

PETER WOLF

Dr. sc. ETH, MA Sports Engineering

PERSONAL INFORMATION

Age 46 years (born 1977)
Nationality German
Family Status: Concubinage, 2 children (born 2012 & 2017)
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Switzerland
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EDUCATION

2006 **Dr. sc. ETH, ETH Zurich, Switzerland**
2002 – 2006 Doctoral student, ETH Zurich, Switzerland
2002 **M.A. in Sports Engineering, TU Chemnitz, Germany**
1997 – 2002 Studies in sports science and process engineering, TU Chemnitz, Germany

RESEARCH EXPERIENCE

2007 - present **ETH Zurich, Sensory-Motor Systems Lab, Deputy Head & Scientific Coordinator**
Supervision of research in the field of multimodal, (semi-) automated motor learning, rehabilitation robotics, and sports engineering. Scientific support in the field of magnet resonance compatible robotics and sleep research. Responsibility in terms of leading and recruiting staff, financial planning, acquisition of financial support, lectures.
From 2012 to 2016 part-time (1 day childcare / week)

2006 - 2007 **Synthes, CH-Bettlach, Product Development, Research Consultant**
Optimization of an asian femoral nail and simulation of nail insertion

2007 **ETH Zurich, Institute for Movement Science, Research Assistant**
Programming of movement analysis methods

2005 – 2012 **Project Collaboration with the Department of Orthopaedics, Karolinska Institute, Sweden, and the Centre for Rehabilitation and Human Performance Research, University of Salford, England:**
Analysis of lower leg, rear and mid foot bone motion during walking and running performed with intracortical pins; several research stays in England and Sweden, partly financed by SNF

2002 – 2006 **ETH Zurich, Institute for Biomechanics, Ph.D. thesis under Supervision of Dr. Stacoff and Prof. Stuessi**
Development of a non-invasive procedure to investigate rearfoot kinematics and its application to specify the dependence of foot motion on foot morphology; (Dissertation Matching Grant of the International Society of Biomechanics, 2005)

2001 – 2002 **adidas, Test Center, Scheinfeld, M.A. Thesis under Supervision of Dr. Krabbe**
Development of a method to measure cushioning properties of running shoes at the beginning of stance phase

AWARDS

- 2018 Sports Technology Award, Best Participation Technology, received for Cybathlon
- 2006 Poster Award at the 2006 Conference of the German, Austrian and Swiss Society for Biomedical Engineering, Zurich, Switzerland, received for a study entitled *Transmission between the lower leg and rearfoot.*

TEACHING @ ETH ZURICH

- 2016 - present Lectures in Biomechanics, (4h per year)
- 2012 Lectures in Introduction to Health Sciences and Technologies (2h per year)
- 2011 - present Lectures in physical Human Robot Interaction (2h per year)
- 2011 - 2012 Setting up of two practical courses "Einführung in die Gesundheitswissenschaften"
- 2008 - 2013 Lecture *Matlab for Human Movement Science* (14 x 2h = 28h per year)
- 2006 - present Lectures in Rehabilitation Engineering (2h per year)
- 2006 - present Supervision of > 25 Semester / Bachelor / Master theses in the field of Mechanical Engineering
- 2004 - present Supervision of > 25 Master theses in the field of Human Movement Science
- 2002 - present Supervision of > 25 internships in the field of Human Movement Science

