

Curriculum Vitae

1 About the person

Blickhan, Reinhard, Dr. Prof.

Nationality: german

Address:

at work.

Institute of Sports science
Holder of the Chair of Science of Motion
Friedrich Schiller University
Seidelstr. 20
D-07749 Jena
Germany

Tel.: 03641 9 45701

Fax: 03641 9 45702

e-mail: reinhard.blickhan@uni-jena.de

private:

Leo Sachse Str.32
07749 Jena

Tel.: 03641 363757

Family status: married: 7.5.76, Georgia Blickhan-Ligda, greek,
2 children:

Marko 29.5.85 (Boston, USA)

Denise 18.4.88 (St. Ingbert, FRG)

Date of birth: 11.02.51

2 Education, Employment, Career

1957 - 1961	Elementary school, Eppertshausen
1961 - 1968	Goetheschule (high school, natural sciences), Dieburg
1969 - 1972	Studies of Physics, Justus-Liebig University, Gießen
1972 - 1976	Studies of Physics, Technical University, Darmstadt
1976	Diplome (masters) in Physics, T.U. Darmstadt (Prof. Kötzler), "Measurement of the dynamic zero-field susceptibility of EuO in the range of the ferromagnetic critical point."

- 1976 - 1983 Studies of Biology at the Johann-Wolfgang-Goethe-University, Frankfurt am Main
- 1983 Doctor of Natural Sciences (PhD, Dr. phil. nat.), J.W.-Goethe-University, Frankfurt am Main, (Prof. F.G. Barth), "Strain in the exoskeleton of spiders."
- 1983 - 1986 Research stipend (post doc, DFG) and research specialist at Harvard University, Cambridge, U.S.A., (Prof. C. R. Taylor, Prof. T. A. McMahon) "Principals of construction of the motion system of vertebrates".
- 1986 - 1992 Assistant professor, University of the Saarland (Prof. W. Nachtigall) "Locomotion in fluids", establishment and direction of a project on fish locomotion.
- 1989, 1990 Visiting scientist for several months at the University of California at Berkeley "Principals of construction of the arthropod motion system" und at the Scripps-Oceanographic-Institute at San Diego "Forces in the tendon of swimming tuna."
- 1992 Scientific excursion to the marine station of the University of Heraclion, Crete, Greece, "Visualization of flow in the vicinity of swimming fish".
- 1992 Habilitation "Biomechanics of the axial aquatical and the pedal terrestrial locomotion"
- 1992 Heisenberg-stipend of the DFG (German Science Foundation)
- 1993 Walther-Arndt-Habilitation-Price of the German Zoological Society (DZG)
- 1993 Call: guest-professor (C4) at the University of Zürich, Switzerland
- 1993 Professor of Biomechanics at the Institute of Sport Science at the Friedrich Schiller University, Jena, Germany
- 1994 Visiting-professor at the Institute of Zoology, University of Wiena, Austria
- 1995 Organization of the dvs-workshop "Biomechanics und motor control" with Dr. Kirchner
- 1995 Founder and since then speaker of the innovation college "Motion Systems", an interdisciplinary research group with ca. 30 scientists (biology, sport, medicine, engineering)
- 1996 Co-organizer: Workshop of the German Zoological Society "Biomechanics" (with Bereiter-Hahn and Nachtigall)
- 1997 Organizer: Ist International Congress on Motion Systems
- 1997 One of 5 referees for the evaluation of the Institute of Sports science at the TU-Munich
- 1998 Elected and appointed director of the Institute of Sports science with currently 750 students and a staff of ca. 30
Head of the search committee „Sport Medicine C4“
Member of the ethics commission of the Faculty of Social- and Behavioral Sciences
Research visit at the University of California at Berkeley „Preflex“
- 1999 First institute of the university being externally evaluated within the valuation within the association of the universities of Halle, Jena, Leipzig.
- 2000 Reelection as director of the Institute of Sports science.
- 2001 Call: Prof. Biomechanics (suc, van Ingen-Schenau) Vrije Universiteit, Amsterdam (rejected)
Organizer: IInd International Congress on Motion Systems
Prof. Motions Science, Friedrich-Schiller University, Jena
Referee: Evaluation of the IFBK Amsterdam and Nijmegen
- 2004-2005 Head of the search committee „Sport Medicine C4 „Sports and School W3/C4“

- 2006-2008 Vice with currently 1000 students
Head of the committee of the institute of sport science to introduce new European curricula (Bologna) “bachelor and master in sport science”
- 2008-2011 Director of the Institute of Sportscience, among top 4 german institutes (CHE-Ranking). The Group of Motion Science (including Locomotion Lab – Dr. Seyfarth) employs about 30 scientists.
- 2009 Organizer (with Andre Seyfarth): Workshop “Adaptive motion in man, animals, and machines.” Jena
- 2013 - 2014 Head of the search committee „Sportpsychologie W3“
- 2013 - 2014 Head of the search committee „Trainingswissenschaft W3“
- 2015, 2016 Visiting Professor at Keio University, Yokohama, Japan
- 2016 – 2018 Seniorprofessor “Motion Science”

