

Young academics

Dissertations

- 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, SS05, Fakultät für Sozial und Verhaltenswissenschaften, Jena) Betr.: Blickhan
- 2005 H. Geyer Grundmodelle pedaler Lokomotion basierend auf nachgiebigem Beinverhalten. (summa cum laude, SpoWiss.) 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
- 2007 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
- 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
- 2011 B. Pflanz Zur Koordination des Basketballwurfs (magna cum laude, Fakultät für Sozial und Verhaltenswissenschaften, Jena). Betr.: Wagner, Blickhan)
- 2011 R. Müller Laufen über unebenen Boden: Anpassung und Einstellung globaler und lokaler Beinparameter. (magna cum laude, Fakultät für Sozial und Verhaltenswissenschaften, 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.

Young academics in teaching positions

- V. Wank (2004) Prof. Biomechanik, Universität Tübingen
- K. Maier (2005) Prof. Computer Science and Electronic Engineering; University of Essex
- H. Wagner (2006) Prof. Bewegungswissenschaft, Universität Münster
- H. Geyer (2010) Prof. Robotics Institute, Carnegie Mellon University, Pittsburgh
- A. Seyfarth (2011) Prof. Biomechanik, Technische Universität Darmstadt

Rufe ehemaliger Diplomanden und Postdoktoranden

- 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

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 A***157**: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* 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* 270: 2173–2183
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. 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
44. 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

45. Wagner H, Siebert T, Ellerby DJ, Marsh RL, Blickhan R. (2005). ISOFIT: a model-based method to measure muscle-tendon properties simultaneously. *Biomech. Model. Mechanobiol.* 4:10-19
46. Geyer, H., Seyfarth, A., Blickhan, R. (2006) Compliant leg behaviour explains basic dynamics of walking and running. *Proc. Roy. Soc. B* 278: 286 -2867
47. Mörl, F., Blickhan, R. (2006) Three-dimensional realltion of skin markers to lumbar vertebrae of healthy subjects in different postures measured by open MRI. *Eur. Spine. J.* 15(6):742-751
48. Wagner, H., P. Giesl & R. Blickhan (2007). Musculoskeletal stabilisation of the elbow – complex or real. *J. Mechanics Med. Biol.* 7(3): 275 – 296
49. Geyer H, Seyfarth A, Blickhan R (2006) Compliant leg behaviour explains basic dynamics of walking and running *Proc. R. Soc. B*, 273, 2861–2867
50. 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.
51. 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.
52. Wagner, H., P. Giesl & R. Blickhan (2007) Musculoskeletal stabilisation of the elbow – complex or real. *J. Mechanics Med. Biol.* 7: 275 – 296
53. Blickhan, R., Seyfarth, A., Geyer, H., Grimmer, S., Wagner, H., Günther, M. (2007) Intelligence by mechanics. *Proc. Roy. Soc. Lond. A.* 365: 199-220
54. 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
55. Till O, Siebert T, Rode C, Blickhan R. (2008) Characterization of isovelocity extension of activated muscle: a Hill-type model for eccentric contractions and a method for parameter determination. *J. Theor. Biol.* 255(2):176-187.
56. Günther, M., Otto, D., Müller, O., Blickhan, R. (2008) Transverse human standing during quiet stance. *Gait Posture* 27:361-367
57. 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
58. Till, O., Siebert, T., Rode, C., Blickhan, R. (2008) Characterization of isovelocity extension of activated muscle: a Hill-type model for eccentric contractions and a method for parameter determination. *J. Theor. Biol.* 255: 176-187

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. Gunther M, Grimmer S, Siebert T, Blickhan R. (2009). All leg joints contribute to quiet human stance: a mechanical analysis. *J. Biomech.* 42(16): 2739-2746.
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. (2009). 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) *Cupiennius 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
69. Müller, R., Grimmer, S., Blickhan, R. (2010) Running on uneven ground: Leg adjustments by muscle preactivation control. *Hum. Mov. Sci.* 29: 299-310
70. Weihmann, T., Karner, M., Full, R. J., Blickhan, R. (2010) Jumping kinematics in the wandering spider *Cupiennius salei*. *J. Comp. Physiol. A* 196: 421-438.
71. Ertelt, T., Ertelt, H.-J., Blickhan, R. (2011) The geometry-critical functional dependence of the M. gastrocnemius. *Int. J. Appl. Mech.* 3:85-98
72. Hochstein, S., Blickhan, R. (2011) Vortex re-capturing and kinematics in human underwater undulatory swimming. *Hum. Mov. Sci.* 30: 998-1007

