

CURRICULUM VITAE

Steven J. Elmer, Ph.D.

Michigan Technological University
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- SEE FINAL PAGE OF CV FOR 1-PAGE SUMMARY -

EDUCATION

Ph.D.	Exercise and Sport Science (2011)	University of Utah
M.S.	Exercise and Sport Science (2008)	University of Utah
B.S.	Exercise and Sport Science (2005)	University of Utah

PROFESSIONAL POSITIONS

Michigan Technological University (Houghton, MI)

2019-present	Associate Professor, Dept. of Kinesiology & Integrative Physiology
2015-present	Graduate Program Director, Dept. of Kinesiology & Integrative Physiology
2015-present	Adjunct Appointments, Depts. of Biological Sciences and Mechanical Engineering
2015-2016	Interim Chair, Dept. of Kinesiology & Integrative Physiology
2014-2018	Assistant Professor, Dept. of Kinesiology & Integrative Physiology

Central Michigan University (Mt. Pleasant, MI)

2014-present	Instructor and Adjunct Assistant Professor, Dept. of Physical Therapy
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University of Maine (Orono, ME)

2013-2014	Assistant Professor, Dept. of Exercise Science and STEM Education
2013-2014	Cooperating Assistant Professor, Dept. of Mechanical Engineering

Eastern Maine Medical Center (Bangor, ME)

2013-2014	Allied Scientist
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University of Utah (Salt Lake City, UT)

2012-2013	Post-Doctoral Fellow, Dept. of Exercise and Sport Science
2006-2011	Graduate Research and Teaching Assistant, Dept. of Exercise and Sport Science

United States Olympic Committee – Olympic Training Center (Colorado Springs, CO)

2005	Sports Physiology Intern (with Randy Wilber), Athlete Performance Laboratory
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SCHOLARLY INTERESTS

I am broadly trained in exercise physiology and biomechanics. My research goals are to find better ways to restore musculoskeletal function, maintain health, and improve performance in healthy and clinical populations. Specifically, my research is focused on three key areas: 1) skeletal muscle contraction, 2)

metabolic cost of locomotion, and 3) exercise interventions to improve physical conditioning and mobility. Applications for my research range from basic aspects of muscle contraction to applied human performance in a variety of settings including injury, rehabilitation, ergonomics, and sport. In addition to my applied research, I am committed to improving the teaching of exercise physiology. I treat teaching the same as I do research and keep up the literature, incorporate best practices, try new things, and publish my findings in educational-based physiology journals. Finally, I actively engage in local, regional, national, and international outreach events to help promote enthusiasm for STEM and increase awareness of physiology and biomechanics.

UNIVERSITY COURSES TAUGHT

Michigan Technological University **Dept. of Kinesiology & Integrative Physiology**

Advanced Exercise Physiology* (3 credit)
Human Biomechanics (3 credits)
Foundations of Kinesiology (3 credits)
Exercise Physiology Laboratory (1 credit)
Graduate Seminar (1 credit)

Central Michigan University **Dept. of Physical Therapy**

Exercise Physiology Lab* (1 credit)

University of Maine **Dept. of Exercise Science and STEM Education**

Motor Learning and Performance* (3 credits)
Statistics and Assessment (3 credits)

University of Utah **Dept. of Exercise and Sport Science**

Biomechanics (3 credits)
Honors Biomechanics (3 credits)
Online Biomechanics# (3 credits)
Senior Capstone# (3 credits)

Other Guest Lectures

Honors Exercise Physiology
Exploration of Movement Sciences

Honors Exercise Physiology Lab
Muscle Physiology*

* graduate course

indicates that I received a course development grant to develop this new course

PROGRAM AND CURRICULUM DEVELOPMENT

Michigan Technological University

Masters in Kinesiology (2014)
Accelerated Masters (BS-MS) in Kinesiology (2015)
Doctorate in Integrative Physiology (2017)

After arriving at Michigan Tech, the Department of Kinesiology and Integrative Physiology developed a graduate program and launched a series of new graduate degree options. As Graduate Program Director, I was involved with the design, implementation, and assessment of these new programs.

PEER-REVIEWED JOURNAL PUBLICATIONS (38 total publications)

Singer, T., Kilgas, M.A., Stavres, J., Pollock, B., **Elmer, S.J.**, McDaniel, J. (2019) Knee exercise with blood flow restriction: Impact of cuff pressure on hemodynamics. *European Journal of Applied Physiology* (accepted).

Kilgas, M.A., Denherder, A.E., Lytle, L.M., Williams, C.T., **Elmer, S.J.** (2019). Home-based exercise with blood flow restriction to improve quadriceps function and physical function after total knee arthroplasty: a case report. *Physical Therapy* (Epub ahead of print).

Greenlund I., Suriano, P.E., **Elmer, S.J.**, Carter, J.R., Durocher, J.J. (2019). Chronic standing desk use and arterial stiffness. *Journal of Physical Activity and Health*, 16, 1022-1028.

Lytle, L.M., Dannenbring, J.L., Kilgas, M.A., **Elmer, S.J.** (2019). Eccentric arm cycling: a potential upper-body exercise for wheelchair users. *Archives in Physical Medicine and Rehabilitation*, 100, 914-922.

Kilgas, M.A., Lytle, L.M., Drum, S.N., **Elmer, S.J.** (2019). Exercise with blood flow restriction to improve quadriceps function long after ACL reconstruction. *International Journal of Sports Medicine*, 40, 650-656.

Kilgas, M.A., McDaniel, J., & **Elmer, S.J.** (2019). Limb blood flow and tissue perfusion during exercise with blood flow restriction. Submitted to *European Journal of Applied Physiology*, 119, 377-387.

Bye, T.K., Carter, K.R., **Elmer, S.J.** (2019). An outside the box activity to demonstrate how humans and animals turn. *Advances in Physiology Education*, 43, 282-287.

VanSumeren, A.L., Kilgas, M.A., Bye, T.K., Anderson, D.J., **Elmer, S.J.** (2018). Influence of the lower-body on seated arm cranking performance. *International Journal of Sports Medicine*, 39, 757-763.

Elmer, S.J., Anderson, D.J., Wakeham, T., Kilgas, M.A., Durocher, J.J., Lindstedt, S.L., LaStayo, P.C. (2017). Upper-body eccentric exercise: improvements in muscle strength and power at moderate training intensities. *European Journal of Applied Physiology*, 117, 1473-1483.

Elmer, S.J., Joyner, M.J., Carter, J.R. (2017). Two hour marathon: what do students think? *Advances in Physiology Education*, 41, 522-525.

Leong, C.H., **Elmer, S.J.**, Martin, J.C. (2017). Effects of noncircular chainrings on joint specific kinematics and power production. *Journal of Applied Biomechanics*, 33, 410-418.

Kilgas, M.A., **Elmer, S.J.** (2017). Back to the future! Revisiting the physiological cost of negative work as a team-based activity for exercise physiology students. *Advances in Physiology Education*, 41, 120-129. [Article featured on journal yearly cover issue]

Elmer, S.J., McDaniel, J., Martin, J.C. (2016). Biomechanics of counterweighted one-legged cycling. *Journal of Applied Biomechanics*, 32, 78-85.

Elmer, S.J., Carter, K.R., Armga, A.J., Carter, J.R. (2016). Evaluation of blended learning within an exercise physiology laboratory. *Advances in Physiology Education*, 40, 64-69.

Barratt, P., Korff, T., **Elmer, S.J.**, Martin, J.C. (2016). Mechanical determinants of submaximal cycling: roles of pedal speed and crank length. *Medicine & Science in Sports & Exercise*, 48, 705-713.

Hajiaghamemar, M., Seidi, M., Allen, A.E., Hodge, W.A., Caccese, V., **Elmer, S.J.** (2015). A new approach to quantify functional improvements following x-stop spacer procedure: a case report. *Journal of Medical Cases*, 6, 205-210.

Elmer, S.J., Martin, J.C. (2014). A cycling workstation to facilitate physical activity in office settings. *Applied Ergonomics*, 45, 1240-1246.

McDaniel, J., Behjani, S., **Elmer, S.J.**, Brown, N.A., Martin, J.C. (2014). Joint-specific power-velocity relationships during maximal cycling. *Journal of Applied Biomechanics*, 30, 423-430.

Leong, C., McDermott, W., **Elmer, S.J.**, Martin, J.C. (2014). Chronic eccentric cycling improves quadriceps muscle structure and maximum cycling power. *International Journal of Sports Medicine*, 35, 559-565.

Elmer, S.J., Danvind, J., Holmberg, H.C. (2013). Development of a novel eccentric arm cycle ergometer for training the upper body. *Medicine & Science in Sports & Exercise*, 45, 206-211.

Elmer, S.J., Marshall, C.S., McGinnis, K.R., Van Haitsma, T.A., LaStayo, P.C. (2013). Eccentric arm cycling: physiological characteristics and potential applications with clinical and athletic populations. *European Journal of Applied Physiology*, 113, 2541-2552.