3 Young academics

Dissertations

- 1993 A. Kesel Elektromyographische Untersuchung der Muskelrekrutierung an im Wasserkanal frei schwimmenden Regenbogenforellen (*Oncorhynchus mykiss*) bei unterschiedlichen Schwimgeschwindigkeiten und unterschiedlichen Verhaltensmustern unter Berücksichtigung anatomischer und neurophysiologischer Aspekte., (Mathem. Nat. Fakultät, Univ. d. Saarl.). Betr. Nachtigall, Blickhan
- 1996 J. Sens Funktionelle Anatomie und Biomechanik der Laufbeine einer Vogelspinne (*Grammostola spatula*, F.O. Pickard-Cambridge). (Math. Nat. Fakultät, Univ. d. Saarlandes). Betr, Blickhan, Mosbacher
- 1999 K. Meier Neuronale Netzze zur Steuerung von einbeinigen Bewegungssystemen – Entwurf und optoelektronische Implementierung. (Fakultät f. Math. u. Inform., Friedrich-Schiller-Universität Jena). Betr. Blickhan, Beckstein, Fey
- 2000 M. Karner Volumenverschiebung beim Sprung der Jagdspinne *Cupiennius salei* (Keyserling, 1871) (*magna cum laude*, Zoologie, Ffm) Betr.: Blickhan
- 2000 A. Seyfarth Elastische Beine - Strategien und Bauprinzipien. (*summa cum laude*, Fakultät für Sozial und Verhaltenswissenschaften, Jena) Betr.: Blickhan
- 2001 A. Friedrichs Neue Diagnoseverfahren für Biomechanik, Sport, Rehabilitation und Fahrzeugentwicklung. Diagnostik in Sport und Rehabilitation. (*magna cum laude*, Fakultät für Sozial und Verhaltenswissenschaften, Jena) Betr.: Blickhan
- 2001 H. Wagner Die selbststabilisierenden Eigenschaften des menschlichen Bewegungsapparates. (*summa cum laude*, Theor. Physik, Ffm) Betr.: Blickhan
- 2003 T. Siebert Messung von Muskeleigenschaften. (*summa cum laude*, Fakultät für Sozial und Verhaltenswissenschaften, Jena) Betr.: Blickhan, Wagner

- 2005 F. Mörl Lumbale Dysbalancen und isometrisches Krafttraining. (*summa cum laude*, Fakultät für Sozial und Verhaltenswissenschaften, Jena) Betr.: Blickhan
- 2005 H. Geyer Grundmodelle pedaler Lokomotion basierend auf nachgiebigem Beinverhalten. (*summa cum laude*, Fakultät für Sozial und Verhaltenswissenschaften) Betr.: Blickhan, Seyfarth
- 2007 H. Heger Modellierung der viskoelastischen Eigenschaften des Hüftgelenkes. Dynamische Steifigkeit des Hüftgelenkes. (*summa cum laude*, Fakultät für Sozial und Verhaltenswissenschaften, Jena) Betr.: Blickhan, Wank
- 2008 T. Weihmann Biomechanische Analyse der ebenen Lokomotion von *Ancylomedes bogotensis* (Keyserling, 1877) (Chelicerata, Arachnida, Lysoidea) (*cum laude*; Biologie, Betr.: Blickhan)
- 2008 T. Ertelt Kraftmorphologie der menschlichen Beinbewegung.- Elektromyographische und kinematische Einflüsse frequenzbedingter Schlittensprünge. (*summa cum laude*, Fakultät für Sozial und Verhaltenswissenschaften, Jena) Betr.: Blickhan, Wagner
- 2008 S. Grimmer Steifigkeitsanpassung beim Laufen auf unebenem Terrain. (*magna cum laude*, Fakultät für Sozial und Verhaltenswissenschaften, Jena) Betr.: Blickhan, Wagner, Seyfarth
- 2008 S. Adler The relation between long-term seating comfort and driver movement. (*magna cum laude*, Fakultät für Sozial und Verhaltenswissenschaften, Jena) Betr.: Blickhan
- 2008 J.-U. Michel Motorische Steuerung während adaptiver Lokomotion: Neurophysiologische Mechanismen, Entwicklung und Krankheit. (*magna cum laude*, Fakultät für Sozial und Verhaltenswissenschaften, Jena) Betr.: Dietz (Zürich), Blickhan
- 2009 C. Rode Interaction between passive and contractile muscle elements: re-evaluation and new mechanisms. (*summa cum laude*, Fakultät für Sozial und Verhaltenswissenschaften, Jena). Betr.: Blickhan, Siebert
- [2010 Y. Blum Biomechanische Modelle und Stabilitätsanalyse des zweibeinigen Rennens. (*magna cum laude*; Fakultät für Sozial und Verhaltenswissenschaften, Jena) Betr.: Seyfarth]
- 2011 B. Pflanz Zur Koordination des Basketballwurfs (*magna cum laude*, Fakultät für Sozial und Verhaltenswissenschaften, Jena). Betr.: Wagner, Blickhan)
- 2011 R. Müller Laufen über unebenes Terrain: Aktivierung der Muskulatur (*magna cum laude*, Fakultät für Sozial und Verhaltenswissenschaften, Jena). Betr.: Blickhan
- 2012 M. Koch Kinetische Reaktion des Bewegungsapparates auf vertikal am Arm wirkende Zugkräfte – Unterschiede zwischen Gesunden und Patienten mit chronisch unspezifischem unteren Rückenschmerz. (*cum laude*, Fakultät für Sozial und Verhaltenswissenschaften, Jena). Betr.: Blickhan
- 2012 M. Ernst Selbststabilität und Kontrolle der schnellen bipedalen Lokomotion auf unebenem Untergrund. (*magna cum laude*, Fakultät für Sozial und Verhaltenswissenschaften, Jena). Betr.: Blickhan
- [2012 M. Maus Towards understanding human locomotion. (Faculty of Computer Science and Automation, Ilmenau) Betr.: Seyfarth]

