2026 Midwest Chapter of The American College of Sports Medicine Annual Meeting

Long Program

Amway Grand Plaza Hotel
Grand Rapids, Michigan
October 21-23, 2026

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Special Events

Wednesday (10/21/2026)

2:00 pm – 4:00 pm	Board of Directors Meeting (Pearl Room)
5:30 pm – 7:30 pm	Registration/Badge Pick-up (Center Concourse)
6:00 pm – 7:30 pm	Health Initiatives on Campus Showcase (Center Concourse)
7:30 pm – 10:00 pm	Past President's Social (Imperial Ballroom)

Thursday (10/22/2026)

7:30 am – 12:00 pm	Registration (Center Concourse)
8:00 am – 5:00 pm	Exhibitor Fair (West Concourse)
8:00 am – 8:50 am	**National and State Level Physical Activity Plan: How to Engage** -*ACSM President Karin Pfeiffer* (Ambassador Ballroom)
9:00 am – 9:50 am	**Where Do You Want ACSM to Take You?** (Ford) -Anna Parr (ACSM Member Programs Manager) -Kworweinski Lafontant (ACSM National Student Trustee)
9:00 am – 12:00 pm	Graduate School Fair (Center Concourse)
12:00 pm – 2:00 pm	Keynote Presentation and Lunch (Ambassador Ballroom)
2:15 pm – 2:30 pm	Physical Activity Break! (Led by EIM Members in Session Rooms)
2:00 pm – 4:30 pm	Badge Pick-Up (Center Concourse)
4:30 pm – 6:00 pm	Leadership & Mentoring Program Speed Mentoring (Ambassador Ballroom)
8:00 pm – 10:00 pm	Quiz Bowl (Ambassador Ballroom)

Friday (10/23/2026)

6:30 am	**MWACSM Walk, Roll, or Run!** (Details on Page 6)
10:00 am – 12:00 pm	Business/Awards Meeting, Brunch, and Keynote Presentation (Ambassador Ballroom)

Opening Session (8:00 - 8:50 a.m.) Ambassador Ballroom

National and State Level Physical Activity Plan: How to Engage

Karin Pfeiffer, PhD, FACSM, FNAK

ACSM President, 2026–2027



Karin Allor Pfeiffer is the Red Cedar Distinguished Professor in Kinesiology and Director of the Institute for the Study of Youth Sports at Michigan State University in East Lansing, Michigan. She is also a member of MSU's Center for Physical Activity and Health. An exercise physiologist, Dr. Pfeiffer studies physical activity in children and adolescents through population-based research. Her work spans preschool through high school and extends to college students. She currently serves as President of the American College of Sports Medicine.

Thursday Morning National ACSM Session (Ford)

9:00–9:50 a.m.

WHERE DO YOU WANT ACSM TO TAKE YOU?

Anna Parr, CMP — ACSM Member Programs Manager
Kworweinski Lafontant, MS, ACSM-EP, ACSM-CPT — ACSM National Student Trustee



Anna serves on the national staff team for ACSM in the membership department. Her role includes serving as the staff liaison to all 11 ACSM Regional Chapters and nearly 20 ACSM Special Interest Groups, as well as overseeing the administration of the ACSM Fellowship program. Anna joined the ACSM staff team in September 2025, bringing nearly four years of non-profit, event planning, and member engagement experience with other membership associations.



Kworweinski has been a part of ACSM since his freshman year of undergrad in 2018 at Hope College, and he has benefitted greatly from the work and advocacy of ACSM. His career has included working as a personal trainer and strength coach in box gyms, after-school programs, and community youth basketball leagues, conducting graduate research and teaching at the University of South Florida, and currently conducting research as a PhD candidate at the University of Central Florida. As the Student Trustee on the ACSM Board of Trustees, Kworweinski serves as the voice for ACSM students worldwide and leads the national Student Affairs Committee. He has been an active member of both the Midwest and Southeast ACSM Regional Chapters, organizing student conference trips to both the Southeast and national ACSM annual meetings.

Session Overview

An interactive, introductory session that puts you in the driver's seat of your ACSM journey. Designed for students and early-career professionals who are new to ACSM, this session explores possible career destinations, common roadblocks, and the resources, connections, and opportunities that can help you navigate what comes next. You'll leave with at least three concrete ways ACSM can help you move toward your next stop. All are welcome!

MWACSM Fun Walk, Roll, or Run

Walk, Run, or roll before breakfast!

Friday, October 23, 2026 | 6:30 a.m.

Meet at Lyon Square, near the Gillett Pedestrian Bridge, just outside the conference hotel.

Join the Midwest ACSM community for movement, conversation, and a chance to connect with colleagues before the conference day begins.

Enjoy a scenic route along Grand Rapids' downtown River Trail. The loop is approximately 1.65 miles; choose one or two laps and run, walk, or roll at your own pace.

Registration and Participation Waiver

Scan the QR code below to register your participation and complete the waiver, or use the registration link in the digital program.



Open the registration and participation waiver form

Thank You to Our Exhibitors

Silver Exhibitors

Bowling Green State University
Physical Therapy • Occupational Therapy
Athletic Training
Sports Administration and Kinesiology

Cincinnati Children's Hospital
Cardiopulmonary Exercise Lab

Medical Supplies & Equipment for Physicians, Clinics and Hospitals

Indiana Wesleyan University

Thank You to Our Exhibitors

Silver Exhibitors

PARKER UNIVERSITY

SCHOOL OF KINESIOLOGY
GRADUATE STUDENT AFFAIRS
UNIVERSITY OF MICHIGAN

UNIVERSITY OF WISCONSIN
RIVER FALLS

VALD
Technology for Human Performance

Bronze Exhibitors

ACSM
AMERICAN COLLEGE OF SPORTS MEDICINE

SCHOOL OF HEALTH SCIENCES
OAKLAND UNIVERSITY

Thank You to Our Graduate Fair Exhibitors

Gold Level

Ripon College

Master of Exercise Science

Exercise Physiology • Sport Management • Sport Psychology

Silver Level

Calvin University
M.S. in Exercise Science
Cardiac Rehabilitation Graduate Certificate

Central Michigan University
Exercise Physiology

Concordia University Wisconsin
Physical Therapy

Miami University
M.S. in Kinesiology, Nutrition, and Health
Master of Athletic Training

Michigan State University
Master of Applied Sport Sciences

Northern Illinois University
School of Rehabilitation
and Performance Sciences

Thank You to Our Graduate Fair Exhibitors

Silver Level Continued

Northern Michigan University
M.S. Exercise Science, Applied Sport Psychology, and Athletic Training

Purdue University
M.S. in Athletic Training, Sport Management, and Kinesiology; Doctorate in Kinesiology
Combined B.S./M.S. in Kinesiology

Quincy University
Doctor of Occupational Therapy
Doctor of Physical Therapy

Southern Illinois University Edwardsville
Kinesiology—Exercise Physiology
Kinesiology—Exercise and Sport Psychology
Nutrition and Dietetics

St. Ambrose University
M.S. in Exercise Physiology



Tiffin University
M.S. Clinical Exercise Physiology

University of Michigan — School of Kinesiology
M.S. Athletic Training, Intraoperative Neurophysiology,
Movement Science, and Sport Management
Ph.D. Movement Science and Sport Management

University of Wisconsin–River Falls
Clinical Exercise Physiology
Strength and Conditioning
Health and Wellness Management

Continuing Education Credit (CEC)

ACSM CEC Certificate

_____

Participant Name

Midwest Chapter of the American College of Sports Medicine

Provider Name

2026 Midwest Chapter of the American College of Sports Medicine Annual Meeting (Grand Rapids, Michigan)

Course Title

Approved Provider Number: #650390 CECs: 12.0

Kyle L. Timmerman

Lead Program Administrator Signature

ACSM Midwest Chapter

Board of Directors



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President



Dr. Steven Elmer

President-Elect



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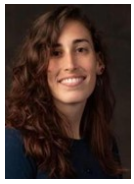
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Dr. Helaine Alessio, FACSM

Chapter Historian



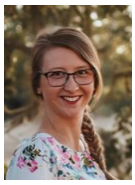
Dr. Kayla Baker

Member-at-Large
Year 3



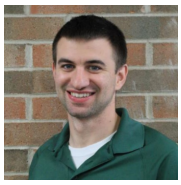
Dr. Avinash Chandran

Member-at-Large
Year 3



Dr. Megan Nelson

Member-at-Large
Year 3



Mathew Kilgas

Member-at-Large
Year 2



Terence Moriarty

Member-at-Large
Year 2



James Sackett

Member-at-Large
Year 2



Jack Senefeld

Member-at-Large
Year 1



Chad Wiggins

Member-at-Large
Year 1



Mai Wageh

Member-at-Large
Year 1

Keynote Speakers

Keynote Presentation and Lunch (Thursday, October 22 • Noon–2:00 p.m.)
Ambassador Ballroom



Dr. Marni Boppart

PLASMA EXTRACELLULAR VESICLES: NOVEL INSIGHTS REGARDING SYSTEMIC CARRIERS AND MEDIATORS OF EXERCISE BENEFITS

Exercise releases signaling molecules that help coordinate adaptations throughout the body. This presentation explores whether extracellular vesicles circulating after exercise carry molecules that benefit skeletal muscle and the brain. Dr. Boppart will discuss preclinical findings and the potential for these vesicles to support future rehabilitation therapies.

Keynote Presentation and Business Meeting (Friday, October 23 • 10:00 a.m.–Noon)
Ambassador Ballroom



Dr. Kyle Hackney

SKELETAL MUSCLE PLASTICITY WITH DISUSE AND AGING-ROLE OF EXERCISE

Periods of inactivity and advancing age can reduce muscle size, strength and physical capacity. Dr. Hackney will examine these changes and discuss evidence for exercise as a means of maintaining muscle function.

Thursday Morning Professional Symposiums

Symposium 1 **Thursday, 9:00 - 9:50** **Grandview**

SQUARE-STEPPING EXERCISE AS A COGNITIVE-MOTOR INTERVENTION TO SUPPORT HEALTHY AGING

Emerson Sebastião (*Moderator: Craig Berry*)



Dr. Emerson Sebastião is an Assistant Professor in Health and Kinesiology at the University of Illinois Urbana-Champaign and Director of the Exercise, Aging, and Functional Ability Lab. His research examines physical activity and exercise as strategies to promote health, physical and cognitive function, and quality of life in older adults. Using quantitative and qualitative methods, his work focuses on understanding factors influencing physical activity participation, examining its health and functional benefits, and developing and optimizing exercise interventions. His research emphasizes older adults, including those living with multiple sclerosis, with a focus on healthy aging and functional independence.

Session Overview

Can a cognitively engaging stepping-based exercise enhance cognitive and physical function in older adults? This question is central to emerging research on Square-Stepping Exercise (SSE), a structured cognitive-motor training designed to simultaneously challenge executive and motor function.

Age-related declines in cognitive and physical function are closely interconnected and contribute to reduced independence, increased fall risk, and diminished quality of life among older adults. SSE has emerged as a promising exercise intervention that integrates complex stepping patterns with cognitive demands requiring attention, working memory, visuospatial processing, and planning. By targeting cognitive-motor integration, SSE improve both cognitive performance and functional mobility, two critical determinants of healthy aging.

This presentation will provide an overview of the theoretical foundations of SSE and critically review the current evidence regarding its effects on cognitive and physical function in healthy older adults and those with clinical conditions. We will examine factors that may influence intervention effectiveness, including program design, progression, and participant characteristics, and discuss how SSE protocols can be adapted to meet the needs of diverse populations. Finally, we will explore opportunities and challenges associated with implementing SSE in community and clinical settings and identify key priorities for future research.

Learning Objectives

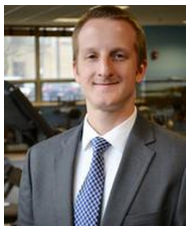
Following this session, attendees will be able to:

1. Describe the theoretical foundations, structure, and key components of Square-Stepping Exercise as a cognitive-motor training intervention.
2. Evaluate the current evidence regarding the effects of Square-Stepping Exercise on cognitive and physical function outcomes in older adults.
3. Discuss practical considerations and implementation strategies for incorporating Square-Stepping Exercise into community-based and clinical programs serving older adults.

Symposium 2 **Thursday, 9:00 - 9:50** **Pearl**

Professional Development for the Clinical Exercise Physiologist: Moving Your Career and the Field Forward

Garett J. Griffith FACSM, Amy Boettcher, Sandy Knecht FACSM (*Moderator: Carol Weideman*)



Dr. Garett Griffith is an Assistant Faculty member of the Northwestern University Feinberg School of Medicine. His research focuses on exercise testing and training in clinical populations including Parkinson's disease, cystic fibrosis, and HFpEF patients. Dr. Griffith is a former President of the Clinical Exercise Physiology Association (CEPA), an affiliate society of ACSM focused on the advancement of the practice and science of clinical exercise physiology through education, advocacy, professional development, and empowerment of professionals in the field.



Amy Boettcher is an Assistant Professor at Michigan State University, where she teaches exercise physiology with an emphasis on clinical exercise physiology. Her research interests include cardiovascular responses to exercise and the application of exercise physiology in clinical populations. Prior to her academic career, Dr. Boettcher worked as a Clinical Exercise Physiologist in cardiopulmonary rehabilitation and is an ACSM Certified Clinical Exercise Physiologist. Her work is driven by a passion for advancing clinical exercise physiology to help prevent chronic disease and improve health, function, and quality of life for individuals living with chronic conditions.



Sandy Knecht, MS is a Clinical Exercise Physiologist with over 25 years' experience in cardiopulmonary exercise testing in pediatric and adult congenital patients. She is currently the Cardiopulmonary Exercise Lab Supervisor and Internship Coordinator at Cincinnati Children's Hospital. Sandy holds the American College of Sports Medicine ACSM -CEP certification with the RCEP distinction and the AACVPR's CCRP certification. Sandy is active in several professional organizations including The American College of Sports Medicine (ACSM) and regional chapter (Midwest ACSM, Clinical Exercise Physiology Association (CEPA), North American Society for Pediatric Exercise Medicine (NASPEM).

Session Overview

This session will explore key professional development opportunities that can help clinical exercise physiologists (CEPs) build rewarding and sustainable careers while strengthening the profession as a whole. A major focus of this session will be the value of internships across all career stages. For students, internships provide essential hands-on experience, networking opportunities, and resume-building. For practicing professionals, serving as internship supervisors offers an opportunity to develop leadership skills, contribute to workforce development, and help prepare future CEPs for successful careers. This session will also examine factors associated with career advancement and increased earning potential within the field by discussing the role of professional certifications and advanced education. In addition, attendees will learn about the benefits of active engagement in professional organizations through research participation and committee service. Volunteering for committees and contributing to professional initiatives not only supports the advancement of the field but also provides valuable opportunities for networking, leadership development, and professional recognition. Whether you are a student preparing to enter the workforce or practicing professional seeking advancement, this session will provide practical strategies and actionable insights for growth within the field of clinical exercise physiology.

Learning Objectives

1. Understand the value of internships and volunteer opportunities in exercise science for both students and professionals
2. Identify professional development opportunities in clinical exercise physiology including certifications and participation in professional societies
3. Describe the impact of professional development on expected salary for practicing clinical exercise physiologists

Symposium 3 **Thursday, 9:00 - 9:50** **Emerald**

Creating and Using HTML Applications with Generative AI for Exercise Science Education

Matt Kilgas, Jon Stavres (*Moderator: Nicholas Mortensen*)



Dr. Matthew Kilgas is an Associate Professor in the School of Health and Human Performance at Northern Michigan University (NMU) and the 2025–2027 NMU Teaching and Learning Scholar. His research focuses on exercise-based interventions to restore musculoskeletal function and improve performance in clinical and athletic populations. An active advocate for open education, Dr. Kilgas is leading the development of two OER textbooks and exploring the use of generative AI to support instructional design. He teaches graduate and undergraduate courses in exercise physiology, chronic disease management, and research methods.



Dr. Stavres is an Assistant Professor in the Depart. of Kinesiology, Nutrition and Health at Miami University. He earned his Ph.D. in Exercise Physiology from Kent State University under the mentorship of Dr. John McDaniel, after which he completed his postdoctoral training at the Penn State Heart and Vascular Institute with Dr. Lawrence I. Sinoway. Dr. Stavres' research focuses on human cardiovascular function, with a particular focus on exercise blood pressure control in individuals with cardiometabolic dysfunction.

Session Overview

This session explores the use of generative AI to design and create custom HTML applications for courses in exercise science. These interactive hands-on activities have been shown to enhance student comprehension by providing an opportunity to actively engage in their learning. While traditional higher education often relies on passive lecturing, deep conceptual learning requires active participation, which can be difficult for complex topics in Physiology and Kinesiology.

We will demonstrate how instructors can use Large Language Models (LLMs) to write custom code for the creation of hands-on web-based activities without knowledge of coding or software development. By removing this technical barrier, instructors can quickly build custom digital tools for their specific learning objectives. During this interactive session, attendees will work together to develop a prompt and generate their own custom applications that can be integrated directly into their classrooms. We will showcase how these applications have been successfully utilized in our courses as assignments, laboratory projects, and summative assessments. Finally, we will share existing applications and outline a research proposal aimed at evaluating the pedagogical effectiveness of these interactive HTML applications compared to traditional instruction.

Learning Objectives

1. Explain how web-based applications enhance student comprehension by providing an opportunity to actively engage in the learning process.
2. Demonstrate how to integrate these applications into lectures and labs to enhance student learning.
3. Utilize Generative AI to design custom HTML applications for interactive learning without prior knowledge in coding or software development.

