V**., Rietman, H.S. Dynamic Balance Control (DBC) in lower leg amputee subjects; Contribution of the regulatory activity of the prosthesis side (2012) Clinical Biomechanics, 27 (1), pp. 40-45.
11. Westerveld, A.J., Schouten, A.C., Veltink, P.H., **Van Der Kooij, H**. Selectivity and resolution of surface electrical stimulation for grasp and release (2012) IEEE Transactions on Neural Systems and Rehabilitation Engineering, 20 (1), art. no. 6104159, pp. 94-101.
12. Molier, B.I., Prange, G.B., Krabben, T., Stienen, A.H.A., **van der Kooij, H**., Buurke, J.H., Jannink, M.J.A., Hermens, H.J. Effect of position feedback during task-oriented upper-limb training after stroke: Five-case pilot study (2011) Journal of Rehabilitation Research and Development, 48 (9), pp. 1109-1118.
13. Schouten, A.C., Boonstra, T.A., Nieuwenhuis, F., Campfens, S.F., **Van Der Kooij, H**. A bilateral ankle manipulator to investigate human balance control (2011) IEEE Transactions on Neural Systems and Rehabilitation Engineering, 19 (6), art. no. 5993546, pp. 660-669.
14. Ronsse, R., Lenzi, T., Vitiello, N., Koopman, B., Van Asseldonk, E., De Rossi, S.M.M., Van Den Kieboom, J., **Van Der Kooij, H**., Carrozza, M.C., Ijspeert, A.J. Oscillator-based assistance of cyclical movements: Model-based and model-free approaches (2011) Medical and Biological Engineering and Computing, 49 (10), pp. 1173-1185.
15. **Van Der Kooij**, H., Peterka, R.J. Non-linear stimulus-response behavior of the human stance control system is predicted by optimization of a system with sensory and motor noise (2011) Journal of Computational Neuroscience, 30 (3), pp. 759-778.
16. **Van der Kooij, H**., Campbell, A.D., Carpenter, M.G. Sampling duration effects on centre of pressure descriptive measures
17. (2011) Gait and Posture, 34 (1), pp. 19-24.
18. de Rossi, S.M.M., Vitiello, N., Lenzi, T., Ronsse, R., Koopman, B., Persichetti, A., Vecchi, F., Ijspeert, A.J., **van der Kooij, H**., Carrozza, M.C. Sensing pressure distribution on a lower-limb exoskeleton physical human-machine interface (2011) Sensors, 11 (1), pp. 207-227.
19. De Rossi, S.M., Vitiello, N., Lenzi, T., Ronsse, R., Koopman, B., Persichetti, A., Giovacchini, F., Vecchi, F., Ijspeert, A.J., **van der Kooij, H**., Carrozza, M.C. Soft artificial tactile sensors for the measurement of human-robot interaction in the rehabilitation of the lower limb.
20. Prange, G.B., Jannink, M.J.A., Stienen, A.H.A., **Van Der Kooij, H**., Ijzerman, M.J., Hermens, H.J. An explorative, cross-sectional study into abnormal muscular coupling during reach in chronic stroke patients (2010) Journal of NeuroEngineering and Rehabilitation, 7 (1), art. no. 14, .
21. Stienen, A.H.A., Hekman, E.E.G., Braak, H.T., Aalsma, A.M.M., Van Der Helm, F.C.T., **Van Der Kooij, H**. Design of a rotational hydroelastic actuator for a powered exoskeleton for upper limb rehabilitation (2010) IEEE Transactions on Biomedical Engineering, 57 (3), art. no. 4812080, pp. 728-735.
22. Stienen, A.H.A., Hekman, E.E.G., Prange, G.B., Jannink, M.J.A., Van Der Helm, F.C.T., **Van Der Kooij, H**. Freebal: Design of a dedicated weight-support system for upper-extremity rehabilitation (2009) Journal of Medical Devices, Transactions of the ASME, 3 (4), art. no. 041009, .
23. Jannink, M.J.A., Aznar, M., De Kort, A.C., Van De Vis, W., Veltink, P., **Van Der Kooij, H**. Assessment of visuospatial neglect in stroke patients using virtual reality: A pilot study (2009) International Journal of Rehabilitation Research, 32 (4), pp. 280-286.
24. van Asseldonk, E.H.F., Wessels, M., Stienen, A.H.A., van der Helm, F.C.T., **van der Kooij, H**. Influence of haptic guidance in learning a novel visuomotor task (2009) Journal of Physiology Paris, 103 (3-5), pp. 276-285.
25. Stienen, A.H.A., Hekman, E.E.G., Prange, G.B., Jannink, M.J.A., Aalsma, A.M.M., Van Der Helm, F.C.T., **Van Der Kooij, H**. Dampace: Design of an exoskeleton for force-coordination training in upper-extremity rehabilitation (2009) Journal of Medical Devices, Transactions of the ASME, 3 (3), art. no. 031003, .

