

Education

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**Postdoctoral Fellow, 2015-2018**

Harvard Medical School/Massachusetts General Hospital, Boston, MA

**Ph.D., Kinesiology, 2009**

University of Minnesota, Minneapolis, MN

Dissertation: Bone Geometry, Bone Strength, and Biomechanics in Distance Runners with a History of Stress Fracture

**M.A., Kinesiology, 2007**

University of Minnesota, Minneapolis, MN

Thesis: Bone Strength and Muscle Mass are Low in Runners with a History of Stress Fracture

**B.A., Exercise Science, 2005**

Valparaiso University, Valparaiso, IN

Academic Experience

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**Academic/Research Appointments**

2020-present

**Research Investigator:** TRIA Institute, Bloomington, MN

- Obtain opportunities for independent and collaborative research
- Initiate and implement research projects, analyze results, and disseminate findings
- Mentor research staff in fellows in research methodology and dissemination
- Write grants for research funding

2022-present

**Associate Director of Research:** Wu Tsai Human Performance Alliance  
Female Athlete Program, Boston Children's Hospital, Boston, MA

- Guide program research agenda
- Initiate and implement research projects, analyze results, and disseminate findings
- Mentor research staff in fellows in research methodology and dissemination

2019-present

**Senior Sports Scientist:** Orreco, Galway Ireland

- Work directly with professional sports teams to collect, analyze and provide feedback on biomarker data
- Disseminate research findings

2018-2023

**ORISE Established Scientist:** Military Performance Division, US Army  
Research Institute of Environmental Medicine, Natick, MA

- Obtain opportunities for independent and collaborative research
- Collect data, analyze data and disseminate study findings
- Write grants for research funding

- Attend and participate in conferences and participate in continuing education opportunities
- 2018-2022 **Research Associate:** Harvard Medical School/Massachusetts General Hospital (MGH), Boston, MA
  - Analyze data for on-going research projects
  - Disseminate research findings
- 2015-2018 **Postdoctoral Fellow:** Harvard Medical School, Cambridge, MA/Massachusetts General Hospital (MGH), Boston, MA
  - Coordinate the MGH arm of 2 multi-center stress fracture studies
  - Obtain opportunities for independent and collaborative research
  - Supervise research assistants and interns
  - Write grants for research funding
  - Attend and participate in conferences and participate in continuing education opportunities
  - Analyze and interpret data and disseminate research findings
- 2014-2015 **Visiting Professor:** Hamline University, St Paul, MN
  - Instructed Kinesiology, Senior Seminar, Anatomy and Physiology and Public Health Courses. Class sizes range from 3-42 students.
  - Guided student in individual study
  - Participated in on-going faculty development and education opportunities.
- 2014 **Adjunct Instructor:** Hamline University, St Paul, MN
  - Instructed introduction to Global health – 41 students
- 2013-2014 **Assistant Professor:** Minnesota State University, Mankato, MN
  - Instructed Structural Kinesiology and Biomechanics, Physiology of Exercise, and Athletic Testing and Conditioning. Class sizes range from 12-45 students.
  - Served on the College of Allied Nursing and Health Wellness Committee.
  - Served on the Human Performance Curriculum Committee.
  - Advised students – 85
  - Served on masters' committees.
- 2008-2009 **Principal Investigator:** School of Kinesiology, University of Minnesota
  - Designed a cross-sectional study in collaboration with faculty at the University of Utah, Salt Lake City, UT and researchers at The Orthopedic Specialty Hospital in Murray, UT to assess biomechanics and stress fracture risk in competitive female distance runners.
  - Completed IRB applications.
  - Recruited participants, administered bone scans (pQCT) and assessed running mechanics.
  - Analyzed and reported data.

## Publications and Conference Presentations

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### Peer Reviewed Publications

Coulombe JC, Bozzini BN, Guerriere KI, Foulis SA, Reynoso M, Walker LA, Staab JS, Bouxsein ML, Hughes JM, **Popp KL**. Association between changes in serum bone metabolism markers and bone microarchitecture changes during basic combat training – The ARMI study. Bone. 2024 August 23. Online ahead of print

**Popp KL**, Bozzini BN, Reynoso M, Coulombe J, Guerriere KI, Proctor SP, Castellani CM, Walker LA, Zurinaga N, Kuhn K, Foulis SA, Bouxsein ML, Hughes JM, Santoro N. Hypothalamic-pituitary-ovarian axis suppression is common among women during US Army Basic Combat Training. *Br J Sports Med*. 2024 Jul 23. Online ahead of print

Tenforde AS, Ackerman KE, Bouxsein ML, Gaudette L, McCall L, Rudolph SE, Gehman S, Garrahan M, Hughes JM, Outerleys J, Davis is, **Popp KL**. Factors associated with high-risk and low-risk bone stress injury in female runners: implications for risk factor stratification and management. *Orthop J Sports Med*. 2024 May 21;12(5)

Hughes JM, Guerriere KI, **Popp KL**, Castellani CM, Pasiakos SM. Exercise for optimizing bone health after hormone-induced increases in bone stiffness. *Front Endocrinol*. 2023 Sep 18;12:19454.