Symposium 4 **Thursday, 10:00 - 10:50** **Grandview**

The Effects of Type 2 Diabetes and Aging on Muscle Function: Examining the Impact of Neuropathy, Pharmacological Treatments, and Exercise Training

Rachel Logue Cook, Sarah Lessila, Frank Doyle (*Moderator: Dan Carl*)



Rachel Logue Cook is a Research Investigator in the School of Kinesiology at the University of Michigan. She received her bachelor's degree in Kinesiology from San Diego State University in 2018 before attending the University of Michigan for her master's degree (2019) and doctoral training (2024). Her research focuses on aging and the factors that lead to accelerated age-related declines in muscle strength, physical function, and independence. Dr. Logue Cook recently completed an exercise training intervention in adults with Type 2 Diabetes and also has a keen interest in women's health and understanding how hormonal changes during menopause impact late-life function.



Sarah Lessila is a Research Specialist, Neuromuscular Physiology of Human Movement Laboratory at the University of Michigan School of Kinesiology, studying neuromuscular function in populations including diabetes, ageing and sex differences. I hold a Bachelor of Science in Exercise Physiology and a Master of Science in Exercise and Rehabilitation Science both earned from Marquette University in Milwaukee WI.



Frank is a second-year PhD student in the School of Kinesiology at the University of Michigan, where he also earned his master's degree in Movement Science. His research investigates how diabetic peripheral neuropathy and its associated impairments in peripheral nerve function impact muscular strength and fatigability along with overall functional performance. By utilizing large, publicly available datasets, Frank hopes to characterize the extent and clinical presentation of these functional deficits prior to investigating underlying physiological mechanisms.

Session Overview

The U.S. population of older adults is rapidly increasing and are at greater risk for mobility impairments, frailty, and loss of independence. Aging is also a leading risk factor for developing Type 2 Diabetes (T2D), a metabolic disease characterized by elevated blood glucose and insulin resistance. T2D can then, in turn, accelerate the aging process leading to decreased muscle strength, increased muscle fatigue, and greater risk for developing diabetic neuropathy making it more difficult to complete activities of daily living. Developments in pharmacological treatments (e.g., metformin, GLP-1/GIP) and exercise training recommendations have helped to slow the progression of the disease, however the mechanisms by such interventions impact muscle function remain largely unknown. The goal of this session is to discuss recent findings on the impact of T2D and aging on muscle function which leverage both laboratory-based mechanistic assessments and analysis of large health datasets. This session will be comprised of three sessions which will examine 1) the impact of diabetic neuropathy on muscle strength and physical function, 2) sex differences in muscle strength based on metformin use in T2D, and 3) the impact of blood flow restriction training on muscle strength, power, and fatigue in adults with T2D.

Learning Objectives

1. Following this session, attendees will be able to identify the ways in which T2D accelerates the typical aging process.
2. Following this session, attendees will be able to describe the impact of diabetic neuropathy on muscle strength and physical function in older adults.
3. Following this session, attendees will be able to describe sex differences in muscle strength outcomes based on metformin use in adults with T2D.
4. Following this session, attendees will be able to describe the effectiveness of blood flow restriction training on muscle strength, power, and fatigue in adults with T2D.

Symposium 5 **Thursday, 10:00 - 10:50** **Pearl**

BEYOND THE CLINIC CUFF: UNLOCKING THE VALUE OF AMBULATORY BLOOD PRESSURE MONITORING

Katharine D. Currie FACSM, Jill M. Slade FACSM, Anne Tonson (*Moderator: Sandra Knecht*)



Katharine Currie is an Associate Professor of Kinesiology at Michigan State University, and Director of the Exercise & Cardiovascular Health Outcomes (ECHO) Lab. Her research focuses on the acute and chronic blood pressure responses to lifestyle interventions including exercise and heat therapy. Katharine is a Fellow of the American College of Sports Medicine and received her Clinical Exercise Physiologist accreditation through the Canadian Society for Exercise Physiology.



Dr. Jill M. Slade is an Associate Professor of Radiology and Associate Chair for Research in Radiology at Michigan State University. Her research focuses on age-related microvascular changes and how vascular function adapts to physical activity. Specifically, her work investigates cardiovascular dynamics, including blood pressure responses to exercise and training in older women with hypertension. Her laboratory utilizes noninvasive ultrasound and magnetic resonance imaging (MRI) to evaluate muscle and vascular function in clinical and aging populations. Dr. Slade earned her PhD in Exercise Physiology from the University of Georgia and completed postdoctoral training at Michigan State University.



Dr. Anne Tonson is a Research Associate at Michigan State University in the Departments of Kinesiology and Radiology. Her research focuses on skeletal muscle energetics and cardiovascular health across the lifespan, with a particular interest in the mechanisms underlying functional decline associated with aging. Using magnetic resonance imaging and spectroscopy, she investigates the physiological changes that contribute to age-related impairments in muscle and cardiovascular function. She is currently coordinating NIH-funded clinical trials investigating how targeted exercise interventions and exercise timing affect blood pressure regulation and vascular health in postmenopausal women with hypertension.

Session Overview

Hypertension, or high blood pressure, remains the leading modifiable risk factor for cardiovascular disease. In the United States, it is estimated that 48.1%, or 119.9 million adults have hypertension, with only 22.5% having their blood pressure under control. Cardiovascular disease morbidity and mortality rates are higher in those with uncontrolled hypertension, highlighting a large segment of the US population at risk. While hypertension is traditionally diagnosed and monitored using in-office or clinic-based blood pressure assessments, ambulatory blood pressure monitoring (ABPM) extends beyond a single point-in-time measurement to provide continuous insight into blood pressure behavior in real-world settings demonstrating both its clinical and research utility. Specifically, ABPM provides blood pressure measurements throughout a 24-hour period, encompassing both awake and asleep states, and offers valuable insight into nocturnal blood pressure dipping and the morning blood pressure surge, two physiologic periods that have been associated with heightened cardiovascular risk and an increased incidence of cardiovascular events. The purpose of this session is to explore the utility of ABPM in both research and clinical practice, including measurement protocols, data analysis and interpretation, and practical applications. A special discussion will focus on ABPM considerations for assessing acute and chronic exercise-induced changes in blood pressure.

Learning Objectives

1. Describe key considerations for incorporating ambulatory blood pressure monitoring (ABPM) into research study design, including participant selection, measurement protocols, and outcome assessment.
2. Demonstrate an understanding of the practical steps involved in ABPM implementation, including device setup, data acquisition, quality control, analysis, and interpretation of key ABPM metrics and patterns.
3. Recognize clinical and research observations that may warrant follow-up assessment with ABPM and understand how ABPM can provide additional insight into blood pressure patterns and cardiovascular risk.

Symposium 6 **Thursday, 10:00 - 10:50** **Emerald**

Science Meets Story: Using Storytelling and Character Design in STEM Classrooms

Kayla Dingo, Zach Sievert (*Moderator: Henry Wang*)



Dr. Kayla Dingo is an Associate Professor Educator at the University of Cincinnati in the Department of Rehabilitation, Exercise and Nutrition Sciences. She holds a PhD in Exercise Physiology, and she is a Certified Exercise Physiologist through the ACSM. She is also a Certified Strength and Conditioning Specialist and Tactical Strength and Conditioning Facilitator through the NSCA. Her research typically revolves around the physical and mental benefits of non-traditional exercise; however, she also has a deep passion for STEM pedagogy and making learning as enjoyable and rewarding as possible for her students.



Zach Sievert, PhD, is an Assistant Professor at the University of Cincinnati, where he has been on the faculty since 2023. A biomechanist by training, he studies the mechanisms underlying anterior cruciate ligament (ACL) injury risk and develops evidence-based strategies to prevent these injuries. He also conducts strength and conditioning research focused on optimizing training to enhance athletic performance and reduce injury.

Session Overview

Many undergraduate students struggle with understanding and retaining complex scientific content due to dense terminology, unfamiliar ideas, and the inherently invisible nature of many biological processes. Instructional design plays a critical role in whether complexity becomes a barrier or a bridge to learning. Drawing on Dual Coding and Cognitive Load Theory, this study explores how integrating visual and narrative elements can deepen comprehension while minimizing extraneous cognitive load. Specifically, it examines a character-driven, narrative-based approach to teaching concepts in an undergraduate exercise physiology course. By pairing visual models (e.g., animations, drawings) with stories that anthropomorphize molecules, structures, and physiological processes, abstract concepts are transformed into coherent, memorable interactions that support meaningful learning. While narrative-based teaching is recognized as a powerful pedagogical tool, its application within undergraduate STEM education remains underexplored. This study addresses that gap by examining the impact of narrative-based teaching on student learning outcomes and experiences. Findings suggest that narrative-based teaching may help students organize complex information, reduce cognitive burden, and develop deeper conceptual understanding, as well as improve enjoyment of learning. Attendees will leave with a practical framework for incorporating character-driven storytelling into their own teaching practices.

Learning Objectives

Following this session, attendees will be able to:

1. Explain how Dual Coding Theory and Cognitive Load Theory support the use of narrative-based instruction in undergraduate STEM education.
2. Evaluate the potential benefits of character-driven storytelling and visual models for improving student understanding, engagement, and retention of complex scientific concepts.
3. Identify key elements of effective narrative-based instructional materials for teaching abstract physiology concepts.
4. Apply a practical framework for incorporating narrative and visual elements into their own teaching practices to enhance student learning.

Symposium 7 **Thursday, 10:00 - 10:50** **Ford**

MANAGING YOUTH SPORT TRAINING LOAD: A PRACTICAL FRAMEWORK

Zachary Roark (*Moderator: Joshua Wooten*)



Dr. Zack Rourk is the Program Director of the Master of Science in Strength and Conditioning program at the University of Wisconsin–River Falls. He holds a PhD in Kinesiology and has more than 15 years of experience in hockey performance, working with athletes from youth development through the professional and Olympic levels. His areas of expertise include strength and conditioning, exercise physiology, long-term athlete development, and physical preparation for hockey. Throughout his career, he has worked with professional hockey organizations both as a staff member and consultant, integrating applied sport science with athlete development and performance.

Session Overview

Youth sports have become increasingly year-round, specialized, and competition-heavy, creating growing concern related to overtraining, overuse injury, burnout, and long-term athlete health. Current literature consistently identifies excessive training load, inadequate recovery, and early sport specialization as important contributors to injury risk and drop out in youth athletes. However, many current monitoring strategies and solutions rely on complex systems involving biomarkers, GPS metrics, athlete management software, or advanced workload calculations that may not be practical for most youth sport environments.

This presentation will review the current evidence surrounding youth overtraining, sport specialization, and injury risk while highlighting the practical gap that exists between the literature and real-world implementation. The session will specifically examine how high levels of practices, games, private lessons, camps, lifting sessions, and multi-team participation can create excessive “exposure frequency” in modern youth athletes.

A practical field-based framework currently utilized in a high-performance youth hockey setting called “The Golden Rule” will then be presented as a simplified management model designed to operationalize current load-management principles in real youth sport environments. The model focuses on limiting weekly sport-related exposures, identifying early warning signs of overtraining, prioritizing recovery, and facilitating communication between athletes, parents, and coaches.

This presentation is timely as participation demands in youth sports continue to escalate, while coaches, parents, and clinicians are often left without practical tools to manage training loads in developing athletes. The presentation aims to provide attendees with actionable strategies that can immediately be implemented across a variety of youth sport settings.

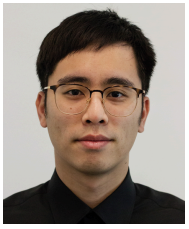
Learning Objectives

1. Identify common contributors to overtraining and overuse injury in modern youth sport environments.
2. Explain how cumulative exposure frequency, inadequate recovery, and sport specialization contribute to overtraining responses in youth athletes.
3. Recognize common early warning signs of overtraining, including behavioral, psychological, and performance-related changes.
4. Apply a practical exposure-based load management framework (“The Golden Rule”) to help reduce overtraining risk in youth athletes.

Symposium 8 **Thursday, 11:00 - 11:50** **Grandview**

COGNITION AND BRAIN FUNCTION DURING EXERCISE AND ENVIRONMENTAL STRESS

Shih-Chun Kao, Igor Fernandes (*Moderator: Heather Betz*)



Dr. Alvin Kao is an associate professor in the Department of Health and Kinesiology at Purdue University. His research program has been funded by NIH and Spencer Foundation, focusing on optimizing brain function and cognitive performance in response to exercise by novel strategies such as mindfulness-based exercise and within-day repeated exercise delivery. Particularly relevant to this presentation is his recent work examining factors that may moderate the preservation of neurocognitive function during physical exertion, providing new insights into how individuals maintain cognitive performance while exercising.

Session Overview

Maintaining cognition and the brain functions that subserve cognition is critical for performance under stress. However, human cognitive function is often understood by assessments during a controlled resting state without the presence of stressors that can commonly occur, reducing the ability of the assessed outcomes to explain and predict actual cognitive performance and behavior under physical and environmental stress in applied settings. The poor understanding of neural and cerebrovascular mechanisms of these effects further hinders the development and application of strategies targeting the factors modifying and/or causing stress-related cognitive impairments. This proposed session will provide novel insights by presenting empirical evidence from several completed and ongoing studies to quantify cognitive impairments, identify associated neural and cerebrovascular alterations in response to stress induced by exercise, heat, and hypoxia, and inform potential strategies to mitigate these stress-related cognitive deficits. The innovative integration of cognitive neuroscience and brain physiology as well as the consideration of multiple stressors is timely in facilitating the effort of performance optimization in high-stakes fields in sports, first-responder, and military contexts.

Learning Objectives

Following this session, attendees will be able toâ€¦

1. Recognize and describe changes in cognitive performance in response to various physical and environmental stressors
2. Identify and describe potential neuroelectric and cerebrovascular mechanisms underlying impaired cognitive performance during exercise and environmental stresses
3. Identify and describe potential factors moderating the effects of exercise and environmental stresses on concurrent cognition and brain function.
4. Identify, develop, and apply potential strategies to mitigate cognitive impairment under conditions of exercise and environmental stress.

Symposium 9 **Thursday, 11:00 - 11:50** **Pearl**

From Cardiac Rehab to Oncology Rehab and Beyond: Expanding Opportunities for Clinical Exercise Physiologists

Cassandra Ledman, Malloree Rice, Leah Luhring, David Running (Moderator: Sandra Knecht)



Cassandra Ledman, MS, ACSM-CEP, NBC-HWC, is a Clinical Associate Professor at Purdue University, where she teaches undergraduate and graduate courses in Clinical Exercise Sciences and Health and Wellness Coaching. She led Purdue's program to NBHWC accreditation and chairs the university's Exercise is Medicine® On Campus initiative, helping the university achieve Gold designation for three consecutive years. Cassandra serves as President of the Clinical Exercise Physiology Association (CEPA) and has served on the Midwest ACSM Exercise is Medicine Committee for four years, including two years with the EIM-OC mentorship program as a campus mentor. Her research focuses on experiential learning, health coaching, professional identity formation, and lifestyle medicine



Leah Luhring, MS, ACSM-EP is an Exercise Physiologist at University of Cincinnati Health working in cardiopulmonary rehab and cancer exercise. She has obtained the ACSM-ACS Cancer Exercise Specialist Certification. She has worked to implement a cancer exercise program within a cardiac rehab framework at UC Health. Other projects include developing an exercise program for cancer patients while getting infusions, creating a registry for cancer exercise outcomes, and developing a behavior change program for cancer patients prescribed GLP1s.



David Running is an ACSM CEP with 15 years of experience in Exercise Testing, Cardiac Rehabilitation, and Pulmonary rehabilitation. He is currently the Manager and Internship Coordinator at University of Michigan Health- West Cardiovascular Rehabilitation. David has been a member of ACSM since 2012 when he received his CEP. David is currently a member of the Clinical Exercise Physiology Association. He is also part of the Student Advisory Committee with the MSCVPR, as well as a Member of the GVSU Exercise Science Advisory Committee. David has worked in Cardiac Rehab at UM West since the program's beginning in 2017.

Session Overview

The role of the Clinical Exercise Physiologist (CEP) continues to evolve as healthcare systems increasingly recognize the value of exercise-based interventions in disease prevention, treatment, and long-term management. While traditional CEP roles have centered on cardiopulmonary rehabilitation and exercise testing, emerging opportunities now exist across a growing number of specialty practice areas. This interactive panel session will feature CEP professionals working across a range of specialized practice areas; such as, advanced cardiac rehabilitation, oncology, pediatric exercise, metabolic and weight management care, and health and wellness coaching. Panelists will highlight how CEP roles adapt across different patient populations, healthcare environments, and emerging areas of practice.

Panelists will provide an overview of the supporting evidence and clinical need for exercise services within their specialty area, describe the day-to-day responsibilities of a CEP, and discuss how core CEP competencies are applied to improve patient outcomes. Additionally, speakers will share educational pathways, certifications, experiences, and professional development strategies that prepared them for success in their respective fields. The session will conclude with a forward-looking discussion examining emerging trends, evolving healthcare needs, and future opportunities for CEPs to expand their impact within interdisciplinary healthcare teams.

This session is designed for students, early-career professionals, practicing CEPs, and educators seeking to better understand current and emerging career pathways within clinical exercise physiology.

Learning Objectives

1. Describe emerging specialty practice areas in clinical exercise physiology and the healthcare needs driving this growth.
2. Explain how core CEP competencies are applied across diverse specialty settings to support patient outcomes.
3. Identify credentials and professional development strategies required within different specialty areas of CEP.
4. Discuss Future trends and opportunities that are shaping the evolving role of the CEP within healthcare systems.