Elmer, S.J., Amann, M., McDaniel, J., Martin, D.T., Martin, J.C. (2013). Fatigue is specific to working muscles: no cross-over during single-leg cycling in trained cyclists. *European Journal of Applied Physiology*, 113, 479-488.

Elmer, S.J. Martin, J.C. (2013). Construction of an isokinetic eccentric cycle ergometer for research and training. *Journal of Applied Biomechanics*, 29, 490-495.

Elmer, S.J., Marshall, C.S., Wehmanen, K.W., Amann, M., McDaniel, J., Martin, D.T., Martin, J.C. (2012). Effects of locomotor muscle fatigue on joint-specific power production during cycling. *Medicine & Science in Sports & Exercise*, 44, 1504-1511.

Elmer, S.J., Hahn, S.A., McAllister, P.D., Leong, C., Martin, J.C. (2012). Improvements in multi-joint leg function following chronic eccentric exercise. *Scandinavian Journal of Medicine & Science in Sports*, 22, 653-661.

Elmer, S.J., McDaniel, J., Mattson, J., Martin, J.C. (2012). Effect of a contusion injury on muscular force, power, work, and fatigue. *Scandinavian Journal of Medicine & Science in Sports*, 22, 488-494.

Elmer, S.J., Barratt, P., Korff, T., Martin, J.C. (2011). Joint-specific power production during submaximal and maximal cycling. *Medicine & Science in Sports & Exercise*, 43, 1940-1947.

Barratt, P., Korff, T., **Elmer, S.J.**, Martin, J.C. (2011). The influence of crank length on joint-specific power during maximal cycling. *Medicine & Science in Sports & Exercise*, 43, 1689-1697.

Elmer, S.J., Martin, J.C. (2010). Joint-specific power loss after eccentric exercise. *Medicine & Science in Sports & Exercise*, 42, 1723-1730.

Elmer, S.J., Madigan, M.L., LaStayo, P.C., Martin, J.C. (2010). Joint-specific power absorption during eccentric exercise. *Clinical Biomechanics*, 25, 154-158.

Elmer, S.J., McDaniel, J., Martin, J.C. (2010). Alterations in neuromuscular function and perceptual responses following eccentric cycling exercise. *European Journal of Applied Physiology*, 110, 1225-1233.

McDaniel, J., **Elmer, S.J.**, Martin, J.C. (2010). Effect of shortening history on isometric and dynamic muscle function. *Journal of Biomechanics*, 43, 606-611.

McDaniel, J., **Elmer, S.J.**, Martin, J.C. (2010). Limitation of relaxation kinetics on muscular work. *Acta Physiologica*, 198, 191-198.

Elmer, S.J., Martin, J.C. (2009). Fourier series approximations and low pass filtering: facilitating learning of digital signal processing for biomechanics students. *SportScience*, 13, 1-8.

Martin, J.C., **Elmer, S.J.**, Horscroft, R.D., Brown, N.A.T., Shultz, B.B. (2007). A low cost instrumented spatial linkage accurately determines ASIS position during cycle ergometry. *Journal of Applied Biomechanics*, 23, 224-229.

INVITED COMMENTARY

Elmer, S.J. and LaStayo, P.C. (2019). Distinct modalities of eccentric exercise: Different recipes, not the same dish. *Journal of Applied Physiology*, 127, 884-891.

Elmer, S.J., LaStayo, P.C. (2014). Revisiting the positive aspects of negative work. *Journal of Experimental Biology "Classics" Column*, 217(Pt 14), 2434-2436.

Burns, K.J., Martin, J.C., **Elmer, S.J.**, McDaniel, J. (2014). Response to Letter to the Editor: a counterweight is not necessary to implement simple, natural and comfortable single-leg cycle. *European Journal of Applied Physiology*, 114, 2457-2458.

MANUSCRIPTS SUBMITTED

Kilgas, M.A., McDaniel, J., Yoon, T., **Elmer, S.J.** Training adaptations to aerobic and resistance exercise with blood flow restriction. Submitted.

Hendrickson, J.L, Cockfield, B.A., Bye, T.K., Carter, K.R., **Elmer, S.J.** Developing a science outreach program and promotion "PhUn" all year with rural K-12 students. Submitted.

Leong, C.H., **Elmer, S.J.**, Martin, J.C. Noncircular chainrings do not influence physiological responses during submaximal cycling. Submitted.

Wakeham, T., **Elmer, S.J.**, Durocher, J.J. Post-exercise arterial stiffness responses are similar after acute eccentric and concentric arm cycling. Submitted.

ABSTRACT PUBLICATIONS (28 total abstracts)

Kilgas, M.A., Lytle, L.M, **Elmer, S.J.** (2018). "Home-based exercise with blood flow restriction to restore limb symmetry long after knee surgery. *Medicine & Science in Sports & Exercise*, 50(5S), 831.

Kearney, S., Singer, T., Stavres, J., **Elmer, S.J.**, Kilgas, M.A., McDaniel, J. (2018). "Influence of cuff pressure on cardiovascular responses to knee extension exercise with blood flow restriction. *Medicine & Science in Sports & Exercise*, 50(5S), 191.

VanSumeren, A.L., Kilgas, M.A., Bye, T.K., Anderson, D.J., **Elmer, S.J.** (2017). "Muscular contributions to upper-body exercise. *Medicine & Science in Sports & Exercise*, 49(5S), 465.

Elmer, S.J. (2017). "The locomotion": not the pop song but an activity designed to integrate energetics and mechanics to understand human movement. *Federation of American Societies for Experimental Biology*, 31(S1), 576.35.

Elmer, S.J., Anderson, D.J., Vanlandschoot, R.J., Lytle, L.M., Dannenbring, J.L., Kilgas, M.A. (2016). Upper-extremity eccentric exercise: increases in muscle strength and power while training at moderate intensities. *Medicine & Science in Sports & Exercise*, 48(5S), 474.

Wakeham, T.R., **Elmer, S.J.**, Duroucher, J.J. (2016). Concentric vs. eccentric arm cycling: acute cardiovascular and arterial stiffness responses. *Medicine & Science in Sports & Exercise*, 48(5S), 1017.

Elmer, S.J., Carter, K.R., Armga, A.J., Carter, J.R. (2016). Blended learning within an undergraduate exercise physiology laboratory. *Federation of American Societies for Experimental Biology*, 30(S1), 776.31.

Elmer, S.J., McDaniel, J., Martin, J.C. (2015). Biomechanics of single- and double-leg cycling. *Medicine & Science in Sports & Exercise*, 47(5S), 951.

Marshall, C.S., **Elmer, S.J.**, Martin, J.C. (2015). Evaluating differences in locomotor muscle function during submaximal and maximal cycling using joint work loops. *Medicine & Science in Sports & Exercise*, 47(5S), 951.

Leong, C., **Elmer, S.J.**, Martin, J.C. (2015). Noncircular chainrings do not improve maximum cycling power and joint-specific power during maximal cycling. *Medicine & Science in Sports & Exercise*, 47(5S), 251.

Weitzal, B.A., Nelson, D.S., **Elmer, S.J.**, Martin, J.C. (2015). A counterweight improves efficiency for an amputee cyclist. *Medicine & Science in Sports & Exercise*, 47(5S), 253.

Elmer, S.J., Peterson, M. D., Marshall, C.S. (2014). Muscle coordination during submaximal and maximal arm cycling. *Medicine & Science in Sports & Exercise*, 46(5S), 675.

Zielinski, G.A., **Elmer, S.J.** (2014). Exercise-induced locomotor muscle fatigue and recovery: leg vs. arm. *Medicine & Science in Sports & Exercise*, 46(5S), 7.

Rimer, E.G., **Elmer, S.J.**, Martin, J.C. (2014). Joint-specific cycling biomechanics of a patellar-deficient leg: a case study. *Medicine & Science in Sports & Exercise*, 46(5S), 421.

Leong, C., Church, T.S., **Elmer, S.J.**, Martin, J.C. (2014). Effects of non-circular chainrings on maximum cycling power and optimal pedaling rate. *Medicine & Science in Sports & Exercise*, 46(5S), 420.

Elmer, S.J., Marshall, C.S., Amann, M., Martin, J.C. (2013). Neuromuscular fatigue, reserve, and recovery following exhaustive high-intensity endurance exercise. *Medicine & Science in Sports & Exercise*, 45(5S), 182.

Elmer, S.J., Marshall, C.S., Wehmanen, K.W., Amann, M., Martin, J.C. (2012). Effects of locomotor muscle fatigue on joint-specific power production during cycling. *Medicine & Science in Sports & Exercise*, 44(5S), 475.

Wehmanen, K.W., Marshall, C.S., Martin, J.C. **Elmer, S.J.** (2012). Effects of temperature and prior sprint efforts on maximum cycling power and optimal pedaling rate. *Medicine & Science in Sports & Exercise*, 44(5S), 426.

Elmer, S.J., Leong, C., Marshall, C.S., Wehmanen, K.W., Amann, M., Martin, J.C. (2011). Effect of central and peripheral fatigue on maximal voluntary function. *Medicine & Science in Sports & Exercise*, 43(5S), 25.