73. Ertelt, T., Blickhan, R. (2011) Group specific behaviour of bi-articular upper leg muscles exemplified by sledge hopping. *J. Mech. Med. Biol.* (acc.) DOI No: 10.1142/S0219519411004307

B) Booksections

B1) Peer reviewed

1. Barth FG, Blickhan R (1983) Arthropods: Mechanoreception. *In: Bereiter-Hahn J, Matozi GN, Richards KS (Eds.) Biology of the Integument. Vol.1 Springer, London pp. 554-582*
2. Goslow GE, Bennet AF, Blickhan R, Bramble DM, Duncker H-R, Fischer MS, Hinchliffe JR, Jenkins Jr. FA, Székely G, van Mier P, Videler JJ (1989) How are locomotor systems integrated and how have evolutionar innovations been introduced? *In: Roth G, Wake DB (eds). Dahlem Complex organismal function: integration and evolution in vertebrates. John Wiley & Sons Ltd pp. 205 – 218*
3. Blickhan R (1989) Running and hopping. *In: W. Wieser, E. Gnaiger (Edts) Energy transformations in cells and animals. Thieme, Stuttgart pp.183-190*
4. Blickhan R, Full RJ (1991) Mechanical work in terrestrial locomotion. *In: A. Biewener (Ed). Biomechanics (Structures): A Practical Approach. Oxford University Press pp 75-96*
5. Blickhan R, Nachtigall W (1991) Strömungen in der Umgebung frei schwimmender Tiere: Präformation und Nachlauf. *Konzepte SFB 230, Heft 35:40-44*
6. Blickhan R (1996) Motorische Systeme bei Vertebraten. *In: Schmidt RF, Dudel (eds.) Neurowissenschaft, Vom Molekül zur Kognition. Springer, Heidelberg:191-214*
7. Blickhan, R. (1997) Hydrodynamik der undulatorischen Lokomotion. *In: Wissler, A., Bilo, D., Kesel, A., Möhl, B. (eds.) Lokomotion in Fluiden. Fischer, Jena: 331-351*
8. Meier, P., Blickhan, R. (2000) FEM-Simulation of skeletal muscle: The influence of inertia during activation and deactivation. *In: W. Herzog (ed), Skeletal Muscle Mechanics: From Mechanisms to Function. John Wiley & Sons, 207-223*
9. Blickhan, R., Wagner, H., Seyfarth, A. (2003) Brain or muscles. *In: Pandalai, S.G. (ed.) Recent research developments in biomechanics 1. Transworld Research Network, Thiruvananthapuram (Trivandrum), India pp:215-245*
10. Blickhan, R., Wank, V., Günther, M. (2005) Energieabsorption, Enrgiespeicherung und Arbeit bei schneller Lokomotion über unebenes Terrain. *In: F. Pfeiffer, H. Cruse (eds.), Autonomes Laufen. Springer, Berlin pp: 71-96*
11. Blickhan, R., Petkun, S., Weihmann, T., Karner, M. (2005) Schnelle Bewegungen bei Arthropoden: Strategien und Mechanismen. *In: F. Pfeiffer, H. Cruse (eds.), Autonomes Laufen. Springer, Berlin pp: 19-45*

12. Blickhan, R., Seyfarth, A., Wagner, H., Friedrichs, A., Günther, M., Maier, K.D. (2006) Robust behaviour in the human leg. In: H. Kimura et al. (eds.) *Adaptive Motion of Animals and Machines*. Springer, Berlin pp. 5-16
13. Ernst, M., Geyer, H., Blickhan, R. (2009) Spring-legged locomotion on uneven ground: a control approach to keep the running speed constant. In: O Tosun, H L Akin, M O Tokhi, G S Virk eds.: *MOBILE ROBOTICS Solutions and Challenges*, Proceedings of the Twelfth International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines Istanbul, Turkey, 9 - 11 September. pp.639-644
14. Hochstein, S., Blickhan, R., Reischle, K., Kunze, S., Brücker, C. (2010) Strömungsuntersuchungen der Unterwasser-Delphinbewegung. In: A. Hahn et al. eds. *Biomechanische Leistungsdiagnostik im Schwimmen*. Sportverlag Strauß, pp. 31-37