ADDITIONAL EXPERIENCE

- 2017 – present **The Championship for Robot-Assisted Humans with Motor Impairments (Cybathlon)**
Member of Strategic Board, Planning of Cybathlon 2020+, Head of Quality Management Cybathlon 2020
- 2015 - present **ETH Ethics Commission**
Member
- 2014 **International Conference on Rock Climbing Research, Pontresina, Switzerland**
Principal Organizer (supported by Dr. U. Hefti, Dr. A. Schweizer, and Dr. U. Stöcker)
- 2013 - 2017 **The Championship for Robot-Assisted Humans with Motor Impairments (Cybathlon 2016)**
Deputy Head of Organisation, Chief Operating Officer and Finance Manager
- 2013 **International Conference on Multisensory Motor Behavior: Impact of Sound**
Organizer (together with Prof. A. Effenberg & Dr. G. Schmitz, Hanover)
- 2011 **SKILLS Conference, "Listen to learn: how sound enhances motor learning"**
Session Organizer
- 2011 **EMBC 2011, "Sports, Exercise and Games: Biomechanics and Robotics"**
Track Chair and organizer of mini-symposium
- 2011 **ICORR 2011 / Rehab Week Zurich hosted by ETH Zurich & Hocoma**
Local Arrangement Chair (>1000 registrations), member of the Scientific Committee
- 2010 - present **Engagement in the Department of Health Sciences and Technology, ETH Zurich**
Representative of the academic staff in the Department's Conference (2010-2012), Founder and Chair of the Department's Association of Scientific Staff HAS (2013), Treasurer of HAS (2014-2018), Member of the UK Med (2019), Member of the UK HST (2019 – present)
- 2009 - present **ETH Unterwegs, Lecture on Robot-assisted training in sports** (at > 20 schools)

- 2009 **ESB Workshop 2009 hosted by the Institute for Biomechanics, ETH Zurich, Co-Organizer and Member of the Local Scientific Committee**
Invitation of speakers, recruitment of industrial sponsors, paper review
- 2007 - present **Reviews in the field of Biomechanics & Robotics**
Journals: Biomedizinische Technik; Clinical Biomechanics; Computational and Mathematical Methods in Medicine; Computerized Medical Imaging and Graphics; Computer Methods in Biomechanics and Biomedical Engineering; Gait & Posture; Journal of Applied Biomechanics; Journal of Biomechanics; Journal of NeuroEngineering and Rehabilitation, Journal of Sports Engineering and Technology; Measurement; Orthopaedic Research; Presence

Expert's reports for DFG, FWF, and KU Leuven
- 2006 - present **Invited lectures about Foot Biomechanics & Robot-assisted motor learning**
e.g. adidas (2006), TU Chemnitz (2008), Spiraldynamik Zürich (2011), Qualisys (2012), Li Ning (2012), Uni Basel (2014 - present)

GRANT SUPPORT

- 2023 **SNF, Agora Rolling Call, Hands-On Science in Climbing**
Principle Investigator: *P. Wolf* Own Effort: 100% Volume: CHF 19'700
- 2023 **SNF, Scientific Exchanges, 6th Congress of the Int. Rock Climbing Research Association**
Principle Investigator: *P. Wolf* Own Effort: 100% Volume: CHF 17'000
- 2018 – 2020 **Schweizer Paraplegiker Stiftung, Innovative Wheelchair Technology**
Principle Investigator: *P. Wolf* Own Effort: 70% Volume: CHF 371'000
- 2016 – 2017 **Gerber-ten Bosch Stiftung, Steigerung der Mobilität für Menschen mit Rückenmarksverletzungen mittels robotischer Exosuits**
Co-Principle Investigator: *P. Wolf* Own Effort: 10% Volume: CHF 20'000
- 2015 - 2018 **ETH Research Grant, Fusion of conventional and robot-aided therapy**
Co-Principle Investigator: *P. Wolf* Own Effort: 20% Volume: CHF 216'280
- 2014 - 2017 **SNF, Acceleration of complex motor learning by skill level-dependent feedback design and automatic selection**
Principle Investigator: *P. Wolf* Own Effort: 90% Volume: CHF 347'960
- 2014 - 2017 **ETH Research Grant, Social rewards in robot-assisted multi-subject rehab exercises: Impact of cooperation and competition on functional outcome**
(subproject of strategic research proposal Eat 2 Learn 2 Move managed by SMS-Lab)
Co-Principle Investigator: *P. Wolf* Own Effort: 50% Volume: CHF 178'500
- 2014 - 2017 **SNF, Driving the human motor system by somatosensory input**
Co-Principle Investigator: *P. Wolf* Own Effort: 5% Volume: CHF 392'800
- 2013 - 2018 **University of Zurich (internal call for clinical research priority project), Neuro-Rehabilitation: Strategies for customized treatments – Interaction Engineering**
Principle Investigator: *R. Riener* Own Effort: 60% Volume: CHF 735'671
- 2012 **NCCR Robotics (internal call for reserve fund), Mechanically assisting & interacting knob**
Principle Investigator: *P. Wolf* Own Effort: 95% Volume: CHF 33'171
- 2011 **ETH Equipment Grant, Force sensors & Deflection units**
Principle Investigator: *P. Wolf* Own Effort: 80% Volume: CHF 15'662
- 2011 – 2013 **SNF, Impact of Different Feedback Modalities on Complex Skill Learning**
Principle Investigator: *P. Wolf* Own Effort: 90% Volume: CHF 241'410

