

**Kyle J. Hackney, PhD, CSCS**  
North Dakota State University  
Health, Nutrition, & Exercise Sciences  
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## **Education**

PhD, Syracuse University (2013)  
Concentration: Exercise Science and Science Education

MEd, Wayne State University (2005)  
Concentration: Exercise Physiology

BA, Hope College (2003)  
Majors: Exercise Science and Psychology

## **Professional Positions**

**Assistant Professor** (2013 - Present)  
North Dakota State University, Department of Health, Nutrition, and Exercise Sciences  
Fargo, ND

**Exercise Physiologist** (2011 - 2013)  
Wyle Science, Technology and Engineering Group, Exercise Physiology & Countermeasures Project, Contractor for National Aeronautics & Space Administration (NASA) Lyndon B. Johnson Space Center  
Houston, TX

**NASA-Graduate Student Research Program Student Fellow** (2008 - 2011)  
Syracuse University/NASA Johnson Space Center  
Syracuse, NY/Houston, TX

**Graduate Research and Teaching Assistant** (2007 - 2008)  
Syracuse University  
Syracuse, NY

**Graduate Teaching Assistant** (2005 - 2007)  
Michigan State University  
East Lansing, MI

**Graduate Teaching Assistant** (2003 - 2005)  
Wayne State University  
Detroit, MI

## **Certifications**

Certified KAATSU Specialist, KAATSU Global (2016 - Present)  
Bone Densitometer EnCORE Certification, GE/Alpha Source (2016 - Present)  
Certified Strength and Conditioning Specialist, NSCA (2003 - Present)

## **TEACHING**

### **North Dakota State University (2013 - Present)**

#### Undergraduate

HNES 365: Kinesiology  
HNES 374: Methods of Resistance Training and Cardiovascular Conditioning

#### Graduate

HNES 713: Graduate Exercise Physiology  
HNES 760: Skeletal Muscle Physiology  
HNES 791: Exercise Endocrinology  
HNES 793: Individual Study  
HNES 794: Practicum/Internship  
HNES 798: Master's Thesis

### **Syracuse University (2007 - 2008)**

#### Undergraduate

PPE 685: System Physiology Lab

### **Michigan State University (2005 - 2007)**

#### Undergraduate

KIN 490: Independent Study  
KIN 411: Exercise Physiology Laboratory  
KIN 310: Physiology of Physical Activity  
KIN 217: Applied Human Anatomy Laboratory  
KIN 121: Healthy Lifestyle  
KIN 103R: Weight Training I  
KIN 118A: Basketball II  
KIN 108A: Basketball I  
KIN 106C: Bowling I  
KIN 103D: General Conditioning

### **Wayne State University (2003 - 2005)**

#### Undergraduate

KIN-3570: Physiology of Exercise I- Laboratory  
KIN-2010: Physiological and Psychological Foundations of Physical Activity  
LFA-1530: Basketball Fundamental Skills  
LFA-1540: Basketball Shooting and Strategy  
LFA-1520: Weightlifting and Training

## RESEARCH AND CREATIVE ACTIVITIES

### Journal Articles in Submission

**Hackney K.**, Brown, W. J., Stone, K., & Tennent, D. (In review). Blood flow restricted exercise and aging: Mitigating sarcopenia and enhancing clinical recovery (Invited Review). *Journal of Techniques in Orthopaedics*.

Andrew T., Kotarsky, C., Bond, C., & **Hackney, K.** (In revisions). Occupational specific strength predicts astronaut-related task performance. *Aerospace Medicine and Human Performance*.

Kotarsky, C. J., Christensen, B. K., Miller, J. S., & **Hackney, K.** (In revisions). Effect of progressive callisthenic push-up training on muscle strength and thickness. *Journal of Strength & Conditioning Research*.

### Published Journal Articles

Scott, J., Martin, D., Ploutz-Snyder, R., Matz, T., Caine, T., Downs, M., **Hackney, K.**, Buxton, R., Ryder, J., & Ploutz-Snyder, L. (2017). Panoramic ultrasound: A novel and valid tool for monitoring change in muscle mass. *Journal of Cachexia, Sarcopenia, and Muscle*, 1-7.

**Hackney, K.**, Olson, B. M., Schmidt, A. J., Nelson, A. H., & Zacharias, E. L. (2016). Acute muscular, metabolic, cardiovascular, and perceptual responses to low cuff pressure-small cuff width blood flow restricted exercise prescription. *Journal of Novel Physiotherapies*, 6(4), 1-6.