B2) Conferencevolumes and magazines

1. Bilo, D., Blickhan, R., Brill, C., Nachtigall, W., Warnke, U. (1989) Technische Biologie und Bionik II: Lokomotion und Medizintechnik. Forschungsmagazin d. Univ. Saarl. 16-20
2. Kesel AB, Blickhan R, Nachtigall W (1991) Muscle recruitment in rainbow trout. In: *Fische in Ökotoxikologie und Ökophysiologie*. Heidelberg
3. Friedrichs, A., Seyfarth, A., Wank, V., Blickhan, R. (1997) Mechanische Ersatzmodelle für das Laufen und Springen. In: Gollhofer, A. (ed.), *Integrative Forschungsansätze in der Bio&Mechanik*. Schriften des dvs. Vol. 71. Academia, St. Augustin: 213-218
4. Blickhan, R., Kirchner, G. (1997) *Biomechanik und Motorik*. Nachwuchsworkshop, Jena. Czwalina, Hamburg
5. Blickhan, R. (1997) Bewegungskontrolle und Kinetik. In: R. Blickhan, G. Kirchner (ed.) *Biomechanik und Motorik*. Czwalina, Hamburg: 13-22
6. Blickhan, R. (1997) Biomechanik und Motorik: Gemeinsame Ansätze und Perspektiven aus der Sicht der Biomechanik. In: R. Blickhan, G. Kirchner (ed.) *Biomechanik und Motorik*. Czwalina, Hamburg: 131-136
7. Blickhan, R. (1998) Elastic mechanisms in fast legged locomotion. In: Pfeiffer F. (ed.) *Proc. Euromech 375 Biology and Technology of Walking*. pp.1-9
8. Maier, K.D., Glauche, V., Beckstein, C., Blickhan, R. (1998) Control of a one-legged movement system: An artificial neural network approach. In: Pfeiffer, F. (ed.) *Proc. Euromech 375 Biology and Technology of Walking*. pp.82-89

9. Zentner, L., Petkun, S., Blickhan, R. (1998) The spider leg as an example for a new hydraulic device. In: Pfeiffer, F. (ed.) *Proc. Euromech 375 Biology and Technology of Walking*. pp.39-46
10. van Leeuwen, J.L., Johansson, T., Wank, V., Blickhan, R. (1998) Optimization of skeletal muscle design for particular functional demands. In: Reinhard Blickhan, Alfred Wisser, Werner Nachtigall (eds.) *Motion Systems*. Biona Report 13, Gustav Fischer, Jena pp. 250-251
11. Maier, K.D., Glauche, V., Beckstein, C., Blickhan R. (1998) Controlling movement with artificial neural networks. In: R. Blickhan, A. Wisser & W. Nachtigall (eds) *Motion Systems*. BIONA-report 13, Akad. Wiss. u. Lit., Mainz: G. Fischer, Jena, pp. 122-123
12. Petkun S., Blickhan R. (1998) Designing a diminutive force platform. In: Reinhard Blickhan, Alfred Wisser, Werner Nachtigall (eds.) *Motion Systems*. Biona Report 13, Gustav Fischer, Jena, pp. 94-95
13. Wagner, H., Blickhan, R. (1998) Modelling the human knee using cruciate ligaments. In: Reinhard Blickhan, Alfred Wisser, Werner Nachtigall (eds.) *Motion Systems*. Biona Report 13, Gustav Fischer, Jena pp. 56-57s
14. Schilling, C., Blickhan, R. (1999) Biological motion systems and microtechnical devices. In: D. Robert, A. Kesel (eds) *Inspiration from nature*. Wissenschaftkolleg, Berlin
15. Gramsch, T., Meier, P., Frank, T., Kallenbach, M., Schilling, C., Blickhan, R., Wurmus, H. (1999) Ein Vergleich des Skelettmuskels mit Mikroaktorkaskaden mittels FEM-Simulation des Muskels. *44th International Scientific Colloquium*, TU-Ilmenau 2:197-204
16. Meier, P., Gramsch, T., Schilling, C., Kallenbach, M., Frank, T., Blickhan, R. (1999) Der Einfluss der Nichtlinearität der Kennlinien auf das mechanische Verhalten des Muskels. In: W. Nachtigall (ed) Biona-report 14, Gustav Fischer, Jena pp 135-138
17. Wank, V., Wagner, H., Blickhan, R. (2000) Muskelkraft und Gelenkmoment – ein Vergleich ausgewählter Modelle zur Berechnung der Muskelmomentenhebel für Kniestrecker. *Sportwissenschaft* 30:82-95
18. Blickhan, R., Friedrichs, A. (2000) Biomechanical approaches for characterization of body movements. In: Radandt, S., Grieshaber, R., Schneider, W. (eds) *Prävention von arbeitsbedingten Gesundheitsgefahren und Erkrankungen*. Monade, Leipzig, pp 200-208
19. Wank, V., Heger, H., Wagner, H., Blickhan, R. (2001) Force transformation in the knee joint a comparative study. In: R. Blickhan (ed.) *Motion Systems 2001*. Shaker, Aachen pp 42-46
20. Meier, P., Blickhan, R. (2001) 3-D muscle modeling by the finite element method. In: R. Blickhan (Ed.) *Motion Systems 2001*. Shaker, Aachen pp 63-68

