

ZACHARY M. GILLEN

Curriculum Vitae

Department of Kinesiology
Mississippi State University
McCarthy 236

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EDUCATION

- 2020 **Doctor of Philosophy, Human Sciences**, University of Nebraska-Lincoln,
Lincoln, NE
Mentor: Dr. Joel T. Cramer
Dissertation: *Comparisons of muscle strength, size, and neuromuscular function
in pre- and post-pubescent males and females*
- 2015 **Master of Science, Exercise Physiology**, Midwestern State University, Wichita
Falls, TX
Mentor: Dr. Frank B. Wyatt
Thesis: *The relationship between aerobic and anaerobic performance in
recreational runners*
- 2013 **Bachelor of Science, Exercise Physiology**, Midwestern State University, Wichita
Falls, TX

PROFESSIONAL EXPERIENCE

- 2020-Current ***Assistant Professor of Exercise Physiology (tenure-track)***, Department of
Kinesiology, Mississippi State University
Mississippi State, MS
- 2016-2020 ***Doctoral Research Assistant***, Department of Nutrition & Health Sciences,
University of Nebraska-Lincoln
Lincoln, NE
- 2015-2016 ***Assistant Strength and Conditioning Coach***, Trinity Christian Academy
Addison, TX
- 2015-2016 ***Performance Specialist***, DX3 Athlete
Frisco, TX
- 2013-2015 ***Graduate Assistant Strength and Conditioning Coach***, Midwestern State
University
Wichita Falls, TX
- 2012-2013 ***Intern Strength and Conditioning Coach***, Midwestern State University
-

Wichita Falls, TX

PROFESSIONAL AFFILIATIONS

- 2021-Current Southeast Chapter of the American College of Sports Medicine, **Member**
- 2016-Current American College of Sports Medicine, **Member**
- 2013-Current United States of America Weightlifting, **Member**
- 2012-Current National Strength and Conditioning Association, **Member**
- 2016-2020 Northland Chapter of the American College of Sports Medicine, **Member**

UNIVERSITY SERVICE

- 2022-Current Mississippi State University, College of Education Research Committee, **Member**
- 2022-Current Mississippi State University, Department of Kinesiology Special Review Committee, **Member**
- 2021-Current Mississippi State University, Department of Kinesiology Academic Culture Committee, **Member**
- 2021-Current Mississippi State University, College of Education Instructional Technology Committee, **Member**
- 2020-Current Mississippi State University, Department of Kinesiology Curriculum Committee, **Member**
- 2020-Current Mississippi State University, Department of Kinesiology Laboratory Committee, **Member**
- 2022 Mississippi State University Spring 2022 Preview Days, Pre-Professional Meeting, **Speaker**
- 2022 Mississippi State University Spring 2022 College of Education Academic Insight, **Speaker**
- 2021 Mississippi State University Fall 2021 Preview Days, Pre-Professional Meeting, **Speaker**
- 2021 Mississippi State University College of Education, Department of Kinesiology Orientation, **Advisor**

- 2021 Mississippi State University Spring 2021 Undergraduate Research Symposium, **Judge**
- 2021 Mississippi State University Spring 2021 Graduate Research Symposium, **Judge**

MISSISSIPPI STATE UNIVERSITY RESEARCH WORKING GROUPS

- 2021-Current **Working Group Member**
Athlete Engineering Report Automation Task Force
- 2021-Current **Working Group Member**
Athlete Engineering

PROFESSIONAL SERVICE

- 2022-Current National Strength and Conditioning Association, **National Conference Poster Judge**
- 2022-Current National Strength and Conditioning Association, **Mississippi State and Provincial Director**
- 2021-Current National Strength and Conditioning Association, Mississippi State Advisory Board, **Member**
- 2021-Current National Strength and Conditioning Association, Sport Science and Performance Technology Special Interest Group, **Member**
- 2017-Current National Strength and Conditioning Association, Research Consortium, **Member**
- 2017-Current National Strength and Conditioning Association, Long-Term Athletic Development Special Interest Group, **Member**
- 2017-Current National Strength and Conditioning Association, Weightlifting Special Interest Group, **Member**

PUBLIC SERVICE

- 2020-2021 Mississippi State University Strength and Fitness Week, Mississippi State, MS, **Competition Judge**
- 2019 Star City Barbell Open, Lincoln, NE, **Referee**

CERTIFICATIONS

- 2019-Current Certified by the United States of America Weightlifting as **USA Weightlifting Local Referee (LWC)**

- 2013-Current Certified by the National Strength and Conditioning Association as **Certified Strength and Conditioning Specialist, Recertified with Distinction (CSCS*D) on December 31, 2020**
- 2013-Current Certified by the United States of America Weightlifting as **Level 1 Sports Performance Coach (USAW-1)**
- 2013-Current Certified by the American Red Cross for **Adult and Pediatric First Aid/CPR/AED**

AWARDS

- 2016-2020 **Doctoral Research Assistantship**, University of Nebraska-Lincoln
- 2019 **Graduate Student Conference Travel Grant, \$300 awarded**, University of Nebraska-Lincoln
- 2018 **GNC Stipend, \$1,000 awarded**, GNC Sponsored Symposium at the National Strength & Conditioning Association National Conference
- 2018 **Invited Participant to The Mary Frances Picciano Dietary Supplement Research Practicum**, National Institutes of Health
- 2018 **Graduate Student Conference Travel Grant, \$300 awarded**, University of Nebraska-Lincoln
- 2017 **Knickrehm Fellowship, \$3,500 awarded**, University of Nebraska-Lincoln
- 2017 **David H. & Annie E. Larrick Student Travel Funds, \$600 awarded**, University of Nebraska-Lincoln
- 2017 **Graduate Student Conference Travel Grant, \$400 awarded**, University of Nebraska-Lincoln
- 2015 **Outstanding Graduate Student in Health Sciences and Human Services**, Midwestern State University