**Hackney, K.**, Downs, M. E., & Ploutz-Snyder, L. L. (2016). Blood flow restricted exercise compared to high load resistance exercise during unloading. *Aerospace Medicine and Human Performance*, 87(8), 688-696.

**Hackney, K.**, Scott, J. M., Hanson, A. M., English, K. L., Downs, M. E., & Ploutz-Snyder, L. L. (2015). The astronaut-athlete: Optimizing human performance in space. *The Journal of Strength & Conditioning Research*, 29(12), 3531–3545.

Downs, M. E., **Hackney, K.**, Martin, D., Caine, T. L., Cunningham, D., O'Connor, D. P., & Ploutz-Snyder, L. L. (2014). Acute vascular and cardiovascular responses to blood flow-restricted exercise. *Medicine & Science in Sports & Exercise*, 46(8), 1489–1497.

Ploutz-Snyder, L. L., Downs, M., Ryder, J., **Hackney, K.**, Scott, J., Buxton, R., Goetchius, E., & Crowell, B. (2014). Integrated resistance and aerobic exercise protects fitness during bed rest. *Medicine & Science in Sports & Exercise*, 46(2), 358–368.

**Hackney, K.** & English, K. L. (2014). Protein and essential amino acids to protect musculoskeletal health during spaceflight: Evidence of a paradox? *Life: Special Issue "Response of Terrestrial Life to Space Conditions"*, 4(3), 295–317.

Scott, J. M., **Hackney, K.**, Downs, M., Guined, J., Ploutz-Snyder, R., Fiedler, J., Cunningham, D., & Ploutz-Snyder, L. (2014). The metabolic cost of an integrated resistance, interval, and aerobic exercise program during 2 wk of bed rest. *Aviation, Space, and Environmental Medicine*, 85(6), 612–617.

English, K. L., **Hackney, K.**, Redd, E., De Witt, J. K., Ploutz-Snyder, R., & Ploutz-Snyder (2013). A ground-based comparison of the muscle atrophy research and exercise system (MARES) and a standard isokinetic dynamometer. *Acta Astronautica*, 92(1), 3-9.

**Hackney, K.**, Kelleher, A. R., & Ploutz-Snyder, L. L. (2013). Amino acid-carbohydrate intake combined with multiple bouts of resistance exercise increases resting energy expenditure. *ISRN nutrition*, 2013. <http://dx.doi.org/10.5402/2013/948695>

Ryder, J. W., Buxton, R. E., Goetchius, E., Scott-Pandorf, M., **Hackney, K.**, Fiedler, J., Ploutz-Snyder, R. J., Bloomberg, J. J., & Ploutz-Snyder, L. L. (2013). Influence of muscle strength to weight ratio on functional task performance. *European Journal of Applied Physiology*, 113(4), 911–921.

**Hackney, K.**, Everett, M., Scott, J. M., & Ploutz-Snyder, L. (2012). Blood flow restricted exercise in space. *Extreme Physiology & Medicine*, 1(1), 12.

**Hackney, K.**, Cook, S. B., Fairchild, T., & Ploutz-Snyder, L. L. (2012). Skeletal muscle volume following dehydration induced by exercise and heat. *Extreme Physiology & Medicine*, 1(1), 1-3.

**Hackney, K.** & Ploutz-Snyder, L. (2012). Unilateral lower limb suspension: Integrative physiological knowledge from the past 20 years (1991–2011). *European Journal of Applied Physiology*, 112(1), 9–22.

**Hackney, K.**, Cook, S. B., & Ploutz-Snyder, L. L. (2011). Nutrition and resistance exercise during reconditioning from unloading. *Aviation, Space, and Environmental Medicine*, 82(8), 805–809.

**Hackney, K.**, Kelleher, A. R., Fairchild, T. J., Keslay, S., & Ploutz-Snyder, L. L. (2010). The metabolic cost of reciprocal supersets vs. traditional resistance training in young, active males. *Journal of Strength and Conditioning Research*, 24(4), 1043-1051.

**Hackney, K.**, Bruenger, A. J., & Lemmer, J. T. (2010). Timing protein intake increases energy expenditure 24 h after resistance training. *Medicine & Science in Sports & Exercise*, 42(5), 998–1003.

**Hackney, K.**, Engels, H.J., & Gretebeck, R. J. (2008). Resting energy expenditure and delayed-onset muscle soreness after full-body resistance training with an eccentric concentration. *The Journal of Strength & Conditioning Research*, 22(5), 1602–1609.

## **Abstracts and Conference Proceedings**

### **Abstracts**

Kotarsky, C. J., Taylor, A., & **Hackney, K.** (2017). Metabolic and cardiovascular indicators of intensity and performance during astronaut related test battery (5S ed., vol. 49, pp. 287) *Medicine & Science in Sports & Exercise*.