- [2013 S. Riese On the effect of variable leg-spring properties during hopping. (*magna cum laude*; Phys.-Astronom. Fakultät, Jena). Betr.: Seyfarth]
- 2014 S. Hochstein Widerstands- und Strömungsbeeinflussung der menschlichen undulatorischen Schwimmbewegung. (*summa cum laude*; Fachbereich Psychologie und Sportwissenschaft der Westfälischen Wilhelms-Universität in Münster.) Betr.: Blickhan
- 2014 L. Reinhardt Dynamik und Kineamtik der Ameisenlokomotion. (*summa cum laude*, Fakultät für Sozial und Verhaltenswissenschaften, Jena). Betr.: Blickhan
- 2016 K. Leichsenring Kontraktionsdynamik der Unterschenkelmuskulatur bei *Oryctolagus cuniculus*: Dreidimensionale Muskelverformung und Parameteridentifikation. (*magna cum laude*: Fakultät für Sozial und Verhaltenswissenschaften, Jena). Betr.: Siebert, Blickhan
- 2017 K. Moll MR-Muscle Spectroscopy and Spiroergometriy: Impact of Exercise-Induced Metabolic Changes on the Whole-Body Physiology: A Comparison of Global and Local Physiological Parameters. (*summa cum laude*: Fakultät für Sozial und Verhaltenswissenschaften, Jena). Betr.: Reichenbach, Blickhan
- 2018 S. Aminiaghdam Adjustment of posture as a measure to accommodate uneven ground. (*magna cum laude*: Fakultät für Sozial und Verhaltenswissenschaften, Jena). Betr.: Blickhan, Rode, Müller)
- [2019 M.C.P. Schenk Vergleichende Untersuchung zur muskulären Aktivität im Oberflächenmyogramm von Patienten nach konservativer, offen chirurgischer, und minimalinvasiv chirurgischer Behandlung von Wirbelsäulenverletzungen. (*cum laude*; Fakultät f. Sozial und Verhaltenswiss., Jena) Betr.: versch. Inst. in Jena und Halle, Blickhan]
- 2019 M. Götze Bewegungs- und Haltungskontrolle des Laufens und Stehens bei induzierten Störungen. (*magna cum laude*; Fakultät f. Sozial und Verhaltenswiss., Jena). Betr.: Blickhan
- 2019 C. Wick Rekonstruktion der dreidimensionalen Architektur der Wadenmuskulatur beim Kaninchen (*Oryctolagus cuniculus*). (*magna cum laude*: Fakultät f. Sozial und Verhaltenswiss., Jena). Betr.: Siebert, Blickhan
- 2022 J. Vielemeyer Intersection of ground reaction force vectors during human locomotion (*magna cum laude*; Fakultät f. Sozial und Verhaltenswiss., Jena). Betr.: Müller, Blickhan
- 2022 T. Wöhrl Towards understanding of climbing, tip-over prevention and self-righting behaviors in Hexapoda. (*summa cum laude*; Fakultät f. Sozial und Verhaltenswiss., Jena). Betr.: Blickhan

Habilitations

- 2000 Wank V. Aufbau und Anwendung von Muskel-Skelett-Modellen zur Bestimmung biomechanischer Muskelparameter. Habilitationsschrift an der Friedrich-Schiller Universität, Jena.
- 2004 Wagner, H. Selbststabilisierung als Prinzip der Bewegungswissenschaft. Habilitationsschrift an der Friedrich-Schiller Universität, Jena.
- 2007 Seyfarth, A. The emergence of gaits in legged systems. Habilitationsschrift an der Friedrich-Schiller Universität, Jena.
- 2011 Siebert, T. Experimentbasierte Modellierung von Skelettmuskeln und Anwendung der Modelle in Muskel-Skelett Simulationen. . Habilitationsschrift an der Friedrich-Schiller Universität, Jena.
- 2017 Müller, R. Bipedale Lokomotion auf unebenem Untergrund. Habilitationsschrift an der Friedrich-Schiller Universität, Jena.
- 2017 Andrada, E. Contributions to the biomechanics of bipedal locomotion –methods and models. Habilitationsschrift an der Technischen Universität, Ilmenau.
- 2018 Rode, C. From Muscle via Leg Architecture to Locomotion: Theories and Experiments. Habilitationsschrift an der Friedrich-Schiller Universität, Jena

