

Integrative Physiology of Exercise

Virtual • November 9–13, 2020



Tentative Agenda

(blocks of times subject to be adjusted)
(session times are in Eastern Standard Time, EST)

Monday November 9, 2020

- 9:30 a.m. – 9:40 a.m. Welcome
Scott Trappe, PhD, Conference Chair
Ball State Univ.
- 9:45 a.m. – 11:45 a.m. **Symposium 1**
Scientific Contributions of John O. Holloszy, MD
Chair: John Kirwan, PhD
Pennington Biomedical Research Center
- Amira Klip, PhD
Hospital for Sick Children
When GLUT4 ‘arrived’ in muscle
- Juleen Zierath, PhD
Karolinska Institute
Exercise as “medicine” to enhance insulin sensitivity and metabolism in type 2 diabetes: Inspired by John O. Holloszy
- Katsuhiko Funai, PhD
Univ. of Utah
Biogenesis of mitochondrial membranes
- Jacob Haus, PhD
Univ. of Michigan
Calcium and caloric restriction: A new perspective on old ideas for the treatment of diabetes
- Session Q & A
- 11:45 a.m. – 12:15 p.m. Break
- Meet the Editor**
AJP – Endocrinology and Metabolism
Andre Marette, PhD, Université Laval

- 12:15 p.m. – 1:15 p.m. **Workshop 1**
Navigating the NIH for Young Investigators & Grant Writing
Facilitators: Lyndon Joseph, PhD, NIA and Amanda Boyce, PhD
NIAMS
- 1:15 p.m. – 2:15 p.m. Break
- 2:15 p.m. – 4:15 p.m. **Symposium 2:**
Mission to mars: Astronaut health & exercise
Chairs: Jessica Scott, PhD, Memorial Sloan Kettering Cancer Center
and Lori Ploutz-Snyder, PhD, Univ. of Michigan
- Lori Ploutz-Snyder, PhD
Univ. of Michigan
Introduction to the NASA SPRINT exercise studies
- Jessica Scott, PhD
Memorial Sloan Kettering Cancer Center
*Exercise to mitigate multisystem deconditioning: the NASA 70-day
bed rest study*
- Scott Smith, PhD
National Aeronautics and Space Administration (NASA)
Nutrition as fuel for space exploration
- COL Michael Fossum (Astronaut)
Texas A&M University at Galveston
*Maintaining bone and muscle mass in space: The astronaut
perspective*
- Session Q & A

Tuesday November 10, 2020

- 9:30 a.m. – 9:40 a.m. **Daily Welcome**
TBD
- 9:45 a.m. – 10:45 a.m. **Keynote Address 1**
August Krogh, Nobel Laureate: 100 Year Anniversary Celebration
Michael Kjaer, MD, DMSc
Univ. of Copenhagen
- 10:45 a.m. – 11:00 a.m. Break

11:00 a.m. – 12:00 p.m. **Workshop 2**
Career Paths & Diversity in Science
Facilitators: Jessica Scott, PhD, Memorial Sloan Kettering Cancer Center; Matthew Fedoruk, PhD, United States Anti-Doping Agency (USADA) and Hirofumi Tanaka, PhD, Univ. of Texas at Austin

12:00 p.m. – 12:30 p.m. Break

12:30 p.m. – 2:30 p.m. **Symposium 3**
Exercise & Organ Crosstalk
Chair: Bente Klarlund Pedersen, MD, DMSc
Rigshospitalet Hospital & Univ. of Copenhagen

Henriette Van Praag, PhD
Florida Atlantic Univ.
The role of muscle in adult neurogenesis and memory function

David Wright, PhD
Univ. of Guelph
Clinical relevance and underlying mechanisms of exercise-induced browning of white adipose tissue

Mark Febbraio, PhD
Monash Univ.
Role of extracellular vesicles in tissue cross talk during exercise

Cora Weigert, PhD
Univ. of Tuebingen
Hepatokines-a novel group of exercise factors

Session Q & A

2:30 p.m. – 2:45 p.m. Break

Meet the Editor
AJP – Heart Circulatory Physiology
Irving Zucker, PhD, Univ. Nebraska Medical Center
Merry Lindsey, PhD, Univ. Nebraska Medical Center