**Hackney, K.**, Taylor, A., Kotarsky, C. J., Bond, C. W., & Ewert, D. (2017). Occupational specific strength testing enhances the prediction of astronaut related task performance (5S ed., vol. 49, pp. 287). *Medicine & Science in Sports & Exercise*.

Bennett, T., Talaski, J., Stone, K., Barry, A. M., **Hackney, K.**, & Terbizan, D. (2017). Use of compression garments for Recovery from plyometric exercise (5S ed., vol. 49, pp. 1075). *Medicine & Science in Sports & Exercise*.

Erickson, J., Wyatt, Z., Mahoney, S., **Hackney, K.**, & Terbizan, D. (2016). High-intensity interval training vs. superset training: A comparison of resistance exercise energy expenditure (5S ed., vol. 48, pp. 162). *Medicine & Science in Sports & Exercise*.

Carlson, A., David, S., **Hackney, K.**, & Reed, B. (2016). Relationships between motivation and performance on the Army Physical Fitness Test (5S ed., vol. 48, pp. 304). *Medicine & Science in Sports & Exercise*.

Olson, B., Schmidt, A., **Hackney, K.**, & Zacharias, E. (2015). Compression at 140mmHg does not alter the metabolic or perceptual response to resistance exercise (5S ed., vol. 47, pp. 940-941). *Medicine & Science in Sports & Exercise*.

Schmidt, A., Olson, B., **Hackney, K.**, & Zacharias, E. (2015). Low-intensity exercise with and without blood flow restriction increases muscle swelling and indicators of fatigue (5S ed., pp. 442-443). *Medicine & Science in Sports & Exercise*.

English, K. L., Newby, N. J., **Hackney, K.**, DeWitt, J. K., Beck, C., Rovenkamp, C., Rea, R., & Ploutz-Snyder, L. L. (2014). Comparison of knee and ankle dynamometry between the X1 exoskeleton and biodex System 4 (vol. 46). *Medicine & Science in Sports & Exercise*.

Everett, M., **Hackney, K.**, Martin, D., & Ploutz-Snyder, L. (2012). Femoral blood flow and cardiac output during blood flow restricted leg press exercise (vol. 44, pp. S732–732). *Medicine & Science in Sports & Exercise*.

**Hackney, K.**, Scott, J. M., Buxton, R., Redd-Goetchius, E., Crowell, J. B., Everett, M. E., Wickwire, J., Ryder, J., Bloomberg, J., & Ploutz-Snyder, L. L. (2012). Muscle adaptations following short-duration bed rest with integrated resistance, interval, and aerobic exercise (5th ed., vol. 44, pp. S501). *Medicine & Science in Sports & Exercise*.

Ryder, J. W., Buxton, R. E., Redd, E., Scott-Pandorf, M., **Hackney, K.**, Fiedler, J., Ploutz-Snyder, R. J., Bloomberg, J. J., & Ploutz-Snyder, L. L. (2011). Analysis of skeletal muscle metrics as predictors of functional task performance (5th ed., vol. 43, pp. S821–821). *Medicine & Science in Sports & Exercise*.

Scott, J., Martin, D., Cunningham, D., Matz, T., Caine, T., **Hackney, K.**, Arzeno, N., & Ploutz-Snyder, L. (2011). Reliability and validity of ultrasound cross-sectional area measurements for long-duration spaceflight (5th ed., vol. 43, pp. 823–4). *Medicine & Science in Sports & Exercise*.

**Hackney, K.**, Cook, S. B., & Ploutz-Snyder, L. L. (2010). Resistance exercise and nutrition in muscle hypertrophy following disuse muscle atrophy: A pilot study. (5th ed., vol. 42, pp. 514). *Medicine & Science in Sports & Exercise*.

**Hackney, K.**, Kelleher, A. R., & Ploutz-Snyder, L. L. (2010). Ingesting amino acid-carbohydrate prior to and during consecutive bouts of resistance training elevates resting energy expenditure (vol. 24, pp. 1). *Journal of Strength and Conditioning Research*.

**Hackney, K.**, Kelleher, A. R., & Ploutz-Snyder, L. L. (2009). The effect of consecutive bouts of resistance training on resting energy expenditure (5th ed., vol. 41, pp. S43). *Medicine & Science in Sports & Exercise*.

Lemmer, J. T., Francis, R. M., **Hackney, K.**, Carpenter, R., & Womack, C. J. (2007). Single muscle fiber gene expression of tPA, uPA, and PAI-1 pre- and post-maximal aerobic exercise (5th ed., vol. 39, pp. S469-S470). *Medicine & Science in Sports & Exercise*.

