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.

Manuscript preparation

Gilhyeon Yoon, Caroline S Vincenty, Kaitlyn Rogers, Ulrika Raue, Scott Trappe, Todd Trappe. Muscle-specific atrophy and adipose infiltration in 17 lower limb muscles in men: 70 years of aging with or without lifelong aerobic exercise. *Manuscript in preparation.*

The MoTrPAC Study group. Multi-omic, multi-tissue responses to acute exercise in sedentary adults: findings from the Molecular Transducers of Physical Activity Consortium

The MoTrPAC Study group.Temporal multi-omic responses to acute exercise in abdominal subcutaneous adipose tissue of sedentary adults: findings from MoTrPAC

The MoTrPAC Study group.Blood biochemical responses to acute exercise: findings from the Molecular Transducers of Physical Activity Consortium (MoTrPAC) Pre-Covid Phase

The MoTrPAC Study group. Exercise Modulation of the Alternative splicing landscape in human tissues

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

Presentation & Abstract

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

Abstract presentation
Gilhyeon Yoon, Caroline Vincenty, Kaitlyn Rogers, Masatoshi Naruse, Scott Trappe, Todd Trappe. (2024). 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.*

Caroline Vincenty, **Gilhyeon Yoon**, Kaitlyn Rogers, Masatoshi Naruse, Scott Trappe, Todd Trappe. (2024). 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.* **** Oral presentation accepted***

Kaitlyn Rogers, Caroline Vincenty, **Gilhyeon Yoon**, Masatoshi Naruse, Scott Trappe, Todd Trappe. (2024). 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.*

Se Hee Jung, Hejung Cho, **Gilhyeon Yoon.** (2023). Moderate-to-high intensity exercise improves function of stroke survivors. *Neurology.*

Se Hee Jung, **Gilhyeon Yoon,** Hejung Cho, Eunsong Lee. (2022). Moderate-to-high intensity exercise changes physical activity behavior of stroke survivors. *Annual meeting and Intenational Conference of Korean Academy of Rehabilitation Medicine.*

Sanyoung Kim, Yeji Lee, Hejung Cho, **Gilhyeon Yoon,** Eunsong Lee, Se Hee Jung. (2022). Effect of moderate to high intensity exercise in dialysis patients: a randomized controlled trial. *Conference of Korean Sports Science Exercise Medicine* **** Merit Research Award***

LABORATORY SKILLS

Wet Lab
- SDS-PAGE and Western blotting
- Fluorometer and Spectrophotometer
- Blood processing (Plasma, Serum, Mononuclear cell preparation, PAXgene)

Dri Lab
- 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 2023 - present

Human Performance Laboratory, Muncie, IN, United States

- Project: MoTrPAC, Molecular Transducers of Physical Activity Consortium, National Institutes of Health (NIH)
  - Single muscle fiber analysis: SDS-PAGE
  - Blood process: Plasma, Serum, Mononuclear cell preparation, PAXgene
  - Phenotyping: Cardiopulmonary Exhaustion Test, Maximal Voluntary Contraction test, DEXA
  - Acute exercise bout biospecimen collection and process: expired gas, blood, muscle
  - Longitudinal exercise training: 12-week resistance and endurance training
  - Subjects: Sedentary, healthy, young and old adults (≥ 18y)

- Project: Muscle-specific atrophy and adipose infiltration in 17 lower limb muscles in men: 70 years of aging with or without lifelong aerobic exercise.
  - Standard of procedure development for the laboratory
  - MRI tracing over 200 hours (17 lower limbs' muscle volume and fat infiltration)
  - Manuscript draft

- Project: Muscle-specific atrophy of the lower limb musculature in response to stimulated microgravity exposure in women
  - Edition of 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: Prism
  - Edition of 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: Maximal Voluntary Contraction test, DEXA, 6-min walk test, Short Physical Performance Battery, Functional Near-Infrared spectroscopy
  - Questionnaire: Quality of Life
  - 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

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 SCHORLARSHIP

- **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

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