Dyches KD, Friedl KE, Greeves JP, McClung HL, McGurk MS, **Popp KL**, Teyhen DS. Physiology of health and performance: enabling success of women in combat arms roles. *Mil Med*. 2023 Jul 25;188(Suppl 4):19-31

Haines MS, Kaur S, Scarff G, Lauze M, Gerweck A, Slattery M, Oreskovic NM, Ackerman KE, Tenforde AS, **Popp KL**, Bouxsein ML, Miller KK, Misra M. Male runners with lower energy availability have impaired skeletal integrity compared to non-athletes. *J Clin Endo and Metab*. 2023 Sep 18;108(10):e1063-e1073

Hughes JM, Taylor KM, Guerriere KI, Smith NI, Staab JS, Walker LA, Staab JE, Bartlett PM, Spiering BA, Nguyen VT, Proctor SP, Foulis SA, Bouxsein ML, **Popp KL**. Changes in distal tibial microarchitecture during eight weeks of U.S. Army Basic Combat Training differ by sex and race. *J Bone and Miner Res Plus*. 2023 Mar 2;7(4)e10719

Bozzini BN, Nguyen VT, Reynoso MC, Guerriere KI, Walker LA, Taylor KM, Foulis SA, Bouxsein ML, Hughes JM, **Popp KL**. The risk of menstrual dysfunction increases for women during U.S. Army Basic Combat Training, *Med Sci Sports and Exerc*, 2023 Sep 1;55(9):1533-1539

Hoening T, Eissele J, Strahl A, **Popp KL**, Sturznicke J, Ackerman KE, Hollander K, Warden SJ, Frosch K, Tenforde AS, Rolvien T. Return to sport following low- and high-risk bone stress injuries: A systematic review and meta-analysis. *Br J Sports Med*, 2023 Apr;57(7):427-432.

Guerriere KI, Castellani CM, **Popp KL**, Bouxsein ML, Hughes JM. Unraveling the physiologic paradoxes that underlie exercise prescription for stress fracture prevention. *Exp. Biol Med*. 2022 Oct;247(20):1833-1839.

Garrahan M., Gehman S, Rudolph SE, Tenforde AS, Ackerman KE, **Popp KL**, Bouxsein ML, Serum 25-Hydroxyvitamin D is associated with bone microarchitecture and strength in a multiracial cohort of young adults. *Clin Endocrinol Metab*, 2022 Aug 18;107(9):e3679-e3688.

Gehman S, Ackerman KE, Caksa S, Rudolph S, Garrahan M, Tenforde AS, Bouxsein ML, **Popp KL**. Restrictive eating and prior low-energy fractures are associated with multiple bone stress injuries. *Int. J. Sport Nutr. Exerc. Metab.*, 2022 May 6:1-9.

Hoening T, Ackerman KE, Beck B, Bouxsein ML, Burr D, Hollander K, **Popp KL**, Rolvien T, Tenforde AS, Warden SA. Stress fracture. *Nat Rev Dis Primers*, 2022 Apr 28;8(1):26

Holtzman B, **Popp KL**, Tenforde AS, Parziale AL, Taylor K, Ackerman KE. Low energy availability surrogates associated with lower bone mineral and density and bone stress injury site. *PM R*. 2022 May;14(5):587-596

**Popp KL**, Outerleys J, Gehman S, Garrahan Margaret, Rudolph S, Loranger E, Ackerman KE, Tenforde AS, Bouxsein ML, Davis IS. Impact loading in female runners with single and multiple bone stress injuries during fresh and fatigued conditions. *J. Health and Sport Sci*, 2022 Feb23:S2095-2546(22)00036-9

**Popp KL**, Cooke LM, Bouxsein ML, Hughes JM. Impact of low energy availability on skeletal health in physically active women and men. *Calcif Tissue Int*, 2022 May;110(5):605-614

Ackerman KE, **Popp KL**, Bouxsein ML. Rocket science: what spaceflight can tell us about skeletal health on earth. *Br J Sports Med*, 2021 Nov;55(21):1182-1183