**Hackney, K.**, Engels, H.J., Demers, N. R., & Gretebeck, R. J. (2006). Delayed onset muscle soreness and resting metabolic rate following full-body resistance exercise with eccentric concentration (5th ed., vol. 38, pp. S464). *Medicine & Science in Sports & Exercise*.

### Conference Proceedings

McIntosh, L., Bennett, T., Streeter, D., Stone, K., Grier, J., & **Hackney, K.** (2017). *Reliability of measuring heart rate variability using a polar bluetooth monitor and kubios analysis software*. Northland American College of Sports Medicine, St. Catherine University, St. Paul, MN.

Burkart, J., Joe, T., Lyman, K., Christensen, B., **Hackney, K.**, Stone, K., & Brodersen, J. (2017). *Biomechanical analysis of hip angles during a back squat with and without Kinesio® tape*. Northland American College of Sports Medicine, St. Catherine University, St. Paul, MN.

Brodersen, J., Lyman, K., **Hackney, K.**, Christensen, B., Stone, K., & Hanson, T. (2017). *Surface electromyography analysis of bilateral paraspinal muscles and quadriceps muscles with Kinesio® Tape application*. Big Sky Athletic Training and Sports Medicine Conference, Big Sky, MT.

Kotarsky, C. J., Stone, K. A., Streeter, D. M., Keith, J. F., Stastny, S., David, S., Mitchell, S., & **Hackney, K.** (2017). *Influence of protein intake at three different time periods on leg muscle strength and area*. Northland American College of Sports Medicine, St. Catherine University, St. Paul, MN.

Stone, K. A., Lyman, K., Christensen, B., Brodersen, J., & **Hackney, K.** (2017). *Muscular health with aging: Differences in quadriceps size, strength, and quality between sedentary and active adults*. Northland American College of Sports Medicine, St. Catherine University, St. Paul, MN.

Streeter, D., Stone, K. A., Bennett, T., McIntosh, L., Stastny, S., Ewert, D., & **Hackney, K.** (2017). *The acute effects of L-arginine supplementation on flow-mediated dilation after resistance training to fatigue*. Northland American College of Sports Medicine, St. Catherine University, St. Paul, MN.

Brooks, A., Grier, J., **Hackney, K.**, & Ewert, D. (2016). *Discovery-based learning: A microcosm of the emerging professional research environment*. Council on Undergraduate Research, Tampa, FL.

Streeter, D., Stone, K., Kotarsky, C., Mitchell, S., David, S., & **Hackney, K.** (2016). *Intra-reliability of ImageJ processing of MRI-derived cross-sectional area: Lower leg*, Northland American College of Sports Medicine, St. Catherine University, St. Paul, MN.

Stone, K., Streeter, D., Kotarsky, C., Mitchell, S., David, S., & **Hackney, K.** (2016). *Intra-reliability of ImageJ processing of MRI-derived cross-sectional area: Upper leg*. Northland American College of Sports Medicine, St. Catherine University, St. Paul, MN.

Christensen, B., Napoli, R., **Hackney, K.**, Miller, J., & Murata, H. (2016). *The effects of two different types of dynamic warm-up and static stretching on power and speed* (pp. 247-250). Proceedings of the 34th International Conference of Biomechanics in Sports, ISBS-Conference Proceedings Archive.

Kotarsky, C. & **Hackney, K.** (2016). *Reliability of measuring muscle thickness using B-mode ultrasound: Pectoralis major*. Northland American College of Sports Medicine, St. Catherine University, St. Paul, MN.

Christensen, B., Napoli, R., **Hackney, K.**, Miller, K., & Miller, H. (2016). *The effects of two different types of dynamic warm-up and static stretching on power and speed*. International Conference of Biomechanics in Sports Annual Meeting. Tsukuba, Japan.

Nelson, A., Olson, B., Schmidt, A., **Hackney, K.**, & Zacharias, E. (2016). *Blood flow restriction exercise induced muscle swelling is not enhanced with low cuff pressure-small cuff width prescription*. North Dakota State University Explore. Fargo, ND.

Asif, S., Iftikhar, A., Taylor, D., Wandler, J., Braaten, B., Ewert, D., & **Hackney, K.** (2015). *A mobile health system (mHealth) for planetary space suit application*. North Dakota EPSCoR/IDEA State Conference. Fargo, ND.

Taylor, D., Talaski, J., Kotarsky, C., Asif, S., Iftikhar, A., Wandler, J., Braaten, B., Ewert, D., & **Hackney, K.** (2015). *Occupational related fitness testing for future space missions*. North Dakota EPSCoR/IDEA State Conference. Fargo, ND.