2011 – 2013	Swiss Federal Sports Commission, Instrumented Climbing Holds Principle Investigator: <i>P. Wolf</i> Own Effort: 90% Volume: CHF 131'694
2011 – 2013	ETH Research Grant, Effects of Training in Virtual Environments on Cognitive and Physical Performance of Elderly Co-Principle Investigator: <i>P. Wolf</i> Own Effort: 20% Volume: CHF 284'300
2010 – 2013	SNF, Supraspinal Contribution to Locomotion in Incomplete Spinal Cord Injured Subjects Principle Investigator: <i>R. Riener</i> Own Effort: 10% Volume: CHF 343'148
2009 – 2011	Emdo-Foundation, Evaluation des funktionellen Trainings von Paraplegikern mittels eines Magnet-Resonanz kompatiblen Gangroboters Principle Investigator: <i>R. Riener</i> Own Effort: 10% Volume: CHF 20'000
2009 – 2011	Koetser-Foundation, Gait-like Movements during fMRI: An Innovative Assessment of Functional Training of SCI Patients Principle Investigator: <i>R. Riener</i> Own Effort: 10% Volume: CHF 37'000
2006 – 2010	Swiss Federal Sports Commission, Dynamic Analysis of Ankle Joint Instability and Its Modelling Principle Investigator: <i>A. Stacoff</i> Own Effort: 30% Volume: CHF 89'900
2006 – 2008	Swiss Federal Sports Commission, Biomechanics of the Patello-Femoral Pain Syndrome Principle Investigator: <i>A. Stacoff</i> Own Effort: 60% Volume: CHF 181'206
2005 – 2006	Swiss Federal Sports Commission, Foot joint morphology of dynamically classified runners Principle Investigator: <i>P. Wolf</i> Own Effort: 90% Volume: CHF 14'500

INVITED TALKS @ INTERNATIONAL CONFERENCES

9. Technical support systems in sports: Adaptated to individual needs
20th Congress of the European College of Sport Science, Malmö, Sweden, 2015.
8. Interaktive Sportsimulatoren: Kein Bedarf oder technisch zu herausfordernd?
Tagung der dvs Sektion Biomechanik, Chemnitz, Germany, 2013.
7. *Angebohrt, um ihr Verhalten erstmalig in vivo zu erfassen: 2+7 Unterschenkel- und Fussknochen.*
2. Symposium on Function & Gait, Basel, Switzerland, 2011.
6. *The M3 Rowing Simulator: Robot-assisted training in a virtual environment.*
14th Bi-Annual Congress of the ACAPS, Rennes, France, 2011.
5. *In vivo Kinematik und Fußmorphologie beim Gehen und Laufen.*
1. Kongress Orthopädie Schuh Technik, Wiesbaden, Germany, 2011.
4. *In vivo Kinematik und Fussmorphologie beim Gehen und Laufen.*
18. International Symposium for Foot Surgery, Munich, Germany, 2010.
3. *Was passiert in unserem Fuss beim Gehen und Laufen?*
1. Zürcher Forum for Applied Sport Sciences, Zurich, Switzerland, 2010.
2. *Biomechanik: Interaktion Vorfuss-Rückfuss.*
4. Orthopädie-tage, Luzern, Switzerland, 2010.
1. *Messverfahren und Messgrößen zur Klassifizierung klinischer Fragestellungen am Beispiel des Patellofemorales Schmerzsyndroms.*
4th Symposium of Biomechanics, Tübingen, Germany, 2007.