Symposium 10 **Thursday, 11:00 - 11:50** **Emerald**

WHAT INFORMS A MAJOR? STUDENT REPORTED SOURCES OF INFLUENCE IN EXERCISE SCIENCE PROGRAMS

Erin Vanderbunt, Jerzie Grob (*Moderator: Zach Sievert*)



Erin Vanderbunt, EdD, AT is an Assistant Professor in the Department of Exercise, Sport and Nutrition Sciences at Southern Illinois University Edwardsville. Her research focuses on student pathways in exercise science and allied health, spanning how students discover and select their major, the factors that support their success and sense of belonging once enrolled, and the broader pipeline connecting undergraduate programs to allied health careers and graduate education. She is particularly interested in ensuring that students have access to accurate, timely information and meaningful experiences that support informed decision-making throughout their academic journey.

Session Overview

Exercise science programs serve as a primary pathway into numerous allied health professions, yet despite growing enrollment, limited research has examined how students are first introduced to these programs or which information sources are most influential in their decision-making. This session will present findings from a national study of 318 undergraduates enrolled in CAAHEP-accredited Exercise Science programs examining the sources of information that influenced their selection of the major. Particular attention will be given to the influence of personal experiences, shadowing opportunities, academic advisors, and introductory coursework. Differences among student populations, including first-generation college students, will also be discussed. Because access to these experiences may not be uniformly distributed across populations, findings have direct implications for recruitment, advising, and supporting informed major selection among students pursuing diverse career pathways in exercise science and allied health.

Learning Objectives

Following this session, attendees will be able to:

1. Identify the most influential college- and non-college-related sources of information that introduce undergraduate students to exercise science majors.
2. Describe differences in information source influence based on gender, race/ethnicity, first-generation status, and socioeconomic status.
3. Apply study findings to inform recruitment strategies, advising practices, and introductory course design supporting informed major and career selection.
4. Engage in a facilitated discussion about shared responsibility for connecting prospective students with meaningful exposure to exercise science and allied health career pathways.

Symposium 11 **Thursday, 11:00 - 11:50** **Ford**

PRE-OSTEOARTHRITIS ILLNESS: A FRAMEWORK FOR EARLY IDENTIFICATION AND PREVENTION OF KNEE OSTEOARTHRITIS AFTER ACL INJURY

Matt Harkey (*Moderator: Terence Moriarty*)



Dr. Matt Harkey is an Associate Professor of Kinesiology at Michigan State University and Co-Director of the Athletic Injury & Rehabilitation (AIR) Laboratories. His research focuses on early detection and prevention of osteoarthritis following knee injury, integrating biomechanics, ultrasound imaging, and patient-reported outcomes. Through this work, Dr. Harkey aims to transform recovery pathways after ACL injury and reduce the long-term burden of osteoarthritis in young, active populations.

Session Overview

Persistent symptoms after ACL reconstruction (ACLR) are common, yet current clinical pathways often dismiss them as normal recovery, missing patients at elevated risk for osteoarthritis (OA). This session introduces "pre-OA illness," a construct refined across more than a decade of primary research and validated in multiple independent cohorts. Early work established that a substantial proportion of patients meet patient-reported criteria for early OA illness after ACLR, and that these symptoms persist rather than resolve from 6 to 12 months. The construct was then tested at scale in the New Zealand ACL Registry (n=10,231), where one-third of patients consistently met criteria across two years. Convergent evidence from the KANON trial links this classification to later radiographic OA. Together, these studies move pre-OA illness from concept to an operationally defined, prognostically meaningful stage. Attendees will learn how patient-reported outcomes identify this younger, active population, how the construct complements imaging-based pre-OA disease, and how it can sharpen inclusion criteria for OA prevention trials. By grounding early identification in replicated data, this session offers an actionable path to shift post-ACLR OA care from reactive to preventive.

Learning Objectives

Following this session, attendees will be able to:

1. Distinguish the concepts of pre-OA disease and pre-OA illness within the broader OA continuum, and explain how each captures a distinct dimension of early post-traumatic joint health.
2. Apply patient-reported outcome thresholds to operationally identify individuals with pre-OA illness after ACL reconstruction.
3. Describe the prognostic evidence linking persistent post-ACLR symptoms to later radiographic OA development.
4. Evaluate how the pre-OA illness construct can inform earlier clinical intervention and improve participant selection

Thursday Afternoon Professional Symposiums

Symposium 12 **Thursday, 2:30 - 3:20** **Grandview**

Sex Differences in Physical Function Across the Lifespan - Is it all About Hormones?

Sandra Hunter FACSM, Rachel Logue Cook, Sophie Jenz (*Moderator: Trent Cayot*)



Dr. Sandra Hunter is the Francie Kraker Goodridge Collegiate Professor of Kinesiology and chair of movement science at the University of Michigan, where she directs the Neuromuscular Physiology of Human Movement Laboratory. Her research examines age- and sex-related differences in muscle function, fatigue, and athletic performance. She has authored more than 170 peer-reviewed publications and serves as editor-in-chief of Exercise and Sport Sciences Reviews.



Rachel Logue Cook is a Research Investigator in the School of Kinesiology at the University of Michigan. She received her bachelor's degree in Kinesiology from San Diego State University in 2018 before attending the University of Michigan for her master's degree (2019) and doctoral training (2024). Her research focuses on aging and the factors that lead to accelerated age-related declines in muscle strength, physical function, and independence. Dr. Logue Cook recently completed an exercise training intervention in adults with Type 2 Diabetes and also has a keen interest in women's health and understanding how hormonal changes during menopause impact late-life function.

Sophie received both her BA and PhD in Neuroscience, with a specialization in Movement and Rehabilitation Science, from Northwestern University and is currently a postdoctoral research fellow in the Neuromuscular Physiology of Human Movement Laboratory at the University of Michigan. Her research focuses on mechanisms underlying sex-related differences in neurophysiology and the influence of fluctuating sex hormones on the motor system across the lifespan. Outside of the lab, she is an NCSA certified personal trainer and is passionate about promoting female health and well-being through strength training.

Session Overview

Sex differences in muscle strength and physical function are evident throughout the adult lifespan, where males often outperform females in tasks requiring speed, strength, power, and endurance. While there are many factors that contribute to sex differences in performance, this male advantage is largely driven by differences in circulating levels of endogenous testosterone between males and females that emerges during puberty. Yet far less is known about the contribution of other hormones, for example, estradiol, on physical function and whether hormonal contributions differ based on sex and/or life stage. The purpose of this session is to present recent findings which leverage world record data, publicly available health data, and lab-based muscular neurophysiology measures to better understand sex differences in physical function and the extent to which sex hormones play a role in these differences. This session will be comprised of three presentations which will examine 1) sex differences in athletic performance and with aging, 2) the contributions of sex hormones (testosterone and estradiol) on muscle strength from childhood to advanced age, and 3) sex differences and the effects of menstrual cycle phase on motor unit physiology.

Learning Objectives

1. Following this session, attendees will be able to identify when sex differences in athletic performance emerge, how they change across the lifespan, and which events are associated with the largest sex differences.
2. Following this session, attendees will be able to describe the extent to which sex hormones, including testosterone and estradiol, are associated with sex differences in muscle strength across the lifespan.
3. Following this session, attendees will be able to describe neuromuscular sex differences and how these contribute to sex differences in physical function and athletic performance.

Symposium 13 **Thursday, 2:30 - 3:20** **Pearl**

ADVANCING EXERCISE IS MEDICINE ON CAMPUS: INSIGHTS FROM THE MWACSM MENTORSHIP PROGRAM

Cassandra Ledman, Whitney Morelli FACSM (*Moderator: Kevin Ballard*)



Cassandra Ledman, MS, ACSM-CEP, NBC-HWC, is a Clinical Associate Professor at Purdue University, where she teaches undergraduate and graduate courses in Clinical Exercise Sciences and Health and Wellness Coaching. She led Purdue's program to NBHWC accreditation and chairs the university's Exercise is Medicine® On Campus initiative, helping the university achieve Gold designation for three consecutive years. Cassandra serves as President of the Clinical Exercise Physiology Association (CEPA) and has served on the Midwest ACSM Exercise is Medicine Committee for four years, including two years with the EIM-OC mentorship program as a campus mentor. Her research focuses on experiential learning, health coaching, professional identity formation, and lifestyle medicine.



Whitney Morelli, FACSM

Session Overview

The Midwest ACSM Exercise is Medicine-On Campus (EIM-OC) Mentorship Program was launched to support institutions seeking to develop, expand, and sustain EIM-OC initiatives through structured mentorship, collaboration, and resource sharing. Now entering its second year, this session will provide attendees with an overview of the program's structure, goals, and opportunities for involvement as both mentors and mentees.

Building upon the success of the inaugural cohort, panelists will share program outcomes, lessons learned, and best practices identified through the first year of implementation. Representatives from both mentor and mentee institutions will discuss how mentorship facilitated the development and enhancement of EIM-OC initiatives, including campus-wide referral programs, student engagement efforts, interdisciplinary collaborations, and community-based health promotion activities.

The panel will feature institutions representing diverse campus settings, levels of program maturity, and project goals, providing attendees with practical examples and actionable strategies that can be adapted to their own campuses. In addition, participants from the second mentorship cohort will share their goals and anticipated projects, offering insight into the continued growth and evolution of the program.

A moderated discussion and audience Q&A will allow attendees to engage directly with panelists, explore common challenges and solutions, and learn how to become involved in future mentorship opportunities. Resources from the EIM-OC programs will also be shared to support institutions interested in launching or strengthening EIM-OC initiatives.

Learning Objectives

Following this session, attendees will be able to:

1. Describe the structure, goals, and evolution of the Midwest ACSM EIM-OC Mentorship Program.
2. Identify successful EIM-OC initiatives implemented through the mentorship program and lessons learned from participating institutions.
3. Discuss strategies for overcoming institutional barriers and creating sustainable campus-based physical activity and health promotion programs.
4. Recognize the value of mentorship, collaboration, and professional networking in advancing Exercise is Medicine-On Campus initiatives.

Symposium 14 **Thursday, 2:30 - 3:20** **Emerald**

Curriculum in Action: Developing a Stakeholder-Informed, H2F-Inspired Experiential Learning Model for Undergraduate Kinesiology Students

Michele M. Bird (*Moderator: Kayla Dingo*)



Michele Bird, PT, DPT, MS, OCS, is a Clinical Assistant Professor in the School of Kinesiology at the University of Michigan with nearly 30 years of clinical physical therapy experience. She teaches musculoskeletal anatomy, biomechanics, injury prevention, and exercise programming. Her educational work focuses on experiential and interprofessional learning that connects kinesiology concepts with real-world clinical and performance settings. She developed AES/MVS 413/513, Injury Prevention and Applied Exercise Programming, which partners kinesiology students with ROTC cadets and other health professionals to integrate injury prevention, performance, recovery, and human factors into applied practice.

Session Overview

Providing kinesiology undergraduates with authentic, logistically feasible experiential learning settings remains a persistent challenge. While students need real-world opportunities to apply exercise programming, injury prevention, and health promotion concepts, off-campus placements often present significant logistical and liability barriers. This session presents a stakeholder-informed pedagogical model developed through a partnership with Army ROTC to create high-impact experiential learning on campus.

Grounded in the U.S. Army's Holistic Health and Fitness (H2F) framework, the model was informed by cadet needs assessments, student feedback, learning outcomes, and physical readiness data. Attendees will explore a rotating experiential curriculum featuring Physical Performance, Injury Prevention, and Recovery domains that undergraduate kinesiology students rotate through while applying principles in an interprofessional manner in authentic settings with the cadets.

The session will also highlight how existing campus resources—including ROTC battalions, graduate athletic training programs, and kinesiology faculty—can be leveraged to create sustainable experiential learning opportunities while fostering meaningful interprofessional education and collaboration. This presentation provides a scalable framework for translating stakeholder feedback into innovative curriculum design that enhances undergraduate clinical readiness through experiential and interprofessional learning.

Learning Objectives

1. Analyze stakeholder needs assessment findings, including cadet feedback, student reflections, and physical readiness data, to inform experiential curriculum design.
2. Design an on-campus experiential H2F inspired learning model that integrates performance, injury prevention and recovery domains within an authentic learning environment.
3. Apply principles of interprofessional education and collaboration to develop scalable, campus-based experiential learning opportunities that enhance student future professional readiness.

Symposium 15 **Thursday, 2:30 - 3:20** **Ford**

Behind the Scenes with Sparty: Considerations to Optimize the Health and Performance of Mascots

Ashley N. Triplett, William Adams FACSM, Shannon Hagerman (*Moderator: Gabrielle Dillon*)



Ashley Triplett, PhD, is the Manager of Sports Medicine Research at the United States Olympic & Paralympic Committee. Her research focuses on injury and illness surveillance, mental health in elite sport, Para athlete wellbeing, and clinical outcomes related to return to sport decision making for elite athletes. Ashley completed her PhD in Kinesiology with an emphasis in Exercise Physiology at Michigan State University and also currently works in support of MSU's Sparty Mascot Program. Ashley has been a member of the ACSM for over 10 years and is currently the President of the Rocky Mountain Chapter.



Dr. William Adams is currently an Assistant Professor within the Department of Kinesiology at Michigan State University. Dr. Adams' research expertise and interests are focused on optimizing human health and performance. He has received over $7 million in funding from federal, foundational, and industry mechanisms and has been either a lead or co-author on 147 publications in both peer-reviewed scientific journals and edited textbooks on topics related to the prevention are care of heat-related illness, optimizing athletic performance in extreme environments, the impact of hydration on human health and performance, and preventing injuries and illnesses in sport.

Session Overview

Extensive research has been undertaken among sport, occupational, and military settings to explore the health and performance-related implications associated with environmental heat stress. Sports team mascots are an understudied population, whom like the athletes competing on the playing field, are subjected to potential extreme environmental conditions. Albeit, the stress imposed on their bodies are likely different than that of athletes due to the clothing ensembles required for their varied roles as a spectator-facing member of their organizations. This presentation aims to discuss the physiologic strain experienced by a college mascot performing at various events and provide recommendations for health monitoring and heat mitigation strategies when working with mascot performers. Additionally, this presentation will explore the logistical considerations of operating a successful mascot program focused on supporting mascot health, performance, and well-being.

Learning Objectives

1. Understand the physiologic responses of a mascot and learn how athlete monitoring could be incorporated into a mascot program.
2. Describe effective heat mitigation strategies to reduce heat-related illness risk.
3. Understand considerations for supporting the health and performance of mascots.

Symposium 16 **Thursday, 3:30 - 4:20** **Grandview**

EXERCISE FOR HEALTHY AGING IN OLDER ADULTS WITH HIV: TRANSLATING EVIDENCE INTO CLINICAL PRACTICE

Vitor Oliveira (*Moderator: James Sackett*)



Dr. Oliveira is a Research Assistant Professor at the University of Washington School of Nursing. He is an early-stage exercise scientist interested in the relationship between HIV and aging-related outcomes, as well as the effects of exercise on the health of people with HIV. Dr. Oliveira has been recently involved in the PROSPER-HIV study (Impact of Physical Activity Routines and Dietary Intake on the Longitudinal Symptom Experience of People with HIV) and the HEALTH study (The High-Intensity Exercise Study to Attenuate Limitations and Train Habits in Older Adults with HIV), and also contributed to book chapters in his area of expertise.

Session Overview

People with HIV are living longer than ever before, resulting in a rapidly growing population of older adults experiencing frailty, sarcopenia, obesity, fatigue, and physical function decline. Despite effective antiretroviral therapy, these aging-related conditions contribute to reduced healthspan, loss of independence, and increased healthcare utilization. Exercise is increasingly recognized as a cornerstone strategy for promoting healthy aging in people with HIV, yet many clinicians and exercise professionals remain uncertain about how to safely and effectively prescribe exercise for this population.

This session will review the current evidence supporting aerobic, resistance, and combined exercise interventions for older adults with HIV, with particular emphasis on findings from the High-Intensity Exercise to Attenuate Limitations and Train Habits (HEALTH) Trial. Attendees will learn how supervised exercise training improved physical function, body composition, fatigue, and frailty-related outcomes among previously sedentary older adults with HIV, while also gaining insight into participant perspectives, barriers to exercise engagement, and strategies to promote long-term adherence.

The presentation will provide practical recommendations for exercise prescription and implementation in clinical and community settings, helping attendees translate emerging research into real-world practice for an underserved and rapidly growing population.

Learning Objectives

1. Describe the major aging-related health challenges experienced by older adults with HIV, including frailty, sarcopenia, obesity, fatigue, and physical function decline.
2. Summarize the current evidence supporting aerobic, resistance, and combined exercise training as strategies to improve health and physical function in older adults with HIV.
3. Interpret key findings from the HEALTH Trial and discuss their implications for physical function, body composition, fatigue, and frailty management.
4. Apply evidence-based principles to develop safe and effective exercise prescriptions for older adults aging with HIV in clinical and community settings.

Symposium 17 **Thursday, 3:30 - 4:20** **Pearl**

HIDDEN IN PLAIN SIGHT: AUTONOMIC DYSFUNCTION, WOMEN'S HEALTH, AND THE ROLE OF EXERCISE PROFESSIONALS

Erica Albertin, Katrina Whitlow (*Moderator: Emily Post*)



Dr. Erica Albertin is a scholar, educator, and clinician whose work focuses on the intersection of exercise physiology, athletic training, and chronic disease management. Erica completed her doctoral work at the University of Idaho and her undergraduate studies at Manchester College. She currently serves as an assistant professor at Saint Mary's College in Notre Dame, Indiana. She has previously served as an athletic trainer with Athletico, US Soccer, Dominican University, and Goshen College. Her scholarly interests include strategies to optimize health and performance, exercise interventions for individuals with type 1 diabetes, and the translation of research into clinical and community settings.



