

# MATTHEW MICHAEL WERNKE, PH.D.

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## EDUCATION

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8/2009-12/2013	<b>UNIVERSITY OF SOUTH FLORIDA</b> <ul style="list-style-type: none"><li>▪ Doctor of Philosophy, Biomedical Engineering</li><li>▪ Dissertation: Quantification of Transhumeral Prosthetic Socket Residual Limb Interface Movement Using Motion Analysis and a Slip Detection Sensor</li></ul>	TAMPA, FL
8/2004-5/2009	<b>FLORIDA STATE UNIVERSITY</b> <ul style="list-style-type: none"><li>▪ Bachelor of Science, Chemical and Biomedical Engineering</li></ul>	TALLAHASSEE, FL

## EMPLOYMENT

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12/2013-PRESENT	<b>APPLIED RESEARCH ENGINEER, OHIO WILLOW WOOD</b> <ul style="list-style-type: none"><li>▪ Design, Conduct, and Manage Scientific Research</li><li>▪ Present and Publish Scientific Data</li><li>▪ Support Training and Education on Technical Aspects of Products</li><li>▪ Establish and Manage Strategic Partnerships for Product Development</li><li>▪ Develop Next Generation Products</li><li>▪ Identify External Funding Opportunities and Prepare Proposals</li></ul>	MT. STERLING, OH
8/2009-12/2013	<b>UNIV. OF S. FLORIDA RESEARCH AND TEACHING ASSISTANT</b> <ul style="list-style-type: none"><li>▪ Design, Conduct, and Analyze Scientific Research</li><li>▪ Prepare Grant Proposals and Reports</li><li>▪ Assist Professors with Coursework</li><li>▪ Hold Office Hours to Assist Students with Questions About Coursework</li><li>▪ Teaching Assistant: Cell and Tissue Engineering</li><li>▪ Teaching Assistant: Environment and Sustainability</li></ul>	TAMPA, FL
7/2013-12/2013	<b>MECHANICAL ENGINEER, VA CENTER OF EXCELLENCE</b> <ul style="list-style-type: none"><li>▪ Design, Machine, and Assemble Testing Apparatuses</li><li>▪ Conduct Scientific Research</li></ul>	TAMPA, FL
5/2005-8/2008	<b>ENGINEERING TECH, BENEDICT ENGINEERING COMPANY</b> <ul style="list-style-type: none"><li>▪ Assist Engineers with Accident Reconstruct Analysis</li><li>▪ Design Material Handling Systems and Forensic Testing</li><li>▪ Review Project Specific Documents</li><li>▪ Discuss Future Casework with Clients</li></ul>	TALLAHASSEE, FL

## LEADERSHIP

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8/2012-8/2013	<b>VICE PRESIDENT: BIOMEDICAL ENGINEERING SOCIETY</b> <ul style="list-style-type: none"><li>▪ Coordinate Events with Student Government</li><li>▪ Assist President Schedule Events and Manage Logistics</li></ul>	TAMPA, FL
8/2005-5/2009	<b>FLORIDA STATE TRACK AND FIELD TEAM</b> <ul style="list-style-type: none"><li>▪ Elected Team Captain Senior Season</li><li>▪ Member of the Three Time National Champion Track Team</li></ul>	TALLAHASSEE, FL

- All-ACC Team Selection for the Weight Throw
- All-ACC Academic Team Selection
- Student Athlete Advisory Council Senior Year
- Recipient of ACC Postgraduate Scholarship

## HONORS/AWARDS

6/24/2015	Winner of the Best Free Paper Prize for Advancing Clinical Treatment	LYON, FRANCE
2/19/2015	Winner of the Thranhardt Lecture Award	NEW ORLEANS, LA
5/13/2014	Nominated for Best Paper Award	LEIPZIG, GERMANY

## US PATENTS

11/2012	<b>PROSTHESIS OR ORTHOSIS SLIP DETECTION SENSOR</b>	PROVISIONAL
	<ul style="list-style-type: none"> <li>▪ Optical Parallax Sensor That Measures Motion Between Prosthetic Socket (or Orthosis) and Skin Surface</li> </ul>	

## PUBLICATIONS AND PRESENTATIONS

**Wernke M**, Rink C, Powell H, Gynawali S, Schroeder R, Kim J, Denune J, Gordillo G, Colvin J, Sen C. Elevated Vacuum Suspension Preserves Residual Limb Skin Health in Lower Limb Amputees: Randomized Clinical Trial. Accepted for Publication into Journal of Rehabilitation Research and Development.