Leong, C., **Elmer, S.J.**, Marshall, C.S., Wehmanen, K.W., Amann, M., Martin, J.C. (2011). Central and peripheral aspects of fatigue following 30 s maximal exercise. *Medicine & Science in Sports & Exercise*, 43(5S) 25.

Elmer, S.J., Hall, K.E., Peters, S.R., Martin, J.C. (2010). Velocity-dependent alterations in recovery of maximal power following eccentric exercise. *Medicine & Science in Sports & Exercise*, 42(5S), 483.

Grisham, J.D., Hahn, S.A., **Elmer, S.J.**, Martin, J.C. (2010). Acute high-intensity single-leg cycling decreases perceived exertion associated with subsequent submaximal exercise. *Medicine & Science in Sports & Exercise*, 42(5S), 473.

Elmer, S.J., Hall, K.E., Peters, S.R., Martin, J.C. (2009). Neuromuscular and perceptual aspects of eccentric muscle damage and recovery. *Medicine & Science in Sports & Exercise*, 41(5S), 198.

Miller, J.D., **Elmer, S.J.**, Ives, S.J., Van Haitsma, T.A., Thomas, L., Hayman, M.A., Fuller-Hayes, A.A., Martin, J.C. (2009). Bilateral deficit in peak cycling O₂ consumption but not maximum cycling power. *Medicine & Science in Sports & Exercise*, 41(5S), 89.

Elmer, S.J., McDaniel, J., Martin, J.C. (2008). Maximal neuromuscular function following a standardized contusion injury. *Medicine & Science in Sports & Exercise*, 40(5S), 348.

McDaniel, J., **Elmer, S.J.**, Martin, J.C. (2008). The influence of shortening history on dynamic muscle function. *Medicine & Science in Sports & Exercise*, 40(5S), 479.

Elmer, S.J., Martin, J.C. (2007). Functional and perceptual responses following damaging eccentric exercise. *Federation of American Societies for Experimental Biology*, 21:615.27, A580-A581.

McDaniel, J., **Elmer, S.J.**, Martin, J.C. (2006). Submaximal work production scales with isometric force. *Federation of American Societies for Experimental Biology*, 20:483.33, A808.

FUNDED GRANTS

CURRENT

2019-2020: **Elmer SJ (PI)**. “UP Grant Planning Workshops: Developing Academic-Community Partnerships to Improve Health”. Blue Cross Blue Shield of Michigan Foundation – Planning Development Award. \$3,500 (direct).

2019-2020: **Elmer SJ (PI)**. “B-FREE in the UP! Improving Recovery after a Knee Replacement with Blood Flow Restriction Exercise Enhancement”. Blue Cross Blue Shield of Michigan Foundation – Investigator Initiated Research Program. \$52,093 (direct).

2019-2020: **Elmer SJ (PI)**, Carolyn Duncan. “Setting Foot on Mars – A Big Step and Even Greater Leap for Undergraduate and Graduate Students to Achieve”. Michigan Space Grant Consortium – Hands on NASA Experience for Students (HONES). \$10,000 (direct).

2019-2020: **Elmer SJ (PI)**. “Wearable Technology for Clinical and Applied Sport Testing”. Michigan Technological University Research Excellence – Portage Health Foundation Infrastructure Enhancement Grant. \$36,409 (direct).

2018-2019: Cockfield B (PI), **Elmer SJ (Co-PI)**. “Physiological Responses to Upper-Body Exercise with Blood Flow Restriction”. Michigan Space Grant Consortium. [Faculty mentor for Graduate Student Fellowship]. \$5,000 (direct).

2018-2019: **Elmer SJ (PI)**. “Teaching Skeletal Muscle Contraction through Reverse Engineering”. The Physiological Society Teaching Grant. \$12,954 (direct).

2018-2020: **Elmer SJ (PI)**, Carter K, Cooke W. “Introducing Space Medicine to High School Students in the Upper Peninsula”. Michigan Space Grant Consortium Pre-College Education Grant. \$10,000 (direct).

2018-2019: Phillips K (PI), Yoon T, **Elmer SJ (Co-PI)**. “*Cold Water Therapy as a Recovery Intervention During Spaceflight Operations*”. Michigan Space Grant Consortium. [Faculty mentor for Graduate Student Fellowship]. \$5,000 (direct).

2018-2019: Sutherland A, **Elmer SJ (Co-PI)**. “*A New Age-Predicted Maximum Heart Rate Equation For Upper-Body Exercise Prescription*”. Michigan Technological University – College of Sciences and Arts Songer Award. [Faculty mentor for Undergraduate Student Research Award]. \$4,000 (direct).

2017-2020: **Elmer SJ (PI)**, Carter KR. “*Physiology Friday with Michigan Tech University: Using Lumber, Woodscrews, and Power Drills to Facilitate Understanding of Human Movement in Rural High Schools*”. The Physiological Society Outreach Grant. \$1,890 (direct).

COMPLETED

2017-2018: **Elmer SJ (PI)**. “*Rehabilitation and Strength and Conditioning Infrastructure for Human Health Research and Education*”. Michigan Technological University Research Excellence – Portage Health Foundation Infrastructure Enhancement Grant. \$20,899 (direct).

2017-2018: Trewartha K (PI), **Elmer SJ (Co-I)**, Durocher J. “*Fighting Aging with Exercise: Improvements in Cognitive and Physical Function through Resistance Training in Older Adults*”. Michigan Technological University Research Excellence – Portage Health Foundation Research Seed Grant. \$40,000 (direct).

2017-2018: **Elmer SJ (PI)**. “*Promoting Active Learning and Mentoring (PALM) Fellowship*”. American Society for Cell Biology. \$2,000 (direct).

2017-2018: Kilgas M (PI), **Elmer SJ (Co-PI)**. “*Muscle Function Following Aerobic Exercise with Blood Flow Restriction: Implications for Spaceflight*”. Michigan Space Grant Consortium. [Faculty mentor for Graduate Student Fellowship]. \$5,000 (direct).

2017-2018: Bye T (PI), **Elmer SJ (Co-PI)**. “*NASA’s Concern for Upper-body Work Performance During Spaceflight: What Impact Does Respiratory Muscle Fatigue Have?*”. Michigan Space Grant Consortium. [Faculty mentor for Undergraduate Student Fellowship]. \$2,500 (direct).

2017-2018: Bye T (PI), **Elmer SJ (Co-PI)**. “*The Effects of Respiratory Muscle Fatigue on Upper-Body Exercise Performance*”. American Physiological Society Undergraduate Summer Research Fellowship Program. [Faculty mentor for Undergraduate Student Fellowship]. \$5,600 (direct).

2016-2017: **Elmer SJ (PI)**, Morley, M. “*I-Corps: A New Assistive Device for Wheelchair Users*”. National Science Foundation I-Corps Team Program. \$45,000 (direct).

2016-2017: **Elmer SJ (PI)**: “*RENEW-U! A New Exercise for Individuals with Spinal Cord Injury*”. American College of Sports Medicine (ACSM) Research Endowment Grant. \$10,000 (direct).

2016-2017: Kilgas MA (PI), **Elmer SJ (Co-PI)**. “*Restoring Quadriceps Function Follow ACL Reconstruction with Blood Flow Restricted Exercise*”. Blue Cross Blue Shield of Michigan Foundation. [Faculty mentor for Graduate Student Fellowship]. \$3,000 (direct).

2015-2016: **Elmer SJ (PI)**: “*RENEW-U! To Improve Skeletal and Respiratory Muscle Conditioning in Older Adults*” Michigan Technological University Research Excellence Fund – Seed Grant. \$25,000 (direct).

- 2015-2016: **Elmer SJ (PI)**, Leonard-Thome A: “*Flipping KIP: A Blended Learning Approach for Kinesiology Laboratories*” Michigan Technological University Center for Teaching and Learning. \$15,000 (direct).
- 2015-2017: **Elmer SJ (PI)**: “*RENEW-U: Exercise Equipment for Individuals with Spinal Cord Injury.*” Michigan Technological University Rehki Enterprise Funding Challenge and SuperiorIdeas Crowdfund. \$13,500 (direct).
- 2015-2016: **Elmer SJ (PI)**: “*New Exercise Equipment for Wheelchair Users.*” Michigan Technological University ICORPS Site Workshop Series. \$1,500 (direct).
- 2014-2015: Zielinski GA (PI), **Elmer SJ (Co-PI)**: “*Locomotor Muscle Fatigue: Arm vs. Leg*” Maine Space Grant Consortium Graduate Research Fellowship. \$6,000 (direct). [Faculty mentor for Graduate Student Fellowship].
- 2009-2011: **Elmer SJ (PI)**: “*Research-Based Capstone Experience for Students in Exercise Science*” University of Utah Graduate School. \$30,000 (direct).
- 2009-2010: **Elmer SJ (PI)**: “*Does Acute Exposure to Metabolic Byproducts Reduce Perceived Effort and Pain Associated with Exercise*” University of Utah Peak Academy Student Research Grant. \$2,500 (direct).
- 2009-2010: **Elmer SJ (PI)**: “*Undergraduate Biomechanics Online Course Development Fellowship*” University of Utah Technology Assisted Curriculum Center. \$5,000 (direct).
- 2008-2009: **Elmer SJ (PI)**: “*Biomechanical Aspects of Eccentric Muscle Damage and Recovery*” International Society of Biomechanics Matching Dissertation Grant. \$2,000 (direct).
- 2007-2008: Normann RA (PI), Clark GA, Brown NA, Martin JC (**Elmer SJ - multiple graduate student RA’s**): “*Multisite Intrafascicular Stimulation for Stance*” National Institute of Health – Institute of Neurological Disorders and Stroke; R01 NS039677-08. \$1,387,000 over 4 years (direct).
- 2006-2007: Martin JC (PI) (**Elmer SJ – graduate student RA**): “*Effects of a Nutritional Supplement on Maximal, Submaximal, and Perceptual Measures Following Damaging Eccentric Exercise*” Gatorade Sports Science Institute. \$64,000 (direct).
- 2005: **Elmer SJ (PI)**: “*Functional Muscular Performance Following a Contusion Injury*” University of Utah Undergraduate Research Opportunities Program. \$1,050 (direct).