TEACHING EXPERIENCE

Mississippi State University, Department of Kinesiology

Teaching Evaluations	Overall Average
Global Index 2020-2021	4.75/5.00
Global Index 2021-Current	3.62/4.00

- 2022-Current EP 3803: Advanced Exercise Physiology, Instructor
- 2021-Current EP 2013: Fundamentals of Kinesiology, Guest Lecturer

2021-Current PE 4853: Motor Learning and Skill Analysis, Instructor
 2021-Current EP 3304: Exercise Physiology, Instructor
 2021-Current EP 4153/6153: Training Techniques for Exercise and Sport, Instructor
 2020-Current KI 8303: Research in Kinesiology, Instructor
 2020-Current EP 8203: Advanced Exercise Physiology, Instructor

University of Nebraska-Lincoln, Department of Nutrition & Health Sciences

Teaching Evaluations	Overall Average
Global Index	4.74/5.00

2018-2020 NUTR 494/894: Essentials of Strength & Conditioning, Instructor
 2018-2019 NUTR 496: Exercise Testing and Programming, Instructor
 2016-2017 NUTR 494/894: Essentials of Strength & Conditioning, Teaching Assistant

PEER-REVIEWED PUBLICATIONS

<i>Peer-Reviewed Research Publications</i>			
	<i>Published or In-Press</i>	<i>In-Review</i>	<i>In-Preparation</i>
<i>Journal Articles</i>	29 (18 since 2020)	4	5
<i>Conference Proceedings and Presentations</i>	37 (17 since 2020)	-	-
<i>Book Chapters</i>	2 (2 since 2020)	-	1

JOURNAL ARTICLES

* *Indicates senior/corresponding author*

Published/In-Press

1. **Gillen ZM***, Shoemaker ME, Cramer JT. Electromyographic and mechanomyographic responses during isokinetic leg extensions in children versus adolescents. *Journal of Science in Sport and Exercise*, In-Press, August 2022.
2. Bello ML, Anglin DA, **Gillen ZM**, Smith JW. Comparison of wearable technology at quantifying power and muscle load of endurance runners against varying wind resistance. *International Journal of Kinesiology & Sports Science*, 10(2): 11-15, 2022. <https://doi.org/10.7575/aiac.ijkss.v.10n.2p.11>
3. **Gillen ZM***, Shoemaker ME, McKay BD, Bohannon NA, Gibson SM, Cramer JT. Influences of the stretch-shortening cycle and arm swing on vertical jump performance in children and adolescents. *Journal of Strength and Conditioning Research*, 36(5): 1245-1256, 2022. <https://doi.org/10.1519/JSC.0000000000003647>
4. Shoemaker ME, Pereira SL, Mustad VA, **Gillen ZM**, McKay BD, Lopez-Pedrosa JM, Rueda R, Cramer JT. Differences in muscle energy metabolism and metabolic flexibility

between sarcopenic and non-sarcopenic older adults. *Journal of Cachexia, Sarcopenia, and Muscle*, 13: 1224-1237, 2022. <https://doi.org/10.1002/jcsm.12932>

5. **Gillen ZM***, McHugh MP, Shoemaker ME, Cramer JT. Comparisons of countermovement jump force profiles in youth athletes. *Translational Sports Medicine*, 4(5): 646-656, 2021. <https://doi.org/10.1002/tsm2.257>
6. **Gillen ZM***, Housh TJ, Schmidt RJ, Herda TJ, De Ayala RJ, Shoemaker ME, Cramer JT. Comparisons of muscle strength, size, and activation in pre- and post-pubescent males and females. *European Journal of Applied Physiology*, 121(9): 2487-2497, 2021. <https://doi.org/10.1007/s00421-021-04717-1>
7. Shoemaker ME, **Gillen ZM**, Cramer JT. Impacts of meat intake on growth, body composition, and performance in children and adolescents: A systematic review. *Nutrition & Dietetics*, April 2021.
8. **Gillen ZM**, Mustad VA, Shoemaker ME, McKay BD, Leutzinger TJ, Lopez-Pedrosa JM, Rueda R, Cramer JT. Impact of slow versus rapid digesting carbohydrates on substrate oxidation in pre-pubertal children: A randomized crossover trial. *Clinical Nutrition*, 40(6): 3718-3728, 2021. <https://doi.org/10.1016/j.clnu.2021.05.004>
9. **Gillen ZM***, Shoemaker ME, Bohannon NA, Gibson SM, Cramer JT. Effects of eccentric preloading on concentric vertical jump performance in young female athletes. *Journal of Science in Sport and Exercise*, 3(2021): 98-106, 2021. <https://doi.org/10.1007/s42978-020-00098-7>
10. **Gillen ZM**, Shoemaker ME, Bohannon NA, Gibson SM, Cramer JT. Comparing the torque- and power-velocity relationships between children and adolescents during isokinetic leg extension muscle actions. *Human Movement Science*, 74, 2020: 102678. <https://doi.org/10.1016/j.humov.2020.102678>
11. Bohannon NA, **Gillen ZM**, Shoemaker ME, Gibson SM, Cramer JT. Test-retest reliability of static and counter-movement power push-ups tests in 6-16-year-old male athletes. *Journal of Strength and Conditioning Research*, 34(9): 2456-2464, 2020. <https://doi.org/10.1519/JSC.0000000000003684>
12. **Gillen ZM**, Shoemaker ME, McKay BD, Bohannon NA, Gibson SM, Cramer JT. Leg extension strength, explosive strength, muscle activation, and growth as predictors of vertical jump height and peak power in youth athletes. *Journal of Science in Sport and Exercise*, 2(4): 336-348, 2020. <https://doi.org/10.1007/s42978-020-00067-0>
13. **Gillen ZM**, Shoemaker ME, McKay BD, Bohannon NA, Gibson SM, Cramer JT. Peak torque explains more unique variability in growth measurements than rate of torque development in youth athletes. *Journal of Strength and Conditioning Research*, 34(9): 2507-2514, 2020. <https://doi.org/10.1519/JSC.0000000000003728>