26. Prange, G.B., Jannink, M.J.A., Stienen, A.H.A., **Van Der Kooij, H**., Ijzerman, M.J., Hermens, H.J. Influence of gravity compensation on muscle activation patterns during different temporal phases of arm movements of stroke patients (2009) Neurorehabilitation and Neural Repair, 23 (5), pp. 478-485.
27. Stienen, A.H.A., Hekman, E.E.G., Schouten, A.C., van der Helm, F.C.T., **van der Kooij, H**. Suitability of hydraulic disk brakes for passive actuation of upper-extremity rehabilitation exoskeleton (2009) Applied Bionics and Biomechanics, 6 (2), pp. 103-114.
28. Stienen, A.H.A., Hekman, E.E.G., van der Helm, F.C.T., **van der Kooij, H**. Self-aligning exoskeleton axes through decoupling of joint rotations and translations (2009) IEEE Transactions on Robotics, 25 (3), pp. 628-633.
29. Simons, C.D.M., van Asseldonk, E.H.F., **Kooij, H.v.d**., Geurts, A.C.H., Buurke, J.H. Ankle-foot orthoses in stroke: Effects on functional balance, weight-bearing asymmetry and the contribution of each lower limb to balance control (2009) Clinical Biomechanics, 24 (9), pp. 769-775.
30. Prange, G.B., Kallenberg, L.A.C., Jannink, M.J.A., Stienen, A.H.A., **van der Kooij, H**., IJzerman, M.J., Hermens, H.J. Influence of gravity compensation on muscle activity during reach and retrieval in healthy elderly (2009) Journal of Electromyography and Kinesiology, 19 (2), pp. e40-e49.
31. Jannink, M.J.A., Erren-Wolters, C.V., De Kort, A.C., **Van Der Kooij, H**. An electric scooter simulation program for training the driving skills of stroke patients with mobility problems: A pilot study (2008) Cyberpsychology and Behavior, 11 (6), pp. 751-754.
32. Vallery, H., Van Asseldonk, E.H.F., Buss, M., **Van Der Kooij, H**. Reference trajectory generation for rehabilitation robots: Complementary limb motion estimation (2009) IEEE Transactions on Neural Systems and Rehabilitation Engineering, 17 (1), pp. 23-30.
33. Vallery, H., Veneman, J., van Asseldonk, E., Ekkelenkamp, R., Buss, M., **van Der Kooij, H**. Compliant actuation of rehabilitation robots (2008) IEEE Robotics and Automation Magazine, 15 (3), pp. 60-69.
34. Van Asseldonk, E.H.F., Veneman, J.F., Ekkelenkamp, R., Buurke, J.H., Van Der Helm, F.C.T., **Van Der Kooij, H**. The effects on kinematics and muscle activity of walking in a robotic gait trainer during zero-force control (2008) IEEE Transactions on Neural Systems and Rehabilitation Engineering, 16 (4), pp. 360-370.
35. Veneman, J.F., Menger, J., van Asseldonk, E.H.F., van der Helm, F.C.T., **van der Kooij, H**. Fixating the pelvis in the horizontal plane affects gait characteristics (2008) Gait and Posture, 28 (1), pp. 157-163.
36. Van Asseldonk, E.H.F., Carpenter, M.G., Van Der Helm, F.C.T., **Van Der Kooij, H**. Use of induced acceleration to quantify the (de)stabilization effect of external and internal forces on postural responses (2007) IEEE Transactions on Biomedical Engineering, 54 (12), pp. 2284-2295.
37. Boonstra, T.A., **Van Der Kooij, H**., Munneke, M., Bloem, B.R. Gait disorders and balance disturbances in Parkinson's disease: Clinical update and pathophysiology (2008) Current Opinion in Neurology, 21 (4), pp. 461-471.
38. Visser, J.E., Carpenter, M.G., **van der Kooij, H**., Bloem, B.R. The clinical utility of posturography (2008) Clinical Neurophysiology, 119 (11), pp. 2424-2436.
39. Veneman, J.F., Kruidhof, R., Hekman, E.E.G., Ekkelenkamp, R., Van Asseldonk, E.H.F., **Van Der Kooij, H**. Design and evaluation of the LOPES exoskeleton robot for interactive gait rehabilitation (2007) IEEE Transactions on Neural Systems and Rehabilitation Engineering, 15 (3), pp. 379-386.
40. **Van Der Kooij, H**., De Vlugt, E. Postural responses evoked by platform pertubations are dominated by continuous feedback (2007) Journal of Neurophysiology, 98 (2), pp. 730-743.
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5. Meuleman, J., Van Asseldonk, E.H.F., **Van Der Kooij, H**. Novel actuation design of a gait trainer with shadow leg approach (2013) IEEE International Conference on Rehabilitation Robotics, art. no. 6650369, .
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8. Wang, S., Meijneke, C., **Van Der Kooij, H**. Modeling, design, and optimization of Mindwalker series elastic joint (2013) IEEE International Conference on Rehabilitation Robotics, art. no. 6650381, .
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26. De Rossi, S.M., Vitiello, N., Lenzi, T., Ronsse, R., Koopman, B., Persichetti, A., Giovacchini, F., Vecchi, F., Ijspeert, A.J., **van der Kooij, H**., Carrozza, M.C. Soft artificial tactile sensors for the measurement of human-robot interaction in the rehabilitation of the lower limb. (2010) Conference proceedings : ... Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Conference, 2010, pp. 1279-1282.
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30. **Van Der Kooij, H**., Prange, G.B., Krabben, T., Renzenbrink, G.J., De Boer, J., Hermens, H.J., Jannink, M.J.A. Preliminary results of training with gravity compensation of the arm in chronic stroke survivors (2009) Proceedings of the 31st Annual International Conference of the IEEE Engineering in Medicine and Biology Society: Engineering the Future of Biomedicine, EMBC 2009, art. no. 5335288, pp. 2426-2429.
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Biennial IEEE/RAS-EMBS International Conference on Biomedical Robotics and Biomechatronics, BioRob 2008, art. no. 4762873, pp. 881-888.

