

Curriculum Vitae Veit SENNER

Personal Data

Title	Prof. Dr.-Ing. Dipl. Sportl.
First name	Veit
Name	Senner
Current position	Professor (C3) of Sport Equipment and Materials
Current institution(s)/site(s), country	1. Technical University of Munich, Germany TUM School of Engineering and Design Department Mechanical Engineering 2. Technical University of Munich, Germany Munich Institute of Robotics and Machine Intelligence (MIRMI)
Identifiers/ORCID	0000-0001-5136-7580

Qualifications and Career

Stages	Periods and Details
Degree programme	1989 Dipl.-Ing. Mechanical Engineering with focus on construction and development, Technical University of Munich
Degree programme	1995 Dipl. Sportlehrer (Sport Science & Physical Education Technical University of Munich, Germany).
Doctorate	2001 Dr.-Ing. Fakultät Maschinenwesen, Technical University of Munich; Supervisor: K. Ehrlenspiel, Subject: Biomechanical Methods in Sport Equipment Design ('magna cum laude')
Stages of academic career	<p>2002 - 2007 Appointment as Assistant Professor (Extraordinarius) at the Technical University of Munich, Department of Sports Science.</p> <p>2007 - 2009 Associate Professor for Sport Equipment and Materials, TUM Department of Sports Science</p> <p>2005 - 2009 Associate Dean of Faculty of Sport Science</p> <p>2009 - Transfer of Professorship to TUM Mechanical Engineering Department. Secondary membership in Department of Sport and Health Sciences.</p> <p>2022 - 2024 Academic Program Director Mechanical Engineering Study Courses, TUM School of Engineering and Design</p>
Stages of industrial career	<p>1985 - 1988 Student trainee at TÜV Bayern, Segment Ergonomics and Biomedicine</p> <p>1989 - 1995 Scientific Associate TÜV Product Service GmbH, Munich.</p>

	1995 - 2001	TÜV SÜD Holding AG. Leaving as head of BASiS-Institute of TÜV Product Service GmbH
	2001 - 2009	Managing Director Science to Business GmbH (formerly BASiS – Angewandte Biomechanik GmbH, Munich)
	2007 - 2011	Managing Director Kompetenzzentrum Sport-Gesundheit-Technologie Garmisch Partenkirchen GmbH
	2010 -	Cofounder / mentor of four university start-ups within the frame of EXIST or FLUEGGE program
Further professional education	1983 - 1995	Governmental education program for professional ski instructors. Finished with a degree as Certified Ski Instructor (“Staatlich geprüfter Skilehrer”).

Activities & Engagement in the Research System

2008 -	Editorial Board <i>Journal Sports Engineering and Technology</i> (SAGE)
2007 - 2019	President German Interdisciplinary Sport Technology Association e.V. (divers)
2002 – 03/2024	Vice President of the <i>International Society Skiing Trauma and Safety</i> (ISSS)
2006 -2022	President Association Snow Sport Education at German Universities (ASH)
2012 – 11/2024	Founding Member Bavarian Board of Trustees for Alpine Safety (BayKurASi)
2004 – 10/2024	Convenor ISO TC83/SC3 WG2 on Ski Bindings
2008 -	Member of German Alpine Association's (DAV) Safety Commission
2010 - 2016	Member Executive Board <i>International Sports Engineering Association</i> (ISEA)
2005 - 2017	Member Executive Board of Evangelical Student Houses in Munich (ESWM)
2021 -	Member Munich Institute of Robotics & Machine Intelligence (MIRMI), TUM

Supervision of Researchers in Early Career Phases

Since 2004, I have successfully supervised 21 dissertations (Dr.-phil., Dr.-Ing., Dr. rer.nat.) and co-supervised a total of 29. Currently, I am supervising 10 Ph.D. candidates. There are also two successfully mentored habilitations.

Throughout my career, I have (co)supervised more than 500 student research projects (Diplom,- and Semesterarbeit, Bachelor's and Master's thesis).

Scientific Results

I have authored 104 peer-reviewed original articles and provided more than 230 contributions to national and international conferences. Citations: >800, h-index: 15 (source: scopus, 20/01/2025). My professorship has conducted over 100 research projects with both public and industry funding, generating more than 4,4 Million Euro research money. 8 patents have been filed, 3 granted.