Young academics in teaching positions

- V. Wank (2004) Prof. Biomechanik (C4), Universität Tübingen
- K. Maier (2005) Prof. Computer Science and Electronic Engineering; University of Essex
- H. Wagner (2006) Prof. Bewegungswissenschaft (C3), Universität Münster
- H. Geyer (2010) Ass. Prof. Robotics Institute, Carnegie Mellon University, Pittsburgh
- A. Seyfarth (2011) Prof. (W3) Biomechanik, Technische Universität Darmstadt
- T. Siebert (2013) Prof. (W3) Bewegung und Sport, Universität Stuttgart
- C. Rode (2021) Prof. (W3) Biomechanik, Universität Rostock

Former master students and postdocs

- A. Kesel (2003) Prof. (FH) Bionik, Hochschule Bremen
- U. Müller (2007) Prof. Biomechanics of Animal Locomotion, California State University, Fresno
- P. Meier (2010) Prof. (FH) Physik, Mechanik und Simulation, Fachhochschule Ostwestfalen-Lippe
- T. Johannsson (2011) Prof. (FH) Maschinenbau (Mathematik), Fachhochschule Koblenz

4 Publications

A) Peer reviewed

1. Kötzler J, Scheithe W, Blickhan R, Kaldis E (1978) Dynamic dipolar cross-over in EuO. *Solid State Comm* **26**:641-644
2. Blickhan R, Barth FG (1985) Strains in the exoskeleton of spiders. *J Comp Physiol* **A157**:115-147
3. Blickhan R (1986) Stiffness of an arthropod leg joint. *J Biomech* **19**:375-348
4. Blickhan R, Full RJ (1987) Locomotion energetics of the ghost crab: II Mechanics of the center of mass. *J Exp Biol* **130**:155-174
5. Biewener AA, Blickhan R (1988) Kangaroo rat locomotion: Design for elastic storage or acceleration? *J Exp Biol* **140**:243-255
6. Biewener A, Blickhan R, Perry A, Heglund N, Taylor CR (1988) Muscle forces during locomotion in kangaroo rats: Force platform and tendon buckle measurements compared. *J Exp Biol* **137**:191-205
7. Perry AK, Blickhan R, Biewener AA, Taylor CR (1988) Preferred speeds in vertebrates: are they equivalent? *J Exp Biol* **137**:207-219
8. Blickhan R (1989a) The spring mass model for running and hopping. *J Biomech* **22**:1217 - 1227
9. Farley CT, Blickhan R, J Saito, CR Taylor (1991) Hopping frequency in humans: a test of how springs set stride frequency in bouncing gaits. *J Appl Physiol* **71**:2127-2132
10. Full F, Blickhan R, Ting L (1991) Leg design in hexapedal runners. *J Exp Biol* **158**: 369-390
11. Bleckmann H, Breithaupt T, Blickhan R, Tautz J (1991) The time course of hydrodynamic events caused by moving fish. *J Comp Physiol* **168**:749-757
12. Blickhan R, Krick C, Breithaupt T, Zehren D, Nachtigall W (1992) Generation of a vortex-chain in the wake of a subundulatory swimmer. *Naturwissenschaften* **79**:220-221
13. Blickhan R (1992) Bionische Perspektiven der aquatischen und terrestrischen Lokomotion. In.: Nachtigall (ed). *Technische Biologie und Bionik 1*. Biona report 8, Fischer pp.135-154
14. Blickhan R, Full RJ, Ting L. (1993) Exoskeletal strain: Evidence for a trot-gallop transition in rapid running ghost crabs. *J. Exp. Biol.* **179**:301-321
15. Blickhan R (1993) Axial aquatic and pedal terrestrial locomotion. - Form, structure, and movement. *Verh Dtsch Zool Ges* **68.2**:5-11