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41. **Van Der Kooij, H**., Van Asseldonk, E.H.F., Nederhand, M. Detecting asymmetries in balance control with system identification: First experimental results from above knee amputees (2007) 2007 IEEE 10th International Conference on Rehabilitation Robotics, ICORR'07, art. no. 4428554, pp. 1055-1062.
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46. Ekkelenkamp, R., Veneman, J., **Van Der Kooij, H**. LOPES: Selective control of gait functions during the gait rehabilitation of CVA patients (2005) Proceedings of the 2005 IEEE 9th International Conference on Rehabilitation Robotics, 2005, art. no. 1501120, pp. 361-364.
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Book (chapters) :

1. E. H. F. van Asseldonk and **H. van der kooij**, "Robot-aided gait training with LOPES," in *Neurorehabilitation Technology*, no. 21, V. Dietz, T. Nef, and W. Z. Rymer, Eds. London: Springer-Verslag, 2012, pp. 379–396.
2. **H. van der Kooij,** J. Veneman, R.Ekkelenkamp *Compliant actuation of exoskeletons* Chapter 7 : Mobile Robots, toward new applications, edited by Aleksandar Lazinica, copyright Advanced robotic systems international, December 2006 (isbn 10:3-86611-314-5) PiV pro literature verlag Rober Mayer-Scholz, Mammendorf, Germany.
3. PhD thesis:**Van der Kooij H** (2000). Balance control in standing and walking, University of Twente, The Netherlands.