Katie is an Assistant Professor of Biology at Saint Mary's College in Notre Dame, Indiana. Her research focuses on biomechanics and physiology, with an emphasis on movement, performance, and evolution of the form-function relationship in vertebrates. She teaches courses in physiology and marine biology.

Session Overview

College-aged women frequently report symptoms such as fatigue, dizziness, stress, anxiety, exercise intolerance, poor recovery, and burnout. These concerns are often addressed in isolation, despite growing evidence that autonomic nervous system (ANS) dysfunction may be a common physiological contributor. For exercise professionals and healthcare providers, recognizing the role of autonomic function is critical for optimizing health, performance, and quality of life.

This session will bring together perspectives from both exercise and human physiology to examine the emerging science of autonomic regulation in women. Attendees will gain an understanding of the ANS as a key regulator of cardiovascular, metabolic, and stress responses and explore how physical activity, recovery behaviors, psychosocial stress, and menstrual cycle characteristics may influence autonomic function.

Emerging wearable technologies and artificial intelligence are creating new opportunities to monitor physiological responses in real-world settings. Metrics such as heart rate variability, resting heart rate, sleep quality, and recovery status are increasingly available to consumers and clinicians alike. This session will explore how exercise professionals can critically interpret these data, distinguish meaningful physiological signals from noise, and consider the potential role of AI-assisted monitoring in identifying early signs of autonomic dysfunction and chronic stress in women.

Learning Objectives

1. Apply evidence-based strategies for incorporating autonomic health considerations into exercise assessment and prescription.
2. Explain the role of autonomic nervous system function in regulating cardiovascular, psychological, and physiological responses to stress in college-aged women.
3. Interpret physiological indicators obtained through wearable technologies, including heart rate variability, resting heart rate, sleep, and recovery metrics, as markers of autonomic function and physiological stress.
4. Integrate evidence-based assessment and exercise prescription strategies to support autonomic health and improve outcomes in women.

Symposium 18 **Thursday, 3:30 - 4:20** **Emerald**

AN EVIDENCE-BASED EXAMINATION OF HYBRID EDUCATION IN THE REHABILITATION PROFESSIONS: IMPLICATIONS FOR EXERCISE SCIENCE EDUCATORS AND STUDENTS

Don Hoover, Kristin Haas (*Moderator: Chris Kotarsky*)



Dr. Don Hoover is Professor and Program Director of Quincy University's Doctor of Physical Therapy Program, possessing more than 3 decades of experience in exercise science, physical therapy education, and academic leadership. Dr. Hoover is the author/co-author of numerous peer-reviewed articles and abstracts in the areas of human movement and rehabilitation. More specifically, his research interests focus upon the areas of sports medicine, sport science, and pedagogy, and he has published in many top tier-journals in these areas, as well as presented internationally on these topics.



Dr. Kristin Haas is Professor and Founding Program Director of Quincy University's Occupational Therapy Doctorate program, bringing more than two decades of experience in occupational therapy education and academic leadership. Her scholarly and professional interests focus on occupational therapy education, instructional innovation, clinical reasoning, professional identity, and servant leadership. She is a co-author of work on the Visualize Whole-Self Model of instructional design and has presented nationally on teaching, scholarly writing, service learning, curriculum development, and student engagement. Dr. Haas is an AOTA Credentialed Leader in Academia, having successfully completed the Academic Leadership Institute.

Session Overview: This session does not focus solely on an underrepresented group in science. Rather, it addresses wholistic access to graduate professional education through hybrid pathways. Hybrid programs in rehabilitation professions have expanded in the US in recent decades. These programs lead to the same professional credentials as traditional ones, but their instructional models create unique demands related to student readiness, self-directed learning, hands-on skill development, and professional formation.

Exercise science faculty and advisors play a major role in helping students understand these pathways and prepare for success. This session synthesizes current profession-specific and pedagogical literature related to hybrid program design, online and in-person learning integration, and transition into clinical or experiential learning. This session offers evidence-based considerations for advising exercise science students who are exploring occupational therapy, physical therapy, clinical exercise physiology, and related rehabilitation programs.

Exercise science programs serve as a primary pipeline into graduate rehabilitation programs, yet many students, faculty, and advisors may have limited familiarity with how hybrid professional education differs from fully face-to-face models. Attendees will leave with strategies for helping students evaluate whether a hybrid pathway aligns well with their learning styles, professional goals, and readiness for graduate professional education.

Learning Objectives: Following this session, attendees will be able to:

1. Describe current trends and emerging themes in hybrid professional education across rehabilitation disciplines.
2. Analyze pedagogical strengths and challenges of hybrid rehabilitation education, including implications for student engagement, skill development, assessment, and professional formation.
3. Identify evidence-informed advising strategies that assist exercise science students evaluate their readiness and fit for hybrid graduate professional programs.
4. Discuss how undergraduate exercise science programs can better prepare students for success in hybrid occupational therapy, physical therapy, clinical exercise physiology, and related rehabilitation pathways.

Symposium 19 **Thursday, 3:30 - 4:20** **Ford**

Osteopathic Manipulative Treatment in Athletics: Practical Applications on the Sideline and in the Training Room

Sean McDade, Andrea Origenes (*Moderator: Jon Stavres*)

Session Overview

Athletic healthcare professionals are frequently tasked with evaluating and managing musculoskeletal dysfunctions that impair performance, limit participation, or delay return to play. Osteopathic Manipulative Treatment (OMT) is a hands-on treatment approach used by osteopathic physicians to address somatic dysfunction, improve mobility, reduce pain, and restore functional movement. While OMT has traditionally been associated with outpatient clinical practice, many techniques can be effectively integrated into athletic settings, including sidelines, locker rooms, and training facilities.

This session will provide an evidence-informed overview of OMT and its role in supporting athletes across the continuum of care. Attendees will learn how common osteopathic techniques—including muscle energy, myofascial release, articulatory treatment, and facilitated positional release—can be utilized to address acute and chronic musculoskeletal complaints frequently encountered in sport. Practical applications for cervical, thoracic, rib, lumbar, pelvic, and extremity dysfunctions will be discussed, with emphasis on rapid assessment, treatment selection, and integration with rehabilitation and return-to-play decision making.

As sports medicine increasingly adopts multidisciplinary approaches to athlete care, understanding the capabilities and limitations of OMT can enhance collaboration among physicians, athletic trainers, physical therapists, exercise physiologists, and other members of the sports medicine team. This presentation will provide attendees with practical knowledge of when OMT may be beneficial, how it complements rehabilitation and performance programs, and where current evidence supports its use in athletic populations.

Learning Objectives

1. Describe the principles of osteopathic manipulative treatment (OMT) and its proposed role in the management of common athletic musculoskeletal conditions.
2. Identify clinical situations in which OMT may be utilized on the sideline, in the training room, and during the rehabilitation process.
3. Differentiate among common OMT techniques and recognize their potential applications, advantages, and limitations in athletic populations.
4. Discuss how OMT can be integrated into a multidisciplinary sports medicine model alongside athletic training, rehabilitation, exercise prescription, and return-to-play planning.

Symposium 20 **Thursday, 4:30 - 5:20** **Grandview**

Inactivity-induced Exercise Resistance

Kevin J. Gries (*Moderator: Kerrie Berends*)



Session Overview

The average total sedentary time in the United States has nearly doubled in the last 20 years and is linked to metabolic and cardiovascular diseases, cancers, and other comorbidities. To combat prolonged periods of reduced activity, exercise appears to be an effective tool. However, previous research has suggested that prolonged inactivity blunts the acute exercise response. To interrogate the mechanism of this inactivity-induced exercise resistance, we sought to identify the systemic exercise response of an acute aerobic exercise bout in individuals who are inactive (<5,000 steps) or have normal steps (>8,500 steps) the day before exercise. Participants exercised at 65% VO2max for 60-minutes following a day of reduced activity (IN) or normal activity (A). RNAseq, proteomics, and Krebs Cycle intermediates from skeletal muscle biopsies were completed before and 4-hours post-exercise. Respiratory gas exchange analysis was completed throughout exercise. Blood samples for select metabolites were collected before, during, and throughout the 4-hour recovery. Inactivity resulted in 494 Differentially Expressed Genes (DEG) at rest, while exercise altered 793 and 1,403 genes in A and IN, respectively. Inactivity affected metabolism as demonstrated by elevated triglycerides and increased carbohydrate utilization during exercise. These findings add to the growing research that exercise cannot fully mitigate the deleterious effects of inactivity, which will be the global focus of the presentation. Inactivity induced exercise resistance has implications for exercise guidelines and underscore the importance of controlling for daily step count when assessing exercise responses.

Learning Objectives

1. Appreciate the importance of reducing sedentary time independent of exercise.
2. Describe the whole body to gene influence of a single day of inactivity on the exercise response.
3. Hypothesize how sedentary time may influence health outcomes related to aging and disease.

Symposium 21 **Thursday, 4:30 - 5:20** **Pearl**

POTS Postural Orthostatic Tachycardia Syndrome: Keeping Athletes in the Game

Robert J. Baker FACSM (*Moderator:Frank Doyle*)



Dr. Baker has been the Director of the Primary Care Sports Medicine Fellowship at Western Michigan University School of Medicine Clinics and the Team Physician for Western Michigan University for over 25 years.

His particular areas of interest include: Exercise-Induced Asthma, Athletes with chronic diseases, and non-surgical orthopedic injuries in athletes.

Session Overview

Postural orthostatic tachycardia syndrome is estimated to affect 1-3 million people, at least 25% are athletes, including high level athletes. This condition appears to be affecting young athletes more commonly as we emerge from the COVID-19 epidemic. Most commonly affected are adolescent females. Diagnosis is primarily clinical. Symptoms can pose health and safety challenges for these athletes. Mitigating factors include: dehydration, concussion, viral illness and hypermobility, which can be common among athletes. Optimal management among physically active individuals can be aided by early identification and appropriate management strategies. Return to sport is not only possible, but many athletes have return to elite competition.

Learning Objectives

Attendees will be able to:

1. Identify symptoms leading to early diagnosis and etiology of POTS in athletes.
2. Discuss the diagnostic approach to POTS.
3. List mitigating factors related to the diagnosis of POTS in an athletic population.
4. Identify management options including: rehabilitation, training and medical management to improve health-related quality of life for POTS athletes.

Symposium 22 **Thursday, 4:30 - 5:20** **Emerald**

Prenatal Exercise: Returning to the Fundamentals of Energy & Fatigue

Alex Claiborne (*Moderator: Rachel Logue Cook*)



Dr. Claiborne is an Assistant Professor in the Department of Kinesiology, Nutrition, and Health at Miami University, where he received his M.S. in 2018. He trained under Dr. Todd Trappe at Ball State University, where he obtained his Ph.D. in Human Bioenergetics in 2022. He received his postdoctoral training with esteemed researcher in the field of exercise during pregnancy, Dr. Linda May, at East Carolina University. Dr. Claiborne joined the faculty at Miami in the summer of 2025, and continues work focused on exercise metabolism and energy balance in pregnant and non-pregnant diabetic individuals.

Session Overview

Continued focus on the fundamentals of exercise physiology remains important. Returning to the literature of decades past always makes me appreciate the simplicity of old papers which presented visually clean and clear exercise data as the primary and sometimes sole outcome. These days, I consider this mode of reflection to be especially important regarding energy homeostasis and the perception of fatigue. In conditions and afflictions in which energy is mismanaged, the implications for health and quality of life are high. Yet, this presentation examines exercise energy homeostasis through the lens of a highly respectable and clinically important application of these longstanding physiological principles - exercise during pregnancy. Where the implications are for two.

I plan to present an integrative approach to studying metabolic balance in exercising pregnant women. I hope to explain to you all how I feel this provides an exceptional and clinically relevant example of how great the human body is at regulating the supply of usable energy to perform external work. The content will cover 3 main areas: 1) classic energy homeostasis during exercise, 2) adjustments made when exercise is performed during pregnancy, and 3) implications for health and performance. The presentation comes at a time where much excitement is built around exercise during pregnancy, and provides an innovative approach to understanding metabolism.

Learning Objectives

1. Review foundational exercise physiology literature on energy homeostasis and fatigue.
2. Describe how energy homeostasis is altered during exercise in pregnancy.
3. Apply integrative exercise physiology concepts to performance and health in pregnancy.

Symposium 23 **Thursday, 4:30 - 5:20** **Ford**

Beyond the Gym: Nature Rx and the Evidence for Green Exercise

Rachele M Kappler FACSM, Stephanie Davis-Dieringer (*Moderator: Jeremy Steeves*)



Akron, Rachele Kappler Ph.D. FACSM, ACSM-CEP is Assistant School Director and Professor of Clinical Instruction in the School of Exercise and Nutrition Sciences at The University of where she has taught for nearly 30 years. Her scholarship focuses on exercise science education.



Stephanie Davis-Dieringer is an Assistant Professor in the School of Exercise and Nutrition Sciences at The University of Akron. With a passion for helping students learn through meaningful, hands-on experiences, her work focuses on exercise science, human performance, strength and conditioning, and undergraduate research. She holds more than 25 national certifications in exercise, health, and wellness, bringing extensive professional experience into the classroom. Her research interests include collegiate esports, physiological stress, performance, and health behaviors.

Session Overview

Purpose: This session equips current and future exercise science professionals to use nature as a deliberate, evidence-based part of client programming. Most people spend most of their waking hours indoors, yet recent systematic reviews and meta-analyses show that time in nature, with or without exercise, produces measurable physiological and mental health benefits. **Content:** The session introduces Attention Restoration Theory and Stress Recovery Theory to explain how natural settings restore focus and calm the stress response. It then reviews the evidence, including lower cortisol, greater parasympathetic tone, and increased natural killer cell activity after time in forests. Participants will learn how green exercise improves mood, enjoyment, and perceived exertion compared with indoor or urban outdoor exercise, and why the restorative quality of a setting, such as a park or forested path, matters more than simply being outside. These effects carry beyond the session, supporting long-term adherence in a field where programs rarely keep half of clients active at twelve months. Applications for children, older adults, and people managing anxiety or depression are discussed, along with established programs such as ParkRx America and Campus Nature Rx. Participants will leave able to prescribe nature-based activity by setting, duration, frequency, and mode, and to address unequal access to green space so prescriptions reach those who stand to benefit most.

Learning Objectives

5. Explain the primary physiological and psychological mechanisms including stress recovery, attention restoration, autonomic nervous system modulation, phytoncide-mediated immune effects, and neuroendocrine responses by which nature exposure produces health benefits beyond those of exercise alone.
6. Compare the evidence for nature-based exercise (green exercise) versus equivalent indoor exercise and versus outdoor urban exercise on outcomes including cortisol, mood, perceived exertion, and physical activity adherence, and discuss the role of restorative quality versus simple outdoor exposure in driving these benefits.
7. Apply a Nature Rx framework including dose, frequency, setting type and restorative quality, and activity mode to client and patient cases across the adult lifespan, and identify established programs that support nature-based prescription in clinical and community settings.
8. Evaluate the practical and ethical considerations of integrating Nature Rx into exercise programming, including access equity across diverse populations and referral pathways to programs such as ParkRx America, Campus Nature Rx, and Social Prescribing USA.

Friday Morning Professional Symposiums

Symposium 24 **Friday, 8:00- 8:50** **Grandview**

Advancing Equity in Concussion Care: Development and Validation of the Para SCAT6 for Wheelchair Athletes

Ashley N. Triplett, Eric G. Post (*Moderator: Alex Claiborne*)



Ashley Triplett, PhD, is the Manager of Sports Medicine Research at the United States Olympic & Paralympic Committee. Her research focuses on injury and illness surveillance, mental health in elite sport, Para athlete wellbeing, and clinical outcomes related to return to sport decision making for elite athletes. Ashley completed her PhD in Kinesiology with an emphasis in Exercise Physiology at Michigan State University and also currently works in support of MSU's Sparty Mascot Program. Ashley has been a member of the ACSM for over 10 years and is currently the President of the Rocky Mountain Chapter.



Dr. Post is the Research Methodologist for the AMSSM Collaborative Research Network, based within the Department of Orthopedics and Rehabilitation at the University of Wisconsin-Madison. He has authored over 100 peer-reviewed publications on topics including sports injury epidemiology, surveillance methodology, and novel approaches for quantifying injury and illness burden in sport. He has secured extramural funding as principal and co-investigator on numerous grants from organizations including the AMSSM Collaborative Research Network, the NATA Research & Education Foundation, and the American College of Sports Medicine.

Session Overview

Despite the physical and psychological benefits of sport participation among individuals who use wheelchairs, there is also a high prevalence of sport-related concussion (SRC) reported in athletes with disabilities. SRC assessment tools like the Sport Concussion Assessment Tool 6 (SCAT6) are widely used but remain unvalidated for adaptive sport athletes, creating a critical gap in concussion care. This session will highlight the development and validation of the Para SCAT6-WC: a novel, evidence-based concussion assessment tool for athletes who use wheelchairs. Presenters will discuss the rationale for tool adaptation, the multidisciplinary and athlete-centered development process, modifications to the original SCAT6 tool, and findings from content and face validation. This session will emphasize both the scientific and practical advancements in concussion assessment for an underserved athlete population, illustrating a model for inclusive clinical tool development. Implications for sports medicine practice, athlete safety, and broader equity in health care delivery will be discussed. Future directions for developing inclusive concussion assessment across additional adaptive sport populations will also be discussed.

Learning Objectives

1. Describe the limitations of current concussion assessment tools for adaptive sport athletes.
2. Explain the multi-phase development and validation process of the Para SCAT6-WC.
3. Apply findings from the Para SCAT6-WC project to improve SRC assessment in adaptive sport settings.