14. McKay BD, Miramonti AA, **Gillen ZM**, Leutzinger TJ, Mendez AI, Jenkins NDM, Cramer JT. Normative reference values for high school-aged American football players. *Journal of Strength and Conditioning Research*, 34(10): 2849-2856, 2020. <https://doi.org/10.1519/JSC.0000000000002532>
15. McKay BD, Miramonti AA, **Gillen ZM**, Leutzinger TJ, Mendez AI, Jenkins NDM, Cramer JT. Normative reference values for high school-aged American football players: Pro-agility drill and 40-yard dash split times. *Journal of Strength and Conditioning Research*, 34(4): 1184-1187, 2020. <https://doi.org/10.1519/JSC.0000000000002930>
16. Shoemaker ME, **Gillen ZM**, McKay BD, Koehler K, Cramer JT. High prevalence of poor iron status among 8 to 16-year-old youth athletes: Interactions among biomarkers of iron, dietary intakes, and biological maturity. *Journal of the American College of Nutrition*, 39(2): 155-162, 2020. <https://doi.org/10.1080/07315724.2019.1621229>
17. Shoemaker ME, **Gillen ZM**, McKay BD, Leutzinger TJ, Mustad VA, Cramer JT. Endogenous versus exogenous carbohydrate oxidation measured by stable isotopes in pre-pubescent children plus ¹³C abundances in foods consumed three days prior. *Metabolism Open*, 7, 2020. <https://doi.org/10.1016/j.metop.2020.100041>
18. Shoemaker ME, **Gillen ZM**, McKay BD, Fisher JA, Hansen C, Bohannon NA, Gibson SM, Koehler K, Cramer JT. Effects of sports nutrition education on athletic performance and iron status in high school-aged youth athletes. *Journal of Clinical Nutrition and Food Science*, 2(2): 010-018, 2019.
19. **Gillen ZM**, Jahn LE, Shoemaker ME, McKay BD, Mendez AI, Bohannon NA, Cramer JT. Effects of eccentric preloading on concentric vertical jump performance in youth athletes. *Journal of Applied Biomechanics*, 35(5): 327-335, 2019. <https://doi.org/10.1123/jab.2018-0340>
20. Shoemaker ME, **Gillen ZM**, McKay BD, Bohannon NA, Gibson SM, Cramer JT. Sex-specific relationships among iron status biomarkers, athletic performance, maturity, and dietary intakes in pre-adolescent and adolescent athletes. *Journal of the International Society of Sports Nutrition*, 16(1): 42, 2019. <https://doi.org/10.1186/s12970-019-0306-7>
21. **Gillen ZM**, Shoemaker ME, McKay BD, Bohannon NA, Gibson SM, Cramer JT. Muscle strength, size, and neuromuscular function before and during adolescence. *European Journal of Applied Physiology*, 119(7): 1619-1632, 2019. <https://doi.org/10.1007/s00421-019-04151-4>
22. **Gillen ZM**, Shoemaker ME, McKay BD, Cramer JT. Performance differences between National Football League and high school American football combine participants. *Research Quarterly for Exercise and Sport*, 22: 1-7, 2019. <https://doi.org/10.1080/02701367.2019.1571679>

23. **Gillen ZM**, Shoemaker ME, McKay BD, Cramer JT. State population influences athletic performance combine test scores in high school-aged American football players. *International Journal of Exercise Science*, 12(6): 256-262, 2019. PMID: 30761209
24. Mendez AI, Miramonti AA, **Gillen ZM**, McKay BD, Leutzinger TJ, Cramer JT. Stature, body mass, and BMI in high school American football players: Appropriate determinants of obesity prevalence? *Journal of Strength and Conditioning Research*, 32(11): 3119-3126, 2018. <https://doi.org/10.1519/JSC.0000000000002347>
25. **Gillen ZM**, Miramonti AA, McKay BD, Leutzinger TJ, Cramer JT. Test-retest reliability and concurrent validity of athletic performance combine tests in 6-15-year old male athletes. *Journal of Strength and Conditioning Research*, 32(10): 2783-2794, 2018. <https://doi.org/10.1519/JSC.0000000000002498>
26. Leutzinger TJ, **Gillen ZM**, Miramonti AA, McKay BD, Mendez AI, Cramer JT. Anthropometric and athletic performance combine test results among positions within grade levels of high school-aged American football players. *Journal of Strength and Conditioning Research*, 32(5): 1288-1296, 2018. <https://doi.org/10.1519/JSC.0000000000002481>
27. **Gillen ZM**, Miramonti AA, McKay BD, Jenkins NDM, Leutzinger TJ, Cramer JT. Reliability and sensitivity of the power push-up test for upper-body strength and power in 6-15-year old male athletes. *Journal of Strength and Conditioning Research*, 32(1): 83-96, 2018. <https://doi.org/10.1519/JSC.0000000000002313>
28. **Gillen ZM**, Wyatt FB, Winchester JB, Smith DA, Ghetia V. The relationship between aerobic and anaerobic performance in recreational runners. *International Journal of Exercise Science*, 9(5): 625-634, 2016. PMID: 27990224