Invited Presentations International:

1. "Development and Evaluation of LOPES: A Robot for Gait Training and Assessment", 7th World Congres of Biomechanics, July 6-11,2014, Boston, USA.
2. "Design and Control of the Mindwalker", 7th World Congres of Biomechanics, July 6-11,2014, Boston, USA.
3. "Advances in Robotic Gait training", June 24-26, 2014 ICNR, Aalborg, Denmark.
4. "Mindwalker", workshop on Lower Limb Exoskeletons for Rehabilitation and Assistance , June 1, 2014, ICRA, Hong Kong, China.
5. "Wearable exoskeletons to reduce human effort in walking" Workshop on Wearable robotics for motion assistance and rehabilitation, ICRA, June 5, 2014, Hong Kong, China.
6. "Reanimating the Limbs: Rehabilitation Robotics and Novel Assessment Methods" INRS 2013, September 13, Zurich, Switzerland.
7. "Comparison of different methods to support human walking" Workshop New design principles and frontiers for wearable robotics at ICRA. May 15, 2012, St. Paul, Minnesota, USA.

8. "Reanimating the Limbs: Rehabilitation Robotics and Novel Assessment Methods for the Lower Extremities", 18th IFESS Annual Conference. June 8, 2013, Donostia-San Sebastián, Spain.
9. "Advantages and Disadvantages of Series Elastic Actuators in Rehabilitation Robotics", workshop Design and Control of Robotic Exoskeletons with Compliant Joints and Actuation Systems, ICORR 2013. June 26, 2013, Seattle, USA.
10. "Sensorimotor control principles in rehabrobotics", Translational Engineering in Neurorehabilitation (TEN 2012) June 21-22 2012 , Göttingen, Germany.
11. "Comparison of different methods to support Human Walking". ICRA 14 MAY 2012, St Paul, USA.
12. "The dependence of human balance control on stimulus amplitude", Joint World congress of ISPGR and Gait & Mental function, June 24-28, 2012, Trondheim, Norway.
13. "Human Balance control: prediction of sensory reweighing and feedback gains in human postural control", Dynamic walking, May 21-24, 2012, Pensacola Beach, USA.
14. "Human Balance Control" 1st UAE Meeting on Neurorehabilitation, March 10, 2012, at Khalifa University in Abu Dhabi, United Arab Emirates.
15. "LOPES: powered exoskeleton for gait training & assessment", International workshop on rehabilitation robotics at ROBOTICA 2011 Fair, November 17, 2011, Rome, Italy.
16. "Lower extremity powered (wearable) assistive and therapeutic exoskeletons", Symposium Europe-Japan Technology Exchange toward Contribution of IRT to Medical Care and Welfare - From Physical Assistance to Cognitive Assistance, March 7, 2011, Leuven, Belgium.
17. "Robotics interaction with humans - Embodied Intelligence for better robots", The European Future Technologies Conference, May 6, 2011 Budapest, Hungary.
18. "Development of therapeutic and assistive devices for humans with movement disorders - a bio-mechatronical approach –" June 9, 2010, EPFL, Lausanne, Switzerland.
19. "Therapeutic devices for the lower and upper extremities", May 3, 2010, Scuola Superiore Sant'Anna, Pisa, Italy.
20. "The history and future of therapy robots", King Abdul Aziz City for Science and Technology, November 17, 2009, Riaad, Saudi Arabia.
21. "Therapy Robots", Oregon Health Science University, October 23, 2009, Portland, USA.
22. "Neurobiomechanics: assessment of functional recovery", ICORR Pre-conference workshop, 23 June, 2009, Kyoto, Japan.
23. "Robotic gait therapy and identification of balance control", North Western University, Chicago, February 24, 2009, USA.
24. "Adaptation in postural control and reaching of the arm". Sensorimotor computation seminars. February 17, 2009, UBC, Vancouver, Canada, Tuesday.
25. "The effect of assist as needed in robotic gait therapy: a pilot study", International Neurorehabilitation Symposium 2009, February 12–14, 2009, University of Zurich, Campus Irchel, Switzerland.
26. "Robot-Augmented Movement Re-Learning?" Neuro Robotics Symposium, July 21-22, 2008, Freiburg, Germany.
27. "Workshop on Motor Learning in Stroke Recovery", March 19-20, 2007, Rome, Italy.
28. "Future rehabilitation technologies", Technology in Stroke Rehabilitation, Train Brain November 10, 2006,Aalborg University, Denmark.
29. "Design of a compliantly actuated exo-skeleton for an impedance controlled gait trainer robot". The 28th Annual International Conference of the IEEE Engineering in Medicine and Biology, August 30-September 3, 2006, New York City, USA.
30. "Computer Modeling', The international congress on gait & mental function, February 3-5, 2006, Madrid, Spain.
31. "Non-parametric identified balance control mechanisms can be described by simple parametric models" Motor control conference, 21-25 September 2005, Sofia, Bulgaria.