Rudolph S, Caksa S, Gehamn S, Garrahan M, Hughes JM, Tenforde AS, Ackerman KE, Bouxsein ML, **Popp KL**. Physical activity, menstrual history, and bone microarchitecture in female athletes with multiple bone stress injuries. *Med Sci Sports and Exerc*, 2021 Oct 1;53(10):2182-2189

**Popp KL**, Ackerman KE, Rudolph SE, Johannesdottir F, Hughes JM, Tenforde AS, Bredella MA, Xu C, Unnikrishnan G, Reifman J, Bouxsein, ML. Changes in volumetric bone mineral density of 12 months after tibial bone stress injury diagnosis: Implications for return to sport and military duty. *Am J Sports Med*, 2021 Jan;49(1):226-235

Hughes JM, Castellani CM, **Popp KL**, Guerriere KI, Matheny Jr. RW, Nindle BC, Bouxsein ML. The central role of osteocytes in the four adaptive pathways of bone's mechanostat. *Exerc Sport Sci Rev*, 2020. Jul;48(3):140-148

**Popp KL**, Frye AC, Stovitz SD, Hughes JM. Bone geometry and lower extremity bone stress injuries in male runners. *J Sci Med Sport*, 2019 Sep 21, 2020 Feb;23(2):145-150

**Popp KL**, Turkington V, Hughes JM, Xu C, Unnikrishnan G, Reifman J, Bouxsein ML. Skeletal loading score is associated with bone microarchitecture in young adults. *Bone*. 2019 Oct;127:360-366

Caksa S, Yaun A, Rudolph SE, Yu EW, **Popp KL**, Bouxsein ML. Influence of soft tissue on bone density and microarchitecture measurements by high-resolution peripheral quantitative computed tomography. *Bone*. 2019 Jul; 124:47-52

Hughes JM, Foulis SA, Taylor KM, Guerriere KI, Walker LA, Hand AF, **Popp KL**, Gaffney-Stomberg E, Heaton KJ, Sharp MA, Grier TL, Hauret KG, Jones BJ, Bouxsein ML, McClung JP, Matheny RW, Proctor SP. A prospective field study of US Army trainees to identify the physiological bases and key factors influencing musculoskeletal injuries: a study protocol. *BMC Musculoskeletal Disorders*. 2019 Jun 12;20(1):282

Sundaramurthy A, Xu C, Hughes JM, Gaffney-Stomberg E, Guerriere KI, **Popp KL**, Bouxsein ML, Reifman J, Unnikrishnan G. Regional changes in density and microarchitecture in the ultradistal tibia of female recruits after U.S. Army Basic Combat Training. *Calcif Tissue Int*. 2019 Jul;105(1):68-76

Ackerman KE, Holtzman B, Cooper KM, Flynn EF, Bruinvels G, Tenforde AS, **Popp KL**, Simpkin AJ, Parziale AL. Low Energy Availability Surrogates Correlate with Health and Performance Consequences of Relative Energy Deficiency in Sport (RED-S). *Br J Sports Med*, 2019 May;53(10):628-633

Hughes JM, McKinnon CJ, Taylor KM, Kardouni JR, Bulathsinhala L, Guerriere KI, **Popp KL**, Boussein ML, Proctor S, Matheny, RW. Nonsteroidal anti-inflammatory drug prescriptions are associated with increased stress fracture diagnosis in the US Army Population. *J Bone and Miner Res*, 2019 Mar;34(3):429-436

**Popp KL**, Xu C, Yuan A, Hughes JM, Unnikrishnan G, Reifman J, Boussein ML. Trabecular microstructure is influenced by race and sex in Black and White young adults. *Osteoporos Int.*, 2019 Jan;30(1):201-209

**Popp KL**, Caksa S, Martinez-Betancourt A, Yu A, Tsai J, Yu EW, Boussein ML. Cortical bone material strength index and bone microarchitecture in postmenopausal women with atypical femoral fractures. *J Bone and Miner Res*, 2019 Jan;34(1):75-82.