16. Blickhan R., Full R.J. (1993) Similarity in multilegged locomotion: Bouncing like a monopode. *J. Comp. Physiol. A* **173**:509-517
17. Blickhan R., Cheng J.-Y. (1994) Energy storage by elastic mechanisms in the tail of large swimmers. *J. Theoret. Biol.* **168**:315-321
18. Cheng J.-Y., Blickhan R. (1994) Bending moment distribution along swimming fish. *J. Theoret. Biol.* **168**:337-348
19. Cheng J.-Y., Blickhan R. (1994) Note on the calculation of propeller efficiency using elongated body theory. *J. Exp. Biol.* **192**:169-177
20. Bohmann, L., Blickhan, R. (1997) Der hydraulische Mechanismus des Sprunges einer Spinne. *Forsch. Ingenieurwes.* 63:224-230
21. Bohmann, L., Blickhan, R. (1998) Der hydraulische Mechanismus des Spinnenbeines und seine Anwendung für technische Probleme. *Z. angew. Math. Mech.* 78: 87-96
22. Johansson, T., Meier, P., Blickhan, R. (2000) A finite element model for mechanical analysis of skeletal muscles. *J. theoret. Biol.* 206:131-149
23. Wagner, H., Blickhan, R. (1999) Stabilizing function of skeletal muscles: an analytical investigation. *J. theoret. Biol.* 199:163-179
24. Seyfarth, A., Friedrichs, A., Wank, V., Blickhan, R. (1999) Dynamics of the long jump. *J Biomechanics* 32:1259-1268
25. Maier, K.D., Wank, V., Bartonietz, K., Blickhan, R. (2000) Neural Network based models of javelin flight: Prediction of flight distances and optimal release parameters. *Sports Engn.*, 23:57-63
26. Seyfarth, A., Blickhan, R., van Leeuwen, J. (2000) Optimum take-off techniques and muscle design for long jump. *J. exp. Biol.* 203:741-750
27. Wank, V., Bauer, R., Walter, S., Kluge, H., Fischer, M.S., Blickhan, R., Zwiener, R. (2000) Accelerated contractile function and improved resistance of calf muscles in newborn piglets with intrauterine growth restriction. *Amer. J. Appl. Physiol.*
28. Zentner, L., Petkun, S., Blickhan, R. (2000) From the spider leg to a hydraulik device. *Technische Mechanik* 20:21-29
29. Bauer, R., Wank, V., Walter, B., Blickhan, R., Zwiener, U. (2000) Reduced muscle vascular resistance in intrauterine growth restricted newborn piglets. *Exp Toxic Pathol* 52:271-276
30. Haas, F., Gorb, S., Blickhan, R. (2000) The function of resilin in beetle wings. *Proc R Soc Lond B* 267:1375-1381
31. Maier, K.D., Glauche, V., Beckstein, C., Blickhan, R. (2000) Controlling fast spring-legged locomotion with artificial neural networks. *Soft Computing* 4:157-164

32. Maier, K.D., Beckstein, C., Blickhan, R., Fey, D., Erhard, W. (2001) A digital multi-layer-perceptron hardware architecture based on three dimensional massively parallel optoelectronic circuits. *Informatica* 25:271-278
33. Maier, K.D., Beckstein, C., Blickhan, R., Erhard, W. (2001) Standard cell-based implementation of a digital optoelectronic neural-network hardware. *Appl. Optics* 40:1244-1252.
34. Seyfarth, A., Günther, M., Blickhan, R. (2001) Stable Operation of an Elastic Three-Segmented Leg. *Biol Cybern.* 84, 5:365-382
35. Günther, M., Blickhan, R. (2002) Joint stiffness of the ankle and knee during running. *J Biomech* 35: 1459 - 1474
36. Seyfarth, A., Geyer, H., Günther, M., Blickhan, R. (2002) A movement criterion for running. *J Biomech* 35:649-655
37. Siebert, T., Wagner, H., Blickhan, R. (2003) Not all oscillations are rubbish: Forward simulation of quick-release experiments. *J Mech Med Biol*3:107-122
38. Wagner, H., Blickhan, R. (2003) Stabilizing function of antagonistic neuromusculoskeletal systems: an analytical investigation. *Biol. Cybern.* 89, 71–79
39. Geyer, H., Seyfarth, A., Blickhan, R. (2003) Positive force feedback in bouncing gates. *Proc Royal Soc B* 02171.1-10
40. Günther, M., Sholukha, V.A., Keßler, D., Wank, V., Blickhan, R. (2003) Dealing with skin motion and wobbling masses in inverse dynamics. *J. Mech. Med. Biol.* 3:309-335
41. Günther, M., Keppler, V., Seyfarth, A., Blickhan, R. (2004) Human leg design: optimal axial alignment under constraints. *J. Math. Biol.* 48: 623-646; DOI: 10.1007/s00285-004-0269-3
42. Geyer, H., Seyfarth, A., Blickhan, R. (2005) Spring-mass running: simple approximate solution and application to gait stability. *J. Theoret. Biol.* 232: 315-328
43. Mörl, F., Wagner, H., Blickhan, R. (2005) Lumbar spine intersegmental motion analysis during lifting. *Pathophysiol.* 12: 295-302
44. Wagner, H., Anders, Ch., Puta, Ch., Petrovitch, A., Mörl, F., Schilling; N., Witte, H., Blickhan, R. (2005) Musculoskeletal support of lumbar spine stability. *Pathophysiol.* 12: 257-265
45. Wagner H, Siebert T, Ellerby DJ, Marsh RL, Blickhan R (2005) ISOFIT - A model-based method to measure muscle-tendon properties simultaneously. *Journal of Biomechanics and Modeling in Mechanobiology* 4:10-19.
46. Günther M., Witte H. and Blickhan R. (2005) Joint energy balances: the commitment to the synchronization of measuring systems. *J. Mech. Med. Biol.* 5: 139-149