In-Review

1. Bello ML, **Gillen ZM**, Smith JW. Changes in muscular strength following 9 weeks of high- or low-load resistance training. *European Journal of Applied Physiology*, May 2022.
2. Blocker A, Brown C, Ewing M, Lowell RK, **Gillen ZM**, Ball JE, Burch RF, Chander H, Freeman C, Strawderman L, Martin J. The use of wearable technology to improve warfighter training. *Bioengineering*, January 2022.
3. **Gillen ZM**, Housh TJ, Schmidt RJ, Herda TJ, De Ayala RJ, Shoemaker ME, Cramer JT. Differences in neuromuscular responses during isometric muscle actions before and after pubescence. *Journal of Science in Sport and Exercise*, November 2021.
4. Shoemaker ME, Smith CM, **Gillen ZM**, Cramer JT. Sex differences in test-retest reliability of near-infrared spectroscopy during post-occlusive reactive hyperemia of the vastus lateralis. *Journal of Strength and Conditioning Research*, October 2021.

In-Preparation

1. **Gillen ZM.** The effects of an 8-week strength and conditioning offseason program on countermovement jump performance in NCAA Division I American football players.
2. **Gillen ZM.** The effects of an 8-week strength and conditioning offseason program on drop and plyometric jump performance in NCAA Division I American football players.
3. **Gillen ZM.** Position-specific normative reference values for National Football League combine participants.
4. **Gillen ZM.** The effects of 12-weeks of isokinetic training at three velocities on lower limb performance and size: A case study.

BOOK CHAPTERS

Published/In-Press

1. Smith JW, **Gillen ZM.** Chapter 25, Performance Fitness. *Fundamentals of Kinesiology, 3rd Edition.* Brown SP (Editor). Kendall Hunt Publishing, 2021.
2. **Gillen ZM.** Chapter 26, Strength and Conditioning Coaching. *Fundamentals of Kinesiology, 3rd Edition.* Brown SP (Editor). Kendall Hunt Publishing, 2021.

In-Preparation

1. **Gillen ZM.** Muscle Physiology. Exercise Physiology Lab Manual.

CONFERENCE PROCEEDINGS AND PRESENTATIONS

* *Indicates senior/corresponding author*

Published/In-Press

1. Luczak T, Freeman C, Burch R, Saucier D, Chander H, Ball J, Parker E, Middleton C, Strawderman L, Mohammadi-Aragh J, **Gillen Z**, Smith B, Jones JA, Duclos M, Taquino M, Grice S. Athlete Engineering BaseLine Ecosystem: innovative technologies to enhance human performance. Accepted for presentation at the TechConnect World Innovation Conference & Expo. June 2022.
2. Lowell RK, Johnson DH, **Gillen ZM***. Calculating power production from 40-yd dash, vertical jump, and broad jump NFL combine scores to examine position group differences. Accepted for presentation at the National Strength & Conditioning Association National Meeting in New Orleans, LA. February 2022.
3. Shoemaker ME, Pereira SL, Mustad VA, **Gillen ZM**, McKay BD, Lopez-Pedrosa-JM, Rueda R, Cramer JT. Substrate energy expenditure and muscle tissue oxygenation responses to steady-state aerobic exercise in sarcopenic and non-sarcopenic older adults. Accepted for presentation at the National Strength & Conditioning Association National Meeting in New Orleans, LA. February 2022.

4. Anglin DA, Bellow ML, **Gillen ZM**, Smith JW. Changes in muscular strength following nine weeks of high- vs. low-load training. Accepted for presentation at the National Strength & Conditioning Association National Meeting in New Orleans, LA. February 2022.
5. Bello ML, **Gillen ZM**, Smith JW. Differences in muscle usage using internal/external load over 9 weeks of resistance training. Accepted for presentation at the National Strength & Conditioning Association National Meeting in New Orleans, LA. February 2022.
6. **Gillen ZM**, Shoemaker ME, Cramer JT. Comparisons of torque, power, and rate of velocity development during isokinetic muscle actions in pre- versus post-pubescent males and females. Presented at the National Strength and Conditioning Association National Conference as a Poster presentation. July 2021.
7. Shoemaker ME, Pereira SL, Mustad VA, **Gillen ZM**, McKay BD, Lopez-Pedrosa JM, Rueda R, Cramer JT. Muscle tissue oxygenation and muscle blood flow responses to fatiguing leg extension exercise in sarcopenic and non-sarcopenic older adults. Presented at the National Strength and Conditioning Association National Conference as a Poster presentation. July 2021.
8. Bello ML, Anglin DA, Joseph HA, **Gillen ZM**, Smith JW. Changes in body composition, muscle thickness, and strength following 9 weeks of high- or low-load resistance training. Presented at the Annual International Society for Sports Nutrition Conference. June 2021.
9. Shoemaker ME, Mustad VA, Pereira SL, **Gillen ZM**, McKay BD, Lopez-Pedrosa JM, Rueda R, Cramer JT. Metabolic differences during submaximal, steady-state aerobic exercise between sarcopenic and non-sarcopenic older adults. Presented at the Annual Nutrition Science Meeting as a Poster presentation. February 2021. *Current Developments in Nutrition*, 5(Supplement_2): 524, 2021.
10. Bello ML, Anglin DA, **Gillen ZM**, Shepherd BD, Smith JW. Comparison of wearable technology at quantifying power/muscle load of endurance runners against varying wind resistance. Presented at the Annual Meeting of the Southeast Chapter of the American College of Sports Medicine as a Poster presentation. February 2021. Also presented at the Annual Meeting of the American College of Sports Medicine. June 2021. *Medicine and Science in Sports & Exercise*, 53(8S): 32. *In person meeting cancelled due to COVID-19.
11. Shoemaker ME, Pereira SL, Mustad VA, **Gillen ZM**, McKay BD, Lopez-Pedrosa JM, Rueda R, Cramer JT. Pre- and post-prandial impairment in muscle blood flow and oxygenation with near-infrared spectroscopy in sarcopenic compared to non-sarcopenic older adults. Presented at the Sports, Cardiovascular and Wellness