Hughes JM, Gaffney-Stomberg E, Guerriere KI, Taylor KM, **Popp KL**, Xu C, Unnikrishnan G, Staab JS, Matheny RW, McClung JP, Reifman J, Boussein, ML. Changes in tibial bone microarchitecture in female recruits in response to 8 weeks of U.S. Army basic combat training. *J Bone and Miner Res*, 2019 Jan;34(1):75-82

Unnikrishnan, G, Xu C, **Popp KL**, Hughes JM, Yuan A, Guerriere KI, Caksa S, Ackerman KE, Boussein ML, Reifman J. Regional variation of bone density, microarchitectural parameters and elastic moduli in the ultradistal tibia of young black and white men and women. *Bone*, 2018 Jul; 112:194-201

Tenforde AS, Parziale AL, **Popp KL**, Ackerman KE. Low bone mineral density in male athletes is associated with bone stress injuries at anatomical sites with greater trabecular composition. *Am J Sports Med*, 2018 Jan;46(1):30-36

**Popp KL**, Hughes JM, Martinez-Betancourt A, Scott M, Turkington V, Caksa S, Guerriere KI, Ackerman KE, Xu C, Unnikrishnan G, Reifman J, Boussein ML. Bone mass, microarchitecture and strength are influenced by race/ethnicity in young adult men and women. *Bone*, 2017 Oct;103:200-208

Bulathsinhala L, Hughes JM, Kardouni JR, McKinnon CJ, Guerriere KI, **Popp KL**, Matheny RW, Boussein ML. Risk of stress fracture varies by race/ethnicity in a cohort of 1.3 million U.S. Army soldiers. *J Bone and Miner Res*, 2017 Jul;32(7): 1546-1553

Hughes JM, **Popp KL**, Yanovich R, Boussein ML, Matheny RW. The role of adaptive bone formation in the etiology of stress fracture. *Exp Biol Med*, 2017 May;242(9):897-906

**Popp KL**, McDermott B, Koenig SA, Stovitz SD, Koehler S. Bone strength relative to load during pre and post-fatigued running: Implications for Tibial Stress Fractures. *Bone*, 2017 Jan;94:22-28

**Popp KL**, Hughes JM, Smock AJ, Novotny SA, Stovitz SD, Koehler S, Petit MA. Bone geometry, strength, and muscle mass in runners with a history of stress fracture. *Med Sci Sports and Exerc*, 2009 Dec;41(12):2145-50

Smock AJ, Hughes JH, **Popp KL**, Kaufman BC, Stovitz SD, Petit MA. Bone volumetric density, geometry and strength in female and male collegiate runners. *Med Sci Sports and Exerc*, 2009 Nov;41(11):2026-32

## **Oral/Invited Presentations**

### ***ACSM Annual Meeting***

- 2024 Considerations for bone stress injury prevention and treatment from the weekend warrior to Warfighter
- 2023 Mechanisms and considerations for musculoskeletal anabolic resistance in healthy adults under physiological stress
- 2019 Make no bones about it: bone loading in relation to bone stress injuries
- 2019 Bone indentation as an in vivo measurement of bone quality in female athletes with a history of bone stress injuries.
- 2017 Muscle and bone interactions

### ***American Society of Bone and Mineral Research***

- 2022 Volumetric bone mineral density and trabecular microarchitecture at the distal tibia are associated with stress fracture risk during U.S. Army basic combat training
- 2020 Military trainees who are more physically fit have more favorable tibial bone microarchitecture at military entry.
- 2019 Changes in tibial microarchitecture in response to 8 weeks of US Army basic combat training in men and women

### ***2<sup>nd</sup> Annual Bone Stress Injury Symposium***

- 2024 Bone stress injuries in soldiers: Sex-specific considerations

### ***Female Athlete Summit***

- 2024 You have a bone stress injury – Now what? Considerations for return to sport and reducing injury risk

### ***Wu Tsai Alliance Research Series***

- 2023 Suppression of the hypothalamic pituitary ovarian axis in women during U.S. Army basic combat training

### ***Reproductive Sciences Seminar, University of Colorado Anschutz Medical Campus***

- 2023 Suppression of the hypothalamic pituitary ovarian axis in women during U.S. Army basic combat training: Implications for bone health

### ***TRIA Orthopedics Grand Rounds***

- 2023 Sex hormone suppression in active young women: Implications for bone health
- 2022 Bone stress injuries and skeletal adaptation in the military

### ***TRIA Orthopedics Continuing Medical Education Conferences***

- 2024 Effects of hormones on skeletal health and fracture risk

***Military Operational Medicine Research Program Injury Prevention and Reduction meeting***

- 2021 Effect of Basic Combat Training on reproductive function in women: implications for stress fracture risk
- 2021 Association between musculoskeletal injury and biomarkers of oxidative stress and energy availability in military recruits
- 2018 Mechanisms underlying stress fracture and the influence of sex and ethnic origin

***Women in Combat Symposium. Forging the Future: How Servicewomen Enhance the Fighting Force***

- 2023 Suppression of the hypothalamic pituitary ovarian axis in women during U.S. Army basic combat training
- 2021 Bone health and stress fracture risk in female soldiers