DISTINGUISHED LECTURES

3. *Patient/Sportler – Roboter – Therapeut/Trainer Interaktionen.*
Hybrid Society Lecture Series, Chemnitz, Germany, 2023.
2. *Mensch-Maschine Interaktion. Wie autonom Roboter Bewegungslernen fördern und wie Assistenzsysteme Bewegungen unterstützen – und wie dazu ein Wettkampf beiträgt.*
VDI Bodensee Forum, Friedrichshafen, Germany, 2019.
1. *Der M3-Rudersimulator: einzigartige Interaktion samt haptischer und auditorischer Feedbackstrategien.*
27. Darmstädter Sport-Forum, Darmstadt, Germany, 2012

PEER-REVIEWED JOURNAL PUBLICATIONS (38 out of 81 first or last author)

81. *Competitive versus cooperative forms of therapeutic gaming with subacute stroke patients*
IEEE Transactions on Medical Robotics and Bionics, accepted.
Baur K, Wolf P, Novak V, Boering D, Hörner S, Dahlen C, Berger J, Riener R
80. *Trajectory Optimization Framework for Rehabilitation Robots with Multi-Workspace Objectives and Constraints*
IEEE Robotics and Automation Letters 8: 6819-6826, 2023.
Sommerhalder M, Zimmermann Y, Simovic L, Hutter M, Wolf P, Riener R
79. *Validation of a novel instrumentation (FlexOmega system) measuring oar bending moments on-water in rowing.*
Current Issues in Sport Science 8: Article 009, 2023.
Ungricht C, Graf C, Mandanis G, Wernas T, Schmid MJ, Wolf P
78. *Development of a textile integrated, two-state controlled tremor suppression orthosis for the wrist.*
IEEE Transactions on Medical Robotics and Bionics 5: 683-703, 2023.
Fromme N, Esser A, Camenzind M, Mylius V, Baumann C, Büchele F, Riener R, Wolf P, Rossi R
77. *Feasibility of an intelligent algorithm based on an assist-as-needed controller for a robot-aided gait trainer (Lokomat) in neurological disorders: a longitudinal pilot-study.*
Brain Science 13: 612, 2023.
Laszlo C, Munari D, Maggioni S, Knechtle D, Wolf P, De Bon D
76. *Human-robot attachment system for exoskeletons: Design and performance analysis.*
IEEE Transactions on Robotics 39: 3087-3105, 2023.
Zimmermann Y, Song J, Deguelle C, Läderach J, Zhou L, Hutter M, Riener R, Wolf P
75. *ANYexo 2.0: A Fully-Actuated Upper-Limb Exoskeleton for Manipulation and Joint-Oriented Training in all Stages of Rehabilitation.*
IEEE Transactions on Robotics 39: 2131-2150, 2023.
Zimmermann Y, Sommerhalder M, Wolf P, Riener R, Hutter M
74. *An algorithm to correct for posture estimation errors due to the compliance in the human-robot interface of wearable robots.*
Wearable Technologies 3: 3, e30, 2022.
Koginov G, Sternberg K, Wolf P, Schmidt K, Duarte JE, Riener R
73. *Usability of an exosuit in domestic and community environments.*
Journal of NeuroEngineering and Rehabilitation 19: 131, 2022.
Basla C, Hungerbühler I, Meyer JT, Wolf P, Riener R, Xiloyannis M
72. *Score rectification for online assessments in robot-assisted arm rehabilitation.*
at-Automatisierungstechnik 70: 935-946, 2022.
Sommerhalder M, Zimmermann Y, Knecht M, Suter Z, Riener R, Wolf P
71. *Human ankle joint movements during walking are probably not determined by talar morphology.*
Scientific Reports 12.1: 1-11, 2022.
Wolf P, Moor R, Lundberg, A, Nester C, Arndt A, Graf E

