Approved by the Regents
May 17, 2018

PROMOTION RECOMMENDATION
The University of Michigan
School of Kinesiology

Deanna Gates, assistant professor of kinesiology, School of Kinesiology, and assistant professor of biomedical engineering, College of Engineering and Medical School, is recommended for promotion to associate professor of kinesiology, with tenure, School of Kinesiology, and associate professor of biomedical engineering, without tenure, College of Engineering and Medical School.

Academic Degrees:

Ph.D.	2009	The University of Texas at Austin
M.S.	2004	Boston University
B.S.	2002	The University of Virginia

Professional Record:

2013 - present	Assistant Professor, Department of Biomedical Engineering, College of Engineering and Medical School, University of Michigan
2012 – present	Assistant Professor, School of Kinesiology, University of Michigan
2011 – 2012	Site Supervisor, Henry M. Jackson Foundation for Military Medicine, Brooke Army Medical Center
2010 – 2012	Research Biomechanist, Center for the Intreped, Brook Army Medical Center

Summary of Evaluation:

Teaching: Professor Gates has worked very hard to incorporate innovative teaching approaches, and reflected on her pedagogy. This has been associated with an impressive increase in student evaluation scores in all of her courses (most are now above >4). Beyond classroom teaching she has served on two collaborative instructional teams (one in the School of Kinesiology and another in the College of Engineering) that were each awarded $50,000 to support innovation in teaching. The School of Kinesiology team was also a finalist for the Provost Teaching Innovation Prize and was invited to share their innovative teaching practices with the wider campus community. She has successfully mentored several graduate students including chairing or co-chairing six dissertation committees and serving as a dissertation committee member on seven others within the School of Kinesiology and the College of Engineering (four completed). Her invitation to participate on so many dissertation committees is a testament to her contributions.

Research: Professor Gates has particular strengths in research funding and publications. She has been awarded about $2.7 million dollars in internal and external research funding. Of this total amount, she is the principal investigator or co-principal investigator for $1.7 million. Equally impressive is her ability to secure funding from four diverse and highly competitive agencies – Department of Defense, National Science Foundation, National Institutes of Health, and Defense Advanced Research Projects Agency. The NSF, NIH and military funding each require a very

different type of application and each has its own priorities and value systems. Her versatility in this regard is outstanding.

Her publication record matches her impressive funding profile. She has authored or co-authored 29 peer-reviewed publications and two additional papers have been accepted. Importantly, she is lead or senior author role on 24 of the 31 papers (first author on 13 papers; last author on 11 papers). In Movement Science, the lead author indicates the primary author whereas the senior or last author indicates a role in supervision of the work. Sixteen of these publications have University of Michigan affiliation and eight include her Ph.D. students as first authors. Her trajectory of publication rate is in an upward direction; her rate initially after her Ph.D. was ~three/year and has now doubled to ~seven/year for 2016 and 2017. The impact of her work is also impressive according to any of the metrics. According to the Web of Science, her publications have been cited 366 times with an h-index of 11 and i10-index of 13 in Web of Science. In Google Scholar, she has 706 citations with the h-index of 15 and i10-index of 16 (as of December 2017). Her Relative Citation Ratio (RCR) value of 1.72 indicates that the relative influence of the work ranks at the 70th percentile for NIH funded investigators (a very select group). She has presented seven conference proceedings (e.g., four full papers) and 60 abstracts, 37 of these abstracts are with University of Michigan affiliation.

Recent and Significant Publications:

Gardinier, E.S.[b], Wensman, J., Kelly, B.M. and Gates, D.H. (2018), "A Controlled Clinical Trial of a Clinically-tuned Powered Ankle Prosthesis in People with Transtibial Amputation," *Clinical Rehabilitation*. (In Press).

Actis, J.[a], Nolasco, L.[a], Gates, D.H., and Silverman, A.K. (2018), "Lumbar Loads and Trunk Kinematics in People with a Transtibial Amputation during Sit-to-stand," *Journal of Biomechanics* (In Press).

Engdahl, S.[a] and Gates, D.H. (2018) "Reliability of Upper Limb and Trunk Joint Angles in Healthy Adults during Activities of Daily Living," *Gait & Posture*. 60, 41-47.

Engdahl, S.[a], Chestek, C., Kelly, B., Davis, A., and Gates, D.H. (2017), "Factors Associated with Interest in Novel Interfaces for Upper Limb Prosthetic Control," *PLoS ONE* 12(8): e0182482.

Cowley, J.C.[a] and Gates, D.H. (2017) "Inter-joint Coordination Changes During and after Muscle Fatigue," *Human Movement Science* 56 Part B, 109-118.