2:45 p.m. – 4:15 p.m. **Formal Poster Session 1**

Wednesday November 11, 2020

9:30 a.m. – 9:40 a.m. **Daily Welcome**
TBD

- 9:45 a.m. – 10:45 a.m. **Keynote Address 2**
A.V. Hill, Celebrating a Century of VO2max
David Bassett, PhD
Univ. of Tennessee
- 10:45 a.m. – 11:00 a.m. Break
- 11:00 a.m. – 1:00 p.m. **Concurrent Sessions of Trainee Presentations**
Room 1: Integrative Responses I
Chair: Jacob Haus, PhD
Univ. of Michigan
- Michael Schleh
Univ. of Michigan
High-intensity interval training increased aerobic capacity but did not improve peripheral insulin sensitivity, in either insulin resistant or insulin sensitive obese adults
- William Tait
Univ. of Otago
The utility of preoperative high-intensity interval training
- Brooks Leitner
Yale Univ.
Interaction between inflammation and substrate metabolism during recovery from an acute bout of treadmill training
- Kevin Gries
Mayo Clinic
Inflammation, mitochondria, and exercise responsiveness in obesity
- Andre Teixeira
University of Guelph
Regulation of renal and muscle sympathetic nerve activity during stress in humans
- Timothy Moore
Univ. of California, Los Angeles
The response to physical activity in mouse and man: an interplay between genetics and exercise
- Cesare Granata
Monash Univ.
A multi-omics approach reveals an intricate network of exercise training-induced mitochondrial adaptations in human skeletal muscle

Euan Owen

Univ. of Liverpool

Integrative transcriptomic, proteomic and protein synthesis profiling of individual proteins in mouse skeletal muscle reveal distinct signatures between adult and old animals.

Room 2: Skeletal Muscle I

Chair: Simon Schenk, PhD

Univ. of California, San Diego

James Shadiow

Univ. of Michigan

Skeletal muscle fiber type-specific redox signatures in lean and obese individuals in response to exercise

Yuntian Guan

Univ. of Virginia

Mitochondrial quality control in exercise-mediated protection against diastolic dysfunction in diabetes

J. Matthew Hinkley

AdventHealth Orlando

Exercise-induced metabolite signatures in skeletal muscle are similar between young and old adults

Jacob Bonafiglia

Queen's Univ.

Interindividual variability in skeletal muscle responses to moderate intensity continuous training

Megan Trappe

Burriss Laboratory School

High intensity exercise in space: human skeletal muscle fiber types after 6 months aboard the international space station

Elena Monti

Univ. of Padova

Early neuromuscular and contractile maladaptations to short-term bed rest

Jacob Sorensen

Univ. of Minnesota

Secondary denervation and poor neuromuscular junction remodeling is a chronic pathophysiologic consequence of volumetric muscle loss

Eleanor Jones
Univ. of Nottingham
Motor unit discharge properties following concentric and eccentric exercise-induced fatigue are dependent upon contraction type.

Room 3: Cardiovascular and Aging

Chair: Jessica Scott, PhD
Memorial Sloan Kettering Cancer Center

Nathan Stewart
Rutgers Univ.
Nocturnal blood pressure dipping relates to metabolic insulin sensitivity but not vascular function in metabolic syndrome

Emily Heiston
Virginia Commonwealth Univ.
A single bout of exercise increases vascular insulin sensitivity in adults with obesity

Juan Estrada
UT Southwestern Medical Center
Insulin receptor blockade in the nucleus tractus solitarius augments exercise pressor reflex function in normal rats

Ramona Weber
Kansas State Univ.
Effects of soluble guanylate cyclase activator on skeletal muscle capillary hemodynamics in heart failure rats with reduced ejection fraction

Mark Schoenike
Massachusetts General Hospital
Pulmonary capillary wedge pressure responses to upright exercise refine hemodynamic assessment and predict prognosis in hfpef

Hyerim Park
Florida State Univ.
Effects of aging and endurance exercise training on bone structure and blood flow

Davis Englund
Mayo Clinic
The effects of structured physical activity on biomarkers of cellular senescence in older adults

Jae Min Cho
Univ. of Utah
Late-in-life exercise training improves composition of the intestinal microbiome.