Scott, J. M., **Hackney, K.**, Downs, M. E., Martin, D., Caine, T., Matz, T., Babcock, L., Goetchius, E., Buxton, R., Ryder, J., & Ploutz-Snyder, L. L. (2015). *Panoramic ultrasound imaging for quantification of disuse-induced muscle atrophy*. Human Research Program Investigators' Workshop: Integrative Pathways to Mars, Galveston, TX.

Lyman, K., **Hackney, K.**, Christensen, B., Sletten, S., & Hanson, T. (2015). *Kinesio taping as a low cost intervention to assist with quadriceps muscle recruitment during exercise countermeasures*. American Society for Gravitational and Space Research Conference. Alexandria, VA.

Olson, B., Schmidt, A., Zacharias, E., & **Hackney, K.** (2014). *Association between whole blood lactate and the perceptual responses to compression exercise*. NDSU Human Development and Education Research Showcase. Fargo, ND.

Schmidt, A., Olson, B., Zacharias, E., & **Hackney, K.** (2014). *Change in contraction velocity and skeletal muscle swelling during compression resistance exercise*. Human Development and Education Research Showcase. Fargo, ND.

Taylor, D., Gagnon, B., Ewert, D., & **Hackney, K.** (2014). *Human forearm blood flow and skin thermal conductivity due to emotional response during acute exercise*. North Dakota EPSCoR/IDEA state conference: Innovations and Expressions. Grand Forks, ND.

**Hackney, K.** (2014). *What is an acceptable level of microgravity induced deconditioning in the astronaut?* North Dakota NASA EPSCoR Annual Meeting. Fargo, ND.

Perticone, J. I., Matz, T., Caine, T., Martin, D. S., **Hackney, K.**, Ploutz-Snyder, L. L., & Scott, J. M. (2012). *Novel technique to standardize muscle ultrasound pennation angle acquisition and analysis.* NASA Human Research Program Workshop. Galveston, TX.

Scott, K. J., Arzeno, N., Caine, T., Martin, D. S., **Hackney, K.**, & Ploutz-Snyder, L. L. (2012). *Novel ultrasound assessment of dynamic muscle.* NASA Johnson Space Center IR&D. Houston, TX.

Scott, J. M., Martin, D. S., Cunningham, D., Matz, T., Scott-Pandorf, M., Caine, T., **Hackney, K.**, Arzeno, N., & Ploutz-Snyder, L. L. (2012). *Panoramic ultrasound cross-sectional area measurements for long duration space flight.* NASA Human Research Program Investigators' Workshop. Houston, TX.

Ploutz-Snyder, L. L., Ryder, J., Buxton, R., Redd, E., Scott-Pandorf, M., **Hackney, K.**, Fiedler, J., Ploutz-Snyder, R., & Bloomberg, J. (2012). *Thresholds of muscle strength below which function is impaired.* NASA Human Research Program Investigators' Workshop. Houston, TX.

**Hackney, K.**, Everett, M., & Ploutz-Snyder, L. (2012). *Nutrition coupled with high-load traditional or low-load blood flow restricted exercise during human limb suspension* (suppl 1 ed., vol. 9, pp. page 8). *Journal of the International Society of Sports Nutrition*. <http://www.jissn.com/content/9/S1/P8>.

**Hackney, K.**, Everett, M. E., & Ploutz-Snyder, L. L. (2012). *Timing protein-carbohydrate intake with high-load or blood flow restricted exercise during unloading and loading.* NASA Human Research Program Workshop, Galveston, TX.

**Hackney, K.**, English, K. L., Redd, E., De Witt, J. K., Ploutz-Snyder, R., & Snyder, L. L. (2011). *A ground-based comparison of the muscle atrophy research and exercise system (MARES) and a standard isokinetic dynamometer.* Humans in Space Symposium. Houston, TX.

Ploutz-Snyder, L. L., Ryder, J., Buxton, R., Redd, E., Scott-Pandorf, M., **Hackney, K.**, Fiedler, J., & Bloomberg, J. (2011). *Novel analog for muscle deconditioning.* Experimental Biology. Washington DC.

Ploutz-Snyder, L. L., Ryder, J., **Hackney, K.**, Scott-Pandorf, M., Redd, E., Buxton, R., & Bloomberg, J. (2010). *Relationships among lower body strength, power and performance of functional tasks.* Joint Life Sciences Meeting 13-18. Trieste, Italy.

