

CURRICULUM VITAE

Gilhyeon Yoon

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Human Performance Laboratory, Ball State University, Muncie, IN, United States

EDUCATION

Ph.D. Candidate, Human Bioenergetics

2023 - present

Human Performance Laboratory, Ball State University, Muncie, IN, United States

Advisor: Dr. Todd Trappe

M.S., Exercise Physiology

2020 - 2021

Loughborough University, Loughborough, United Kingdom

Advisor: Dr. Richard Ferguson

Thesis: The Effect of Different Durations of Low-intensity Exercise on AMPK Phosphorylation within skeletal muscle

B.S., Physical Education

2012 - 2016

Seoul National University, Seoul, Republic of Korea

Advisor: Dr. Wook Song

RESEARCH INTERESTS

- Healthy aging with exercise training
Investigating how different modes of exercise (endurance, resistance, concurrent, and various sports) over several months or years contribute to preserving human physiological function
- Skeletal muscle health
Focusing on skeletal muscle health parameters, including muscle size, strength, composition (adipose infiltration and collagen aggregation), enzyme activity, capillary profile, protein remodeling
- Molecular adaptations of skeletal muscles
Exploring the connection between above-mentioned parameters and the underlying molecular responses

Publication

Journal article

Rogers KR, **Yoon G**, Vincenty CS, Trappe SW, Trappe TA. Muscle-specific atrophy of the lower limb musculature in response to simulated microgravity exposure in women. *J Appl Physiol* (1985). 2025 Sep 1;139(3):759-765. doi: 10.1152/japplphysiol.00483.2025. Epub 2025 Aug 19. PMID: 40828606.

Vincenty CS, **Yoon G**, Rogers K, Naruse M, Trappe S, Trappe TA. Human skeletal muscle-specific hypertrophy with exercise training and aging: a comprehensive review. *J Appl Physiol* (1985). 2025 Jul 1;139(1):58-69. doi: 10.1152/japplphysiol.00892.2024. Epub 2025 May 22. PMID: 40402994; PMCID: PMC12188863.

Book Chapter

NSCA Korea's Sports Nutrition (2024). Chapter 9: Obesity and Weight management

Presentation & Abstract

Oral presentation

Yoon G. Energy balance: Crosstalk between brain and peripheral tissues, *National Strength and Conditioning Association-Korea Conference 2024*

Poster presentation

Yoon G, Vincenty CS, Rogers KR, Naruse M, Trappe SW, Trappe TA. A comprehensive review of the skeletal muscle hypertrophic response to exercise training in older adults: III. Influence of training duration and volume. *Integrative physiology of Exercise 2024*.

Abstract

Vincenty CS, **Yoon G**, Rogers KR, Naruse M, Trappe SW, Trappe TA. A comprehensive review of the skeletal muscle hypertrophic response to exercise training in older adults: I. Insights into muscle specific responses. *Integrative physiology of Exercise 2024*.

Rogers KR, Vincenty CS, **Yoon G**, Naruse M, Trappe SW, Trappe TA. A comprehensive review of the skeletal muscle hypertrophic response to exercise training in older adults: II. Age- and sex-specific responses. *Integrative physiology of Exercise 2024*.

Jung SH, Cho H, **Yoon G**. Moderate-to-high intensity exercise improves function of stroke survivors (P12-8.009). *Neurology 2023 Apr 28 doi.org/10.1212/WNL.0000000000202350*.

Jung SH, **Gilhyeon Yoon**, Cho H, Lee E. Moderate-to-high intensity exercise changes physical activity behavior of stroke survivors. *Annual meeting and International Conference of Korean Academy of Rehabilitation Medicine 2022*.

Kim S, Lee Y, Cho H, **Yoon G**, Lee E, Jung SH. Effect of moderate to high intensity exercise in dialysis patients: a randomized controlled trial. *Korean Sports Science Exercise Medicine 2022 * Merit Research Award*

RESEARCH SKILL

- SDS-PAGE
- Fluorometer and Spectrophotometer
- Single muscle fiber isolation
- Muscle biopsy assistant
- Blood processing (Plasma, Serum, Mononuclear cell preparation, PAXgene)
- MRI image analysis: Fiji and Medical Image Processing Analysis Visualization
- Indirect calorimetry
- Muscle strength test: Isometric and Isokinetic test
- Data visualization: Prism

RESEARCH EXPERIENCE

Doctoral Research Fellow

Human Performance Laboratory, Muncie, IN, United States

2023 - present

- Project: MoTrPAC, Molecular Transducers of Physical Activity Consortium, National Institutes of Health (NIH)
 - Muscle fiber type (myosin heavy chain) analysis: SDS-PAGE with silver staining
 - Muscle glycogen and lactate analysis: fluorometric enzymatic method