Various internal undergraduate student research fellowships (Summer Undergraduate Research Fellowships, Undergraduate Research Internships) totaling \$33,800 (direct)

GRANTSMANSHIP DEVELOPMENT & TRAINING

PENDING GRANTS

2020: Isaac Wedig (PI), **Elmer SJ (co-PI)**, “Upper-Body Aerobic Exercise with Blood Flow Restriction to Improve Muscular and Cardiovascular Function”. Michigan Space Grant Consortium. [Faculty mentor for Graduate Student Fellowship].

GRANTS SUBMITTED

2018: **Elmer SJ (PI)**. “*Energetics of Traversing Arctic Environments on Wheels*”. National Geographic Society – Exploration Grant. **Not funded.**

- 2018: Mueller ST (PI), Tan YY, Sun Y., **Elmer SJ (co-I)**. “*Integrating and Validating Non-intrusive and Non-contact Physiological Recording in the Model of Individual Rider Comfort in Response to Environmental Climate Manipulations*”. Ford Motor Company. **Not funded**.
- 2018: Sain T (PI), Rastgaar M, **Elmer SJ (co-I)**. “*Integrated Computational Design and Manufacturing of Smart Magneto-rheological Materials for Next Generation Agile and Compliant Robot Prosthesis*”. Michigan Tech University - College of Engineering Cross Cutting Initiative Seed Grant. **Not funded**.
- 2017: **Elmer SJ (PI)**, McDaniel, J. “*Blood Flow Restriction Exercise as a Home-Based Intervention to Restore Limb Symmetry After ACL Reconstruction*”. National Institutes of Health – National Institute of Arthritis and Musculoskeletal and Skin Diseases (R15). **Scored**.
- 2017: **Elmer SJ (PI)**. “*RENEW-U! A New Exercise for Spinal Cord Injury*”. National Institutes of Health – National Institute of Child Health and Human Development Small Grant Program (R03). **Not funded**.
- 2017: Trewartha K, Mueller S, Wang M, **Elmer SJ (co-I)**. “*Aging and the Neurocognitive Mechanisms of Rapid Corrective Actions*”. National Institutes of Health – National Institute of Arthritis and Musculoskeletal and Skin Diseases (R15). **Not funded**.
- 2016: **Elmer SJ (PI)**, Durocher JJ, Wang M. “*RENEW-U! To Improve Upper-Body Peripheral and Respiratory Muscle Conditioning in Older Adults*”. National Institutes of Health – National Institute of Aging Area Enhancement Award (R15). **Not funded**.
- 2016: **Elmer SJ (PI)**. “*Interdisciplinary Rehabilitation Engineering Research Career Development Program*”. National Institutes of Health - Rehabilitation Research Career Development Program (K12) – Northwestern University. **Not funded**.
- 2016: **Elmer SJ (PI)**. “*Exercise-induced Muscle Fatigue and Recovery: Implications for Astronaut Health, Training, and Performance*”. Michigan Space Grant Consortium. **Not Funded**.
- 2016: **Elmer SJ (PI)**. “*RENEW! An Eccentric-based Training Program to Improve Running Economy and Performance*”. USA Track & Field. **Not funded**.
- 2015: **Elmer SJ (PI)**. “*RENEW! To Improve Physical Conditioning and Mobility in SCI*”. Paralyzed Veterans of America. **Not funded**.

WORKSHOPS

2015, 2016, 2017: Faculty Grant Writing Development Workshop, Michigan Tech University, Houghton, MI

2014: NIH Regional Grant Writing Workshop, Baltimore, MD

INVITED ORAL PRESENTATIONS

American College of Sports Medicine

- 2019 *Blood Flow Restriction Exercise: Acute Responses, Training Adaptations, and Considerations for Clinical Use* Symposium Chair
Accepted/To be Presented
Midwest Annual Meeting, Oak Brook, IL
- 2017 *Eccentric Muscle Contractions: Physiological Responses, Mechanisms, Applications, and Historical Lessons* Symposium Speaker, Chair
Midwest Annual Meeting, Grand Rapids, MI

2014 *Single-leg Cycling: Advantageous for Improving Performance, Restoring Function, and Facilitating Research* Symposium Speaker, Co-Chair
Midwest Annual Meeting, Merryville, IN

American Physiological Society

2020 *Using History of Physiology in teaching About Science* Invited Symposium Speaker
Revising the Physiological cost of Negative Work
Accepted/To be Presented
Experimental Biology Annual Meeting, San Diego, CA

2019 *Medical Education Refresher Course – Beyond the Weight Room: The Importance of Skeletal Muscle in Health & Disease* Invited Symposium Speaker
Experimental Biology Annual Meeting, Orlando, FL

2019 *Graduate School Admissions Panel Breakout Session* Speaker
Michigan Chapter Annual Meeting, Mt. Pleasant, MI

2017 *The Two Hour Marathon: What do Students Think?* Educational Key Note Speaker
Michigan Chapter Annual Meeting, Alma, MI

2015 *Evaluation of Blended Learning within Exercise Physiology Laboratories* Symposium Speaker
Michigan Chapter Annual Meeting, Boyne Falls, MI

The Physiological Society

2018 *Innovations in Physiology Education* Invited Symposium Speaker
EuroPhysiology Meeting, London, United Kingdom

American Kinesiology Association

2017 *Coordinating Laboratory Safety and Training for Graduate Students* Speaker
Annual Leadership Workshop, Dallas, TX

Clinical Presentations

2015 *Knee Arthrofibrosis: Surgical Treatment, Rehabilitation, and Patient Perspectives* Speaker
Portage Sports Medicine Institute - Grand Rounds, Houghton, MI

2014 *Joint-specific Power Loss, Recovery, and Complications Following Quadriceps Tendon Rupture: A Case Report* Speaker
Biomedical Engineering, Steadman-Philippon Research Institute, Vail, CO

2014 *Chronic Eccentric Exercise Training: Applications with Patient and Athletic Populations* Speaker
Maine Current Topics in Orthopedics Conference, Sugarloaf, ME

2014 *Joint-Specific Power Loss, Recovery, and Complications Following Quadriceps Tendon Rupture: A Case Report.* Speaker
Maine Current Topics in Orthopedics Conference, Sugarloaf, ME

2014 *Integrated Neuromuscular Function: Aspects and Applications* Speaker
Department of Physical Therapy
Portage Health, Hancock, MI

2014 *Knee Arthrofibrosis* Speaker
Orthopedic Forum
Eastern Maine Medical Center, Bangor, ME

Department Seminars

2019 *Exercise Training to Improve Health* Speaker
Department of Exercise Science
College of St. Scholastica, Duluth, MN

2018 *Inspiration from Nature to Improve Human Health and Performance* Speaker
Department of Biological Sciences
Michigan Technological University, Houghton, MI

2016 *Integrated Neuromuscular Function: Aspects and Applications* Speaker
Department of Cognitive and Learning Sciences
Michigan Technological University, Houghton, MI

2015 *Eccentric Exercise: Aspects, Applications, and Unanswered Questions* Speaker
School of Health and Human Performance
Northern Michigan University, Marquette, MI

2014 *Positive Aspects of Negative Work* Speaker
Department of Mechanical Engineering-Engineering Mechanics
Michigan Technological University, Houghton, MI

2014 *Integrated Neuromuscular Function: Aspects and Applications* Speaker
Department of Kinesiology and Integrative Physiology
Michigan Technological University, Houghton, MI

2013 *Integrated Neuromuscular Function: Aspects and Applications* Speaker
Department of Psychology
University of Maine, Orono, ME

2013 *Positive Aspects of Negative Work* Speaker
Department of Mechanical Engineering
University of Maine, Orono, ME

2013 *Integrated Neuromuscular Function: Aspects and Applications* Speaker
Department of Exercise Science and STEM Education
University of Maine, Orono, ME

2013 *Biomechanical Changes Following Knee Surgery: Case Report* Speaker
Department of Physical Medicine and Rehabilitation
University of Utah, Salt Lake City, UT