70. *Supporting and stabilizing the scapulohumeral rhythm with a body- or robot-powered orthosis.*
IEEE Transactions on Medical Robotics and Bionics 4: 729-743, 2022.
Georgarakis AM, Zimmermann Y, Wolf P, Hutter M, Riener R
69. *A textile exomuscle that assists the shoulder during functional movements for everyday life.*
Nature Machine Intelligence 4: 574-582, 2022.
Georgarakis AM, Xiloyannis M, Wolf P, Riener R
68. *Learning to walk with a wearable robot in 880 simple steps – a pilot study on motor adaptation.*
Journal of NeuroEngineering and Rehabilitation 18: 157, 2021.
Haufe FL, Kober AM, Wolf P, Riener R, Xiloyannis M
67. *Acute effect of high-intensity climbing on performance and muscle oxygenation in elite climbers.*
Journal of Science in Sport and Exercise, 2021.
Feldmann A, Lehmann R, Wittmann F, Wolf P, Baláš J, Erlacher D
66. *Reaching higher: External scapula assistance can improve upper limb function in humans with irreversible scapula alata.*
Journal of NeuroEngineering and Rehabilitation 18: 131, 2021.
Georgarakis AM, Xiloyannis M, Dettmers C, Joebges M, Wolf P, Riener R
65. *The influence of skill and task complexity on perception of nested affordances.*
Attention, Perception, & Psychophysics 83: 3240-3249, 2021.
Seifert L, Dicks M, Wittmann F, Wolf P
64. *Outside testing of wearable robots for gait assistance shows a higher metabolic benefit than testing on treadmills.*
Scientific Reports 11: 14833, 2021.
Haufe FL, Duroyon EG, Wolf P, Riener R, Xiloyannis M
63. *Soft robotic suits: State of the art, core technologies and open challenges.*
IEEE Transactions on Robotics 38: 1343-1362, 2022.
Xiloyannis M, Alicea R, Georgarakis AM, Haufe FL, Wolf P, Masia L, Riener R
62. *Haptic training: which types facilitate (re) learning of which motor task and for whom? answers by a review*
IEEE transactions on haptics 14: 722-739, 2021.
Basalp E, Wolf P, Marchal-Crespo L
61. *Digital Innovation Hubs in Healthcare Robotics Fighting*
IEEE Robotics and Automation Magazine 28: 40-47, 2021.
Jovanovic K, Schwier A, Matheson E, Xiloyannis M, ..., Wolf P, ... Stramigioli S
60. *The perception of nested affordances: an examination of expert climbers.*
Psychology of Sport & Exercise 52, 101843, 2021.
Seifert L, Dicks M, Wittmann F, Wolf P
59. *Activity-based training with the Myosuit: a safety and feasibility study across diverse gait disorders.*
Journal of NeuroEngineering and Rehabilitation 17, 135, 2020.
Haufe FL, Schmidt K, Duarte JE, Wolf P, Riener R, Xiloyannis M
58. *Configurable 3D rowing model renders realistic forces on a simulator for indoor training.*
Applied Biosciences and Bioengineering 10: 734, 2020.
Basalp E, Bachmann P, Gerig N, Rauter G, Wolf P
57. *InSight Crutches: Analyzing the role of arm support during robot-assisted leg movements.*
IEEE Robotics and Automation Magazine 27: 103-113, 2020.
Haufe FL, Hassani RH, Riener R, Wolf P
56. *Biomechanical effects of passive hip springs during walking.*
Journal of Biomechanics 98:109432, 2020.
Haufe FL, Wolf P, Riener R, Grimmer, M.