Nutrition Symposium. March 2021. **In person symposium cancelled due to COVID-19.*

12. **Gillen ZM**, Shoemaker ME, Bohannon NA, Gibson SM, Cramer JT. Comparisons of torque, power, and neuromuscular function during isokinetic muscle actions in children versus adolescents. Presented at the National Strength and Conditioning Association National Conference as a Poster presentation. July 2020. *Journal of Strength and Conditioning Research*, 35(4): e20-e21. **In person meeting cancelled due to COVID-19.*
13. Shoemaker ME, **Gillen ZM**, Bohannon NA, Gibson SM, Cramer JT. Vastus lateralis muscle oxygenation measured by near-infrared spectroscopy during voluntary isometric leg extension muscle actions. Presented at the National Strength and Conditioning Association National Conference as a Poster presentation. July 2020. *Journal of Strength and Conditioning Research*, 35(4): e9. **In person meeting cancelled due to COVID-19.*
14. **Gillen ZM**, Shoemaker ME, Bohannon NA, Gibson SM, Cramer JT. Strength and power as indicators of differences in fiber type contributions in children and adolescents. Presented at the Annual Meeting of the American College of Sports Medicine in as a Thematic Poster presentation. May 2020. *Medicine and Science in Sports and Exercise*, 52(5): S196, 2020. **In person meeting cancelled due to COVID-19.*
15. Shoemaker ME, **Gillen ZM**, Bohannon NA, Gibson SM, Cramer JT. Vastus lateralis muscle oxygenation measured by near-infrared spectroscopy during voluntary isometric leg extension muscle actions. Presented at the Annual Meeting of the American College of Sports Medicine in as a Thematic Poster presentation. May 2020. *Medicine and Science in Sports and Exercise*, 52(5): S123, 2020. **In person meeting cancelled due to COVID-19.*
16. Bohannon NA, **Gillen ZM**, Shoemaker ME, Gibson SM, Cramer JT. Effects of eccentric pre-loading on vertical jump performance in 9-17-year-old female athletes. Presented at the Annual Meeting of the American College of Sports Medicine in as a Poster presentation. May 2020. *Medicine and Science in Sports and Exercise*, 52(5): S197, 2020. **In person meeting cancelled due to COVID-19.*
17. Mustad VA, Pereira SL, Lopez JM, Rueda R, **Gillen ZM**, Shoemaker ME, Cramer JT. Impaired metabolic flexibility in sarcopenic men and women. Presented at the International Conference on Frailty & Sarcopenia Research Meeting in Toulouse, France, as a Poster presentation. March 2020. **In person conference cancelled due to COVID-19.*
18. **Gillen ZM**, Shoemaker ME, McKay BD, Bohannon NA, Gibson SM, Cramer JT. Peak torque, but not rate of torque development, explains unique variability in growth measurements in boys and girls. Presented at the National Strength & Conditioning Association National Conference in Washington D.C., as a Poster presentation. July 2019. *Journal of Strength and Conditioning Research*, 34(1): e162-e163.

19. Shoemaker ME, **Gillen ZM**, McKay BD, Bohannon NA, Gibson SM, Cramer JT. Vertical jump power differences in male and female high school athletes can be accounted for by height and muscle-mass related variables. Presented at the National Strength & Conditioning Association National Conference in Washington D.C., as a Poster presentation. July 2019. *Journal of Strength and Conditioning Research*, 34(1): e66-e67.
20. Shoemaker ME, **Gillen ZM**, McKay BD, Bohannon NA, Mendez AI, Cramer JT. Effects of an online sports nutrition curriculum on biomarkers of iron status in youth athletes. Presented at the Annual Meeting of the American College of Sports Medicine in Orlando, FL, as a Thematic Poster presentation. June 2019. *Medicine and Science in Sports and Exercise*, 49(5): S702, 2019.
21. **Gillen ZM**, Shoemaker ME, McKay BD, Bohannon NA, Mendez AI, Jahn LE, Cramer JT. Effects of arm swing and overhead target on vertical jump performance in children and adolescents. Presented at the Annual Meeting of the American College of Sports Medicine in Orlando, FL, as a Thematic Poster presentation. May 2019. *Medicine and Science in Sports and Exercise*, 49(5): S482, 2019.
22. Shoemaker ME, **Gillen ZM**, McKay BD, Bohannon NA, Gibson SM, Cramer JT. Does online sports nutrition education improve athletic performance in high school athletes? Presented at the Annual Symposium of Sports, Cardiovascular, and Wellness Nutrition (SCAN) in Phoenix, AZ, as a Poster presentation. April 2019.
23. Bohannon NA, Gibson SM, **Gillen ZM**, Shoemaker ME, McKay BD, Cramer JT. Test-retest reliability of static and counter-movement power push-ups in young male athletes. Presented at the University of Nebraska-Lincoln Spring Research Fair in Lincoln, NE, as a Poster presentation. April 2019.
24. Shoemaker ME, **Gillen ZM**, McKay BD, Koehler K, Cramer JT. Iron status in adolescent athletes: Influences of gender and sport. Presented at the National Strength and Conditioning Association National Conference in Indianapolis, IN, as a Poster presentation. July 2018. *Journal of Strength and Conditioning Research*, 33(2): e183-e185, 2019.
25. **Gillen ZM**, Shoemaker ME, McKay BD, Cramer JT. Magnitudes of differences between high school and professional American football recruiting combine scores. Presented at the National Strength and Conditioning Association National Conference in Indianapolis, IN, as a Poster presentation. July 2018. *Journal of Strength and Conditioning Research*, 33(2): e173, 2019.
26. McKay BD, **Gillen ZM**, Shoemaker ME, Cramer JT. Determining the relationships among maturity offset and sprint performance in young female soccer athletes. Presented at the National Strength and Conditioning Association National Conference in Indianapolis, IN, as a Podium presentation. July 2018. *Journal of Strength and Conditioning Research*, 33(2): e120, 2019.