2013 *Dynamic Neuromuscular function: Aspects and Applications* Speaker
Department of Exercise Science
Fort Lewis College, Durango, CO

2012 *Locomotor Muscle Fatigue: Biomechanical, Central, Peripheral, and Age-Related Aspects* Speaker

Department of Physical Therapy
Marquette University, Milwaukee, WI

- 2012 *High-Intensity Endurance Exercise: Insight into Neuromuscular Fatigue, Reserve, and Recovery* Speaker
Department of Medicine
University of Utah / Veterans of Affairs Medical Center, Salt Lake City, UT
- 2011 *Dynamic Neuromuscular Function: Aspects and Functional Implications* Speaker
Department of Health and Human Performance
University of Montana, Missoula, MT

Other Presentations

- 2016 *Exercise is Medicine* Speaker
Michigan Tech Research Forum
Michigan Technological University, Houghton, MI
- 2016 *Eccentric Exercise: Aspects and Applications with Athletic and Clinical Populations* Speaker
Exercise Science Club
Central Connecticut State University, New Britain, Connecticut
- 2015 *What is in a Faculty Application Package?* Speaker
Graduate Student Government Professional Development Event
Michigan Technological University, Houghton, MI

CONFERENCE PRESENTATIONS (POSTER AND ORAL) (48 total)

INTERNATIONAL MEETINGS

Elmer, S.J., Barrett, P., Korff, T., Martin, J.C. Joint-specific power production during submaximal and maximal cycling. Presented at the annual meeting for the International Society of Biomechanics in Sports, Marquette, MI, July 2010.

Elmer, S.J., Martin, J.C. Biomechanical aspects of eccentric muscle damage and recovery. Presented at the XXII Congress of the International Society of Biomechanics, Cape Town, South Africa, July 2009.

NATIONAL MEETINGS

Elmer, S.J., Bye, T.K., Hendrickson, J., Sutherland, A., Destrampe, A., Carter, J.R., Carter, K.R. Educate, engage, excite! Outreach in kinesiology and integrative physiology. Presented at the Experimental Biology Meeting, San Diego, CA, April 2018.

Elmer, S.J., Bye, T.K., Carter, K.R. Physiology Friday with Michigan Tech University: using lumber, woodscrews, and power drills to facilitate understanding of human and animal movement in rural high schools. Presented at the Experimental Biology Meeting, San Diego, CA, April 2018.

Elmer, S.J., Carter, K.R., Bye, T.K., Carter, J.R. Use of a course-based, required service learning assignment to increase physiology understanding in local schools. Presented at the Experimental Biology Meeting, Chicago, IL, April 2017.

Ralphs, D., **Elmer, S.J.** Comparison of whole-limb power and asymmetry in individuals with knee surgery. Presented at the National Conference for Undergraduate Research, Lexington, KY, April 2014.

Grisham, J.D., Hahn, S.A., **Elmer, S.J.**, Martin, J.C. Joint-specific power production and fatigue during high intensity single-leg cycling. Presented at the National Conference for Undergraduate Research, Missoula, MT, April 2010.

Hahn, S.A., Grisham, J.D., **Elmer, S.J.**, Martin, J.C. A comparison of joint-specific power and fatigue during intermittent high intensity cycling. Presented at the National Conference for Undergraduate Research, Missoula, MT, April 2010.

Tanner, D.W., Christensen, A.C., **Elmer, S.J.**, Martin, J.C. A comparison of single- and double-leg cycling biomechanics. Presented at the National Conference for Undergraduate Research, Missoula, MT, April 2010.

Elmer, S.J., Martin J.C., McDaniel, J. Influence of relaxation kinetics on muscular work. Presented at the National Skeletal Muscle Research Center - Workshop on Multi-Scale Muscle Mechanics, Woods Hole, MA, September 2009.

Elmer, S.J., Martin, J.C. Joint-specific power absorption during eccentric cycling. Presented at the annual meeting for the American Society of Biomechanics, State College, PA, August 2009.

REGIONAL MEETINGS

Gonzalez, J., Bruning, J., Wedig, I., Cockfield, B., Pitts, J., McIntryre, N., Lewellen, S., Hendrickson, J., **Elmer, S.J.** Setting foot on mars - a big step and even greater leap for undergraduate and graduate students to achieve. Presented at the annual meeting for the Michigan Space Grant Consortium, Ann Arbor, MI, October 2019.

Hendrickson, J., **Elmer, S.J.** 3D physical model to experience how the human body works first hand. Presented at the annual meeting for the Michigan Space Grant Consortium, Ann Arbor, MI, October 2019.

Cockfield, B., **Elmer, S.J.** Physiological responses to upper-body aerobic exercise with blood flow restriction. Presented at the annual meeting for the Michigan Space Grant Consortium, Ann Arbor, MI, October 2019.

Cockfield, B., Hook, S., Gabe, A., Hendrickson, J., Hart, L., Carter, K., **Elmer, S.J.** National biomechanics day: 3D physical model to experience how the human body works first hand. Presented at the annual meeting for the Michigan Physiological Society, Mt. Pleasant, MI, June 2019.

DenHerder, A., Kilgas, M., Lytle, L., Williams, C., **Elmer, S.J.** Improving recovery after total knee arthroplasty with blood flow restriction exercise. Presented at the annual meeting for the Midwest American College of Sports Medicine, Grand Rapids, MI, November 2018.

Bye, T., **Elmer, S.J.** NASA's concern for upper-body work performance during space flight: what impact does respiratory muscle fatigue have? Presented at the annual meeting for the Michigan Space Grant Consortium, Ann Arbor, MI, November 2018.

Van Laarhoven, K., Verbrigghe, D., Hook, S., **Elmer, S.J.** Human powered locomotion on mars. Presented at the annual meeting for the Michigan Space Grant Consortium, Ann Arbor, MI, November 2018.

Bigalke, J., Cunningham, H., **Elmer, S.J.** The Apollo number and suit dynamics. Presented at the annual meeting for the Michigan Space Grant Consortium, Ann Arbor, MI, November 2018.

Gabe, A., Bye, T., **Elmer, S.J.** The martian: an accurate depiction of human locomotion on mars. Presented at the annual meeting for the Michigan Space Grant Consortium, Ann Arbor, MI, November 2018.

Phillips, K., Verbrigghe, D., Gabe, A., Jauquet, B., Eischer, C., Yoon, T., **Elmer, S.J.** Temperature effects on prefrontal cortex activation and psychological ratings during water immersion and a fatiguing task. Presented at the annual meeting for the Michigan Space Grant Consortium, Ann Arbor, MI, November 2018.

Cockfield, B., Wakeham, T., Bruning, J., Stelly, S., **Elmer, S.J.** Teaching skeletal muscle contraction through reverse engineering. Presented at the annual meeting for the Michigan Space Grant Consortium, Ann Arbor, MI, November 2018.

Hendrickson, J., Sutherland, A., Bye, T., **Elmer, S.J.**, Carter, J., Carter, K. Department wide outreach program in kinesiology and integrative physiology. Presented at the annual meeting for the Michigan Space Grant Consortium, Ann Arbor, MI, November 2018.

Kilgas, M.A., Drum, S.N., Lytle, L.M., **Elmer, S.J.** Home-based exercise with blood flow restriction to restore limb symmetry following ACL reconstruction. Presented at the annual meeting for the Michigan Physiological Society, Houghton, MI, June 2018.

Hendrickson, J., Sutherland, A., Destrampe, A., Bye, T.K., Carter, J.R., **Elmer, S.J.**, Carter, K.R. Department wide outreach program in kinesiology and integrative physiology. Presented at the annual meeting for the Michigan Physiological Society, Houghton, MI, June 2018.

Maanika, C., **Elmer, S.J.**, Durocher, J.J., Trewartha, K.M. Associations between physical fitness, cognitive functioning, and motor learning in older adults: a preliminary study. Presented at the annual meeting for the Michigan Physiological Society, Houghton, MI, June 2018.

Kilgas, M.A., McDaniel, J., **Elmer, S.J.** Effects of cuff pressure on blood flow during exercise with blood flow restriction. Presented at the annual meeting for the Midwest American College of Sports Medicine, Grand Rapids, MI, November 2017.

Bye, T.K. **Elmer, S.J.** Effects of respiratory muscle fatigue on upper-body exercise tolerance. Presented at the annual meeting for the Michigan Physiological Society, Alma, MI, June 2017.

Bye, T.K., Carter, K.R., **Elmer, S.J.**, Carter, J.R. Use of a course-based service learning assignment to increase understanding of physiology in local schools. Presented at the annual meeting for the Michigan Physiological Society, Alma, MI, June 2017.

Elmer, S.J., Greenlund, I., Joyner, M.J., Carter, J.R. Two hour marathon: what do students think? Presented at the annual meeting for the Michigan Physiological Society, Alma, MI, June 2017.

Elmer, S.J., Bye, T.K., Hudak, K., Gabe, A., Carter, K.R. National biomechanics day: using physics, lumber, wood screws, and power drills with high school students to understand human and animal movement. Presented at the annual meeting for the Michigan Physiological Society, Alma, MI, June 2017.