47. Hoyer, D., Kletzin U., Adler D., Adler, S., Meissner W. Blickhan, R. (2005) Gait information flow indicates complex motor dysfunction. *Physiol. Meas.* **26** 545-554
48. Geyer, H., Seyfarth, A., Blickhan, R. (2006) Compliant leg behaviour explains basic dynamics of walking and running. *Proc. Roy. Soc. Lond. B.* DOI .10.1098/rspb.2006.3637. *Proc. Roy. Soc. B* **278**: 286 -2867
49. Mörl, F., Blickhan, F. (2006) Three-dimensional realtion of skin markers to lumbar vertebrae of healthy subjects in different postures measured by open MRI. *Eur. Spine. J.* **15**(6):742-751
50. Wagner, H., P. Giesl & R. Blickhan (2007). Musculoskeletal stabilisation of the elbow – complex or real. *J. Mechanics Med. Biol.* **7**(3): 275 – 296
51. Geyer H, Seyfarth A, Blickhan R (2006) Compliant leg behaviour explains basic dynamics of walking and running *Proc. R. Soc. B*, **273**, 2861–2867
52. Fischer MS, Blickhan R. (2006) The tri-segmented limbs of therian mammals: kinematics, dynamics, and self-stabilization—a review. *J. Exp. Zool.* **305A**:935–952.
53. Hoyer, D., Frank, B. Pompe, B., Schmidt H., Werdan, K., Muller-Werdan, U., Baranowski, R., Zebrowski, J. J., Meissner, W., Kletzin, U., Adler, D., Adler, S., Blickhan, R. (2006) Analysis of complex physiological systems by information flow: a time scale-specific complexity assessment. *Biomed. Tech.* **51**: 41-48.
54. Wagner, H., P. Giesl & R. Blickhan (2007) Musculoskeletal stabilisation of the elbow – complex or real. *J. Mechanics Med. Biol.* **7**: 275 – 296
55. Blickhan, R., Seyfarth, A., Geyer, H., Grimmer, S., Wagner, H., Günther, M. (2007) Intelligence by mechanics. *Proc. Roy. Soc. Lond. A.* **365**: 199-220
56. Siebert, T., Rode, C., Herzog, W., Till, O., Blickhan, R. (2008) Nonlinearities make a difference: comparison of two common Hill-type models with real muscle. *Biol. Cybern.* **98**:133-43, DOI 10.1007/s00422-007-0197-6
57. Günther, M., Otto, D., Müller, O., Blickhan, R. (2008) Transverse human standing during quiet stance. *Gait Posture* **27**:361-367
58. Grimmer, S., Ernst, M., Günther, M., Blickhan, R. (2008) Running on uneven ground: leg adjustment to vertical steps and self-stability. *J. Exp. Biol.* **211**: 2989-3000
59. Ertelt, T., Blickhan, R. (2009) Describing force patterns: a method for an analytic classification using the example of sledge jumps. *J. Biomech*, **42**: 2616-2619
60. Weihmann, T., Blickhan, R. (2009) Comparing inclined locomotion in a ground-living and a climbing ant species: sagittal plane kinematics. *J. Comp. Physiol. A* **195**: 1011-1020.
61. Rode, C., Siebert, T., Herzog, W., Blickhan, R. (2009) The effects of parallel and series elastic components on the active cat soleus force-length relationship. *J. Mech. Med. Biol.* **9**: 105-122