27. Bohannon NA, **Gillen ZM**, Mendez AI, Jahn LE, McKay BD, Shoemaker ME, Cramer JT. Can smartphone accelerometers be used to calculate power and force during a power push-up exercise? Presented at the University of Nebraska-Lincoln Summer Research Symposium in Lincoln, NE, as a Poster presentation. August 2018.
28. Mendez AI, Bohannon NA, **Gillen ZM**, Jahn LE, McKay BD, Shoemaker ME, Cramer JT. Comparison of smartphone accelerometer with force plates for use with vertical jump. Presented at the University of Nebraska-Lincoln Spring Research Fair in Lincoln, NE, as a Poster presentation. April 2018.
29. Miramonti AA, **Gillen ZM**, McKay BD, Leutzinger TJ, Mendez AI, Cramer JT. Competitive youth soccer participation improves sprint and broad jump performance. Presented at the National Strength & Conditioning Association National Conference in Las Vegas, NV, as a Poster presentation. July 2017. *Journal of Strength and Conditioning Research*, 31(1): S224-S225, 2017.
30. McKay BD, Herda AA, Stout JR, Miramonti AM, **Gillen ZM**, Cramer JT. Specific adaptations in older men and women performing exercises with self-selected intensities. Presented at the National Strength & Conditioning Association National Conference in Las Vegas, NV, as a Poster presentation. July 2017. *Journal of Strength and Conditioning Research*, 31(1): S209-S210, 2017.
31. **Gillen ZM**, Miramonti AA, McKay BD, Leutzinger TJ, Cramer JT. Age-related differences in agility drill performances among youth athletes: Influences of growth and development. Presented at the National Strength & Conditioning Association National Conference in Las Vegas, NV, as a Thematic Poster presentation. July 2017. *Journal of Strength and Conditioning Research*, 31(1): S159, 2017.
32. McKay BD, Cramer JT, Miramonti AA, Jenkins NDM, **Gillen ZM**, Leutzinger TJ. Test-retest reliability of the 40-yd dash and vertical jump assessments in youth athletes. Presented at the Annual Meeting of the American College of Sports Medicine in Denver, CO, as a Poster presentation. June 2017. *Medicine & Science in Sports & Exercise*. 49(5S): 1082, 2017.
33. **Gillen ZM**, Cramer JT, Miramonti AA, Jenkins NDM, McKay BD, Leutzinger TJ. Power push-up tests performed from the knees and toes in young male athletes. Presented at the University of Nebraska-Lincoln Spring Research Fair, Lincoln, NE. April 2017. Also presented at the Annual Meeting of the American College of Sports Medicine in Denver, CO, as a Poster presentation. June 2017. *Medicine & Science in Sports & Exercise*, 49(5S): 758, 2017.
34. Miramonti AA, Cramer JT, Jenkins NDM, **Gillen ZM**, McKay BD, Leutzinger TJ. Effects of speed and agility training on combine performance in young male athletes. Presented at the University of Nebraska-Lincoln Spring Research Fair in Lincoln, NE, as a Poster presentation. April 2017. Also presented at the Annual Meeting of the American

College of Sports Medicine in Denver, CO, as a Poster presentation. June 2017. *Medicine & Science in Sports & Exercise*, 49(5S): 968, 2017.

35. Leutzinger TJ, **Gillen ZM**, Miramonti AA, McKay BD, Mendez AI, Cramer JT. Athletic performance combine test results among high school American football players. Presented at the University of Nebraska-Lincoln Spring Research Fair in Lincoln, NE, as a Poster presentation. April 2017.
36. Mendez AI, Miramonti AA, **Gillen ZM**, McKay BD, Leutzinger TL, Cramer JT. Obesity prevalence in high school American football players. Presented at the University of Nebraska-Lincoln Spring Research Fair in Lincoln, NE, as a Poster presentation. April 2017.
37. **Gillen ZM**, Smith DA, Ghetia V, Wyatt FB. Neuromuscular recruitment in endurance runners should be improved with explosive-strength training. Presented at the Annual Meeting of the Texas Chapter of the American College of Sports Medicine in Austin, TX, as a Poster presentation. February 2015. Also presented at the Midwestern State University Celebration of Scholarship in Wichita Falls, TX, as a Poster presentation. April 2015. *International Journal of Exercise Science*, 2(7): 53, 2015.