Kilgas, M.A. **Elmer, S.J.** Re-visiting the physiological cost of negative work: a team-based activity for undergraduate exercise physiology students. Presented at the annual meeting for the Michigan American College of Sports Medicine, Gaylord, MI, January 2016.

Anderson, D.J., Vanlandschoot, R.J., Lyttle, L.L., Dannenbring, J.L., **Elmer, S.J.** Upper-extremity eccentric exercise: increases in muscle size and power at moderate training intensities. Presented at the annual meeting for the Michigan Physiological Society, Boyne Falls, MI, April 2015.

Peterson, M.D., Marshall, C.S, **Elmer, S.J.** Muscle coordination during submaximal and maximal arm cycling. Presented at the New England regional meeting for the American College of Sports Medicine, Providence, RI, November 2013.

Hartvigsen, J.M., Peterson, M.D., Seegmiller, A.G., **Elmer, S.J.** Contributions of arm, trunk, and leg musculature to upper body power. Presented at the New England regional meeting for the American College of Sports Medicine, Providence, RI, November 2013.

Seegmiller, A.G., Martin, J.C., **Elmer, S.J.** A cycling workstation to facilitate physical activity in desk-bound workers. Presented at the New England regional meeting for the American College of Sports Medicine, Providence, RI, November 2013.

Hamemar, M., Seidi, M., Bates, A., St. Pierre, J., **Elmer, S.J.**, Caccese, V., Shahinpoor, M., Hodge, W.A. Improvements in movement kinematics, functional mobility, and quality of life following X-Stop interspinous implant: a case report. Presented at the New England regional meeting for the American College of Sports Medicine, Providence, RI, November 2013.

Grisham, J.D., Hahn, S.A., **Elmer, S.J.***, Martin, J.C. Acute high-intensity single-leg cycling decreases perceived exertion associated with subsequent submaximal exercise. Presented at the Utah Conference for Undergraduate Research, Cedar City, UT, February 2010.

Elmer, S.J., Martin, J.C. Biomechanical aspects of eccentric muscle damage and recovery. Presented at the Northwest Biomechanics Symposium, Pullman, WA, June 2009.

Bouwhuis, J.C., Tanner, D.W., Diamond, N.F., **Elmer, S.J.***, Martin, J.C. Bilateral deficit and asymmetry during short-term maximal cycling. Presented at the Northwest Biomechanics Symposium, Pullman, WA, June 2009.

Madigan, M., **Elmer, S.J.***, Martin, J.C. Influence of seat position on power absorption during eccentric cycling. Presented at the Northwest Biomechanics Symposium, Pullman, WA, June 2009.

Hills, A.A., Christensen, A.C., Snarr, M.L., Bath, B.S., **Elmer, S.J.***, Martin, J.C. Maximal power produce with flexible and non flexible shoes. Presented at the Northwest Biomechanics Symposium, Pullman, WA, June 2009.

Christensen, A.C., Snarr, M.L., Hills, A.A., Bath, B.S., **Elmer, S.J.***, Martin, J.C. Bilateral deficit during maximal synchronous cycling. Presented at the Northwest Biomechanics Symposium, Pullman, WA, June 2009.

Diamond, N.D., Bath, B.S., Holscher, R.B., **Elmer, S.J.***, Martin, J.C. The effects of noncircular chainrings on maximal cycling power. Presented at the Northwest Biomechanics Symposium, Pullman, WA, June 2009.

Snarr, M.L., Christensen, A.C., Hills, A.C., **Elmer, S.J.***, Martin, J.C. Maximal power during asynchronous and synchronous cycling. Presented at the Northwest Biomechanics Symposium, Pullman, WA, June 2009.

Elmer, S.J., Hall, K.E., Peters, S.R., Martin, J.C. Neuromuscular and perceptual aspects of eccentric muscle damage and recovery. Presented at Southwest American College of Sports Medicine, San Diego, CA, 2008.

Frankel, M.A., Normann, R.A., **Elmer, S.J.**, Meek, S.G., Warren, D.J., Clark, G.A. Closed-loop isometric force control of the feline gastrocnemius muscle. Presented at Mountain West Biomedical Engineering, Park City, UT, 2008.

Tanner, D.W., Madigan, M., **Elmer, S.J.***, Hall, K.E, Martin, J.C. Bilateral deficit during maximal power cycling. Presented at Southwest American College of Sports Medicine, San Diego, CA, 2008

*indicates that I supervised and mentored undergraduate student with research project (Lab PI Martin JC)

POPULAR PRESS COVERAGE

Research project involving blood flow restriction exercise after a knee replacement was highlighted in *Blue Cross Blue Shield's Blues Perspectives Newsletter* (Fall, 2019)

www.mibluesperspectives.com/2019/10/09/u-p-physical-therapy-program-is-changing-lives/

Overall research program highlighted in *Lake Superior Magazine* (Fall, 2018)

www.lakesuperior.com/the-magazine/currentissue/404/

Overall research program highlighted in the annual *Michigan Tech Research Magazine* (May 14, 2018)

www.mtu.edu/magazine/research/2018/stories/exercise/

International Biology Week – Physiology Friday outreach with local high schools was featured on TV6.

Michigan Tech celebrates International Biology Week at local high schools

www.uppermichiganssource.com/content/news/Michigan-Tech-celebrates-International-Biology-Week-at-local-high-schools-451152893.html

Michigan Tech engineers make wheelchair exercise equipment better. Tech Century. (December 18, 2015).

techcentury.com/2015/12/18/michigan-tech-engineers-make-wheelchair-exercise-equipment-better/

Original article (**Elmer, S.J.**, & Martin, J.C. (2014). A cycling workstation to facilitate physical activity in office settings. *Applied Ergonomics*, 45, 1240-1246) highlighted in the Health and Wellness section of *The Wall Street Journal*. Take your bike to your desk to improve health (May 27, 2014). *The Wall Street Journal*.

online.wsj.com/news/articles/SB10001424052702303980004579581991474622788?mg=reno64-

wsj&url=http%3A%2F%2Fonline.wsj.com%2Farticle%2FSB10001424052702303980004579581991474622788.html

GRADUATE STUDENT ADVISORY – IN PROGRESS

PRIMARY ADVISOR

Isaac Wedig	PhD candidate, Integrative Physiology	2019 – present
Ben Cockfield	MS candidate, Kinesiology	2019 – present
Alex Knuck	DPT candidate, Physical Therapy	2019 – present
Alicia Denherder	DPT candidate, Physical Therapy	2017 – present

GENERAL GRADUATE STUDENT ADVISING

Assist with advising students pursuing MS coursework-option in Kinesiology	2014 – present
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GRADUATE STUDENT ADVISORY – COMPLETED

PRIMARY RESEARCH ADVISOR (2 PhD, 2 MS, 6 DPT awarded)

Doctoral Students

Kevin Phillips, PhD (May, 2019)

Integrative Physiology, Michigan Technological University

Matthew Kilgas, PhD (December, 2018)

Integrative Physiology, Michigan Technological University

Physical Therapy Doctoral Students

Alyssa Vinckier, DPT (May, 2019)

Physical Therapy, Central Michigan University

Brenna Sellman, DPT (May, 2018)

Physical Therapy, Central Michigan University

Kate Glodowski, DPT (May, 2018)

Physical Therapy, Central Michigan University

Zach Bennett, DPT (May, 2018)

Physical Therapy, Central Michigan University

Jennifer Anderson, DPT (May, 2017)

Physical Therapy, Central Michigan University

Lydia Lytle, DPT (May, 2017)

Physical Therapy, Central Michigan University

Masters Students

Thomas Bye, MS (May, 2019)

Kinesiology, Michigan Technological University

Katheryn Carter, MS (August, 2016)

Kinesiology, Michigan Technological University

COMMITTEE MEMBER (6 MS awarded)

Ian Greenlund, MS (May, 2018)

Biological Sciences, Michigan Technological University

Travis Wakeham, MS (May, 2018)

Biological Sciences, Michigan Technological University

Leslie Castelino, MS (August, 2017)

Mechanical Engineering, Michigan Technological University

Matthew Gage, MS (May, 2017)

Kinesiology, Michigan Technological University

Sarah VanDyke, MS (August, 2016)

Kinesiology, University of Mary

Andrea Lee, MS (May, 2016)

Kinesiology, Michigan Technological University

COMMITTEE MEMBER (4 PhD awarded)

Hind Derar, PhD (May 2016)

Mechanical Engineering, University of Maine

Marzieh Memar, PhD (May, 2015)

Mechanical Engineering, University of Maine

Morteza Seidi, PhD (May, 2015)
Mechanical Engineering, University of Maine

Chee Hoi Leong, PhD (December, 2014)
Exercise Physiology, University of Utah

EXTERNAL REVIEWER

Marcin Lipski, PhD (August 2018)
Exercise Physiology, Edith Cowan University

UNDERGRADUATE STUDENT RESEARCH ADVISORY

Department of Kinesiology & Integrative Physiology (also Exercise Science)