Koller, J.[a], Gates, D.H., Ferris, D., Remy, C.D. (2017), "Confidence in the Curve: Establishing Instantaneous Cost Mapping Techniques using Bilateral Ankle Exoskeletons," *Journal of Applied Physiology*. 122(2): 242-252. (PMID # 27856717).

Cowley, J.C.[a], Resnik, L., Wilken, J.M., Smurr Walters, L, and Gates, D.H. (2017), "Movement Quality of Conventional Prostheses and the DEKA Arm during Everyday Tasks," *Prosthetics Orthotics International,* (Mar) 1-8. (PMID #26932980).

Gates, D.H., Smurr Walters, L., Cowley, J.C.[a], Wilken, J.M., and Resnik, L. (2016), "Motion Requirements for Upper Limb Activities of Daily Living," *American Journal of Occupational Therapy,* 70(1): 1-10. (PMCID # 4690598).

Engdahl, S.[a], Christie, B.[c], Kelly, B., Davis, A., Chestek, C. and Gates, D.H. (2015), "Assessing Patient Interest in Advanced Prosthetic Technology," *Journal of*

Neuroengineering and Rehabilitation, 12:53. (PMCID # 4465617).

Gates, D.H., Aldridge, J.M., Wilken, J.M. (2013), "Kinematic Comparison of Walking on Uneven Ground using Powered and Unpowered Prostheses," *Clinical Biomechanics* 28: 467-472.

Service: Professor Gates also has an impressive service record particularly as it relates to research. She has served on grant review panels for five organizations including the National Science Foundation and Department of Defense, served as an ad hoc reviewer for several refereed journals (27 journals), and currently serves on two professional organization committees while being a member of five professional organizations. Her School of Kinesiology and university service is acceptable including modest contributions to search committees, undergraduate scholarship committee and UM FEMMES, a program that provides engaging, hands-on science, technology, math, and engineering (STEM) activities to girls.

External Reviewers:

Reviewer A: "Since her appointment at the University of Michigan…, Professor Gates has published an average of 3.8 papers per years and on 74% of these papers she was first or senior author. …There has been a marked increase in her output since 2015 and she currently has 6 papers in review. This appears to indicate a sustained high level of output which is commendable…."

Reviewer B: "She has received funding for her research from the NIH, DARPA, and the DoD, and has with five current grants with three as principal investigator….Overall her funding profile is very good…"

Reviewer C: "…Her publication record and funding history since being appointed at UM are admirable and reflect the extent to which she has established herself as an independent investigator. Her publications appear in respected journals and the sources of her funding are those to which many aspire."

Reviewer D: "…In addition, the overall quality of her publications is excellent….I consider her first author publication pertaining to frontal plane dynamic margins of stability in transtibial amputees walking on loose rock surface to be outstanding…."

Reviewer E: "…I have been impressed with the quality of her research is definitely at the leading edge of the work being conducted in the field… Over the past 13 years, I have received the credentials of assistant professors at 18 institutions, similar in academic excellence to the University of Michigan. Professor Gates' academic performance is in the top third of the individuals I have assessed."

Reviewer F: "…Dr. Gates has a truly outstanding record of garnering extramural funding for her research. Her record is even more impressive given the competitive climate for grant funding these days. She has received significant funding from NSF, NIH and DoD among others."

Reviewer G: "…There is evidence she is leading a well-focused research program that is addressing meaningful research questions and is leading to publications in highly regarded journals. Her publication productivity is strong, and her research is getting cited by others."

Reviewer H: "…In addition, she has developed inter-disciplinary, inter-departmental, and inter-institutional collaborations that are clearly productive. As a result of her holistic, intelligent, and interdisciplinary approach, she has either already been awarded external funding at the PI level (Themes 1 and 2), or she has a sound, achievable plan to move toward that goal (Themes 3 and 4)…. Based on her accomplishments, my assessment of Dr. Gates' standing in the field is that she is at the top of her peer group."

Summary of Recommendation: Professor Gates is a highly valued member of our school, and her aggregate achievements in research, teaching, and service have resulted in unanimous and enthusiastic support at all levels in our school as well as from external reviewers, for her promotion. From my perspective, her highly collaborative interdisciplinary approaches over several areas of biomechanics research is a strong asset for Kinesiology. It is with the support of the School of Kinesiology Executive Committee that I recommend Deanna Gates for promotion to associate professor of kinesiology, with tenure, School of Kinesiology, and associate professor of biomedical engineering, without tenure, Department of Biomedical Engineering, College of Engineering and Medical School.

Lori Ploutz-Snyder
Dean, School of Kinesiology

Alec D. Gallimore, Ph.D.
Robert J. Vlasic Dean of Engineering
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Marschall S. Runge, M.D., Ph.D.
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