Category A

- Nispel K, Lerchl T, Gruber G, Moeller H, Graf R, **Senner V** and Kirschke JS (2025) From MRI to FEM: an automated pipeline for biomechanical simulations of vertebrae and intervertebral discs. *Front. Bioeng. Biotechnol.* 12:1485115. doi: 10.3389/fbioe.2024.1485115.
- Lerchl, T., Nispel, K., Baum, T., Bodden, J., **Senner, V.** & Kirschke, J. S. (2023). Multibody Models of the Thoracolumbar Spine: A Review on Applications, Limitations, and Challenges. *Bioengineering*, 10(2), 202. <https://doi.org/10.3390/bioengineering10020202>
- Lerchl, T., El Hussein, M., Bayat, A., Sekuboyina, A., Hermann, L., Nispel, K., Baum, T., Löffler, M. T., **Senner, V.** & Kirschke, J. S. (2022). Validation of a Patient-Specific Musculoskeletal Model for Lumbar Load Estimation Generated by an Automated Pipeline From Whole Body CT. *Frontiers in bioengineering and biotechnology*, 10, 862804. <https://doi.org/10.3389/fbioe.2022.862804>
- Senner, V.** (2022). History, philosophy, and value of mechanical models in sports science and engineering. *Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology*, 8(2), <https://doi.org/10.1177/17543371211062799>.
- Hermann, A., Jung, A., Gruen, A., Brucker, P.U., **Senner, V.** (2022) A lower leg surrogate study to investigate the effect of quadriceps–hamstrings activation ratio on ACL tensile force. *Journal of Science and Medicine in Sport* 25(9), 770-775.
- Hermann, A., **Senner, V.** (2021) Knee injury prevention in alpine skiing. A technological paradigm shift towards a mechatronic ski binding. *Journal of Science and Medicine in Sport*, 24 (10), pp. 1038-1043.
- Elhady, N., Jonas, S., Provost, J., **Senner, V.** (2020) Sensor Failure Detection in Ambient Assisted Living Using Association Rule Mining. *Sensors*. 2020; 20(23):6760. <https://doi.org/10.3390/s20236760>
- Passler, S., Müller, N. & **Senner, V.** (2019). In-Ear Pulse Rate Measurement: A Valid Alternative to Heart Rate Derived from Electrocardiography? *Sensors* (Basel, Switzerland), 19(17). <https://doi.org/10.3390/s19173641>
- Meyer, D., Korber, M., **Senner, V.** & Tomizuka, M. (2018). Regulating the Heart Rate of Human-Electric Hybrid Vehicle Riders Under Energy Consumption Constraints Using an Optimal Control Approach. *IEEE Transactions on Control Systems Technology*, 1–14. <https://doi.org/10.1109/TCST.2018.2852743>
- Senner, V.**, Michel, F. I., Lehner, S., & Brügger, O. (2013). Technical possibilities for optimizing the ski-binding-boot functional unit to reduce knee injuries in recreational alpine skiing. *Sports Engineering, Volume 16* (Issue 4), 211–228.
- Bere, T., Flørenes, T., Krosshaug, T., Koga, H., Nordsletten, L., Irving, C., Muller, E., Reid, R.C., **Senner, V.** & Bahr, R. (2011). Mechanisms for Anterior Cruciate Ligament Injury in World Cup Alpine Skiing: A Systematic Video Analysis of 20 Cases. *American Journal of Sports Medicine*, 39(7), 1421–1429.

Category B

Hosted / organized national and international conferences:

- Bayerischer Sportkongress 2007 und 2009
- Plastics in Sport 2008, 2009, 2013
- 18th International Congress on Ski Trauma and Safety 2009
- dvs Sportinformatik & Technologie 2018 (Deutsche Vereinigung für Sportwissenschaft)
- spinfortec 2020

International teaching activities

Tutor at six Winterschools (2011, 2012, 2013, 2015, 2017 and 2024) held in conjunction with the International Sports Engineering Association (isea)

Academic Distinctions

Michael Jäger Prize 2015 from the GOTS (Society for Orthopedic Traumatological Sports Medicine).