2018 Jana Hendrickson, Ben Cockfield
2017 Abby Sutherland
2016 Thomas Bye
2015 Ashley VanSumeren, Claire Eischer
2014 Darien Lewis*, Sarah Lange, Dagmar Ralphs
2013 Derek Drouin, Mitchell Peterson, Alex Seggmiller
2012 James Hartvigsen, Keith McGinnis
2011 Jericha Johnson, Jackie Bohn, Kyle Wehmanen, Camden Marshall, Jay Rigby
2010 Sarah Hahn, Ammon Nielson, Sarah Hahn, Elizabeth Toronto, Brandon Lindquist, Paul McAllister
2009 Dean Tanner, Matthew Madigan, Jeremy Bouwhuis, Ammon Hills, Michael Snarr
2008 Kimberley Hall

Department of Biomedical Engineering

2016 Dakota Anderson
2015 Ashley VanSumeren, Kyle Scheck

Department of Mechanical Engineering

2015 Ian Connic

Department of Biology

2014 Ryan Vanlandschoot
2009 Andrew Christiansen

Department of Physics

2009 Nelson Diamond

**completed an undergraduate honors thesis*

GRADUATE STUDENT RESEARCH AWARDS

EXTERNAL AWARDS

2018 Kevin Phillips, Dept. of Kinesiology and Integrative Physiology
Graduate Research Fellowship
Michigan Space Grant Consortium

2017 Matthew Kilgas, Dept. of Kinesiology and Integrative Physiology
Graduate Research Fellowship
Michigan Space Grant Consortium

2016 Matthew Kilgas, Dept. of Kinesiology and Integrative Physiology
Doctoral Student Award Program
Blue Cross Blue Shield of Michigan Foundation

2014 Gregory Zielinski, Dept. of Exercise Science and STEM Education
Maine Space Grant Consortium Graduate Research Fellowship

INTERNAL AWARDS

- 2018 Kevin Phillips, Dept. of Kinesiology & Integrative Physiology
Portage Health Foundation Finishing Assistantship
Michigan Tech University – Graduate School
- 2018 Matthew Kilgas, Dept. of Kinesiology & Integrative Physiology
Portage Health Foundation Finishing Assistantship
Michigan Tech University – Graduate School
- 2017 Matthew Kilgas, Dept. of Kinesiology & Integrative Physiology
Graduate Student Teaching Award
Michigan Tech University – Graduate School
- 2017 Matthew Kilgas, Dept. of Kinesiology & Integrative Physiology
1st Place Graduate Student Poster
Michigan Tech University – Graduate Student Government Research Colloquium
- 2016 Lydia Lytle and Jennifer Dannenbring, Dept. of Kinesiology & Integrative Physiology
2nd Place Graduate Student Poster
Michigan Tech University – Graduate Student Government Research Colloquium
- 2016 Matthew Kilgas, Dept. of Kinesiology & Integrative Physiology
Oral Presentation Attendance Award
Michigan Tech University – Graduate Student Government Research Colloquium

UNDERGRADUATE STUDENT RESEARCH AWARDS

I have mentored over 35 undergraduate students with their research projects many of which have received recognition through the National Science Foundation (2 students) and University Undergraduate Research Opportunities Program and Summer Undergraduate Research Program (24 students).

EXTERNAL AWARDS

- 2018 Thomas Bye, Dept. of Kinesiology & Integrative Physiology
Graduate Research Fellowship Honorable Mention
National Science Foundation
- 2018 Janna Hendrickson & Alexa Destrampe, Dept. of Kinesiology & Integrative Physiology
Outstanding Poster Presentation
Michigan Physiological Society
- 2018 Thomas Bye, Dept. of Kinesiology & Integrative Physiology
Barbara A. Horwitz and John M. Horowitz Undergraduate Research Award
American Physiological Society
- 2017 Thomas Bye, Dept. of Kinesiology & Integrative Physiology
Undergraduate Research Fellowship
Michigan Space Grant Consortium
- 2017 Thomas Bye, Dept. of Kinesiology & Integrative Physiology
Summer Undergraduate Research Fellowship

American Physiological Society

- 2014 Kyle Scheck, Dept. of Biomedical Engineering
Summer Research Fellowship in “Multiscale Approach to Biomechanics”
National Science Foundation – Research Experience for Undergraduates (NSF REU)

INTERNAL AWARDS

- 2019 Jana Hendrickson, Dept. of Kinesiology & Integrative Physiology
Undergraduate Research Internship Program
Michigan Tech University - Pavlis Honors College and Portage Health Foundation
- 2018 Abby Sutherland, Dept. of Kinesiology & Integrative Physiology
Songer Research Award
Michigan Tech University – College of Sciences and Arts
- 2018 Abby Sutherland, Dept. of Kinesiology & Integrative Physiology
Undergraduate Research Internship Program
Michigan Tech University - Pavlis Honors College and Portage Health Foundation
- 2017 Thomas Bye, Dept. of Kinesiology & Integrative Physiology
Summer Undergraduate Research Internship
Michigan Tech University (turned down to accept external APS fellowship above)
- 2016 Thomas Bye, Dept. of Kinesiology & Integrative Physiology
Undergraduate Research Internship
Michigan Tech University - Pavlis Honors College and Portage Health Foundation
- 2016 Ashley VanSumeren, Dept. of Kinesiology & Integrative Physiology and Biomedical Engineering
Undergraduate Student Research Award
Michigan Tech University - Life Sciences Technology Institute Research Forum
- 2016 Dakota Anderson, Dept. of Biomedical Engineering
Summer Undergraduate Research Fellowship (SURF)
Michigan Tech University
- 2015 Ashley VanSumeren, Dept. of Kinesiology & Integrative Physiology and Biomedical Engineering
Undergraduate Research Internship
Michigan Tech University - Pavlis Honors College and Portage Health Foundation
- 2015 Dakota Anderson, Dept. of Biomedical Engineering
Undergraduate Student Research Award
Michigan Tech University - Life Sciences Technology Institute Research Forum
- 2014 Sarah Lange, Dept. of Exercise Science and STEM Education
Undergraduate Research Fellowship
University of Maine - Maine Center for Undergraduate Research
- 2014 Dagmar Ralphs, Dept. of Exercise Science and STEM Education
Undergraduate Research Fellowship
University of Maine - Maine Center for Undergraduate Research
- 2014 Darian Lewis, Dept. of Exercise Science and STEM Education

- Undergraduate Research Fellowship
University of Maine - Maine Center for Undergraduate Research
- 2014 Derek Drouin, Dept. of Exercise Science and STEM Education
Undergraduate Research Fellowship
University of Maine - Maine Center for Undergraduate Research
- 2013 Mitchell Peterson, Dept. of Exercise and Sport Science
Undergraduate Research Fellowship
University of Utah – Undergraduate Research Opportunities Program
- 2013 James Hartvigsen, Dept. of Exercise and Sport Science
Undergraduate Research Fellowship
University of Utah – Undergraduate Research Opportunities Program
- 2011 Jericha Johnson, Dept. of Exercise and Sport Science
Undergraduate Research Fellowship
University of Utah – Undergraduate Research Opportunities Program
- 2011 Jackie Bohn, Dept. of Exercise and Sport Science
Undergraduate Research Fellowship
University of Utah – Undergraduate Research Opportunities Program
- 2011 Kyle Wehmanen, Dept. of Exercise and Sport Science
Undergraduate Research Fellowship
University of Utah – Undergraduate Research Opportunities Program
- 2010 Sarah Hahn, Dept. of Exercise and Sport Science
Undergraduate Research Fellowship
University of Utah – Undergraduate Research Opportunities Program
- 2010 Brandon Lindquist, Dept. of Exercise and Sport Science
Undergraduate Research Fellowship
University of Utah – Undergraduate Research Opportunities Program
- 2010 Ammon Nielsen, Dept. of Exercise and Sport Science
Undergraduate Research Fellowship
University of Utah – Undergraduate Research Opportunities Program
- 2010 Elizabeth Toronto, Dept. of Exercise and Sport Science
Undergraduate Research Fellowship
University of Utah – Undergraduate Research Opportunities Program
- 2009 Dean Tanner, Dept. of Exercise and Sport Science
Undergraduate Research Fellowship
University of Utah – Undergraduate Research Opportunities Program
- 2009 Matthew Madigan, Dept. of Exercise and Sport Science
Undergraduate Research Fellowship
University of Utah – Undergraduate Research Opportunities Program
- 2009 Jeremy Bouwhuis, Dept. of Exercise and Sport Science

- Undergraduate Research Fellowship
University of Utah – Undergraduate Research Opportunities Program
- 2009 Nelson Diamond, Dept. of Physics
Undergraduate Research Fellowship
University of Utah – Undergraduate Research Opportunities Program
- 2008 Kim Hall, Dept. of Exercise and Sport Science
Undergraduate Research Fellowship
University of Utah – Undergraduate Research Opportunities Program