55. *Rowing simulator modulates water density to foster motor learning.*
Frontiers Robotics and AI 6: 74, 2019.
Basalp E, Marchal-Crespo L, Rauter G, Riener R, [Wolf P](#)
54. *When a robot teaches humans: Automated feedback selection accelerates motor learning.*
Science Robotics, 4:eaav1560, 2019.
Rauter G, Gerig N, Sigrist R, Riener R, [Wolf P](#)
53. *Visual error amplification showed no benefit for non-naïve subjects in trunk-arm rowing.*
Current Issues in Sport Science 3:013, 2018.
Gerig N, Basalp E, Sigrist R, Riener R, [Wolf P](#)
52. *Trends in robot-assisted and virtual reality-assisted neuromuscular therapy: A systematic review of health-related multiplayer games.*
Journal of NeuroEngineering and Rehabilitation 15: 107, 2018.
Baur K, Schättin A, de Bruin ED; Riener R, Duarte JE, [Wolf P](#)
51. *Cyathlon: How to promote the development of assistive technologies.*
Science Robotics, 17:eaat7174, 2018.
[Wolf P](#), Riener R
50. *Acute responses to forearm compression of blood lactate accumulation, heart rate, perceived exertion and muscle pain in elite climbers.*
Frontiers in Physiology, Section Exercise Physiology 9:605, 2018.
Engel F, Sperlich B, Stöcker U, [Wolf P](#), Schöffl V, Donath L
49. *Missing depth cues in virtual reality limit performance and quality of three dimensional reaching movements.*
PLoS one 13, e0189275, 2018.
Gerig N, Mayo J, Baur K, Wittmann F, Riener R, [Wolf P](#)
48. *Automated feedback selection for robot-assisted training.*
International Journal of Computer Science in Sport 16: 149-174, 2017.
Gerig N, [Wolf P](#), Sigrist R, Riener R, Rauter G
47. *Personality-based reward contingency selection: a player-centered approach to gameplay customization in a serious game for cognitive training.*
Entertainment Computing 28, 70-77, 2018.
Nagle A, Riener R, [Wolf P](#)
46. *Calcaneal adduction in slow running: Three case studies using intracortical pins.*
Footwear Science 9: 87-93, 2017.
Fischer KM, Willwacher S, Arndt A, [Wolf P](#), Brüggemann P
45. *The effect of intracortical bone pin application on kinetics and tibiocalcaneal kinematics of walking gait.*
Gait and Posture 52: 129-134, 2017.
Maiwald C, Arndt A, Nester C, Jones R, Lundberg A, [Wolf P](#)
44. *Effects of physical exercise combined with nutritional supplements on aging brain related structures and functions: A systematic review.*
Frontiers in Aging Neuroscience 8: 161, 2016.
Schättin A, Bauer K, Stutz J, [Wolf P](#), de Bruin E
43. *Towards a system of customized video game mechanics based on player personality: relating the Big Five personality traits with difficulty adaptation in a First-Person Shooter Game.*
Entertainment Computing 13: 10-24, 2015.
Nagle A, [Wolf P](#), Riener R
42. *Test-retest reliability of fMRI experiments during robot-assisted active and passive stepping.*
Journal of NeuroEngineering and Rehabilitation 12:102, 2015.
Jaeger L, Marchal-Crespo L, [Wolf P](#), Riener R, Kollias S, Michels L
41. *High user control in game design elements increases compliance and in-game performance in a memory training game.*