Ploutz-Snyder, L. L., Cook, S. B., Fairchild, T., **Hackney, K.**, Frechette, V., & Ploutz-Snyder, R. (2008). *Muscle volume decreases with whole body dehydration.* *The Integrative Biology of Exercise—V.* 4,6.



## Grants, and Sponsored Research

### Grants Awarded

Douglas, M. & **Hackney, K.**, (2017). *North Dakota State University/Service Dogs for America- Continuing to support veterans with service dogs* (In review). United States Department of Defense: Uniformed Services University of the Health Sciences, \$247,277.00.

Stastny, S., **Hackney, K.**, & Byun, W. (2017). *The influence of animal-based protein and beef consumption on ability to perform functional activities, muscle quality and bone mineral density among adolescent to older females* (Funded), North Dakota Beef, \$208,421.00.

Mahoney, S., Dicks, N., & **Hackney, K.** (2017). *Leg blood flow restriction during rowing exercise as a countermeasures to microgravity induced deconditioning* (Funded), Northland American College of Sports Medicine, \$500.00.

**Hackney, K.**, Stastny, S., David, S., Byun, W., & Mitchell, S. (2016). *Protein and muscular health with aging: Effect of increased physical activity* (Funded), Sanford Health-North Dakota State University Collaborative Research Seed Grant Program, North Dakota State University, \$76,000.00.

Streeter, D & **Hackney, K.** (2016). *The acute effects of L-arginine supplementation on flow mediated dilation after resistance training to fatigue* (Funded), Northland American College of Sports Medicine Student Research Grant, \$1,000.00.

Douglas, M. & **Hackney, K.** (2016), *North Dakota State University/Service Dogs for America- A partnership for connecting veterans with service dogs* (Funded), United States Department of Defense: Uniformed Services University of the Health Sciences, \$231,027.00.

Stastny, S., **Hackney, K.**, Byun, W., & David, S. (2016). *Beef protein intake, physical activity, and muscle quality in middle age* (Funded), National Cattlemen's Beef Association, \$38,610.00.

**Hackney, K.**, Stastny, S., David, S., & Mitchell, S. (2015). *Protein and muscular health with aging* (Funded), Sanford Health-North Dakota State University Collaborative Research Seed Grant Program, North Dakota State University, \$77,277.00.

Stastny, S., **Hackney, K.**, & Byun, W. (2015) *Beef Protein Intake, Physical Activity, and Muscle Quality with Aging* (Funded), Minnesota Beef Council, State, \$39,939.00.

**Hackney, K.** (2014). *Ergogenic potential of ION-3 nitrate technology* (Funded), North Dakota State University, \$1,000.00.

Christensen, B., **Hackney, K.**, & Fitzgerald, M. (2014). *Graduate school recruiting proposal* (Funded), North Dakota State University Graduate School, \$5,000.00.

Lyman, K., **Hackney, K.**, Christensen, B., & Sletten, S. (2014). *Kinesio@Taping as a low-cost intervention to assist muscle recruitment during exercise countermeasures* (Funded), NASA Space Grant Consortium, \$12,450.00.

**Hackney, K.**, Fazel-Rezai, R., Ewert, D., Braaten, B., Noghianian, S., Wayne, J., & De Leon, P. (2013). *A mobile health system (mHealth) for monitoring the physiological response of an astronaut performing tasks in the NDX-2 planetary space suit* (Funded), North Dakota NASA EPSCoR, State, \$41,357.00.

**Hackney, K.** (2013). *Metabolic and perceptual responses to blood flow restricted exercise prescription*. (Funded), North Dakota State University, \$1,000.00.

**Hackney, K.** (2013). *Novel magnetic resonance imaging techniques to assess skeletal muscle health*. (Funded), College of Human Development and Education, North Dakota State University, \$2,000.00.

**Hackney, K.** & Ploutz-Snyder, L. (2008). *Essential amino acid-carbohydrate intake prior to low load resistance training with blood flow restriction as a countermeasure to unweighting* (Funded), Graduate Student Research Program-National Aeronautics and Space Administration, \$90,000.00.

**Hackney, K.** & Ploutz-Snyder, L. (2008). *The effect of amino acid-carbohydrate supplementation prior to sequential bouts of resistance training on resting metabolic rate* (Funded), Research and Creative Grant, Syracuse University, College of Education, \$1,000.00.

**Hackney, K.** (2007). *The effect of amino acid-carbohydrate versus carbohydrate supplementation prior to sequential bouts of resistance training on resting metabolism*. (Funded), General Nutrition Center Nutritional Research Grant Sponsored, \$2,500.00.