- Blood process: Plasma, Serum, Mononuclear cell preparation, PAXgene
- Phenotyping: Cardiopulmonary Exhaustion Test, Maximal Voluntary Contraction test (knee extension, hand grip), DEXA
- Acute exercise bout biospecimen collection and process: expired gas, blood, muscle
- Longitudinal exercise training of sedentary adults: 12-week resistance and endurance training
Edition of manuscripts as a Ball State University Team Review
- Project: Muscle-specific atrophy and adipose infiltration in 17 lower limb muscles in men: 70 years of aging with or without lifelong aerobic exercise.
 - Development of the standard of procedure of MRI adipose analysis for the laboratory
 - MRI tracing over 300 hours (17 lower limbs' muscle volume and adipose infiltration)
 - Writing a manuscript
- Project: Muscle-specific atrophy of the lower limb musculature in response to stimulated microgravity exposure in women
 - Edition of a manuscript
 - Data interpretation
- Project: Human Skeletal muscle-specific hypertrophy with exercise training and aging: a comprehensive review
 - Data sampling for the review paper
 - Preparation of tables and figures
 - Edition of a manuscript

Research assistant

2022 - 2023

Seoul National University Borame Medical Center, Seoul, Republic of Korea

Advisor: Dr. Sehee Jung

- Project: Development of Assessment Tools and Rehabilitation Exercise Program for People with Disabilities in South Korea, National Rehabilitation Center of South Korea
 - Phenotyping: 6-min walk test, Short Physical Performance Battery, Timed up and go, Functional Near-Infrared spectroscopy, Maximal Voluntary Contraction test (hip flexion, hip extension, knee extension, knee flexion, shoulder abduction, elbow flexion, and elbow extension), DEXA
 - Cognitive test: Montreal Cognitive Assessment
 - Questionnaire: Physical Activity Scale for Elderly, Short Form-12 Health Survey
 - Longitudinal exercise training: 8-week group-based resistance training
 - Subjects: Stroke survivors, Patients with chronic renal failure, visual impairment, spinal cord injury

M.Sc. Thesis

2021

Loughborough University, Loughborough, United Kingdom

Advisor: Dr. Richard Ferguson

- Project: Effect of acute low-intensity exercise duration on skeletal muscle signaling responses in males
 - Enzymatic-amperometric method: blood glucose and lactate analysis
 - Micro-hematocrit analysis
 - Acute exercise bout biospecimen collection: expired gas, blood, and muscle
 - Phenotyping: Cardiopulmonary Exhaustion Test: Douglas Bag and O₂ and CO₂ analyzer

PROFESSIONAL EXPERIENCE

- **Strength and conditioning Coach** (Voluntary experience) 2020
 - Soongsil University Soccer Team, Seoul, Republic of Korea
- **Athletic trainer** 2018 - 2019
 - Jeju United Professional Football Club (Soccer), Jeju, Republic of Korea
- **Assistant rehabilitation trainer** (Voluntary experience) 2018 - 2018
 - Inje University Sports Rehabilitation Center, Seoul, Republic of Korea
- **Assistant strength and conditioning trainer** (Voluntary experience) 2015 - 2016
 - Nexen Heroes Professional Baseball Club, Seoul, Republic of Korea

TEACHING EXPERIENCE

- **Track and Field** Spring 2015
 - Teaching Practicum, Seoul National University High School
- **English** Fall 2014
 - Educational Volunteer Program, Nankock Middle School
- **Pediatric Exercise Program** Spring 2014
 - Internship program, Motor Behavior Lab in the Seoul National University
- **Math** Spring 2013
 - Educational Volunteer Program, Gwanak Community Center

AWARDS, HONORS AND SCHOLARSHIP

- **Doctoral Fellowship**, Ball State University 2023, 2024, 2025
- **Travel Grant**, Ball State University 2023, 2024
- **Merit Research Award**, Korea Sports Science Exercise Medicine Association 2022
- **Merit Graduate**, Loughborough University 2021
- **Cum Laude Graduate**, Seoul National University 2016
- **Baekwoon Scholarship**, Baekwoon Foundation 2015
- **Kwanak Scholarship**, Kwanak Corporation 2014, 2015
- **Eminence Scholarship**, Seoul National University 2014
- **Yuyeun Scholarship**, Yuyeun Foundation 2013
- **Superior Academic Performance**, Seoul National University 2012

ATHLETICS

- **College Athlete**, Seoul National University Handball Team 2012 - 2015
 - Vice-captain 2014, 2015
- **CNO Indianapolis Monumental Marathon** 2026
 - 3:31:31

Military Services

- **Leader of Parachute Platoon, Lieutenant** 2016 - 2018
 - Republic of Korea Marine Corps, Pohang, Republic of Korea
- **Reserve Officer** 2013 - 2015
 - Reserve Officer's Training Corps, Seoul National University, Republic of Korea

Certification

- **Certified Strength and Conditioning Specialist**, National Strength and Conditioning Association
- **Certified athletic trainer**, Republic of Korea Athletic Trainer Association
- **Certified Exercise Professionals**, Korea Sports Promotion Foundation