***Academy of Orthopaedic Physical Therapy: Combined Sections Meeting***

- 2020 Bone stress injuries in runners: an exercise in load and tolerance

***Fifth International Congress on Soldier Physical Performance***

- 2020 Sex differences in bone anabolism in U.S. Army soldiers is partially explained by baseline bone microarchitecture during Basic Combat Training

***U.S. Army and Israeli military medicine Shoresh conference***

- 2019 The association of hormonal contraceptives, bone properties and stress fracture risk
- 2019 Adaptive bone formation and the prevention of stress fractures

***Harvard Medical School CME: State-of-the-art approaches to optimize the diagnosis, treatment, rehabilitation, and prevention of sports injuries***

- 2017 Anatomy of bone stress injuries

***American Medical Athletic Association's Annual Sports Medicine Symposium***

- 2017 Bridging the gap between clinical science and training

***Female Athlete Conference***

- 2023 You have a bone stress injury – Now what? Considerations for return to sport and reducing injury risk
- 2023 Suppression of the hypothalamic pituitary ovarian axis in women during U.S. Army basic combat training
- 2017 Stress fractures in athletes

***NDHSCA Coaches Convention***

- 2010 Stress fractures: recognition, prevention and treatment
- 2010 Consistency and aerobic capacity in training progression
- 2010 Strength training to improve performance and prevent injuries

***Video***

- Popp JJ, Popp KL. (2012) How to build a championship cross country program. Championship Productions.

## Select Poster Presentations

Kolesky N, **Popp KL**, Holtzman B, Ackerman KE. Teammates on and off the field: Effect of team sport on mental health following bone stress injury. American College of Sports Medicine Annual Meeting, June, 2024

Rogers M, Coulombe J, Pellegrini C, Holtzman B, **Popp KL**, Ackerman KE. Self-reported eating behavior is correlated with health consequences of Relative Energy Deficiency in Sport. American College of Sports Medicine Annual Meeting, June, 2024

**Popp KL**, Bozzini, BN, Reynoso M, Guerriere KI, Coulombe J, Foulis SA, Kuhn K, Bouxsein ML, Santoro N, Hughes JM. Hypothalamic pituitary ovarian axis suppression is common in women during U.S. Army basic combat training. American Society of Bone and Mineral Research Annual Meeting. September, 2023.

Coulombe JC, Bozzini BN, Guerriere KI, Foulis SA, Reynoso M, Walker LA, Staab JS, Bouxsein ML, Hughes JM, Popp KL. Changes in serum bone metabolism markers can predict improved bone microarchitecture during basic combat training – The ARMI study. American Society of Bone and Mineral Research Annual Meeting. September, 2023.

Guerriere KI, Faller TN, Walker LA, Hussian I, **Popp KL**, Bouxsein ML, Taylor KM, Foulis SA, Hughes JM. Greater exercise frequency before U.S. Army Basic Combat Training is associated with lower risk of stress fracture. American Society of Bone and Mineral Research Annual Meeting. October 2022

Bozzini BN, Nguyen VT, Reynoso MC, Guerriere KI, Walker LA, Taylor KM, Bouxsein ML, Foulis SA, Hughes JM, **Popp KL**. Prevalence of menstrual disturbances in females during U.S. Army Basic Combat Training. Military Health Systems Research Symposium. September 2022

**Popp KL**, Taylor KM, Guerriere KI, Speiring BA, Walker LA, Smith NI, Foulis SA, Proctor SP, Bouxsein ML, Hughes JM. Despite weight loss, men exhibit adaptive bone formation following 8 weeks of Basic Combat Training. American Society of Bone and Mineral Research Annual Meeting. October 2021

Castellani CM, Faller TN, Guerriere KI, **Popp KL**, Walker LA, Foulis SA, Bouxsein ML, Hughes JM, Taylor KM. The association of current and former tobacco use on tibial bone microarchitecture in male and female U.S. Army recruits. American Society of Bone and Mineral Research Annual Meeting. October 2021

Hughes JM, Guerriere KI, Taylor KM, **Popp KL**, Smith NI, Walker LA, Spiering BA, Foulis SA, Proctor SP, Bouxsein ML. Anabolic bone formation occurs in the distal tibia of both younger and older trainees in response to initial military training. American Society of Bone and Mineral Research Annual Meeting. October 2021

**Popp KL**, Taylor KM, Guerriere KI, Smith NI, Staab JS, Walker LA, Staab JE, Proctor SP, Foulis SA, Hughes JM. Prior physical activity influences changes in tibial microarchitecture during U.S. Army Basic Combat Training. American College of Sports Medicine Annual Meeting. May 2021