**Hackney, K.** & Ploutz-Snyder, L. (2007). *The effect of amino acid-carbohydrate supplementation in rehabilitation outcomes following unilateral lower limb suspension* (Funded), Burnyst Endowed Foundation Research Award, Syracuse University, College of Education, \$1,000.00.

### **Grants Not Awarded**

**Hackney, K.** & Jarajapu, Y. (2017). *Modulation of bone marrow-derived CD34+ cells by blood flow restricted exercise* (Not Awarded), American College of Sports Medicine Foundation. \$10,000.00.

MacFadden, L., Bond, C., Noonan, B., Piatt, B., & **Hackney, K.** (2017). *Blood flow restriction resistance exercise as an adjunct therapy for rehabilitation following knee arthroscopy* (Not Awarded, Top 27 of 51 applications), Great Plains IDeA CRT Pilot Training Program. \$126,000.00.

**Hackney, K.** & Jarajapu, Y. (2017). *Blood flow restricted exercise modulation of endothelial progenitor cells* (Not Awarded), NSCA Young Investigator Grant. \$19,836.00.

Dicks, N., & **Hackney, K.** (2017). *Blood flow restriction as a training method for load carriage in tactical athletes* (Not Awarded), NSCA-Tactical Athlete Grant. \$6,114.00.

Dicks, N., Mahoney, S., & **Hackney, K.** (2017). *Effect of blood flow restriction during rowing on the musculoskeletal and cardiovascular system* (Not Awarded), American College of Sports Medicine Foundation. \$4,425.00.

**Hackney, K.**, Stone, K., Stastny, S., & Mitchell, S. (2017). *Kaatsu exercise and muscular health with aging: Effect of blended protein supplementation* (Not Awarded), Sanford Health-North Dakota State University Collaborative Research Seed Grant Program.\$88,766.00.

Ewert, D., **Hackney, K.**, & Brooks, A. (2016). *Discovery based learning in multi-disciplinary teams (DBL-T)* (Not Awarded), NSF EAGER Grant Program. \$144,913.00.

Ewert, D, Braaten, B., Brooks, A., **Hackney, K.**, Nawarathna, D., & Vonnahme, K., (2016). *Discovery based learning in multi-disciplinary teams: Pilot funding* (Not Awarded), North Dakota State University. \$80,000.00.

**Hackney, K.** & Lyman, K. (2016). *Kinesiotaping as a rehabilitation strategy following prolonged inactivity* (Not Awarded), National Aeronautics and Space Administration.\$100,000.00.

**Hackney, K.** (2016). *Potential health application of a KAATSU exercise device* (Not Awarded), Centennial Endowment Fund, \$2,074.00.

Sanders, G., **Hackney, K.**, et. al. (2015). *Aging Center Grand Challenge Proposal* (Not Awarded), NDSU Research and Discovery Grand Challenge Initiative, North Dakota State University, \$935,500.00.

Ewert, D., **Hackney, K.**, Braaten, B., Nawarathna, D., & Vonnahme, K. (2015). *Discovery based learning in multi-disciplinary teams* (Not Awarded), National Science Foundation Research Traineeship (NRT) Program, \$495,419.00.

Ewert, D., **Hackney, K.**, & Brooks, A. (2015). *Discovery based learning in multi-disciplinary teams (DBL-T)* (Not Awarded), NSF EAGER Grant Program, \$144,913.00.

Ewert, D., **Hackney, K.**, Braaten, B., Nawarathna, D., Vonnahme, K., & Pruess, B. (2015). *Discovery based learning in multi-disciplinary teams (DBL-T): Pilot funding* (Not Awarded), NDSU Learning and Student Success Grant Program, North Dakota State University, \$77,000.00.

Ewert, D., **Hackney, K.**, Braaten, B., Nawarathna, D., Vonnahme, K., & Pruess, B. (2015) *Discovery-based learning to achieve healthy populations and vital communities.* (Not Awarded), NDSU Research and Discovery Grand Challenge Initiative, North Dakota State University, \$1,000,000.00.

Kotarsky, C. & **Hackney, K.** (2015). *Effect of a progressive callisthenic push-up routine on muscular strength* (Not Awarded), National Strength and Conditioning Association, \$5,425.00.

**Hackney, K.**, Fazel-Rezai, R., & Ewert, D. (2015). *Fitness for duty requirements for astronauts using the zeroG body mass unloading system* (Not Awarded), North Dakota-National Aeronautics and Space Administration Cooperative Agreement Notice, \$818,681.00.

Ewert, D., **Hackney, K.**, Fazel-Rezai, R., Noghianian, S., Tavakolian, K., De Leon, P., Braaten, B., & Marinov, V. (2015). *Smart health monitoring based on wearable antennas.* (Not Awarded), North Dakota-National Aeronautics and Space Administration EPSCoR Cooperative Agreement Notice, \$1,243,240.00.