Symposium 25 **Friday, 8:00- 8:50** **Ford**

FROM DATA TO DECISIONS: PRACTICAL APPLICATIONS OF SMARTWATCH TECHNOLOGY IN EXERCISE SCIENCE

Adam S. Lepley (*Moderator: Robert Baker*)



Adam Lepley is an Assistant Professor in the School of Kinesiology at the University of Michigan and Director of the PRIME Laboratory. His research focuses on neuromuscular and neurophysiological adaptations following musculoskeletal injury, particularly anterior cruciate ligament reconstruction, as well as the validation and application of wearable technologies in health and sport. He is a certified athletic trainer and Fellow of the National Athletic Trainers' Association. His work integrates biomechanics, neurophysiology, rehabilitation, and digital health approaches to better understand recovery, improve clinical decision-making, and optimize long-term patient and athlete outcomes.

Session Overview

Consumer smartwatches are increasingly used to monitor health, physical activity, exercise performance, and rehabilitation outcomes, yet the accuracy and usefulness of smartwatch-derived metrics vary widely across devices, algorithms, populations, and activities. This session will provide an evidence-based overview of the practical application of wearable smartwatch technology in exercise science, with emphasis on how common sensors and proprietary algorithms generate outcomes such as heart rate, body composition, VO_2max, energy expenditure, sweat loss, distance, and gait-related metrics. Attendees will review current evidence from validation studies and applied research, including examples showing when smartwatch-derived metrics demonstrate acceptable agreement and when caution is warranted. The session will also highlight the importance of measurement purpose, ecological validity, and interpretation, emphasizing that wearable technologies should support, rather than replace, clinical and performance decision-making. By integrating current literature with applied examples from exercise science and rehabilitation research, this session will help attendees critically evaluate what wearable metrics can measure, what they should be used for, and how to translate data into meaningful decisions for health, performance, and recovery.

Learning Objectives

1. Describe how smartwatch sensors and proprietary algorithms generate commonly used physiological and biomechanical metrics in exercise science.
2. Evaluate the strengths and limitations of smartwatch-derived outcomes, including heart rate, body composition, VOâ,,max, energy expenditure, sweat loss, distance, and gait-related variables.
3. Interpret wearable-derived data within the context of measurement validity, ecological validity, device limitations, and intended use.
4. Identify practical considerations for integrating smartwatch technology into research, clinical practice, performance monitoring, and rehabilitation decision-making.

Symposium 26 **Friday, 8:00- 8:50** **Pearl**

Sleep on the Line: Comparing Sleep Architecture and Recovery in Firefighters Across Experience Levels and Call Volume

Daniel L. Carl FACSM, Mitch Creighton, Nico Richards (*Moderator: Michele Bird*)



Daniel L. Carl, Ph.D., FACSM is an Exercise Physiologist and Professor in the Department of Rehabilitation, Exercise and Nutrition Sciences at the University of Cincinnati. He is a Past-President of MWACSM including service as Secretary and Member-at-Large. He is a Fellow of the American College of Sports Medicine including National service as Chair of the Certification-related Content Advisory Committee. Dan is the current UC Past-Chair of Faculty and serves as Program Director of Health Sciences.



Mitch Creighton is an undergraduate student at the University of Cincinnati studying Health Sciences on the Pre-Physician Assistant track, with minors in Chemistry and Biological Sciences. Mitch is a member of the Health Sciences Club and the UC Student Safety Board, and Mitch works as a Patient Care Assistant on a heart failure and cardiovascular step-down unit at The Christ Hospital. Mitch's research with the Cincinnati Fire Department focuses on firefighter sleep, recovery, and performance across different levels of training and experience. This research also serves as Mitch's Senior Capstone requirement.



Nico Richards is an undergraduate student at the University of Cincinnati studying Health Sciences on the Pre-Medicine track with a minor in nutrition. Nico is a member of the Health Sciences Club and works as a Medical Assistant in the infusion center at the University of Cincinnati's Blood Cancer Healing Center. Nico's research with the Cincinnati Fire Department, which analyzes different recruit classes as well as probationary versus veteran firefighters, serves as Nico's Senior Capstone requirement.

Session Overview

Firefighters working a 24-hour on / 48-hour off schedule experience significant disruptions in sleep architecture due to both sleep deprivation and poor sleep regularity. During shifts, sleep is frequently interrupted by emergency calls, leading to fragmented, low-quality rest rather than continuous recovery sleep. Approximately 60% of firefighters report sleep fragmentation, 40% report excessive fatigue, and nearly 85% obtain less than six hours of sleep during 24-hour shifts, contributing to chronic sleep debt.

Irregular scheduling further exacerbates these challenges as firefighters shift between on- and off-duty sleep patterns, disrupting circadian rhythms and reducing sleep efficiency even on recovery days. This inconsistency limits full recovery and sustains fatigue. Performance impacts are measurable, with reaction times slowing by ~27% and decision-making accuracy declining by up to 25%. Operational risk is also elevated, as firefighters obtaining less than six hours of sleep are 66% more likely to experience workplace accidents.

Over time, these effects increase the risk of errors, injuries, and long-term health conditions, including cardiovascular disease, metabolic dysfunction, immune impairment, and mental health challenges.

This presentation will compare sleep architecture between probationary and veteran firefighters and across high-volume versus low-volume stations. Data will include sleep regularity, duration, sleep stages (deep, light, REM), wake time, HRV, physical activity (steps), and overall stress.

Learning Objectives

1. Describe the impact of 24-hour shift schedules on firefighter sleep architecture, including sleep duration, fragmentation, and circadian disruption.
2. Compare differences in sleep patterns and physiological metrics (e.g., sleep stages, HRV, stress) between probationary and veteran firefighters, as well as between high-volume and low-volume stations.
3. Explain how sleep deprivation and irregular sleep patterns influence firefighter performance, safety outcomes, and long-term health risks.

Symposium 27 **Friday, 9:00 - 9:50** **Grandview**

THE MARATHON: EXPLORING THE CAPABILITIES & LIMITS OF HUMAN PERFORMANCE

Nicholas Mortensen (*Moderator: Kevin Ballard*)



Dr. Nicholas Mortensen is an Assistant Professor of Kinesiology at Michigan State University, where he oversees the Strength and Conditioning Concentration within the Applied Sport Sciences Master's program. His research focuses on strength and conditioning protocols across different disciplines and abilities, as well as suitable nutrition strategies to enhance performance and recovery. He is a Certified Strength and Conditioning Specialist (CSCS) through the National Strength and Conditioning Association. Additionally, he has experience working in various strength and conditioning, corporate wellness, and clinical health fitness settings.

Session Overview

The marathon is one of the most popular aerobic events in the world, testing an athlete's capabilities for a grueling 26.2 miles. Between exercise program preparation, fueling capacity, and psychological needs, there are plenty of variables athletes need to consider for a successful race. And now with the emergence of new technology, the marathon is as competitive as ever, with world records being challenged every year. In this discussion, we will explore the history of marathon performance for both male and female athletes, along with the key determinants of top racers, such as running economy, lactate threshold/maximal lactate steady-state, and critical velocity. We will also examine why/ how records continue to be broken with innovation aiding various performance metrics, such as the use of "super-shoes" and wearable technology, as we inch closer to understanding the capabilities & limits of human performance, along with how this can translate into other competitive events.

Learning Objectives

1. Learn the history behind the marathon and its relevance today
2. Understand the key determinants of performance in the marathon, including VO2 max, lactate threshold/ maximal lactate steady state, running economy, and critical velocity.
3. Examine the roles and ethics of technology in marathon performance and how this relates to other competitions
4. Construct predictions of future marathon performance records and the limits of human capabilities

Symposium 28 **Friday, 9:00 - 9:50** **Ford**

Beyond Muscle: Does Creatine Improve Cognition Equally Across All Populations?

Terence Moriarty (*Moderator: Jon Stavres*)



Dr. Terence Moriarty is an Associate Professor of Exercise Physiology at the University of Northern Iowa, where he directs the Exercise Physiology Laboratory. His research investigates how exercise, nutrition, and environmental stressors influence brain function, cognition, and human performance, with expertise in creatine supplementation and functional near-infrared spectroscopy (fNIRS). He has authored numerous peer-reviewed publications and serves as a Member-at-Large for the Midwest Chapter of the American College of Sports Medicine.

Session Overview

Creatine monohydrate is one of the most extensively studied nutritional supplements for enhancing skeletal muscle performance. More recently, interest has expanded to its potential role in brain bioenergetics, cognitive function, and neurological health. Despite growing popularity, significant misconceptions remain regarding the cognitive benefits of creatine supplementation and whether these effects occur uniformly across populations.

This presentation will examine the physiological role of creatine within the brain and review current evidence regarding its effects on cognition in healthy younger adults, older adults, athletes, and clinical populations. Particular emphasis will be placed on conditions characterized by metabolic stress, including sleep deprivation, hypoxia, mental fatigue, aging, and neurological disorders. Emerging evidence suggests that cognitive benefits may be greatest when cerebral energy availability is challenged rather than during normal resting conditions.

Potential mechanisms involving phosphocreatine availability, ATP regeneration, mitochondrial function, and cerebral oxygenation will be discussed. Practical applications for exercise physiologists, clinicians, athletic trainers, and researchers will also be presented. Attendees will gain an evidence-based understanding of the current state of creatine and cognition research while identifying key gaps and future directions within this rapidly growing area of exercise physiology and sports nutrition.

Learning Objectives

Following this presentation, attendees will be able to:

1. Explain the role of creatine in brain bioenergetics and cerebral energy metabolism.
2. Evaluate current evidence regarding creatine supplementation and cognitive performance across healthy, athletic, aging, and clinical populations.
3. Discuss why creatine supplementation may provide the greatest cognitive benefits during conditions of metabolic stress such as sleep deprivation, hypoxia, mental fatigue, and aging.
4. Apply current evidence to exercise physiology practice and identify future research priorities related to creatine and brain health.

Student Oral Session 1 Overview (Thurs., 9:00 – 9:50)

Haldane ***Moderator: Alex Claiborne***

Time	Presentation	Authors
9:00 - 9:12 AM	IS INTERMUSCULAR ADIPOSE TISSUE A MODIFIER OF RESISTANCE TRAINING ADAPTATION?	Donald D. Deiwert, Youngjun Lee, Owen Guith, Abigail Walker, Christopher L. Newman, Rachel K. Surowiec, Monica J. Hubal FACSM
9:12 - 9:24 AM	SKELETAL MUSCLE MICROVASCULAR OXYGENATION DURING LOWER-BODY POSITIVE PRESSURE TREADMILL RUNNING	Emily Percino, Arturo Sosa III, Michael D. Belbis, Michael J. Holmes, Keith Screen, Joseph Yao, Christopher W. Kinnick, Zhen Yap, Sara E. Hobart, Scott Lawrance, Bruno T. Roseguini, Daniel M. Hirai
9:24 - 9:36 AM	EFFECTS OF A SHORT-TERM REDUCTION IN DAILY STEPS ON GLYCEMIC CONTROL IN HEALTHY ADULTS	Isaiah Stokes, Elizabeth Hudak, Katie VandeWyngearde, Eric Slattery, Paul T. Reidy FACSM, Kyle L. Timmerman FACSM, Jon Stavres, Kevin D. Ballard FACSM

Oral Session 1 **9:00 - 9:50 AM** **Haldane**

9:00 - 9:12 AM

IS INTERMUSCULAR ADIPOSE TISSUE A MODIFIER OF RESISTANCE TRAINING ADAPTATION?

Donald D. Deiwert, Youngjun Lee, Owen Guith, Abigail Walker, Christopher L. Newman, Rachel K. Surowiec, Monica J. Hubal FACSM

BACKGROUND: Muscle quality (MQ) is a measure of skeletal muscle health, representing strength per unit size. MQ can be increased through progressive resistance training (RT), but evidence suggests that overall elevated adiposity can attenuate this response. Local intermuscular adipose tissue (IMAT) is directly related to muscle health but is poorly studied. Changes in IMAT may impact MQ and RT adaptation. Given the influence of sex hormones on adipose accumulation and RT adaptations in muscle, we propose that IMAT influences MQ improvements following RT in a sex-dependent manner. PURPOSE: This study assessed if baseline IMAT volume is correlated to RT-induced changes in MQ. METHODS: We used retrospective data from 16 untrained participants (8 females; age = 28±5) before and after a unilateral 12-week RT intervention. Outcomes included muscle strength (one-repetition maximum (1RM) and maximal voluntary contraction (MVC)), and MRI-derived volume measures pre- and post-training. The MRI-derived elbow flexor (EF) and IMAT volumes were obtained by manual segmentation using 3D Slicer. MQ-1RM and MQ-MVC were calculated by dividing 1RM or MVC by EF volume. Significance for statistical analyses was set at $p<0.05$. RESULTS: RT induced significant increases in MQ-1RM in both males and females (24.3±17.8% and 19.5±15.0%, respectively; no difference between sexes). MQ-MVC did not significantly change, possibly due to a limited sample size ($p=0.11$; partial $\eta^2=0.17$). Baseline IMAT was a significant predictor of MQ-1RM change ($p=0.024$), with significant sex differences trending ($p=0.08$). CONCLUSION: Evidence suggests increased IMAT may influence MQ adaptation following RT. Additional subject data are in progress, and with this larger sample size, sex differences in the relationship between IMAT and MQ adaptation could emerge.

9:24 – 9:36 AM

SKELETAL MUSCLE MICROVASCULAR OXYGENATION DURING LOWER-BODY POSITIVE PRESSURE TREADMILL RUNNING

Emily Percino, Arturo Sosa III, Michael D. Belbis, Michael J. Holmes, Keith Screen, Joseph Yao, Christopher W. Kinnick, Zhen Yap, Sara E. Hobart, Scott Lawrance, Bruno T. Roseguini, Daniel M. Hirai

BACKGROUND: Lower-body positive pressure (LBPP) treadmills provide body weight support (BWS) and reduce the cardiometabolic cost of running at a fixed speed. However, the pressure used for BWS may shift blood centrally and reduce lower-limb vascular volume, potentially challenging locomotor muscle O2 delivery-utilization matching. PURPOSE: To determine whether muscle microvascular oxygenation is impaired during LBPP running when mechanical loading and metabolic demand are dissociated. METHODS: Twelve untrained, healthy participants (24±4 years; 8M/4F) completed randomized visits: 0% BWS (AG0), 15% BWS (AG15), and 40% BWS (AG40) on an anti-gravity treadmill, and 0% BWS on a standard treadmill (ST). Each visit included speed-matched running (Stage 1) followed by V̇O2-matched running (Stage 2). Heart rate (HR), pulmonary V̇O2, chamber pressure, and medial gastrocnemius tissue oxygen saturation (StO2) were measured. One-way repeated measures ANOVA was utilized. Data are displayed as mean±SD. RESULTS: Chamber pressure increased with BWS (AG0: 0.3±0.1, AG15: 6.7±0.7, AG40: 19.5±2.0 mmHg; $p<0.001$). During speed-matched running, V̇O2 and HR decreased with increasing BWS, whereas steady-state StO2 did not differ. However, AG40 elicited a larger initial StO2 deoxygenation amplitude than ST (AG0: 12.7±4.4, AG15: 12.8±3.9, AG40: 15.0±5.0, ST: 12.1±2.9 % saturation; $p<0.05$) and a slower StO2 time constant than all other conditions (AG0: 3.5±1.0, AG15: 3.7±1.2, AG40: 5.7±3.3, ST: 3.9±1.2 s; $p<0.05$). During V̇O2-matched running, higher speeds were required under BWS, but steady-state StO2 did not differ (AG0: 54.6±5.6, AG15: 53.8±6.0, AG40: 53.8±5.5, ST: 53.3±4.5 % saturation; $p=0.461$). CONCLUSION: High BWS transiently altered locomotor muscle oxygenation kinetics, but LBPP did not compromise steady-state StO2 when metabolic demand was matched. LBPP running provides a model for studying central-peripheral O2 transport during mechanically unloaded exercise.

9:36 - 9:48 AM

EFFECTS OF A SHORT-TERM REDUCTION IN DAILY STEPS ON GLYCEMIC CONTROL IN HEALTHY ADULTS

Isaiah Stokes, Elizabeth Hudak, Katie VandeWyngearde, Eric Slattery, Paul T. Reidy FACSM, Kyle L. Timmerman FACSM, Jon Stavres, Kevin D. Ballard FACSM

BACKGROUND: Reduced physical activity (PA) is associated with increased cardiometabolic disease risk. Studies investigating the effects of a short-term reduction in PA on glycemic control are scarce. PURPOSE: We investigated the effects of modest step reduction for 1 week (followed by 1 week of resumption of habitual PA) on glycemic control in healthy adults who have completed the intervention for our ongoing clinical trial. METHODS: Daily steps and interstitial glucose were continuously monitored for 3 weeks in 6 healthy adults (3 women; age = 21.2±1.9 y (mean±SD); BMI = 23.5±2.9 kg/m2) using a smartwatch (Garmin) and a continuous glucose monitor (Dexcom Stelo), respectively. Following 1 week of habitual PA (week 1), participants were instructed to reduce their steps for 1 week (week 2). Participants were provided with an electric scooter during week 2 to facilitate step reduction. Participants were instructed to resume their habitual PA during week 3. Differences in daily steps and glycemic control were assessed via one-way repeated-measures ANOVA with Bonferroni-corrected post hoc comparisons or Friedman tests with Wilcoxon signed-rank post hoc comparisons when data were not normality distributed. RESULTS: There was a main effect ($p=0.03$) for daily steps. Compared to week 1 (11,814±3,178 steps/d), daily steps were 33% and 20% lower in week 2 (8,042±2,835 steps/d; post-hoc comparison, $p=0.09$) and week 3 (9,185±1,179 steps/d; $p=0.45$), respectively. No main effects ($p>0.05$) were found for mean glucose, glucose coefficient of variation, or glucose time in range. CONCLUSION: Our preliminary data in healthy adults support that glycemic control is unaffected by modest step reduction for 1 week. Ongoing recruitment for our clinical trial will more definitively determine the cardiometabolic effects of short-term reductions in PA and the role of cardiorespiratory fitness on changes in glycemic and vascular function with reduced PA. FUNDING: NHLBI 1R15HL177798-01.