TEACHING DEVELOPMENT & TRAINING

- 2019 UP Teaching and Learning Conference
Michigan Tech Center for Teaching and Learning
- 2017 Alan Alda Center for Communicating Science Workshop
Michigan Tech University
- 2017 UP Teaching and Learning Conference
Michigan Tech Center for Teaching and Learning
- 2016 APS Workshop: Institute on Teaching and Learning
American Physiological Society
- 2015 Jackson Blended Learning Showcase
Michigan Tech University Center for Teaching & Learning
- 2014 Faculty Fellows Program
University of Maine Center for Undergraduate Research
- 2014 Flipping without Flopping
Echo 360 Webinar
- 2010 Pre-Conference Teaching Biomechanics Symposium
International Society of Biomechanics in Sports
- 2009 Teaching Assistant Scholars Program Graduate
University of Utah Center for Teaching & Learning Excellence
- 2009 Annual Teaching Assistant Symposium
University of Utah Center for Teaching & Learning Excellence

PROFESSIONAL MEMBERSHIPS

American College of Sports Medicine
American Physiological Society
The Physiological Society

PROFESSIONAL SERVICE

American Physiological Society
Teaching Section Trainee Advisory Committee (2017-present)

Abstract reviewer for Michigan Physiological Society Meeting (2017)
Judge for quiz bowl event held during the Michigan Physiological Society Meeting (2018)

American College of Sports Medicine

Abstract reviewer for Midwest ACSM Meeting (2019)
Maine State Representative (2013-2014)

The Physiological Society

Reviewer for summer studentships (2018)

Manuscript Peer-Review

Medicine Science in Sports and Exercise

Muscle & Nerve

Journal of Experimental Biology

European Journal of Applied Physiology

Journal of Applied Biomechanics

Sports Health

Applied Ergonomics

Physical Therapy in Sport

Applied Physiology, Nutrition, and Metabolism

Human Movement Science

BMC Sports Science, Medicine, and Rehabilitation

HONORS/AWARDS

Some of these highlighted honors and/or awards are also presented in relevant sections above

International Society of Biomechanics

- Matching Dissertation Grant Award (2008)

American College of Sports Medicine

- ACSM Biomechanics Interest Group Student Research Award (2009)
- ACSM Biomechanics Interest Group Student Travel Award (2008)
- Southwest ACSM Student Research Award (2008)

National Skeletal Muscle Research Center

- Workshop on Multi-Scale Muscle Mechanics Trainee Travel Stipend Award (2009)

Michigan Technological University

- Top 10% in Teaching Evaluations, Provost's Office (2018)
- Deans Teaching Showcase, Center for Teaching & Learning (2017)
- Creative Canvas Course Content (C4) Award, Center for Teaching & Learning (2015)

University of Maine

- Faculty Fellow, Center for Undergraduate Research (2014)

University of Utah

- Post-doctoral Travel Award, Graduate School (2013)
- Outstanding Student Research Award, College of Health (2011, 2008)
- Outstanding Exercise Physiology Student, Dept. of Exercise and Sport Science (2011)
- Outstanding Doctoral Student, Dept. of Exercise and Sport Science (2011)

- Student Travel Award, Graduate School (2009, 2008)
- R.O. Ruhling Scholarship, Dept. of Exercise and Sport Science (2008)
- Outstanding Master's Student, Dept. of Exercise and Sport Science (2008)
- NASPA Undergraduate Exercise Physiology Major of the Year (2005)

UNIVERSITY SERVICE

Michigan Technological University

University

2019-present	Faculty Planning Committee Member – H-STEM Building Design/Construction
2019-present	Executive Committee Member – Health Research Institute
2018	Summer Undergraduate Research Fellowship (SURF) Reviewer
2018	Life Science Technology Institute Research Forum Judge
2016, 2019	Research Excellence Fund Seed Grant Reviewer
2016	Endowed Professor of Preventive & Community Health Search Committee Member
2016-present	HOSA Future Health Professionals Club Faculty Advisor
2016-present	Medical Careers Week Organizing Committee Member
2016-present	Graduate Faculty Council

College

2017-2018	College of Sciences and Arts Deans Search Committee
2016-2017	Hosted Undergraduate Research Workshop for Pavlis Honors College
2015-2016	College of Sciences and Arts Council
2014	Strategic Faculty Hiring Initiative Search Committee

Department

2019-present	Promotion and Tenure Committee
2018	Biomechanics Search Committee Chair
2017-present	Graduate Assessment Committee Chair
2016-2018	Undergraduate Assessment Committee Chair
2016-2018	Supervisor for Academic Adviser/Outreach Coordinator
2015-2016	Interim Department Chair
2015-present	Graduate Program Director
2014-present	Undergraduate Assessment Committee
2014-present	Department Seminar Series Chair/Organizer

University of Maine

College

2013-2014	Graduate Affairs Committee
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Department

2013-2014	Department Seminar Series Chair/Organizer
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University of Utah

Department

2008-2009	Department Seminar Series Chair/Organizer
2006-2007	Graduate Student Advisory Committee – Promotion/Tenure Review

COMMUNITY OUTREACH

Biomechanics at Michigan Tech. National Biomechanics Day – American Society of Biomechanics, Houghton, MI [April, 2019]

Physiology Friday. International Physiological Society, Houghton, MI [October, 2018]

Biomechanics at Michigan Tech. National Biomechanics Day – American Society of Biomechanics, Houghton, MI [April, 2018]

Physiology Understanding Week (PhUn Week). American Physiological Society, Houghton, MI [November, 2017]

Physiology Friday. International Physiological Society, Houghton, MI [October, 2017]

Biomechanics at Michigan Tech. National Biomechanics Day – American Society of Biomechanics, Houghton, MI [April, 2017]

Kinesiology and Integrative Physiology at Michigan Tech. Houghton High School, Houghton, MI [April, 2017]

Physiology Understanding Week (PhUn Week). American Physiology Society, Houghton, MI [November, 2016]

Human Health at Michigan Tech. Keweenaw Science and Engineering Festival, Houghton, MI [August, 2016]

Human Health at Michigan Tech. Regional UP Health Occupations Students of America (HOSA) Regional Competition, Marquette, MI [January, 2016]

Kinesiology and Integrative Physiology at Michigan Tech. Copper Country Intermediate School District, Houghton, MI [December, 2015]

Kinesiology and Integrative Physiology at Michigan Tech. Engineering Scholars Summer Youth Program, Houghton, MI [July, 2015]

Kinesiology and Integrative Physiology at Michigan Tech. Women in Engineering Summer Youth Program, Houghton, MI [June, 2015]

Kinesiology and Integrative Physiology at Michigan Tech. Houghton High School, Houghton, MI [April, 2015]

Kinesiology and Integrative Physiology at Michigan Tech. Copper Country Intermediate School District, Houghton, MI [April, 2015]

World Usability Day: Lab Tour and Demonstrations. Houghton, MI [November, 2014]

Exercise Science at University of Maine. Maine Outer Islands School Group, Orono, ME [January 2014]

What is Biomechanics? Undergraduate Student Health Professions Club, Orono, ME [November 2013]

Research in Neuromuscular Function. Maine Winter Sports Club, Orono, ME [November 2013]

Curriculum Vitae Highlights

Strong Publication Record

- 38 peer-reviewed publications to date
- Majority in *Med Sci Sport Exerc*, *J Appl Biomech*, *Euro J Appl Physiol*, *Adv Physiol Educ*
- Invited Commentary in *J Appl Physiol*, *Euro J Appl Physiol*, *Experimental Biology*
- Research highlighted in Wall Street Journal, Lake Superior Magazine, and other media forums

Funding Record

- Awarded external funding from federal agencies, private foundations, professional organizations
- Research, teaching, and science outreach supported by external grants

Presentations at Regional, National, and International meetings

- 28 published abstracts to date
- 25 presentations at National Meeting for American College of Sports Medicine (ACSM)
- 6 presentations at Federations of American Societies for Experimental Biology (FASEB)
- 3 international physiology and biomechanics presentations (EuroPhysiology, ISB, ISBS)

Graduate/Undergraduate Mentorship

- Supervise BS, MS, DPT, and PhD students
- 3 graduate students supported by external student fellowships
- 3 undergraduate students supported by external student fellowships
- 24 undergraduate student research fellowships funded internally (11 women, 13 men)

Key Professional Service

- American College of Sports Medicine – Maine State Representative, Abstract Reviewer
- American Physiological Society Teaching Section – Trainee Advisory Committee
- Reviewer for *Med Sci Sport Exerc*, *Muscle Nerve*, *J Appl Biomech*, *Appl Ergonomics*

National Honors/Awards

- International Society of Biomechanics Dissertation Grant Award
- National Skeletal Muscle Research Center Workshop Trainee Travel Award
- American College of Sports Medicine – Biomechanics Interest Group Research & Travel Awards

Teaching, Department Service, & Outreach

- Taught undergraduate and graduate courses in biomechanics, exercise physiology, statistics
- Organized Department Seminar Series (included 2 speakers who had cover of *Nature* articles)
- Recognized by Center for Teaching & Learning and Center for Undergraduate Research
- Participate in local, regional, national, and international outreach events