- Frontiers in Psychology, section Human-Media Interaction** 6:1774, 2015.
Nagle A, Riener R, [Wolf P](#)
40. *Comparative grading scales, statistical analyses, climber descriptors and ability grouping: International rock climbing research association position statement.*
Sport Technology 8: 88-94, 2015.
Draper N, Giles D, Schöffl V, Fuss F, Watts P, [Wolf P](#), et al.
 39. *Increase enjoyment using a tablet-based serious game with regularly changing visual elements: A pilog study.*
Gerontechnology 14, 32-34, 2015.
Nagle A, Novak D, [Wolf P](#), Riener R
 38. *On the modulation of brain activation during simulated weight bearing in supine gait-like stepping.*
Brain Topography 29, 193-205, 2016.
Jäger L, Marchal-Crespo L, [Wolf P](#), Riener R, Luft A, Kollias S, Michels L
 37. *Reliability of force application to instrumented climbing holds in elite climbers.*
Journal of Applied Biomechanics 31, 377-382, 2015.
Donath L, [Wolf P](#)[Don](#)
 36. *Learning of temporal and spatial movement aspects: A comparison of four types of haptic control and concurrent visual feedback.*
IEEE Transactions on Haptics 8(4), 421-433, 2015.
Rauter G, Sigrist R, Riener R, [Wolf P](#)
 35. *Interaction forces in climbing: Cost-efficient complementation of a 6dof instrumentation.*
Sports Technology 7, 120-127, 2014.
Bauer F, Simnacher M, Stöcker U, Riener R, [Wolf P](#)
 34. *Sonification and haptic feedback in addition to visual feedback enhances complex motor task learning.*
Experimental Brain Research 233, 909-925, 2014.
Sigrist R, Rauter G, Marchal-Crespo L, Riener R, [Wolf P](#)
 33. *The effect of different difficulty adaptation strategies on enjoyment and performance in a serious game for memory training.*
Journal of Health Informatics 6, 120-128, 2014.
Nagle A, Novak D, [Wolf P](#), Riener R
 32. *The Use of Player-centered Positive Reinforcement to Schedule In-game Rewards Increases Enjoyment and Performance in a Serious Game.*
International Journal of Serious Games 1, 35-47, 2014.
Nagle A, [Wolf P](#), Riener R, Novak D
 31. *Brain activation associated with active and passive lower limb stepping.*
Frontiers in Human Neuroscience, DOI: 10.3389/fnhum.2014.00828, 2014.
Jäger L, Marchal-Crespo L, [Wolf P](#), Riener R, Michels L, Kollias S
 30. *Transfer of complex skill learning from virtual to real rowing.*
PLoS one, DOI: 10.1371/journal.pone.0082145, 2013.
Rauter G, Sigrist R, Koch C, Crivelli F, van Raai M, Riener R, [Wolf P](#)
 29. *The effect of haptic guidance and visual feedback on learning a complex tennis task.*
Experimental Brain Research 231: 277-291, 2013.
Marchal-Crespo L, van Raai M, Rauter G, [Wolf P](#), Riener R
 28. *Terminal feedback outperforms concurrent visual, auditory, and haptic feedback in learning a complex rowing-type task.*
Journal of Motor Behavior 45: 455-472, 2013.
Sigrist R, Rauter G, Riener R, [Wolf P](#)
 27. *Non-linear adaptive controllers for an over-actuated pneumatic MR-compatible stepper.*
Medical & Biological Eng & Computing 7:799-809, 2013.
Hollnagel C, Vallery H, Schädler R, Gómez-Lor López I, [Wolf P](#), Riener R, Marchal-Crespo L