62. Müller, R., Grimmer, S., Blickhan, R. (2010) Running on uneven ground: Leg adjustments by muscle preactivation control. *Human Movement Science* 29: 299-310
63. Reinhardt, L., Weihmann, T., Blickhan, R. (2009) Dynamics and kinematics of ant-locomotion. Do wood ants climb on level surfaces? *J. Exp. Biol.* 212: 2426-2435
64. Rode, C., Siebert, T., Blickhan, R. (2010). Titin-induced force enhancement and force depression: A 'sticky-spring' mechanism in muscle contractions? *J. Theor. Biol.* 259:350-360
65. Günther, M., Müller, O., Blickhan, R. (2010) Watching quiet human stance to shake off its straitjacket. *Arch. Appl. Mech.* 81: 283-302 DOI 10.1007/s00419-010-0414-y
66. Siebert, T., Weihmann, T., Rode, C., Blickhan, R. (2010) Cupienius salei: biomechanical properties of the tibia-metatarsus joint and its flexing muscles. *J. Comp. Physiol. B* 180: 199-209
67. Till, O., Siebert, T., Blickhan, R. (2010) A mechanism accounting for independence on starting length of tension increase in ramp stretches of active skeletal muscle at short half-sarcomere lengths. *J. Theoret. Biol.* 266:117-123
68. Müller, R., Blickhan, R. (2010) Running on uneven ground: Leg adjustments to altered ground level. *Hum. Mov. Sci.* 29: 578-589
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70. Hochstein, S., Blickhan, R. (2011) Vortex re-capturing and kinematics in human underwater undulatory swimming. *Hum. Mov. Sci.* 5: 998-1007
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114. Till, O., Rode, C., Siebert, T., Blickhan, R. (2006) Determining muscle parameters: Adaptation to force variations by recursive non-linear regression. *J. Biomech.* 39: S487
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142. Pacholak, S., Rudert A., Brücker C., Blickhan, R. (2010) Simulation of swimmers performing a dolphin kick. 8th Euromech Fluid Mechanics Conference, Bad Reichenhall (Germany)
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147. Blickhan, R., Ernst, M., Müller, R. (2011) Exploring biomechanics to facilitate control. Dynamic Waling, Jena
148. Reinhardt, L., Weihmann, T. & Blickhan, T. (2012). Fast legged locomotion in the micro-scale – global kinematics and dynamics in the wood ant *Formica polyctena*. Jahrestagung der Society for Experimental Biology (SEB), 29.6.-2.7., Salzburg, Österreich.
149. Müller, R., Siebert, T., Blickhan, R. (2012) Laufen auf unebenem Boden: ein „no-brainer“? Jahrestagung, dvs
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151. Andrada, E., Nyakatura, J., Müller, R., Rode, C., Blickhan, R. (2012) Grounded running: An overlooked strategy for robots. AMS, Stuttgart ISBN: 978-3-642-32216-7
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153. Müller, R., Ernst, M., Blickhan, R. (2013) Identifizierung unterschiedlicher Kontrollstrategien beim Laufen über sichtbare und verdeckte Untergrundänderungen. Jahresdagung DVS, Chemnitz
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155. Götze, M., Blickhan, R. (2013) Validierung der Klassifizierung von chronischen Rückenschmerzpatienten und gesunden Kontrollprobanden hinsichtlich identifizierter kinematischer Bewegungsunterschiede. Erfurter Tage
156. Götze, M., Ernst, M., Blickhan, R. (2013) Kann die kinematische Reaktion auf eine Störung zur Identifizierung des chronischen Rückenschmerzes genutzt werden? DVS Chemnitz
157. Götze, M., Blickhan, R. (2014) Gestörtes Stehen – Unterscheiden sich chronische Rückenschmerzpatienten bei der Kompensation von mechanischen Störungen mit Vorwarnung zu gesunden Kontrollprobanden? Erfurter Tage
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159. Siebert, T., Stutzig, N., Till, O., Blickhan, R. (2014) Active muscle forces is influenced by muscle compression. ISB 2015-1354, Glasgow
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161. Blickhan, R. (2014) Legged locomotion. – From biology to mechanics and return. DPG 2014, BP27, Dresden
162. Reinhardt, L. & Blickhan, T. (2014). Ultra-miniature force plate for measuring triaxial forces in the micro newton range. Jahrestagung der Society for Experimental Biology (SEB), 1.7.-4.7., Manchester, UK
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166. Andrada, E., Sutedja, Y., Hirasaki, E., Blickhan, R., Ogihara N. (2015). Bipedal locomotion of the Japanese macaques: interactions between trunk, legs and self-stability. In proceedings of the XXV Congress of the International Society of Biomechanics, Glasgow, UK, pp.311-312.
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169. Aminiaghdam, S., Rode, C., & Blickhan, R. (2017). Interaction Effects of Posture and Uneven Ground on Able-Bodied Walking Kinetics. *ISBS Proceedings Archive*, 35(1), 185.