Guerriere KI, Hughes JM, Kusumpa S, Walker LA, Melissa D Richardson MD, Taylor KM, Proctor SP, Foulis SA, Bouxsein ML, **Popp KL**. Associations between physical fitness test scores and tibial bone



microarchitecture in young adults entering military training. American College of Sports Medicine Annual Meeting. May 2021

Gehman S, Garrahan M, Rudolph S, Caksa S, Tenforde AS, Ackerman KE, Bouxsein ML, **Popp KL**. Female athletes with multiple bone stress injuries (BSI) display restrictive eating behaviors. American College of Sports Medicine Annual Meeting. May 2021

**Popp KL**, Hughes JM, Taylor KM, Guerriere KI, Smith NI, Proctor SP, Foulis SA, Bouxsein ML. Influence of race/ethnic background on tibial bone microarchitecture changes following 8 weeks of US Army Basic Combat Training. American Society of Bone and Mineral Research Annual Meeting. Oct 2020

Outerlys J, **Popp KL**, Ackerman KE, Tenforde AS, Rudolph SE, Loranger E, Gehman S, Bouxsein ML, Davis IS. Changes in impacts following a fatigue run in female runners with multiple bone stress injuries (BSI). American Society of Biomechanics Annual Meeting, July 2020.

**Popp KL**, Rudolph S, Caksa S, Hughes JM, Tenforde AS, Ackerman KE, Bouxsein, ML. Female runners with multiple bone stress injuries (BSI) have smaller bone area compared to healthy runners. American College of Sports Medicine Annual Meeting, June 2020

Outerleys JB, **Popp KL**, Rudolph SE, Caksa S, Ackerman KE, Bouxsein ML, Davis IS. Impact mechanics in female runners with single and multiple stress fractures following fatigue. American College of Sports Medicine Annual Meeting, June 2019

Taylor KM, Guerriere KI, **Popp KL**, Bouxsein ML, Hughes JM. Baseline bone microarchitecture modifies and mediates sex differences in bone anabolism during Basic Combat Training in U.S. Army Soldiers. International society of Environmental Epidemiology, Aug 2019

**Popp KL**, Rudolph SG, Yuan A, Hughes JM, Ackerman KE, Xu C, Unnikrishnan G, Reifman J, Bouxsein ML. Active young women with current tibial stress fracture have reduced total area and cortical perimeter. American Society of Bone and Mineral Research Annual Meeting, Sept 2018

Hughes JM, **Popp KL**, Xu C, Yuan A, Unnikrishnan G, Reifman J, Bouxsein ML. Trabecular microstructure is influence by race and sex in Black and White young adults. American Society of Bone and Mineral Research Annual Meeting, Oct 2018

Guerriere KI, Hughes JM, Gaffney-Stomberg, Taylor K, **Popp KL**, Xu C, Unnikrishnan G, Bouxsein ML, Reifman J. Female recruits with the lowest baseline bone strength have the greatest increases in bone strength following 8 weeks of U.S. Army Basic Combat Training. American Society of Bone and Mineral Research Annual Meeting, Oct 2018

**Popp KL**, Hughes JM, Martinez-Betancourt A, Scott M, Turkington V, Caksa S, Guerriere KI, Ackerman KE, Xu C, Unnikrishnan G, Reifman J, Bouxsein ML. Race/ethnicity-related differences in bone mass, microarchitecture and strength among young adult men and women. American College of Sports Medicine Annual Meeting, May 2017

McDermott WJ, **Popp KL**, Marshall CS, Walker J. The influence of fatigue on vertical free moment and vertical moments around the COM in female runners with a history of stress fractures. American College of Sports Medicine Annual Meeting, May 2017

Turkington V, **Popp KL**, Scott M, Martinez-Betancourt A, Bouxsein ML. Physical activity during youth is associated with adult bone microarchitecture. American College of Sports Medicine Annual Meeting, May 2017

Hughes JM, Gaffney-Stomberg E, Guerriere KI, Taylor K, Matheny RW, **Popp KL**, McClung JP, Xu C, Unnikrishnan G, Reifman J, Bouxsein M. Changes in tibial bone microarchitecture following 8 weeks of U.S. Army Basic Combat Training. American College of Sports Medicine Annual Meeting, May 2017

**Popp KL**, Hughes JM, Mckinnon CJ, Ackerman KE, Kardouni JR, Guerriere KI, Matteny RW, Bouxsein ML. Estrogen-Containing Contraceptives are Associated with Reduced Risk of Stress Fracture in Women Soldiers. American Society of Bone and Mineral Research Annual Meeting, September 2016