Invited talks National

1. "Mens en robot in beweging" Symposium "Make it move" van studievereniging Paradoks March 25, 2014, Enschede, The Netherlands.
2. "Mindwalker" Symposium "The Art of Human – Embody Technology" van studievereniging Panacea, March 6, 2014, Groningen, The Netherlands.
3. "Mens en robot in beweging" Utrechts Natuurkundig Gezelschap, March 4, 2013, Den Haag, The Netherlands.
4. "Mens en robot in beweging" Dilientia, Koninklijke Maatschappij voor Natuurkunde, February 3, 2013, Den Haag, The Netherlands.
5. "Reanimating the leg" Symposium "Succesvol in Beweging" van de IMDI core Sprint, January 23, 2014, Enschede, The Netherlands.
6. "Robotica in de Revalidatie Geneeskunde" Medical Delta Café, January 14, 2014, Erasmus MC, Rotterdam, The Netherlands.
7. " Human and robot in motion; Reanimating the limbs, advances in rehabilitation robotics" Service Logistics Summit 2013. November 5, 2013, Soesterberg, The Netherlands
8. "Revalidatietechnologie: Mens en robot in beweging" Voorjaarsconferentie Innoveren in de revalidatiepsychologie van de sectie Revalidatie, Nederlands Instituut voor Psychologen (NIP) April 19. 2013 , Berg en Dal, The Netherlands.

9. "Robotica in de Revalidatie" Kivi Niria jaarcongres, Oktober 11, 2012, Enchede, The Netherlands.
10. "De ontwikkeling en toekomst van de LOPES: een revalidatierobot voor looptraining, Mechatronics valley twente congress" April 15, 2010, Enschede, the Netherlands.
11. "Back to the future" symposium OIM orthopedie, March 30, 2007 Zeewolde, The Netherlands.

Media Coverage: Television & Radio

- September 30, 2013: Mindwalker in **Euronews**: "Exoskeletons on the March"
- September 25, 1011: Lopes in **BBC news**: "Robo legs help stroke victim to walk"
- October 3, 2011: Lopes in SBS6 **Hart van Nederland**: "Robot is doorbraak in revalidatie"
- January 12, 2011: Lopes on **Reuter**s: " Robot legs help stroke survivors to walk again"
- April 5, 2011: Lopes in NTR-VPRO program **Labyrinth:** "De machinemens"
- November 19, 2008: Lopes in Vara's **Nieuwslicht**: "Robot benen helpen mensen sneller op de been"
- LOPES in the Teleac's radio program '**Hoe?Zo!**'
- March 29, 2003: Interview **Volkskran**t: "Mensen viruteel nabootsen"

Media Coverage: Newspapers & Magazines

- September 6, 2013: Mindwalker in de Ingenieur: "Exoskelet laat verlamde lopen"
- June 7, 2014: Mindwalker in de New Scientist: "Exoskelet laat verlamde mensen lopen"
- May 30, 2014: Mindwalker in Horizon the EU Research and Innovation Magazine: "Walking again with an exoskeleton"
- September, 2011: Lopes in Fysiopraxis
- February 16,2010: Interview Herman van der Kooij en Wietse van Dijk in Volkskrant: "Hersenen activeren futurtische robotbenen"
- November 2009 Lopes in Made in Holland: "Rehabilitation robots"
- October 17, 2009: Lopes in Twentsche Courant Tubantia: " De robot helpt een handje"
- September 29, 2009: Lopes in NRC Hadelsblad: "Therapeut met stalen rug"
- June 13, 2009: Lopes in de Volkskrant: "Leren omgaan met mensen"
- February 25, 2009: Promovendus Arno Stienen in Medical facts.
- December 16, 2008: Lopes in Metro: "Nieuwe Twentse robot zorgen voor vergaande fysiotherapie"
- June 13, 2008: Lopes in Twentsche Courant Tubantie.
- Lopes in Technisch weekblad.
- July 12, 2007, Jan Veneman's PhD project in Bits&Chips: "Exoskelet leert lopen"
- September 25**,** 2003: Interview Herman van der Kooij Volkskrant: "Mensen viruteel nabootsen"