Kahle J, McLoone K, **Wernke M**, Highsmith M. Gel Liners, The Foundation for Great Sockets. InMotion Magazine, 2016; 26 (1): 40-43.

**Wernke M**, Schroeder R, Kelley C, Denune J, Colvin J. SmartTemp Prosthetic Liner Significantly Reduces Residual Limb temperature and Perspiration. Journal of Prosthetics and Orthotics. 2015; 27 (4): p. 134-139.

Lura DJ, **Wernke MM**, Carey SL, Kahle JT, Miro RM and Highsmith MJ. Differences in knee flexion between the Genium and C-Leg microprocessor knees while walking on level ground and ramps. Clinical Biomechanics. 2015; 30: 175-81.

**Wernke M**, Rink C, Powell H, Gynawali S, Kim J, Schroeder R, Denune J, Colvin J, Sen C. Quantification of Residual Limb Skin Health and Circulation in Response to Elevated Vacuum Suspension. Academy Today. 2015; 11 (2) p7.

**Wernke M**, Kelley C, Haynes M, Gerschutz M, Colvin J. Control de la Temperatura de la Piel y la Sudoración Mediante un Liner Protésico que Incorpora un Material que Cambia de Estado. United Frontiers, 2015; 10: 43- 49.

**Wernke M**, Kelley C, Haynes M, Gerschutz M, Colvin J. Management of Skin Temperature and Perspiration Using a Prosthetic Liner Incorporating Phase Change Material. OrthoBode. Nr.3/2014.

Carey, S. L., **Wernke, M. M.**, Lura, D. J., Kahle, J. T., Dubey, R. V., & Highsmith, M. J. Golf hand prosthesis performance of transradial amputees. *Prosthetics and orthotics international*, 2014.

**Wernke, M.**, Lura, D., Carey, S., Highsmith, M., Technical note: design and performance of a push-up device for above-elbow amputees. *Technology and Innovation*, 2014. 15, p. 297-300.

**Wernke M**, Schroeder R, Kelley C, Denune J, Colvin J. Regulation of Temperature and Perspiration within a Prosthetic Socket to improve Amputee Quality of Life. International Society of Prosthetics and Orthotics World Congress. Free Paper Presentation. June 24, 2015. *\*Winner of the Best Free Paper Prize for Advancing Clinical Treatment.*

**Wernke M**, Rink C, Powell H, Gnyawali S, Kim J, Schroeder R, Denune J, Colvin J, Sen C. Quantification of Residual Limb Skin Health and Circulation in Response to Elevated Vacuum Suspension. 41st Annual Academy Meeting & Scientific Symposium. New Orleans, Louisiana. Free Paper Presentation. February 18-21, 2015.

*\*Thranhardt Lecture Award Winner*

**Wernke M**. Do your Feet pass the test? *United Frontiers*. 2014, Vol. 9 pp. 20-22.

Lura, D., **Wernke, M.**, Alqasemi, R., Carey, S., & Dubey, R. (2012, August). Probability density based gradient projection method for inverse kinematics of a robotic human body model. In *Engineering in Medicine and Biology Society (EMBC), 2012 Annual International Conference of the IEEE* (pp. 6789-6792). IEEE.

Lura, D., **Wernke, M.**, Carey, S., Alqasemi, R., & Dubey, R. Inverse kinematics of a bilateral robotic human upper body model based on motion analysis data. In *Robotics and Automation (ICRA), 2013 IEEE International Conference on* (pp. 5303-5308). IEEE.

**Wernke M**, Kelley C, Haynes M, Gerschutz M, Colvin J. Comparison of Skin Temperature and Moisture Buildup Between Two Prosthetic Liners. 40th Annual Academy Meeting & Scientific Symposium. Chicago, Illinois. February 27th, 2014. Free Paper Presentation.