**Popp KL**, Hughes JM, Mckinnon CJ, Kardouni JR, Matteny RW, Bouxsein ML. Ethinyl estradiol-containing contraceptive prescriptions are associated with reduced risk of stress fracture in female active duty soldiers. American college of Sports Medicine Annual Meeting, May 2016

**Popp KL**, Hughes JM, Thieschafer AJ, Novotny SA, Stovitz SD, Koehler S, Petit MA. Bone geometry, strength, and muscle mass in runners with and without a history of stress fracture. American College of Sports Medicine Annual Meeting, May 2008

Thieschafer AJ, Hughes JH, **Popp KL**, Kaufman BC, Stovitz SD, Petit MA. Examining the bone-muscle relationship in male and female runners. American College of Sports Medicine Annual Meeting, May 2008

**Popp KL**, Hughes JM, Thieschafer AJ, Novotny SA, Stovitz SD, Koehler S, Petit MA. Bone geometry, strength, and muscle mass in female distance runners with a history of stress fracture. The American Society for Bone and Mineral Research Annual Meeting, September 2008

Novotny SA, Pickett KA, **Popp KL**, Swanson KJ, Konczak J, Petit MA. Change in biomechanics with fatigue: implications for tibial stress fractures. American College of Sports Medicine Annual Meeting, May 2008

## Teaching Experience

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### **Hamline University**

BIOL 3220 | Anatomy and Physiology II lab and lecture | Spring 2015

This upper level biology course was an established course in the biology and exercise science curriculum designed to examine the principles and mechanisms underlying human body function from organ system down to the molecular level. During laboratory exercises, students conducted hands-on experiments investigating the principles of human body function in response to various conditions.

HSCI 3020 | Global Health | Spring 2015

I designed and taught this course, which was first offered in the public health curriculum in spring of 2015. It was designed with the intent to foster a deeper understanding of the global nature of health problems as well as international approaches to health and disease.

EXSC 3980 | Kinesiology lab and lecture | Fall 2014

I designed and taught this course, which was first offered in the exercise science curriculum in the fall of 2014. This course was developed with a focus on the anatomical importance of the musculoskeletal system in relation to principles of human movement.

HSCI 1100 | Introduction to Public Health | Fall 2014

This course is an established course in the public health curriculum designed to provide students with a broad overview of the interdisciplinary field of public health, health systems and health policy.

Numerous professional in various public health careers were invited for guest lectures.

EXSC 5950 | Senior Seminar | Fall 2014

This is an established course in the exercise science curriculum designed to synthesis prior coursework, internship and research experience to prepare for next steps in an academic or career path. Significant time was spent on developing oral presentation and interview skills in relation to future goals.

BIOL 3200 | Anatomy and Physiology I lab | Fall 2014

This was the lab portion of the Anatomy and Physiology I lecture course taught by another faculty member and required significant collaboration. It was designed to allow hand-on investigation of principals of human body function that corresponded to lecture material.

HSCI 1120 | Introduction to Global Health and Wellness | Spring 2014

This course was designed to introduce students to global health concerns both historically and in the modern world.

### **Minnesota State University, Mankato**

HP 456 | Athletic Testing and Conditioning | Spring 2014

This is an upper level course in the human performance curriculum and was designed to expose students to field testing, exercise instruction, and the periodization technique of exercise prescription for athletes and physically active individuals.

HP 414 | Physiology of Exercise | Fall 2013, Spring 2014

This course was designed to introduce students to the effects of both acute and chronic exercise on structure and function of the human body across the life span.

HP 348 | Structural Kinesiology and Biomechanics | Fall 2013, Spring 2014

This course included both hands on and lecture-based sessions to introduce students to the anatomical importance and biomechanical functions of the musculoskeletal system during physical activity, sport, and exercise.

### **Kaplan University**

HW 215 | Global Health and Wellness (Online) | 2009-2014

### **University of Minnesota, Twin Cities 2005-2009**

PE 1014 | Conditioning | Fall 2005, Spring 2006, Fall 2006, Fall 2009

KIN 4981 | Understanding Kinesiology Research Methods (Co-Instructor) | Spring 2008  
KIN 3001 | Lifetime Fitness and Health (Lecturer and Teaching Assistant) | Fall 2005, Spring 2006,  
Fall 2006, Spring 2007  
PE 1059 | Track and Field | Spring 2006  
PE 1015 | Weight Training | Fall 2005  
PE 1041 | Cycling | Fall 2005

## Funding

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**Congressionally Directed Medical Research Program; Peer Reviewed Orthopaedic Research Program.** U.S. Research Institute of Environmental Medicine (2020-2023)

Exoskeletons for rapid return to duty after tibial stress fracture.