21. Siebert, T., Meier, P., Blickhan, R. (2001) Properties of the rat m. triceps brachii under locomotion-like conditions. In: R. Blickhan (ed.) *Motion Systems 2001*. Shaker, Aachen pp 76-80
22. Heger, H., Wank, V., Blickhan, R. (2001) Measurement of passive moments at the hip joint in the sagittal plane. In: R. Blickhan (ed.) *Motion Systems 2001*. Shaker, Aachen pp 81-85
23. Moerl, F., Blickhan, R. (2001) Three-dimensional segmental lumbar back mobility. In: R. Blickhan (ed.) *Motion Systems 2001*. Shaker, Aachen pp 86-89
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5 Grants

1977	DFG, Ba 9/11z (<i>Barth, Blickhan</i>)
1979	DFG, SFB45/A2 (<i>Barth, Blickhan</i>)
1983,84	DFG, Research stipend, BL 236/1-1,2 (<i>Blickhan</i>)
1988-92	DFG, Bl 236/2-1,2 (<i>Blickhan, Nachtigall</i>)
1989	DFG Travelling grant Bl 236/2-3 (<i>Blickhan</i>)
1991	Humboldt stipend: Dr. Cheng (<i>Cheng, Blickhan</i>)
1992	DFG Heisenberg stipend Bl 236/5 (<i>Blickhan</i>)
1993-95	BISp (<i>Wank, Blickhan</i>)
1995	DFG Bl 236/7 (<i>Blickhan</i>)
	Stiftung Volkswagenwerk (<i>Blickhan</i>)
	DFG INK 22/A1 "Innovationcollege Motion Systems"
	A3 (<i>Blickhan, Wank</i>) Muscle properties
	B2 (<i>Wank, Blickhan</i>) Joint properties
	C1 (<i>Blickhan</i>) Human running
	D1 (<i>Blickhan</i>) 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 BI 236/7-2 (*Blickhan*)
 DFG BI 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; BI 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 BI236/11-1 (*Blickhan, Günther*) Neuro-muscular control of human posture: experimental analysis, biomechanical modelling and synthesis.
- 2004 - 2012 DFG BI236/13 (*Blickhan, Siebert*) Properties of the muscle tendon-complex of small mammals. Shifted to Tobias Siebert Si841/1-1,2
- 2005 - 2010 DFG BI236/14-1,2 (*Blickhan*) Physical foundation of extension in spiders.
- 2005 -2011 DFG BI236/15-2,3//21-1,2 Package (146/1,2) (*Blickhan, Seyfarth*) The impact of disturbances on selfstable human running.
- 2007 - 2013 DFG BI236/17-1,2,3 (*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 - 2013 DFG BI236/20-1,2 (*Blickhan*) Distribution of aktive ground reaction forces in ants.
- 2010 - 2013 DFG BI236/22-1 (*Blickhan, Denzler, Fischer*) Avian bipedal locomotion C. Dynamics
- 2010 - 2013 BMBF FKZ 01EC1003A (*Wagner, Weiss, Puta, Lappe, Delussanet, Blickhan,*): “Chronic backpain and sonsomotor control.”

Referee

DFG, NSF, Humboldt, Erasmus, Studienstiftung, Minister of Culture Sachsen-Anhalt, Minister of Culture Bavaria, STIFT
 North Eastern University, UC-Berkeley, Carnegy-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

Current teaching (Group of Science of Motion)

Group of Science of Motion: 6 postdocs, 7 postgraduates (dissertation)

Teaching: annually; supervision: Blickhan

L:lecture; S: Seminar; P: Project

So far manuscripts are in German.

Bachelor

- Introduction in to biomechanics (L 15h, S 15h) *Blickhan, coworkers*
- Biomechanics of sport (L 15h, S15h) *Siebert, coworkers*
- Biomechanics of the musleskeletal system (tissues, structures and load) (L 15h, S15h) *Siebert, coworkers*
- Sports equipment (L15h) *Blickhan*
- Biomechanis (S 30h) *Blickhan, coworkers*
- Measuring techniques (L 5+h, S 5) *Blickhan, coworkers*
- Computer praxis (Office, etc.) *Ertelt, 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 locomion (new textbook chapter (100 pages; English)