Student Oral Session 2 Overview (Thurs., 10:00 – 10:50)

Haldane ***Moderator: Craig Berry***

Time	Presentation	Authors
10:00–10:12 AM	PHYSICAL ACTIVITY AND QUADRICEPS STRENGTH ARE ASSOCIATED WITH REGIONAL KNEE BONE MINERAL DENSITY AFTER ACL RECONSTRUCTION	Leo Kim, Cole Geschwender, HoWon Kim, Amanda Melvin, Ethan Lajiness, Zheng-Yang Zhao, Adam Lepley
10:12–10:24 AM	BUILDING FIT FIRST: USING STAKEHOLDER NEEDS ASSESSMENT DATA TO INFORM PHYSICAL ACTIVITY INTERVENTION DESIGN AND IMPLEMENTATION FOR LOW-SES AND FIRST-GENERATION STUDENTS	Kathleen N. Heeter, Vanessa M. Martinez Kercher FACSM, Jonathan T Macy, Kyle A Kercher
10:24–10:36 AM	ASYMMETRY OF BODY COMPOSITION AND HANDGRIP STRENGTH IN COLLEGIATE BASEBALL PLAYERS AND SWIMMERS	Keegan Pulford-Thorpe, Tamara Hew-Butler FACSM, Paul Burghardt
10:36–10:48 AM	AGREEMENT BETWEEN BIOIMPEDANCE BODY COMPOSITION ESTIMATES AT 50KHZ VERSUS CHARACTERISTIC FREQUENCY AMONG OLDER ADULTS	Kworweinski Lafontant, Edwin Rodriguez-Cruz, Susan Kampiyil, Michelle Da Silva Barbera, Linh Nguyen, Sofea Smith, Jack Livingston, Katie R. Hirsch, Sarah K. Fretti, Jeffrey R. Stout FACSM, David H. Fukuda FACSM

10:00–10:12 AM

PHYSICAL ACTIVITY AND QUADRICEPS STRENGTH ARE ASSOCIATED WITH REGIONAL KNEE BONE MINERAL DENSITY AFTER ACL RECONSTRUCTION

Leo Kim, Cole Geschwender, HoWon Kim, Amanda Melvin, Ethan Lajiness, Zheng-Yang Zhao, Adam Lepley

BACKGROUND: Persistent neuromuscular deficits and increased risk of long-term joint degeneration are common after anterior cruciate ligament reconstruction (ACLR). Physical activity and quadriceps strength are modifiable sources of joint loading, but their relationships with knee bone mineral density (BMD) years after ACLR remain unclear. PURPOSE: To compare knee BMD, quadriceps strength, and physical activity between individuals after ACLR and healthy controls (HC) and examine associations within the ACLR group. METHODS: Twenty individuals with unilateral ACLR (age=23.5±5.2yrs; height=170.9±9.6cm; weight=70.5±13.7kg; time since surgery=68.7±58.9mo) and 20 matched HC (age=23.6±4.7yrs; height=171.9±8.3cm; weight=71.4±12.0kg) completed 1 week of wearable-based physical activity monitoring followed by laboratory testing. Knee BMD of the medial/lateral femoral and tibial condyles was assessed with dual-energy x-ray absorptiometry, and quadriceps strength was assessed using maximal voluntary isometric contraction (MVIC). Independent t-tests compared groups ($\alpha<0.05$), and Pearson correlations examined associations within the ACLR group. RESULTS: ACLR participants had lower medial femoral condyle BMD (1.28±0.18 vs 1.78±0.19g/cm^2; $P<0.001$) and higher lateral tibial condyle BMD (1.25±0.31 vs 1.07±0.15g/cm^2; $P=0.03$) than HC. Steps/day (10,760±3,719 vs 10,229±3,051), MVPA (28.5±21.1 vs 26.3±21.9min/day), MVIC (3.01±0.69 vs 3.33±0.67Nm/kg), and other BMD regions did not differ ($P>0.05$). Within ACLR, medial femoral condyle BMD was associated with MVPA ($r=0.73$, $P<0.001$) and MVIC ($r=0.61$, $P=0.01$). CONCLUSION: Despite similar activity and quadriceps strength, ACLR participants demonstrated region-specific knee BMD differences compared with controls. Greater MVPA and MVIC were associated with higher medial femoral condyle BMD, suggesting that habitual loading behavior and neuromuscular function may relate to long-term structural knee health after ACLR.

10:12–10:24 AM

BUILDING FIT FIRST: USING STAKEHOLDER NEEDS ASSESSMENT DATA TO INFORM PHYSICAL ACTIVITY INTERVENTION DESIGN AND IMPLEMENTATION FOR LOW-SES AND FIRST-GENERATION STUDENTS

Kathleen N. Heeter, Vanessa M. Martinez Kercher FACSM, Jonathan T Macy, Kyle A Kercher

Background: Physical inactivity remains prevalent among emerging adults, with low-socioeconomic status (SES) and first-generation college students often facing structural, social, and psychological barriers to physical activity (PA). Despite these disparities, few PA interventions have been developed using stakeholder (i.e., low-SES college student) input, potentially limiting intervention relevance, acceptability, and implementation success.

Purpose: To use stakeholder-informed data to identify intervention targets and implementation strategies that informed the design of Fit First, a tailored PA intervention for low-SES and first-generation college students.

Methods: Students enrolled in a large Midwestern university program for low-SES, first-generation college students completed a cross-sectional survey assessing psychosocial factors (PLAS, ESES), PA behavior (IPAQ), and preferred program delivery and support strategies.

Results: Among 126 students, 34.2% reported engaging in fewer than 300 minutes of moderate-to-vigorous PA per week. Mean PLAS and ESES scores indicated moderate psychosocial support for PA (PLAS: 28.7 ± 5.4; ESES: 4.9 ± 2.4). Among students in the lower 50th percentile of PA, social support emerged as a key intervention target, with 43% reporting that active partners would help sustain PA. Preferred delivery features included optional in-person small-group meetings (52%) and buddy- or group-based programming (35%).

Conclusion: The implementation of a co-development design tailored both the intervention targets and delivery strategies of Fit First. Pairing student-identified social support needs with preferred peer- and group-based delivery approaches demonstrates how co-development can bridge intervention design and implementation planning, increasing the likelihood that programs are relevant, acceptable, and feasible. Current work is being conducted to evaluate the feasibility, acceptability, appropriateness, and implementation outcomes.

10:24–10:36 AM

ASYMMETRY OF BODY COMPOSITION AND HANDGRIP STRENGTH IN COLLEGIATE BASEBALL PLAYERS AND SWIMMERS

Keegan Pulford-Thorpe, Tamara Hew-Butler FACSM, Paul Burghardt

BACKGROUND: Body composition asymmetry thresholds >10% have been used to identify injury risk and strength deficits in athletes. However, the presence of sport-specific “functional asymmetries” remains unclear. PURPOSE: To investigate if unilateral overhead throwing athletes (baseball players) demonstrate inherently larger interlimb asymmetries compared with non-throwing athletes (swimmers) in body composition [total mass (TM), lean soft tissue mass (LSTM), fat mass (FM), and bone mineral content (BMC)] and/or handgrip strength (HGS). METHODS: Collegiate male baseball players and swimmers were recruited for this observational, cross-sectional, study. Whole body composition was measured using a dual-energy X-ray absorptiometry (DXA) scan while HGS was assessed using a hand dynamometer. Interlimb asymmetry was calculated using the Limb Symmetry Index (LSI) [(right limb - left limb)1/2(right limb + left limb) x 100]. Unpaired t-tests were used to compare baseball players vs. swimmers. Data expressed as mean±SD, with significance set at $p<0.05$. RESULTS: 49 athletes participated in this trial (24 swimmers). Baseball players had significantly greater TM (89.9±8.4vs.81.1±7.8kg;$p=0.0003$), LSTM (69.2±6.5vs.65.1±6.2kg;$p=0.02$), FM (17.4±4.5vs.13.2±2.5kg;$p=0.0002$), BMC (3.3±0.2vs.2.8±0.3kg;$p<0.0001$) and total HGS (110±13vs.95±17kg;$p=0.0007$) than swimmers despite being the same age (20±2vs.20±2yrs;$p=0.31$) and height (1.9±0.1vs.1.8±0.1;$p=0.31$m), (baseball vs. swimmers, respectively). No significant differences in upper body or lower body asymmetry were noted between baseball players vs. swimmers with LSI indices <4% for all measured variables. CONCLUSION: Overhead throwing does not result in greater asymmetry in body composition or handgrip strength (baseball players vs. swimmers). These findings suggest that laterally dominant sport-specific skills rely more heavily on neuromuscular adaptations over muscular changes in size and strength.

10:36–10:48 AM

AGREEMENT BETWEEN BIOIMPEDANCE BODY COMPOSITION ESTIMATES AT 50KHZ VERSUS CHARACTERISTIC FREQUENCY AMONG OLDER ADULTS

Kworweinski Lafontant, Edwin Rodriguez-Cruz, Susan Kampiyil, Michelle Da Silva Barbera, Linh Nguyen, Sofea Smith, Jack Livingston, Katie R. Hirsch, Sarah K. Fretti, Jeffrey R. Stout FACSM, David H. Fukuda FACSM

BACKGROUND: Bioimpedance at 50kHz is commonly used with older adults to estimate body composition since 50kHz approximates characteristic frequency (fc). However, fc varies widely between individuals, so 50kHz may not be a uniformly accurate approximation. PURPOSE: To assess agreement between body composition estimates derived at 50kHz and fc. METHODS: Forty-eight older adults (female=31, age=66.6±5.9yrs, BMI=26.7±5.7kg/m2) completed supine bioelectrical impedance spectroscopy assessments with adhesive electrodes on the right dorsal hand/foot after 10min of supine rest. Participants were assessed in the morning while fasted and euhydrated. Height and body mass were assessed using a stadiometer and digital scale. Bioelectrical resistance was extracted at 50kHz and fc to estimate body fat percentage (BF%), fat-free mass (FFM), and total body water (TBW) according to equations by Sun et al. (2003). Agreement was assessed using Bland-Altman analyses with limits of agreement (LoA) and proportional bias estimates. RESULTS: There was a significant mean difference (MD) between fc (45.0±6.4kHz) and 50kHz ($p<0.001$, d=-0.78). TBW (MD=0.24L; LoA=-0.36,0.84L) and FFM (MD=0.25kg; LoA=-0.41.0.91kg) were significantly overestimated with 50kHz compared to fc while BF% (MD=-0.32%; LoA=-1.18,0.53%) was significantly underestimated (Table 1). Significant proportional bias was observed for TBW (b=-0.02, $p<0.001$) and FFM (b=-0.02, $p<0.001$), with greater error occurring at lower fc values. Absolute differences between estimates for TBW (0.24–1.26L), FFM (0.24–1.38kg), and BF% (0.35–1.98%) varied at the individual level but were never zero. CONCLUSIONS: Body composition estimates at fc and 50kHz are not interchangeable. Given that 50kHz is meant to approximate fc, it may be more appropriate to estimate body composition at fc. However, further research is needed to determine if estimates at fc rather than 50kHz have superior agreement with criterion body composition assessments.

Student Oral Session 3 Overview (Thurs., 11:00 – 11:50)

Haldane ***Moderator: Carol Weideman***

Time	Presentation	Authors
11:00–11:12 AM	Factors Influencing Social-Emotional Learning in Middle School Students	Lucas Ball; Hashem Baalawi; Malak Elayyan; Abdullah Alwaleedi; Salma Alregib; Debra Berkey; Weiyun Chen FACSM
11:12–11:24 AM	THE EFFECTS OF REPEATED HOT WATER IMMERSION ON CEREBROVASCULAR DYNAMICS IN HEALTHY ADULTS	McKenna K. Gelinas, Parker R. Matheny, Keegan J. Honig, Marianne E. Kaiser, Morgan L. Worley, & James R. Sackett
11:24–11:36 AM	THE EFFECTS OF REPEATED HOT WATER IMMERSION ON EXECUTIVE FUNCTION IN HEALTHY ADULTS	Parker R. Matheny, McKenna K. Gelinas, Keegan J. Honig, Marianne E. Kaiser, Morgan L. Worley, & James R. Sackett
11:36–11:48 AM	ESTABLISHING PHYSICAL ACTIVITY PERSONAS AMONG RURAL YOUTH	Amie Sorkin, Emily Clemens, Julianna King, Vanessa Martinez FACSM, Kyle Kercher

Oral Session 3 **11:00 - 11:50 AM** **Haldane**

11:00–11:12 AM

Factors Influencing Social-Emotional Learning in Middle School Students

Lucas Ball; Hashem Baalawi; Malak Elayyan; Abdullah Alwaleedi; Salma Alregib; Debra Berkey; Weiyun Chen FACSM

BACKGROUND: Social–emotional learning (SEL) supports adolescent development, yet the psychosocial and physical factors associated with it remain unclear.

PURPOSE: This study investigated the association of resilience, psychological well-being (PWB), cardiorespiratory fitness (CRF), context-dependent physical activity (PA), and mental health symptoms with SEL, and whether associations differed by sex in middle school students.

METHODS: Participants were 170 sixth- through eighth-grade students from six public middle schools in a Midwestern U.S. state. Trained physical education (PE) teachers administered PACER tests during PE classes. Students completed a Qualtrics survey measuring resilience, PWB, CRF, PA, mental health symptoms, and SEL. Multiple regression using weighted least squares examined associations with SEL, accounting for school-level weighting. Sex-stratified analyses were conducted.

RESULTS: The full model significantly predicted SEL ($F = 35.490$, $p < 0.001$). Higher resilience and PWB and better mental health were associated with higher SEL ($\beta = 0.420$, $p < 0.001$; $\beta = 0.297$, $p < 0.001$; $\beta = -0.200$, $p = 0.002$), whereas higher in-school PA was associated with lower SEL ($\beta = -0.131$, $p = 0.029$). For boys, resilience and PWB were positively associated with SEL ($\beta = 0.420$, $p < 0.001$; $\beta = 0.408$, $p < 0.001$). For girls, greater resilience, higher out-of-school PA, and better mental health were associated with higher SEL ($\beta = 0.372$, $p = 0.002$; $\beta = 0.236$, $p = 0.033$; $\beta = -0.439$, $p < 0.001$).

CONCLUSION: Resilience and PWB are important contributors to SEL in middle school students, with sex-specific differences: resilience and PWB were strongly associated with SEL in boys, whereas resilience, out-of-school PA, and mental health were associated with SEL in girls. These results emphasize the roles of psychosocial strengths, context-specific PA, and mental health in promoting SEL in early adolescence.

11:12–11:24 AM

THE EFFECTS OF REPEATED HOT WATER IMMERSION ON CEREBROVASCULAR DYNAMICS IN HEALTHY ADULTS

McKenna K. Gelinas, Parker R. Matheny, Keegan J. Honig, Marianne E. Kaiser, Morgan L. Worley, & James R. Sackett

BACKGROUND: Repeated hot water immersion (HWI) improves cerebral blood flow in at-risk populations. However, the length of training for optimal effects remains unknown. PURPOSE: We tested the hypothesis that repeated HWI for four weeks improves cerebrovascular dynamics in healthy adults when compared to repeated thermoneutral water immersion (NWI). METHODS: 26 healthy subjects experienced either HWI (age: 19.8±1.6 y, BMI: 22.9±3.3 kg/m2, 7 F, 39.9±0.3℃) or NWI (age: 20.8±1.9 y, BMI: 22.4±3.7 kg/m2, 5 F, 35.0±0.3℃). Training consisted of three, 30-minute immersions a week for four weeks, which was preceded by pre-testing (PRE) and followed by post-testing (POST). A transcranial doppler was used to image the right middle cerebral artery (MCA). MCA velocity (MCAv), heart rate (HR), pulsatility index (PI), and end-diastolic velocity (EDV) were recorded and averaged during seated rest. A two-way repeated measures ANOVA was used for analysis. Data were analyzed and presented as a change from PRE to POST. RESULTS: There were no significant differences between conditions (p=0.80) or across time (p=0.36) for MCAv between HWI (-3.97±14.64 cm/s) or NWI (-2.24±16.88 cm/s). There were no significant differences between conditions (p=0.53) or across time (p=0.81) for HR between HWI (0.84±9.88 bpm) or NWI (-1.80±10.34 bpm). There were no significant differences between conditions (p=0.74) or across time (p=0.51) for PI between HWI (-0.01±0.16 a.u.) or NWI (-0.04±0.18 a.u.). There were no significant differences between conditions (p=0.28) or across time (p=0.77) for EDV between HWI (-2.18±10.47 cm/s) or NWI (-0.54±12.15 cm/s). CONCLUSIONS: Repeated HWI does not improve cerebrovascular dynamics when compared to repeated NWI for four weeks in healthy adults. More research is required to identify the necessary dosage and temperature of immersion to elucidate improvements in cerebrovascular dynamics in healthy adults.