LAY ARTICLES, INTERVIEWS, AND APPEARANCES

1. **Gillen ZM**. What are muscle knots? An exercise physiologist explains what those tight little lumps are and how to get rid of them. *The Conversation*, August 4, 2022. <https://theconversation.com/what-are-muscle-knots-an-exercise-physiologist-explains-what-those-tight-little-lumps-are-and-how-to-get-rid-of-them-184917>
2. **Gillen ZM**. What happens when your foot falls asleep? *The Conversation*, September 13, 2021. <https://theconversation.com/what-happens-when-your-foot-falls-asleep-164655>
3. Why do kids have more energy than adults? *Brains On! Science podcast for kids*, June 30, 2020. <https://www.brainson.org/episode/2020/06/30/why-do-kids-have-more-energy-than-adults>

INVITED PRESENTATIONS / TALKS / LECTURES

1. **Gillen ZM**. *Long-term athletic development: Considerations of growth and development*, National Strength & Conditioning Association Mississippi State Clinic, Starkville, MS. September 2020.
2. **Gillen ZM**, Keller JK, Byrd T. *Let's play jeopardy with nutritional supplements*, GNC Sponsored Symposium at the National Strength & Conditioning Association National Conference, Indianapolis, IN. July 2018.
3. **Gillen ZM**. *The relationship between aerobic and anaerobic performance in recreational runners*, at the National Conference of the American Society of Exercise Physiologists, Charlotte, NC. October 2014.

RESEARCH GRANTS AND FUNDING

Research Funding			
	<i>Applied</i>	<i>Acquired</i>	<i>In-Review</i>
<i>External Funding</i>	\$2,904,665.45 (\$1,878,373.45 since 2020)	\$1,394,633.45 (\$786,005.45 since 2020)	\$419,446
<i>Internal Funding</i>	-	-	-
<i>Total</i>	\$2,904,665.45 (\$1,878,373.45 since 2020)	\$1,394,633.45 (\$786,005.45 since 2020)	\$419,446

EXTERNAL FUNDING

Acquired

1. Burch RF, Principal Investigator, Ball JE, Chander H, Knight AC, **Gillen ZM, Co-Investigator**, Seitz H, Smith BK, Strawderman L, Wang J, To F, Freeman CE, Panse C, McCubbins AC, Gurbuz AC, Mohammadi-Aragh J. National Science Foundation (NSF), Alexandria, VA. January 2022. \$550,445 requested – \$770,000 awarded.
MRI: Acquisition of Biomechanical Movement and Body Volumetric Baseline Technology Suite for Motion Capture Improvement and Sensor-based Validation of Lower Body Characteristics
2. Smith JW, Principal Investigator, Bello ML, **Gillen ZM, Co-Investigator**. Strive™, Bothell, WA. November 2020 – August 2022. \$1,455 requested – \$1,455 awarded. Cost extension \$1,238.10 requested - \$1,230.10 awarded. Total award \$2,693.10.
Impacts of high vs. low load resistance training on measures of muscle activation, strength, body composition, cortisol, and testosterone
3. Smith JW, Principal Investigator, **Gillen ZM, Co-Investigator**, Bello ML. Strive™, Bothell, WA. November 2020 – August 2022. \$13,312.35 donation of technology shorts and salivary analysis kits.
Impacts of high vs. low load resistance training on measures of muscle activation, strength, body composition, cortisol, and testosterone
4. **Gillen ZM, Principal Investigator**, Cramer JT, Faculty Mentor. National Strength and Conditioning Association Foundation (NSCAF) Doctoral Research Grant, Colorado Springs, CO. June 2019 – April 2020. \$12,600 requested – \$12,600 awarded.
Muscle strength, size, and neuromuscular function in pre-pubescent and post-pubescent boys and girls.
5. Cramer JT, Principal Investigator, Shoemaker ME, **Gillen ZM**. National Cattleman’s Beef Association (NCBA), Denver, CO. April 2019 – August 2019. \$15,800 requested – \$15,800 awarded.
Will beef help our children grow healthy and strong? Impacts of beef consumption on the convergence among health, growth, and physical performance in children and adolescents.

6. Cramer JT, Principal Investigator, Shoemaker ME, **Gillen, ZM**. Nebraska Beef Council (NBC), Kearney, NE. October 2018 – December 2019. \$35,981 requested – *\$35,981 awarded*.
Will beef make your child a better athlete? Disseminating the research on the relationships between iron status and athletic performance in young Nebraska athletes.
7. Cramer JT, Principal Investigator, McKay BD, **Gillen ZM**, Shoemaker ME. Abbott Nutrition, Columbus, OH. July 2018 – August 2019. \$212,032 requested – *\$212,032 awarded*. NCT03701867
BL39 A pilot study to explore muscle energy metabolism and metabolic flexibility in older men and women.
8. Cramer JT, Principal Investigator, Koehler K, Fischer JA, **Gillen ZM, Study Coordinator**, Miramonti AA, McKay BD. Abbott Nutrition, Columbus, OH. April 2017 – April 2018. \$225,215 requested – *\$225,215 awarded; \$110,000 cost-share budget addendum; \$332,215 total*. NCT03185884
AL25: Proof of concept study: Carbohydrates and children

Not Funded

1. **Gillen ZM**, Principal Investigator, Saucier D, Johnson J. May 2022. \$42,778 requested – *not funded*.
Exploring different strength and movement mechanisms that effect women’s softball pitchers’ performance and risk of injury.
2. Burch RF, Principal Investigator, Saucier D, Shelly Z, **Gillen ZM, Co-Investigator**, Lowell RK. De Luca Foundation, Natick, MA. October 2021. Project pitch submitted – *not funded*.
Asymmetry analysis for jump tests correlated between lab sEMG, wearable sEMG, IMUs, and force plates
3. **Gillen ZM, Principal Investigator**, Lamberth JG, Luczak T, McCubbins OP, Jones JA, Smith LK. National Science Foundation (NSF), Alexandria, VA. October 2021. \$849,699 requested – *not funded*.
Understanding the social, cognitive, and learning aspects of using a digital co-creation and collaborative education platform: Teaching and Learning in the Metaverse (TLM), an exploratory study.
4. **Gillen ZM, Principal Investigator**, Smith JW, Chander H, Knight AC, Burch V, RF. National Football League Scientific Advisory Board, New York, NY. November 2020. Pre-Proposal submitted – *not funded*.
Real-time assessments of hamstrings and quadriceps function using Strive™ Sense3: A multidisciplinary study

5. **Gillen ZM, Principal Investigator**, Cramer JT, Faculty Mentor. National Strength and Conditioning Association Foundation (NSCAF) Doctoral Research Grant, Colorado Springs, CO. June 2017 – May 2018. \$12,450 requested – *not funded*.
Youth combine testing.