Rink C, Gnyawali S, Powell H, **Wernke M**, Haynes M, Gerschutz M, Colvin J, Sen C. Methodological Assessment of Residual Limb Circulation and Skin Health in response to Elevated Vacuum Suspension. 40th Annual Academy Meeting & Scientific Symposium. Chicago, Illinois. February 28th, 2014. Free Paper Presentation.

**Wernke M**, Schroeder R, Haynes M, Nixon D, Nolt L, Rowe L, Denune J, Doddroe J, Byers S, Colvin J. Advanced Transfemoral Socket System. American Orthotic and Prosthetic Association National Assembly 2014. Free Paper Presentation. September 5th, 2014.

**Wernke M**, Schroeder R, Rink C, Gnyawali S, Gerschutz M, Kin J, Lambert L, Powell H, Denune J, Sen C, Colvin J. Baseline Impact of Elevated Vacuum Suspension on Residual Limb Skin Health and Circulation. 2014 Midwest American Society of Biomechanics Regional Meeting, Akron, Ohio. March 4-5, 2014. Podium Presentation.

**Wernke M**, Rink C, Gnyawali S, Schroeder R, Denune J, Roy S, Sen C, Powell H, Kim J, Lambert L, Colvin J. Methodological assessment of residual limb circulation and skin health in response to elevated vacuum suspension. Orthopädie Technik World Congress (OTWorld), International Meeting, Leipzig, Germany. Congress Lecture. May 13, 2014\**Nominated for Best Paper Award*

**Wernke M**, Lura D, Carey S, Highsmith, J. Design and Performance of a Push-up device for Above-Elbow Amputees: A Technical Note. *Technology and Innovation*. 2014 Vol. 15, pp. 297-300.

**Wernke M**, Lura D, Palmowski J, Carey S. A Push-Up Device for Transhumeral Amputees. Poster Presentation. Feb 2013, American Academy of Orthotists and Prosthetists (AAOP), National Meeting, Orlando, FL.

Lura D, **Wernke M**, Carey S, Highsmith M, Dubey R. Development of a Predictive Simulation Tool to Assist in Prosthetic Prescription. Free Papers: Upper Limb Prosthetics. Feb 2013, AAOP, National Meeting, Orlando, FL.

Lura D, Miro R, Kahle J, Carey S, **Wernke M**, Highsmith MJ. Correlations between Anthropometrics and Joint Moments in Sitting and Standing of Transfemoral Amputees. Poster Presentation. Feb 2013, AAOP, National Meeting, Orlando, FL.

**Wernke M**, Lura D, Carey S, Dubey R. Prosthetic Socket Interface Motion: A Case Study. Biomedical Engineering Society Annual Meeting. October 24-27, 2012. Atlanta, GA.

**Wernke M**, Lura D, Carey S, Dubey R. Biaxial Models of Socket Interface Stiffness. In 38<sup>th</sup> Academy Annual Meeting & Scientific Symposium. March 21-24, 2012. Atlanta, GA.

Cooper J, **Wernke, M**, Reed K. The Effects of Incongruent Feedback on Bimanual Task Performance. Haptics Symposium (HAPTICS), 2012 IEEE. Pp. 301-305, doi: 10.1109/HAPTIC.2012.6183806

**Wernke M**, Lura, D, Carey S, Dubey R. Preliminary Modeling of the Prosthetic Socket Pseudo Joint. in *Biomedical*

Engineering Society Annual Meeting. Oct. 12-15, 2011. Hartford, CT.

Lura D, **Wernke M**, Saad J, Highsmith M, Carey S. Standing Stability in Transfemoral Amputees. Free Paper/Platform Presentation. Mar 2011, AAOP, National Meeting, Orlando, FL.

Carey S, **Wernke M**, Lura D, Highsmith M, Dubey R. Golf Hand Prosthesis Performance. in AAOP Annual Meeting. 2011. Orlando FL.

**Wernke M**, Lura D, Carey S, Dubey R. Analyzing Force Platform Calibration with a Novel Pole Design. in ASME International Mechanical Engineering Congress & Exposition. Nov 12-18, 2010. Vancouver, BC