11:24–11:36 AM

THE EFFECTS OF REPEATED HOT WATER IMMERSION ON EXECUTIVE FUNCTION IN HEALTHY ADULTS

Parker R. Matheny, McKenna K. Gelinas, Keegan J. Honig, Marianne E. Kaiser, Morgan L. Worley, & James R. Sackett

BACKGROUND: Repeated hot water immersion (HWI) increases cerebral blood flow. However, it is unclear if these changes translate to improved executive function. PURPOSE: To test the hypothesis that repeated HWI improves executive function compared to repeated thermoneutral water immersion (NWI). METHODS: Healthy adults were assigned to either NWI (n=12; age: 20.8±1.9 y; BMI: 22.4±3.7 kg/m²; 5 F; 35.0±0.3°C) or HWI (n=15; age: 19.7±1.5 y; BMI: 22.5±3.4 kg/m²; 8 F; 39.9±0.3°C). Participants completed 30 minutes of immersion three days/week for four weeks. Executive function was assessed before (PRE) and after (POST) using a validated online cognitive assessment battery, including the Dimensional Change Card Sort (DCCS), Flanker Inhibitory Control and Attention (Flanker), and List Sorting Working Memory tasks (List Sorting), assessing cognitive flexibility, attention/inhibitory control, and working memory, respectively. Data are presented as means ± standard deviations. Repeated measures ANOVA's were used to analyze data. RESULTS: For DCCS Computed Score, no significant condition (P=0.201), time (P=0.080), or interaction effect (P=0.837) was observed during NWI (PRE: 4.10±2.34 a.u.; POST: 4.74±2.92 a.u.) or HWI (PRE: 3.13±1.56 a.u.; POST: 3.60±1.80 a.u.). For Flanker Computed Score, no significant condition (P=0.593), time (P=0.106), or interaction effect (P=0.756) was observed during NWI (PRE: 1.86±0.46 a.u.; POST: 1.92±0.43 a.u.) or HWI (PRE: 1.76±0.31 a.u.; POST: 1.84±0.30 a.u.). For List Sorting Raw Score, no significant condition (P=0.501), time (P=0.105), or interaction effect (P=0.164) was observed during NWI (PRE: 16.17±2.48 a.u.; POST: 17.33±2.06 a.u.) or HWI (PRE: 16.13±2.62 a.u.; POST: 15.82±1.83 a.u.). CONCLUSION: Four weeks of HWI did not alter executive function in healthy adults. These findings indicate that repeated HWI may not be an effective standalone strategy to improve executive function in healthy, young adults.

11:36–11:48 AM

ESTABLISHING PHYSICAL ACTIVITY PERSONAS AMONG RURAL YOUTH

Amie Sorkin, Emily Clemens, Julianna King, Vanessa Martinez FACSM, Kyle Kercher

BACKGROUND AND SIGNIFICANCE: Researchers do not yet fully understand the context-specific physical activity (PA) needs of youth, particularly those from low-socioeconomic rural backgrounds, limiting the ability to design responsive inventions. To address this gap, this study uses a layered contextual inquiry approach to develop personas–profiles that capture distinct patterns of children's PA behaviors across school-based settings. These personas support the design of targeted programming that moves beyond a one-size-fits-all approach. RESEARCH QUESTION: How can children's behavioral and physical engagement within school-based PA settings be categorized into meaningful profiles? PROPOSED METHODS: This sequential mixed-methods study will recruit 20 middle school-aged children through purposive sampling. PA will be assessed using Observational System for Recording Physical Activity in Children (OSRAC), the System for Observing Play and Leisure Activity in Youth (SOPLAY), and structured observation checklists documenting activity level, type, context, and environmental factors. Two trained observers will independently code each participant to establish inter-rater reliability. Data collection will begin with direct observations, followed by focus groups and brief walk-and-talk interviews. Quantitative data will be analyzed using descriptive statistics and Cohen's kappa. Qualitative data will undergo thematic analysis, with findings integrated across phases to develop participant personas. PROJECTED LIMITATIONS AND OBSTACLES: Weather, season, and time of day may influence observation quality and PA opportunities. Selection bias may occur if more active or willing participants are overrepresented. Observer training and inter-rate reliability checks will minimize inconsistencies in coding.

Student Oral Session 4 Overview (Thurs., 2:30 – 3:20)

Haldane ***Moderator: Heather Betz***

Time	Presentation	Authors
2:30 - 2:42 PM	PHYSICAL ACTIVITY AS A CORRELATE OF STUDY HABITS ACROSS A COLLEGE SEMESTER	Lucas Ntapuan Tatul, Erin Vanderbunt
2:42 - 2:54 PM	CHANGES IN IDENTITY, MOTIVATION, AND ENJOYMENT FOLLOWING PHYSICAL ACTIVITY GOAL-SETTING IN RURAL MIDDLE SCHOOLERS	Julianna King, Aiden Cho, Noah Cumming, Vanessa Martinez Kercher FACSM, Kyle Kercher
2:54 - 3:06 PM	THE EFFECTS OF A 4-8 WEEK FINNISH SAUNA INTERVENTION ON ARTERIAL STIFFNESS	Mason T. Lentz, Corey Washington, Gregory D. Fink, Nigel Paneth, George S. Abela, Supratik Rayamajhi, Katharine D. Currie FACSM
3:06 - 3:18 PM	EFFECTS OF CREATINE SUPPLEMENTATION DURING EIGHT WEEKS OF BLOOD FLOW RESTRICTION TRAINING ON LEG EXTENSOR STRENGTH IN RECREATIONALLY TRAINED FEMALES	Matteo F. de Leon, Paola M. Rivera, Clayton L. Camic, Ethan C. Hill

Oral Session 4 **2:30 - 3:20 PM** **Haldane**

2:30 - 2:42 PM

PHYSICAL ACTIVITY AS A CORRELATE OF STUDY HABITS ACROSS A COLLEGE SEMESTER

Lucas Ntapuan Tatul, Erin Vanderbunt

BACKGROUND: The transition to college is often associated with declines in physical activity (PA) and changes in study habits, both of which influence academic success. Emerging evidence suggests PA may support self-regulation and cognitive control, potentially strengthening study behaviors, but longitudinal data is limited. PURPOSE: To examine the relationship between PA levels and study habit domains across a college semester among undergraduate students. METHODS: Undergraduate students (n=43; age=20.74±1.49yrs) enrolled in PA and non-PA courses at a Midwestern university were administered the Godin Leisure-Time Exercise Questionnaire (GLTEQ) and the Learning and Study Strategies Inventory (LASSI) at the start and end of a 16-week semester. Analyses were conducted on available data at each time point. Paired t-tests and Pearson correlations were used to examine changes and relationships. Significance was set at $p<.05$. RESULTS: Baseline PA (57.91±20.58) was positively correlated with all seven LASSI subscales ($r=.35$-$.50$, all $p<.05$; $n=32$), with strongest associations for Self-Testing ($r=.50$, $p=.004$), Selecting Main Ideas ($r=.45$, $p=.010$), and Time Management ($r=.45$, $p=.010$). PA declined significantly by semester end (40.09±33.18; $t(22)=3.12$, $p=.005$, $d=0.65$). Study habits remained stable across all subscales (pre-post $r=.61$-$.91$, all $p<.01$; no significant pre-post changes, all $p>.19$; $n=18$). End-of-semester PA remained associated with Time Management ($r=.64$, $p=.014$, $n=14$). CONCLUSION: Higher PA was consistently associated with stronger study habits at semester start, particularly Self-Testing, Selecting Main Ideas, and Time Management. Despite significant PA decline, study habits remained stable and the PA-Time Management relationship persisted at semester end. These preliminary findings suggest PA is an important correlate of study habits among undergraduates. Larger longitudinal studies are needed to examine whether PA interventions can support academic outcomes.

2:42 - 2:54 PM

CHANGES IN IDENTITY, MOTIVATION, AND ENJOYMENT FOLLOWING PHYSICAL ACTIVITY GOAL-SETTING IN RURAL MIDDLE SCHOOLERS

Julianna King, Aiden Cho, Noah Cumming, Vanessa Martinez Kercher FACSM, Kyle Kercher

BACKGROUND AND SIGNIFICANCE: Despite being a focus of Healthy People 2030, the percent of adolescents meeting physical activity guidelines has decreased in the past few years. Rural adolescents are uniquely at risk of low physical activity engagement due to lack of resources. Goal setting is a behavior change technique shown to support the development of health behaviors, and psychosocial factors have often correlated with long-term physical activity engagement. Despite this, little is known about the impact of goal setting on specific psychosocial factors, such as identity, motivation, and enjoyment, in rural adolescents and if they are associated with physical activity levels.

RESEARCH QUESTION: Are changes in identity, motivation, and enjoyment associated with changes in PA following a goal-setting intervention?

PROPOSED METHODS: This study is a one-year prospective pre-post study with children (n=100) from two rural middle schools. Each school will receive 6-weeks of goal setting programming–one school in first semester and the other in second semester based on random assignment–with the other school serving as the control group, respectively. Students will receive programming once a week and complete surveys at the beginning and end of each semester. Participants will complete 7-days of physical activity data collection using Axivity AX3 accelerometers at each time point. Self-report measures will include the Athletic Identity Questionnaire – Adolescent (AIQ-A), Physical Activity Enjoyment Scale – Short (PACES-S), and Intrinsic Motivation Index (IMI). Regression analyses will be used to examine relationships between the variables.

PROJECTED LIMITATIONS AND OBSTACLES: Potential obstacles include unforeseen changes in the goal-setting intervention schedule due to fluctuating schedules and compliance with the AX3 accelerometers. Limitations of this study would include (1) limited generalizability and (2) potential for social-desirability bias.

2:54 - 3:06 PM

THE EFFECTS OF A 4-8 WEEK FINNISH SAUNA INTERVENTION ON ARTERIAL STIFFNESS

Mason T. Lentz, Corey Washington, Gregory D. Fink, Nigel Paneth, George S. Abela, Supratik Rayamajhi, Katharine D. Currie FACSM

BACKGROUND: Regular Finnish sauna bathing has been associated with improved cardiovascular health in primarily European samples, yet intervention studies examining vascular function in American populations remain limited.

PURPOSE: To investigate the effects of a 4–8 week Finnish sauna intervention on arterial stiffness and supine blood pressure (BP) and heart rate (HR) in American adults.

METHODS: Adults aged 30–80 years completed four, 30-minute Finnish sauna sessions per week for 4–8 weeks. Carotid-femoral pulse wave velocity (cfPWV), and supine systolic BP (SBP), diastolic BP (DBP), and heart rate (HR) were assessed pre- and post- intervention using applanation tonometry and an automatic oscillometric device, respectively, following 10-minutes of supine rest. Data were tested for normality and analyzed using paired t-tests. Results are reported as mean±SD for pre- vs. post-intervention. Statistical significance was set at $P \leq 0.05$.

RESULTS: Thirteen participants (52±13 years; 3 males) completed the intervention. There was no change in cfPWV (8.9±1.7 vs. 8.5±1.7 m/s, P=0.137), SBP (127±13 vs. 123±9 mmHg, P=0.085), DBP (74±10 vs. 72±9 mmHg, P=0.103) and HR (69±6 vs. 68±9 bpm, P=0.869). Individual changes (i.e., post–intervention – pre-intervention) ranged from 0.7 to -2.1m/s for cfPWV, 13 to -20 mmHg for SBP, 6 to -14 mmHg for DBP, and 11 to -17 bpm for HR, with negative values indicating a reduction or improvement in the health outcome.

CONCLUSION: Although a 4–8 week Finnish sauna intervention produced no statistically significant changes in arterial stiffness and supine BP and HR in American adults, we did observe a large range of individual responses suggesting Finnish sauna use may be beneficial for some for improving cardiovascular health. Additional research on Finnish sauna bathing as a non-pharmacological strategy for cardiovascular health promotion is warranted.

This study was funded by a TETRAD Grant from Michigan State University

3:06 - 3:18 PM

EFFECTS OF CREATINE SUPPLEMENTATION DURING EIGHT WEEKS OF BLOOD FLOW RESTRICTION TRAINING ON LEG EXTENSOR STRENGTH IN RECREATIONALLY TRAINED FEMALES

Matteo F. de Leon, Paola M. Rivera, Clayton L. Camic, Ethan C. Hill

BACKGROUND: Blood flow restriction (BFR) training is a viable alternative to traditional resistance training by promoting strength adaptations and mitigating injury risk by using low training loads (20-30% 1-RM), thereby reducing mechanical stress while increasing metabolic stimulus through external cuff pressure. However, it is unclear if creatine supplementation augments these benefits during BFR training in females. PURPOSE: To determine the effects of creatine monohydrate supplementation on lower-body strength during 8 weeks of BFR training in recreationally trained females. METHODS: Twenty-three women (mean ± SD age = 21.2 ± 2.1 years; body mass = 70.0 ± 12.8 kg) volunteered for this study and were randomly assigned to the creatine (n = 11) or placebo (n = 12) group. Training was performed twice a week at 30% 1-RM with BFR cuffs inflated to 60% of arterial occlusion pressure. Each session consisted of 75 repetitions (1 x 30, 3 x 15) of leg press, leg extension, and leg curl exercises. Concentric peak torque of the leg extensors at 90°·s-1 was determined on an isokinetic dynamometer before and after 8 weeks of supplementation and BFR training. Separate 2 x 2 mixed-factorial ANOVAs were used to assess group x time effects with follow-up paired-samples t-tests. An alpha of 0.05 was used for statistical significance. RESULTS: There were significant increases in absolute peak torque (102.5 ± 16.0 to 124.5 ± 26.8 Nm, $p < 0.001$) and relative peak torque (1.46 ± 0.25 to 1.72 ± 0.27 Nm·kg-1, $p < 0.001$) for the creatine group, whereas the placebo group demonstrated no changes (115.1 ± 22.1 to 122.5 ± 18.4 Nm, $p = 0.146$ and 1.72 ± 0.39 to 1.85 ± 0.36 Nm·kg-1, $p = 0.068$, respectively). CONCLUSION: The findings indicated that creatine supplementation combined with 8 weeks of BFR training improved absolute and relative peak torque of the leg extensors compared to placebo in recreationally trained females.

Student Oral Session 5 Overview (Thurs., 3:30 – 4:20)

Haldane Moderator: Nicholas Mortensen

Time	Presentation	Authors
3:30–3:42 PM	A NATIONAL SURVEY OF RELATIVE ENERGY DEFICIENCY IN SPORT RISK AND FUNCTIONAL OUTCOMES IN FEMALE COLLEGIATE DANCERS	Samantha G. Brooks, Ann Frost, David Sanders, Tanya Calamoneri, Eli Stroh, Emaly Vatne, Angela Emerson, Morgan Orr, William Kraemer FACSM, Catherine Saenz
3:42–3:54 PM	BODY SURFACE AREA, BUT NOT MASS OR ADIPOSITY, IS ASSOCIATED WITH SWEAT RATE DURING EXERCISE IN YOUNG SEDENTARY ADULTS	Sneha P. Patel, Brett W. Crossland, Gabrielle A. Dillon
3:54–4:06 PM	Systolic Blood Pressure Responses to Exercise Testing across the Menstrual Cycle in Eumenorrheic Females	Sophie A. Miller, Amy E. Boettcher, Katharine D. Currie FACSM
4:06–4:18 PM	THE EFFECT OF CAFFEINE ON 15-MINUTE CONSTANT SPEED RUNNING IN HEAT	Lilin Lan, Tyler A. Seimetz, Kona Maruyama, Nicholas J. Hanson

Oral Session 5 **3:30 - 4:20 PM** **Haldane**

3:30–3:42 PM

A NATIONAL SURVEY OF RELATIVE ENERGY DEFICIENCY IN SPORT RISK AND FUNCTIONAL OUTCOMES IN FEMALE COLLEGIATE DANCERS

Samantha G. Brooks, Ann Frost, David Sanders, Tanya Calamoneri, Eli Stroh, Emaly Vatne, Angela Emerson, Morgan Orr, William Kraemer FACSM, Catherine Saenz

BACKGROUND: Low energy availability (LEA) occurs when dietary energy intake is insufficient relative to exercise demands. Chronic LEA can progress to Relative Energy Deficiency in Sport (REDs), causing hormonal disruption, impaired bone health, increased injury risk, and reduced performance. Female collegiate dancers face unique training, academic, and psychosocial pressures that may elevate REDs risk, yet prevalence data in across dance programs remains limited. PURPOSE: To characterize REDs risk prevalence and dance-specific functional outcomes in a national sample of female collegiate dancers, and to describe associated psychosocial and health characteristics. METHODS: Female collegiate dancers (n=150) from programs across the U.S. completed an online survey including the Dance-Specific Energy Availability Questionnaire (DEAQ; negative scores=higher REDs risk) and Dance Functional Outcome Survey (DFOS; higher scores=better function). Kruskal-Wallis tests examined DEAQ and DFOS differences by dancer type (major, minor, or dance team member). Spearman correlations examined DEAQ-DFOS associations. RESULTS: DEAQ scores ranged from -14 to 17 (median=4, IQR=8), with 28% scoring negative. Median DFOS total was 82/90 (IQR=14). DEAQ and DFOS scores did not differ by dancer type (p=0.168; p=0.097). Spearman correlations showed small but significant associations between DEAQ and DFOS scales (total: rho=0.227, p=0.008; activities of daily living subscale: rho=0.280, p=0.001; technique subscale: rho=0.174, p=0.043). Secondary findings include 28% reporting secondary amenorrhea, 57% believing lower body weight improves casting, and low REDs awareness (18.7%). CONCLUSION: Nearly one in three female collegiate dancers demonstrated REDs risk, with functional outcomes associated with energy availability. Prevalent menstrual dysfunction, weight-related pressures, and low REDs awareness highlight the need for screening and sports nutrition education across collegiate dance programs.