6. Cramer JT, Principal Investigator, Koehler K, Fischer JA, Miramonti AA, **Gillen ZM**; McKay BD. United States Department of Agriculture (USDA), National Institute for Food and Agriculture (NIFA), Multistate Hatch Project. October 2017 – September 2021. \$396,472 requested – *not funded*.
NC1196 Physical activity to improve health and obesity risk in Nebraska's children and youth: objective physical activity measurement strategies in afterschool programs and childcare settings.

7. **Gillen ZM, Principal Investigator**, Cramer JT, Faculty Mentor. American College of Sports Medicine Foundation (ACSMF) Paffenbarger-Blair Fund for Epidemiological Research on Physical Activity, Indianapolis, IN. June 2017 – May 2018. \$8,742 requested – *not funded*.
Are afterschool programs an opportunity for physical activity? Direct, 7-day, continuous measurements of physical activity in a diverse sample of adolescent students engaged in a community learning center afterschool program.

In-Review

1. Strawderman L, Principal Investigator, Burch RF, Smith BK, Mohammadi-Aragh J, Chander H, **Gillen ZM, Faculty Research Mentor**, Freeman CE, Seitz H. National Science Foundation (NSF), Alexandria, VA. August 2022. \$404,166 requested. March 2023 – March 2026.
REU: Occupational User Technology: Student-Honed Interdisciplinary Experiences (OUTSHINE).

2. Burch RF, Principal Investigator, Saucier D, Chander H, **Gillen ZM, Co-Investigator**. Strive Technology, Bothell, WA. March 2022. \$15,280 requested.
STRIVE EMG Research Plan 2022-2023

MENTORSHIP / ADVISING

Current Student Advisor and Committee Service	
<i>Graduate – Doctoral (Ph.D.)</i>	Graduate Level 1 Faculty Chair: 1 Student Committee Member: 1 Student
<i>Graduate – Masters (MS)</i>	Graduate Level 1 Faculty Chair: 1 Student Committee Member: 7 Students
<i>Undergraduate – Bachelors (BS)</i>	Internship Advisor: 1 Student Advisor: 59 Students

Doctoral Student Committees

1. Lowell RK (2021-Current). Dissertation Topic Undecided. Committee members: **Gillen ZM (Chair)**, Knight AC, Chander H, Smith JW, Burch RF.
2. Bello ML (2020-Current). Dissertation: *Impacts of high- vs. low-load resistance training on measures of muscle activation, strength, body composition, cortisol, and testosterone*. Committee members: Smith JW (Chair), Arent SM, Wax B, **Gillen ZM**, Brown SP, Fountain BJ.

Masters Student Committees

1. Johnson DJ (2022-Current). Thesis Topic Undecided. Committee members: **Gillen ZM**, Smith JW, Knight AC.
2. Smith BW (2021-Current). Non-thesis – Comprehensive Exam. Committee members: Smith JW, **Gillen ZM**, Chander H.
3. Lawrence BD (2020-2022). Non-thesis – Comprehensive Exam. Committee members: Knight AC, Chander H, **Gillen ZM**.
4. Derby HC (2020-2021). Non-thesis – Directed Individual Study. Committee members: Knight AC (Chair), Chander H, **Gillen ZM**.
5. Small K (2020-2021). Non-thesis – Comprehensive Exam. Committee members: Knight AC (Chair), **Gillen ZM**, Smith JW.
6. Dean MA (2020-2022). Non-thesis – Comprehensive Exam. Committee members: Zimmerman MH (Chair), Knight AC, Lee Y, **Gillen ZM**.
7. Kemp JM (2020-2022). Non-thesis – Comprehensive Exam. Committee members: Knight AC (Chair), Chander H, **Gillen ZM**.
8. Graddy SR (2019-2021, Graduated). Non-thesis – Directed Individual Study: *Comparing torque- and power-velocity relationships among men and women during isokinetic knee flexions and extensions*. Committee members: Lamberth JG (Chair), **Gillen ZM**, Smith JW.

Undergraduate Students (Internship in Laboratory)

1. Dallas J. Johnson (2022)

EXTERNAL REVIEWS

American Journal of Physiology

Appetite

Biology

BMC Sports Science, Medicine and Rehabilitation

Clinical Nutrition

Clinical Physiology and Functional Imaging

International Journal of Environmental Research and Public Health
International Journal of Exercise Science
European Journal of Pediatrics
Experimental Physiology
Journal of Applied Biomechanics
Journal of Athletic Training
Journal of the Academy of Nutrition and Dietetics
Journal of Science and Medicine in Sport
Journal of Sports Sciences
Journal of Strength and Conditioning Research
Medicine and Science in Sports and Exercise
Metabolism Open
Pediatric Exercise Science
Perceptual and Motor Skills
PLoS One
Research Quarterly for Exercise and Sport
Sports Medicine
Translational Neuroscience
Translational Sports Medicine