5 Grants

- 1977 DFG, Ba 9/11z (*Barth, Blickhan*)
- 1979 DFG, SFB45/A2 (*Barth, Blickhan*)
- 1983,84 DFG, Research stipend, BL 236/1-1,2 (*Blickhan*)
- 1988-92 DFG, Bl 236/2-1,2 (*Blickhan, Nachtigall*)
- 1989 DFG Travelling grant Bl 236/2-3 (*Blickhan*)
- 1991 Humboldt stipend: Dr. Cheng (*Cheng, Blickhan*)
- 1992 DFG Heisenberg stipend Bl 236/5 (*Blickhan*)
- 1993-95 BISp (*Wank, Blickhan*)
- 1995 DFG Bl 236/7 (*Blickhan*)
Stiftung Volkswagenwerk (*Blickhan*)
DFG INK 22/A1 "Innovationcollege Motion Systems"
A3 (*Blickhan, Wank*) Muscle properties
B2 (*Wank, Blickhan*) Joint properties
C1 (*Blickhan*) Human running
D1 (*Blickhan*) Arthropod locomotion
- 1996 Country of Thuringia: Motionlab (*Blickhan*)
DFG/Country of Thuringia: High speed camera (*Blickhan*)
- 1997-2001 Country of Thuringia: Common project of the institute (*Blickhan*)
DFG Bl 236/7-2 (*Blickhan*)
DFG Bl 236/8-; WA 1420/1-2 DFG, Center of research "Autonomous walking" (*Blickhan*) Energieabsorption,-storage, and work while running running across uneven terrain.
DFG Pe 693/1-1; Bl 236/9-1..3 DFG Center of research "Autonomous walking" (*Petkun, Blickhan*) Fast locomotion in arthropods.
BISp (*Wank, Blickhan*) Muscle diagnostics.
- 1998-2001 DFG Prolongation innovationcollege „Motion systems“ INK 22/A1 (*Blickhan*)
Projects A3, B2, C1, D1, s.1995
- 1998 - 2012 BGN (*Blickhan, Wagner*) Unspecific low back pain – reaction to disturbances
- 2003 - 2008 Stiftung Volkswagen (*Wehner, Ronacher, Wolf, Blickhan*) 3D-Orientation of a small-brain navigator.
- 2004 - 2009 DFG Bl236/11-1 (*Blickhan, Günther*) Neuro-muscular control of human posture: experimental analysis, biomechanical modelling and synthesis.
- 2004 - 2012 DFG Bl236/13 (*Blickhan, Siebert*) Properties of the muscle tendon-complex of small mammals. Shifted to Tobias Siebert Si841/1-1,2
- 2005 - 2010 DFG Bl236/14-1,2 (*Blickhan*) Physical foundation of extension in spiders.
- 2005 -2011 DFG Bl236/15-2,3//21-1,2 Package (146/1,2) (*Blickhan, Seyfarth*) The impact of disturbances on selfstable human running.
- 2007 - 2013 DFG Bl236/17-1,2,3 (*Blickhan*) Active reduction of drag the utilization of instationary effects in human swimming. (Center of research program: Manipulation of fow in nature and technique (SPP 1207))
- 2009 - 2015 DFG Bl236/20-1,2 (*Blickhan*) Distribution of aktive ground reaction forces in ants.
- 2010 - 2015 DFG Bl236/22-1 (*Blickhan, Denzler, Fischer*) Avian bipedal locomotion C. Dynamics

- 2010 - 2013 BMBF FKZ 01EC1003A (*Wagner, Weiss, Puta, Lappe, Delussanet, Blickhan*): Chronic backpain and somatomotor control.
- 2014 DFG B1236/28-1 (*Blickhan, Ogihara*) Anbahnungsantrag: Prinzipien der terrestrischen Lokomotion: Von der Mechanik zur Kontrolle.
- 2014 – 2016 DFG B1236/29-1 (*Böl, Siebert, Blickhan*) Entwicklung und Validierung eines dreidimensionalen elektro-chemo-mechanischen Modells der Harnblase.

6 Referee

DFG, NSF, Humboldt, Erasmus, Studienstiftung, Minister of Culture Sachsen-Anhalt, Minister of Culture Bavaria, STIFT North Eastern University, UC-Berkeley, Carnegie-Mellon University, Free University Amsterdam

Human Movement Science (editorial board)

Journal of Comparative Physiology (A,B), Journal of Experimental Biology, Journal of Cybernetics, Journal of Transaction of the Royal Society, Zoology - Analysis of Complex Systems, Journal of Theoretical Biology, Journal of Applied Physiology, Journal of Biomechanics, Journal of Applied Biomechanics, Pain, Archive of Applied Mechanics, IEEE Engineering in Medicine and Biology, Journal of Sports Medicine, Biomechanics and Modelling in Mechanobiology, International Journal Robotics Research, Experimental Brain Research, Physics in Medicine and Biology, Journal of Motor Behavior, Journal of Biomedical Engineering, European Journal of Applied Physiology

7 Teaching (Group of Science of Motion)

Until 2018.

Teaching: annual; supervision: Blickhan

L: Lecture; S: Seminar; P: Project

So far manuscripts are in German. Some manuscripts in English available.

Bachelor

- Introduction in to biomechanics (L 15h, S 15h) *Blickhan, coworkers*
- Biomechanics of sport (L 15h, S15h) *Rode, coworkers*
- Biomechanics of the musleskeletal system (tissues, structures and load) (L 15h, S15h) *Rode, coworkers*
- Sports equipment (L15h) *Blickhan*
- Biomechanis (S 30h) *Blickhan, coworkers*
- Measuring techniques (L 5+h, S 5) *Blickhan, coworkers*
- Computer praxis (Office, etc.) *Müller, coworkers*

Master

- Introduction in to programming using Matlab (L15h, P15h) *Blickhan, coworkers*
- Modelling using Matlab (L15h, P15h) *Blickhan, coworkers*
- Introduction to Statistics (L15h, S15h) *Blickhan, coworkers*

- Statistics using SPSS (L15h, P15h) *Blickhan, coworkers*

Advanced:

- Terrestrial locomotion (new textbook chapter (100 pages; English))