**Hackney, K.** (2014). *Muscle mass and function benefits from leucine distribution and walking exercise in older adults* (Not Awarded), Ajinomoto Innovation Alliance Program, \$200,000.00.

**Hackney, K., Stastny, S., & Douglas, M.,** (2013). *Beef protein and markers of sarcopenia and health in elderly women* (Not Awarded), Minnesota Beef Council, \$34,670.00.

**Hackney, K.** (2013). *Ergogenics, muscle perfusion, and energy metabolism from resistance exercise and l-arginine nitrate supplementation* (Not Awarded), National Strength and Conditioning Association, Young Investigator Award, \$10,380.00.

Paddon-Jones, D., Ploutz-Snyder, L., Downs, M., English, K., Inniss, K., Pattatinin, A., Scott, J., & **Hackney, K.** (2013). *Optimal distribution of nutrition to potentiate exercise training during hypocaloric bed rest* (Not Awarded), National Space Biomedical Research Institute. \$100,000.00

**Hackney, K., Stastny, S., & Christensen, B.** (2013). *Resistance exercise and ION-3 nitrate technology: Muscle size, metabolism, and power* (Not Awarded), International Society of Sports Nutrition-MusclePharm, \$10,000.00.

**Hackney, K., Stastny, S., & Douglas, M.** (2013), *Soy protein and resistance exercise training: muscle, health, and quality of life in women with low habitual protein intake* (Not Awarded), North Dakota Soybean Council, State, \$29,540.00.

Ploutz-Snyder, L., **Hackney, K.,** & Scott, J. (2012). *Comprehensive morphological and functional muscle assessment for long-duration spaceflight.* (Not Awarded), NASA Research Announcement, \$318,309.00.

Ploutz-Snyder, L., **Hackney, K.,** & Scott, J. (2010). *Does milk enhance the effectiveness of exercise for the maintenance of muscle function during extended periods of unloading?* (Not Awarded), National Dairy Council, Dairy Management Inc., \$179,520.00.

**Hackney, K.,** & Lemmer, J. (2007). *Protein supplementation prior to strength training and resting energy expenditure* (Not Awarded), Michigan State University, College of Education Summer Research Fellowship, \$6,000.00.

**Hackney, K.** & Ploutz-Snyder, L. (2007). *The effect of amino acid-carbohydrate supplementation in rehabilitation outcomes following unilateral lower limb suspension.* (Not Awarded), Mid-Atlantic American College of Sports Medicine Student Research Grant, \$500.00.

## **SERVICE & OUTREACH**

### **Professional Service**

Reviewer, Medicine & Science in Sports & Exercise  
Reviewer, Aerospace Medicine and Human Performance  
Reviewer, Journal of Strength and Conditioning Research  
Reviewer, Experimental Gerontology

### **Department Service**

Committee Member, Exercise Science Program Workgroup (2012 - Present)  
Committee Member, HNES interim Department Chair Search Committee (2016 - 2017)

### **College Service**

Digital Measures Pilot program for HDE (2016)

### **University Service**

Committee Member, Research Strategic Planning Committee (2014)  
Committee Member, Institutional Review Board Alternate (2013 - 2017)

### **Public Service**

Foster and Grant Writer, Service Dogs of America (SDA), Jud, ND (2014 - 2017)

### **Professional Organizations**

International Society for Sports Nutrition (2012 - Present)  
American Physiological Society (2009 - Present)  
American College of Sports Medicine (2004 - Present)  
National Strength and Conditioning Association (2003 - Present)

## **AWARDS AND HONORS**

Exceptional Contributions to Research, College of HDE (2017)  
Exceptional Contributions for Collaborative Efforts, College of HDE (2016)  
James Lebedeff Endowed Professorship Development Award, College of HDE (2016)  
Undergraduate Research Mentor Award, NDSU College of HDE (2015)  
Travel Award, NDSU College of HDE (2015)  
Travel Award, NDSU College of HDE (2014)  
Excellence in Innovation, Wyle Science, Technology and Engineering (2012)  
ACSM Nutrition Interest Group Student Award, Syracuse University (2010)  
Exercise Physiology & Countermeasures Project MVP, NASA-Johnson Space Center (2010)  
Graduate School Travel Award, Syracuse University Graduate School (2009)  
Graduate School Scholarship, Syracuse University (2008)  
Graduate Tuition Scholarship, Syracuse University (2008)  
Graduate Recruitment Fellowship, Michigan State University (2005)