Integrative Responses & Skeletal Muscle II

Chair: Paul Coen, PhD

AdventHealth Research Institute

Kevin Murach

Univ. of Kentucky

The genetic and epigenetic regulation of skeletal muscle ribosome biogenesis in response to acute exercise

Ji H. Kang

Univ. of California, San Diego

Loss of sirtuin 1 (SIRT1) does not impair contraction-stimulated glucose uptake in mouse skeletal muscle

Harrison Stierwalt

Univ. of Kansas Medical Center

AMPK signaling, not Rac1 activation contribute to the insulin sensitizing effects of exercise following moderate-intensity exercise in humans

Mamoru Oyabu

Kyoto Prefectural Univ., Japan

Gene regulation in skeletal muscle atrophy by a transcription factor FOXO1

Cory Dungan

Univ. of Kentucky

Senescent cells accumulate in skeletal muscle of aged mice following mechanical overload

Priti Gupta

Univ. of Houston

Comparing three exercise interventions on pancreatic tumor growth in mice during chemotherapy treatment

Patrick Ryan

Texas A&M Univ.

Exercise is chemotherapy: exercise-derived myokines suppress lung cancer cell growth

Noah Hutchinson

Univ. of Illinois at Urbana-Champaign

Effects of broad spectrum antibiotic administration on running wheel behavior in mice

1:00 p.m. – 1:30 p.m.

Break

Meet the Editor
AJP Regulatory, Integrative and Comparative Physiology
Gina Yosten, PhD, Saint Louis Univ.

1:30 p.m. – 3:00 p.m. **Formal Poster Session 2**

3:00 p.m. – 3:15 p.m. Break

3:15 p.m. – 5:15 p.m. **Quiz Bowl**

Thursday November 12, 2020

9:30 a.m. – 9:40 a.m. **Daily Welcome**
TBD

9:45 a.m. – 11:45 a.m. **Symposium 4**
Homeostasis & adaptation of tendons to exercise
Chair: Peter Magnusson, DMS
Institute of Sports Medicine Copenhagen

Karl Kadler, PhD
The Univ. of Manchester
The role of the circadian clock in exercising tendons

Michael Kjaer, MD, DMSc
Univ. of Copenhagen
Cellular and molecular responses to exercise and inactivity in human tendon muscle loading

Stephanie Dakin, PhD
Univ. of Oxford
Exercise induced inflammation in tendinopathy

Chris Mendias, PhD
Myognosis, Inc.
Regulation of extracellular matrix tendon tissue in response to resistance training

Session Q & A

11:45 a.m. – 12:00 p.m. Break

12:00 p.m. – 1:00 p.m. **Workshop 3**
Team Science
Facilitators: Lori Ploutz-Snyder, PhD, Univ. of Michigan; Sue Bodine, PhD, Univ. of Iowa and John Kirwan, PhD, Pennington Biomedical Research Center

1:00 p.m. – 1:30 p.m.

Break

1:30 p.m. – 3:30 p.m.

Symposium 5

Testosterone, Health & Performance

Chair: Matthew Fedoruk, PhD

United States Anti-Doping Agency (USADA)

Daniel Eichner, PhD

Sports Medicine Research & Testing Laboratory

Testosterone and androgen abuse in sport - Evolution and challenges in detection

Stefan Pasiakos, PhD

Military Nutrition Division, US Army Research Institute of Environmental Medicine

Testosterone supplementation, energy deficit and performance

Angelica Lindén Hirschberg, MD, PhD

Karolinska Institute

Testosterone, females and athletic response - current research and controversy

Al Matsumoto, MD

Univ. of Washington

Testosterone and health: Medical need or anti-aging fad? Clinical use of testosterone in men

Session Q & A - Live

Friday November 13, 2020

9:30 a.m. – 9:40 a.m.

Daily Welcome

TBD

9:45 a.m. – 11:45 p.m.

Symposium 6

Molecular Transducers of Physical Activity Consortium (MoTrPAC)

Session Chair: Sue Bodine, PhD, Univ. of Iowa

Sue Bodine, PhD

Univ. of Iowa

Overview of preclinical animal study protocol and results of training studies

Marcas Bamman, PhD

Univ. of Alabama Birmingham

Overview and update of MoTrPAC clinical studies

Malene Lindholm, PhD

Stanford Univ.

Integrative multi-omic analysis in MoTrPAC

Bret Goodpaster, PhD
AdventHealth Research Institute
Moving the exercise biology field beyond MoTrPAC

MoTrPAC Panel Discussion with Speakers, NIH Officials and Audience

Session Q & A

- 11:45 a.m.– 12:00 p.m. Break
Meet the Editor
Journal of Applied Physiology
Sue Bodine, PhD
Univ. of Iowa
- 12:00 p.m. – 1:00 p.m. **Workshop 4**
Social Media
Facilitator: Stacy Brooks
American Physiological Society
- 1:05 p.m. – 1:45 p.m. **Awards & Closing Remarks**