26. *Quantifying the human likeness of a humanoid robot.*
International Journal of Social Robotics 5:263-276, 2013.
von Zitzewitz J, Boesch PM, [Wolf P](#), Riener R
25. *The effect of a midfoot cut in the outer sole of a shoe on intrinsic foot kinematics during walking.*
Footwear Science 5:63-69, 2013
Arndt A, Lundgren P, Liu A, Nester C, Maiwald C, Jones R, Lundberg A, [Wolf P](#)
24. *Augmented visual, auditory, haptic, and multimodal feedback in motor learning: a review.*
Psychonomic Bulletin & Review 20:21-53, 2013.
Sigrist R, Rauter G, Riener R, [Wolf P](#)
23. *Validity and reliability of accelerometer based gait assessment in patients with diabetes on challenging surfaces.*
Journal of Aging Research, vol. 2012, Article ID 954378, doi:10.1155/2012/954378.
de Bruin E, Hubli M, Hofer P, [Wolf P](#), Kurt Murer K, Zijlstra W
22. *Effect of an antipronation foot orthosis on ankle and subtalar kinematics.*
Medicine & Science in Sports & Exercise 44: 2384-2391, 2012.
Liu A, Nester C, Jones R, Lundgren P, Lundberg A, Arndt A, [Wolf P](#)
21. *Optimisation of the Mean Boat Velocity in Rowing.*
Computer Methods in Biomechanics and Biomedical Engineering 15:815-824, 2012.
Rauter G, Baumgartner L, Denoth J, Riener R, [Wolf P](#)
20. *Brain activity during stepping: A novel MRI-compatible device.*
Journal of Neuroscience Methods 201:124-130, 2011
Hollnagel C, Brügger M, Vallery H, [Wolf P](#), Dietz V, Kollias S, Riener R
19. *Cognitive and Cognitive-Motor Interventions Affecting Motor Functioning of Older Adults: A Systematic Review.*
BMC Geriatrics 11: 29, 2011.
Pichierri G, [Wolf P](#), Murer K, de Bruin E
18. *Visual and Auditory Augmented Concurrent Feedback in a Complex Motor Task.*
Presence 20:15-32, 2011.
Sigrist R, Schellenberger J, Rauter G, Broggi S, Riener R, [Wolf P](#)
17. *Day-to-day consistency of lower extremity kinematics during stair ambulation in 24 to 45 years old athletes.*
Gait & Posture 33: 635-639, 2011.
Husa-Russell J, List R, Lorenzetti S, [Wolf P](#)
16. *Does virtual audience influence rowing?*
Journal of Sports Engineering and Technology 224 (P1), 117-128, 2010.
Wellner M, Sigrist R, von Zitzewitz J, [Wolf P](#), Riener R
15. *Quantification of friction force reduction induced by obstetric gels.*
Medical & Biological Engineering & Computing 47:617-623, 2009.
Riener R, Leybold K, Brunschweiler A, Schaub AF, Bleul U, [Wolf P](#)
14. *Day-to-day consistency of lower extremity kinematics during walking and running.*
Journal of Applied Biomechanics 25:369-376, 2009.
[Wolf P](#), List R, Ukelo T, Maiwald C, Stacoff A
13. *A real-time rowing simulator with multi-modal feedback.*
Sports Technology 1: 257-266, 2008.
von Zitzewitz J, [Wolf P](#), Novakovic V, Wellner M, Rauter G, Brunschweiler A, Riener R
12. *Functional units of the human foot.*
Gait & Posture 28: 434-441, 2008.
[Wolf P](#), Stacoff A, Liu A, Nester C, Arndt A, Lundberg A, Stuessi E

11. *Veränderte Aktivierung der Vasti während dem Laufen als Merkmal des PFPS.*
Schweizer Zeitschrift für Sportmedizin & Sporttraumatologie 56: 66-70, 2008.
Wolf P, Kryenbühl C, Ukelo T, Stuessi E, Stacoff A
10. *Erfassen der Vor- und Rückfussbewegungen im Gehen und Laufen.*
Schweizer Zeitschrift für Sportmedizin & Sporttraumatologie 56: 43-49, 2008.
List R, Unternährer S, Ukelo T, Wolf P, Stacoff A
9. *Invasive in vivo measurement of rear, mid and forefoot motion during walking.*
Gait & Posture 28: 93-100, 2008.
Lundgren P, Nester C, Liu A, Arndt A, Jones R, Stacoff A, Wolf P, Lundberg A
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