Role: **Co-I.** 5% effort 2021-2025

Amount: \$1.5M

**Military Operational Medicine Research Program.** U.S. Research Institute of Environmental Medicine (2020-2023)

Association between musculoskeletal injury and biomarkers of oxidative stress and energy availability in military recruits.

Role: **PI.** 45% effort 2020-2023

Amount: \$1M

**Military Operational Medicine Research Program.** U.S. Research Institute of Environmental Medicine (2020-2023)

Effect of Basic Combat Training on reproductive function in women: implications for stress fracture risk.

Role: **PI.** 50% effort 2020-2023

Amount: \$1.9M

**U.S. Army Medical Research Acquisition Activity: W81XWH-15-C-0024.** Massachusetts General Hospital (2015-2018)

Risk Stratification of Stress Fracture and Prediction of Return-to-Duty

Role: **Co-I.** 100% effort 2015-2017. 50% effort 2017-2018

Amount: \$1.6M

**U.S. Army Medical Research Acquisition Activity: W81XWH-16-1-0652.** Massachusetts General Hospital (2016-2019)

Mechanisms Underlying Stress Fracture and the influence of sex and race/ethnicity

Role: **Co-I.** 50% effort 2015-2018

Amount: \$1M

**National Athletic Trainers Association Research and Education Foundation Doctoral Research Grant.** University of Minnesota, Twin Cities (2009). Bone Geometry Strength and Biomechanical Changes.

Role: **PI**

Amount: \$8,000

**Valparaiso University Undergraduate Research Grant.** Valparaiso University (2004)

Changes in aerobic performance after 6 weeks of strength training: a pilot study.

Role: **Student investigator**

Amount: \$1,000

## Editorial Activities

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### **Ad hoc Reviewer**

Applied Ergonomics

Bone

Medicine and Science in Sports and Exercise

Scandinavian Journal of Sports Medicine

Calcified Tissue International

Journal of Bone and Mineral Research

American Journal of Sports Medicine

Journal of Sports Medicine

## Human Performance Experience

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2012-2020

### **Adult triathlete and running coach**

2012-2013

#### **Exercise Physiologist:** activ8, Minneapolis, MN

- Designed and implemented corporate fitness programs for TRIA, Medica, Minneapolis Police Department, Minneapolis Fire Department and Minneapolis Public Works.
  - Wrote progressive, fitness programs for individuals ages 18-70.
  - Facilitated group sessions training “peer coaches” to teach fitness classes, adapt workouts, and monitor form. Groups ranged from 10-90 individuals.
- Created online content for corporate and individual classes including articles, instructional exercise videos, nutrition information and blogs.
- Coached 50+ runners and triathletes

2009-2012

#### **NCAA Cross Country Coach/Middle Distance Track & Field Coach:** Iowa State University, Ames, IA

- Designed training program for men’s and women’s middle-distance runners including warm-ups, cool-downs, drills, workouts, and strength training.
- Responsible for all aspects of women’s recruiting ~600 runners.
- Helped to coordinate and run high school track camps for ~100 athletes per camp.
- Distance coaching responsibilities and team accomplishments:
  - Contributed to plan and execution of daily practice for 45 distance runners.
  - Oversaw strength training routine.
  - All-time NCAA collegiate record holder over 10,000m (31:18.07).
  - 4 NCAA individual champions in the 5,000m and 10,000m.
  - 14 first team All-Americans.
  - 6 athletes went on to compete in the 2012, 2016 and 2021 Summer Olympics
- Team academic accomplishments:
  - 39 Academic All-Big 12 honors.

- 7 Academic All-Americans.
- 2006-2009, 2015 **Middle Distance Track & Field Coach:** Mounds View High School
- Designed training program girls middle distance runners including warm-ups, cool-downs, drills, workouts, and strength training.

## Honors and Awards

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2018	Endocrine Fellow Young Investigator Travel Award
2015-2018	Massachusetts General Hospital Postdoctoral Fellowship
2005	Valparaiso University Undergraduate Research Award
2001-2005	Valparaiso University Dean's List
2001-2005	NCAA Academic All-Conference

## Membership

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2015-present	American Society of Bone and Mineral Research
2013-present	USA Triathlon
2009-present	USA Track and Field
2005-present	American College of Sports Medicine

## Certifications

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Certificate of Biostatistics  
 FMS-Functional Movement Screen  
 Limited X-Ray Operator  
 CPR and First Aid