3:42–3:54 PM

BODY SURFACE AREA, BUT NOT MASS OR ADIPOSITY, IS ASSOCIATED WITH SWEAT RATE DURING EXERCISE IN YOUNG SEDENTARY ADULTS

Sneha P. Patel, Brett W. Crossland, Gabrielle A. Dillon

BACKGROUND: Sweating is a primary mechanism for regulating body temperature; however, associations between body anthropometrics and sweat measures during aerobic exercise in young sedentary adults remain unclear. Understanding these associations may help identify individuals at risk for dehydration or heat-related performance decrements.

PURPOSE: To determine if body size and composition are associated with sweat rate and composition during an acute aerobic exercise bout in young sedentary adults.

METHODS: Thirteen (n=9 females) young (25±4 yrs) sedentary adults from Midwestern State University completed 20-minute treadmill exercise at 80% age-predicted maximum heart rate in a thermoneutral room (20-22˚C). Height, body mass, and body fat percentage (BF%) were assessed using bioelectrical impedance analysis. Body mass index (BMI), body surface area (BSA) and BSA:mass ratio were calculated. Sweat rate and sodium ([Na+]) concentrations were continuously measured during exercise using an upper arm sweat sensor. Pearson's correlations assessed associations between anthropometrics and sweat measures ($p \leq 0.05$).

RESULTS: Average body mass was 73.04±14.35kg, BF% was 37.08±5.48%, BMI was 26.56±3.08kg/m2, BSA was 1.88±0.15m2 and BSA:mass ratio was 0.03±0.00m2/kg. Average sweat rate was 0.62±0.13L/h, with [Na+] of 267.96±66.97mg. Neither body mass, BF%, nor BMI were correlated with sweat measures (all $p>0.05$). BSA was positively correlated with sweat rate ($r=0.55$, $p=0.05$), but not [Na+] ($p=0.06$). In contrast, BSA:mass ratio was negatively correlated with sweat rate ($r=-0.64$, $p=0.02$) and [Na+] ($r=-0.59$, $p=0.04$).

CONCLUSION: Sweating responses during an acute aerobic exercise are positively correlated with the body's heat-dissipation capacity (BSA) and inversely associated with absolute thermal load imposed by BSA:mass ratio. BF% and BMI are not associated with sweating, as these measures may not influence the imposed thermal load or heat-dissipation capacity.

3:54–4:06 PM

Systolic Blood Pressure Responses to Exercise Testing across the Menstrual Cycle in Eumenorrheic Females

Sophie A. Miller, Amy E. Boettcher, Katharine D. Currie FACSM

BACKGROUND: Systolic blood pressure (SBP) during exercise provides clinically relevant information about cardiovascular risk. We previously demonstrated poor day-to-day reliability of exercise SBP in females when menstrual cycle was not controlled. PURPOSE: To determine if resting, submaximal and peak exercise SBP change throughout the menstrual cycle in naturally cycling females. METHODS: 15 participants (21±4 years, body mass index: 21.4±2.4 kg/m2) completed three modified Bruce treadmill exercise tests during menstruation (day 3.2±1.1), follicular (day 11.3±1.2), and luteal (day 23.3±2.6) phases of their cycle. Luteinizing hormone testing was performed, and follicular and luteal visits were scheduled pre- and post-ovulation, respectively. Exercise testing was completed to volitional exhaustion and SBP was measured via an automated auscultatory machine at rest (standing) and at the end of each exercise stage. Standing, stage 4 (submaximal) and peak SBP were compared across the phases using one-way repeated-measure ANOVAs or Friedman tests depending on normality. Statistical significance was accepted at $p<0.05$ and data are presented as mean±SD or median [interquartile range] for menstruation vs. follicular vs. luteal phases. RESULTS: Standing SBP did not differ across the cycle (118 ± 16 vs. 115 ± 18 vs. 115 ± 14 mmHg; p=0.774). Stage 4 SBP (152 [131, 167] vs. 159 [142, 174] vs. 153 [142, 168] mmHg; p=0.950) and peak SBP (187 ± 31 vs. 195 ± 30 vs. 188 ± 23 mmHg; p=0.541) also did not differ between phases. CONCLUSION: Menstrual cycle phase did not affect resting, submaximal, or peak SBP responses during treadmill testing to volitional exhaustion in eumenorrheic females. These findings suggest it would be appropriate to test females at any phase of their cycle if measuring exercise SBP to determine cardiovascular risk. Additionally, it suggests menstrual phase alone may not explain previously observed variability in exercise BP measurements in females.

4:06–4:18 PM

THE EFFECT OF CAFFEINE ON 15-MINUTE CONSTANT SPEED RUNNING IN HEAT

Lilin Lan, Tyler A. Seimetz, Kona Maruyama, Nicholas J. Hanson

Background: Caffeine is a well-established ergogenic aid that improves running performance, but its effects on physiological and psychological responses during running in the heat remain unclear.

Purpose: This study examined caffeine's effect on heart rate (HR), rating of perceived exertion (RPE), and thermal sensation (TS) during a 15-minute run in a hot environment.

Method: Twelve amateur runners (9 males, 3 females; age: 27.4±5.4 years; VO2max: 44.2 ± 6.8 mL/min/kg; vVO2max: 9.2 ± 1.1 mph) completed one familiarization (vVO2max assessment via GXT) and two experimental sessions (≥48-hour washout). Participants ingested either caffeine (CAF, 6 mg/kg BM) or placebo (PLC) in a counterbalanced order, then ran for 15 minutes at 85% vVO2max in an environmental chamber (88°F, 40% RH) 60 minutes post-ingestion. HR, RPE, TS were recorded at minutes 1, 5, 10 and 15. Data were analyzed using 2*4 (condition x time) repeated measures ANOVAs.

Results: HR increased over time in both conditions (PLC: 154.2±1.7, 176.3±2.7, 182.0±3.0, 185.3±3.3 bpm; CAF: 148.6±4.0, 177.0±1.9, 185.6±2.5, 190.1±2.8 bpm). A significant condition × time interaction effect was observed for HR ($F=4.55$, $p=.047$). Simple effect analysis revealed that caffeine resulted in significantly higher HR at minutes 10 and 15 compared to placebo ($p=.041$ and $p=.007$, respectively). RPE increased over time in both conditions (PLC: 11.1±0.4 to 17.1±0.6; CAF: 10.4±0.7 to 16.6±0.6), with consistently lower scores under caffeine and no significant condition effect or interaction. TS showed a similar pattern (PLC: 4.6±0.1 to 7.1±0.2; CAF: 4.6±0.1 to 6.8±0.2).

Conclusion: During a 15-minute run at 85% vVO2max in heat, caffeine resulted in significantly higher HR compared to placebo as running progressed, suggesting greater cardiovascular strain. Despite this, RPE and TS were consistently lower under caffeine at every time point, though not significantly so – a dissociation that warrants further investigation.

Student Oral Session 6 Overview (Thurs., 4:30 – 5:20)

Haldane ***Moderator: Dan Carl***

Time	Presentation	Authors
4:30–4:42 PM	BEYOND DATA COLLECTION: UNDERGRADUATE INCLUSION IN SCHOLARLY RESEARCH AND PUBLICATION.	Anna Witte, Elizabeth Prible, Kyle Kercher
4:42–4:54 PM	PULSE WAVE VELOCITY IS NOT IMPROVED WITH MORNING OR EVENING EXERCISE TRAINING IN POSTMENOPAUSAL FEMALES WITH HYPERTENSION	Lydia Elbert, Anne Tonson, Jill M. Slade FACSM, Katharine D. Currie FACSM
4:54–5:06 PM	CARDIOVASCULAR AND HORMONAL DIFFERENCES IN VO_2 TESTING BETWEEN PREGNANT AND NONPREGNANT WOMEN: IMPLICATIONS FOR EXERCISE PRESCRIPTION AND RISK DETECTION	Mikayla Lair & Alex Claiborne, Ph.D.
5:06–5:18 PM	Hoosier Sport Global: Creation, Growth, and Global Collaboration	Sophia Huber, Julianna King, Anna Witte, Kyle Kercher

Oral Session 6 **4:30 - 5:20 PM** **Haldane**

4:30–4:42 PM

BEYOND DATA COLLECTION: UNDERGRADUATE INCLUSION IN SCHOLARLY RESEARCH AND PUBLICATION.

Anna Witte, Elizabeth Prible, Kyle Kercher

BACKGROUND AND SIGNIFICANCE:

Undergraduates are increasingly encouraged to participate in research, yet their involvement often remains limited to tasks such as data collection, recruitment, transcription, or administrative support. While these experiences can be valuable, relatively few undergraduates are meaningfully included in higher-level scholarly activities such as data interpretation, manuscript writing, grant development, or journal authorship. Findings will contribute to conversations about mentorship, identity development, and access in higher education. By identifying both the benefits of meaningful undergraduate involvement and the factors that hinder such opportunities, the study may inform practices that support students' transition from research assistants to emerging scholars.

RESEARCH QUESTION:

What factors influence faculty decisions to include or exclude undergraduates from manuscript writing, publication, and authorship opportunities/higher-level scholarly activities?

PROPOSED METHODS:

This study will use qualitative interviews and surveys with 20 health sciences faculty members who vary in their level of undergraduate engagement at Indiana University. Interviews will be audio recorded and transcribed. Questions will focus on experiences with research mentorship, perceptions of authorship and contribution, benefits of participation, and challenges associated with undergraduate involvement in scholarly activities. Interviews and surveys will use an adapted versions of the Mentoring Competency Assessment and Mentoring Interest Scale. For quantitative analysis, we will use descriptive statistics. For qualitative data analysis, we will use deductive thematic analysis.

PROJECTED LIMITATIONS AND OBSTACLES:

This study will have limited generalizability based on using one institution. Further, the data will be self-reported. One potential obstacle is faculty recruitment, as they may be reluctant to share.

4:42–4:54 PM

PULSE WAVE VELOCITY IS NOT IMPROVED WITH MORNING OR EVENING EXERCISE TRAINING IN POSTMENOPAUSAL FEMALES WITH HYPERTENSION

Lydia Elbert, Anne Tonson, Jill M. Slade FACSM, Katharine D. Currie FACSM

BACKGROUND: Aortic stiffness, assessed using carotid-femoral pulse wave velocity (cfPWV), increases with age and menopause, and is associated with an increased risk of future cardiovascular events. While exercise training decreases aortic stiffness (i.e., cfPWV) in some populations, it is unclear whether the time of day when exercise training is performed affects the degree of change. PURPOSE: To examine the effects of 6-weeks of exercise training performed in the morning (AM) and evening (PM) on cfPWV in sedentary postmenopausal females with hypertension. METHODS: Twenty-six participants (64±8 years; body mass index: 33.2±5.8 kg/m2; 81% on blood pressure medications) completed two, 6-week blocks of training four days/week in the AM (0800-1100h) and PM (1700-2000h) with a minimum 3-week wash-out period between blocks. Training involved 40-min of treadmill walking at 50-70% of heart rate reserve and four, 2-min bouts of isometric handgrip exercise at 30% of maximum voluntary contraction. Aortic stiffness (cfPWV) and blood pressure (BP) were measured in the morning pre- and post-training using applanation tonometry and an automated oscillometric device, respectively; cfPWV was calculated as (0.8×distance)÷pulse transit time. Data were analyzed using 2x2 repeated measure ANOVAs with time of day (AM, PM) and intervention (pre, post) as within-subject factors. Data are reported as mean±SD for pre vs. post. RESULTS: There were no effects of time of day or intervention, or interaction effects (all P>0.05) for cfPWV (AM: 9.9±1.7 vs. 9.4±1.5 m/s, PM: 9.7±1.9 vs. 9.8±1.9 m/s), systolic BP (AM: 137±13 vs. 136±13 mmHg, PM: 137±13 vs. 138±12 mmHg) or diastolic BP (AM: 72±9 vs. 72±7 mmHg, PM: 72±9 vs. 73±9 mmHg). CONCLUSION: Six-weeks of exercise training, regardless of the time of day, was not sufficient to lower cfPWV in a primarily medicated sample of postmenopausal females with hypertension. Longer exercise training durations may be required to improve aortic stiffness.

4:54–5:06 PM

CARDIOVASCULAR AND HORMONAL DIFFERENCES IN VO_2 TESTING BETWEEN PREGNANT AND NONPREGNANT WOMEN: IMPLICATIONS FOR EXERCISE PRESCRIPTION AND RISK DETECTION

Mikayla Lair & Alex Claiborne, Ph.D.

BACKGROUND AND SIGNIFICANCE

Heart rate (HR), blood pressure (BP), oxygen uptake (VO_2), and perceived exertion guide exercise prescription and cardiovascular monitoring. These markers are often interpreted using frameworks for nonpregnant individuals. Pregnancy induces significant cardiovascular adaptations, including increased blood volume and resting HR, which may alter the physiological meaning of traditional exercise-testing markers, yet their accuracy during pregnancy remains uncertain, contributing to under-prescription of exercise or missed physiological signals. Understanding exercise physiology in pregnancy is essential for developing evidence-based exercise guidelines and enhancing maternal health research.

RESEARCH QUESTION

How do pregnancy-related cardiovascular adaptations influence the interpretation of key exercise-testing markers, HR, BP, VO_2, perceived exertion, and estimated stroke volume, during submaximal exercise?

PROPOSED METHODS

This study will employ a prospective longitudinal design, with a proposed pilot sample of 7 pregnant participants and 7 matched nonpregnant controls. Pregnant participants will undergo assessment during early, mid, and late pregnancy, as well as postpartum. Submaximal treadmill exercise testing will use the COSMED K5 wearable system, enabling respiratory gas analysis alongside other parameters such as HR, BP, and RPE. Estimated stroke volume will be derived from oxygen pulse (VO_2/HR). Primary outcomes include the influence of pregnancy status on oxygen pulse, VO_2, HR, and BP responses, ventilatory thresholds, and recovery characteristics.

PROJECTED LIMITATIONS AND OBSTACLES

Limitations include estimating stroke volume from oxygen pulse rather than direct cardiac imaging, using pregnancy status as a proxy for hormonal changes, participant retention across pregnancy stages, and restriction to low-risk pregnancies. Nonetheless, this study provides preliminary data to guide future research.

5:06–5:18 PM

Hoosier Sport Global: Creation, Growth, and Global Collaboration

Sophia Huber, Julianna King, Anna Witte, Kyle Kercher

BACKGROUND AND SIGNIFICANCE: International partnerships can enhance global perspectives and collaborative learning among students and faculty. Hoosier Sport Global at Indiana University (IU) has established a partnership with Northumbria University (NU) in the United Kingdom, combining Hoosier Sport' strengths in children's sport-based physical activity interventions with NU's expertise in sport for development. Through international experiences, undergraduate students will engage in cross-cultural collaboration, fostering intercultural competence and professional development. RESEARCH QUESTION: How does the virtual exchanges and study abroad experiences between IU and NU enhance global perspectives and life and career skills among students? PROPOSED METHODS: The proposed pre-post longitudinal study will assess the international experiences of students from IU. During the virtual exchange, US-based students will be paired with UK-based students for virtual meetings to collaborate and design a sport-based youth development deliverable. For the study abroad, US-based students will participate in a 6-week study abroad training course culminating with a 2-week experience at NU to gain hands-on experience within the UK. Students will complete pre- and post-program evaluations using the Global Perspective Inventory, which includes three core domains: cognitive, intrapersonal, and interpersonal dimension. The CAYCI 21st Century Life & Career Skills Scale will measure leadership and responsibility, working with others effectively, and adaptability. Additionally, students will provide qualitative reflection responses on the impact of international collaboration on their life and career skills. PROJECTED LIMITATIONS AND OBSTACLES: Potential barriers include financial constraints, scheduling conflicts across time zones, and coordinating sustained collaboration. Study limitations include a small sample, reducing generalizability, and reliance on self-reported measures.

Poster Session 1 Overview (Thursday, Oct. 22) Crown Foyer

Poster	Presentation	Authors
1	Body Composition and Muscular Strength Parameters in Recreational CrossFitters against Recreationally Physically Active Individuals	Abby Carroll, Riley Rafferty, Mallory Dinninger, Ayden Miou, Curtis Fennell
2	PHYSICAL ACTIVITY PATTERNS IN GLP-1 USERS: EXAMINING POTENTIAL CONTRIBUTORS TO CARDIOMETABOLIC RISK	Alena Hagen, Jon Stavres
3	SLEEP AND ACTIVITY DEFICITS EMERGE BEFORE STRESS AND HEART RATE VARIABILITY CHANGES IN EARLY FIREFIGHTER DUTY	Alexa Boillat, Aubrey Knoll, Tess Fightmaster, Jeromy Alt Ph.D., Nathan Elrod Ph.D., & Daniel L. Carl Ph.D. FACSM
4	PLANT-BASED PROTEIN ASSOCIATED WITH LOWER SYSTOLIC BLOOD PRESSURE IN RECREATIONALLY ACTIVE FEMALE COLLEGE STUDENTS	Alexis Campbell, Ally Walton, Rylee Waslyn, Katie Pain, Christopher Kotarsky
5	EFFECTS OF ORAL CAPSAICIN-INDUCED SENSORY STRESS ON STATIC AND DYNAMIC BALANCE	Alyssa Matta, Mackenzie Kroff, Sam Alyward, Joshua Haworth
6	Physical Therapy Scope of Practice in the United States and the United Kingdom: A Comparative Analysis	Amelia Brogley, Dr. Melinda Petty, Dr. Amy Morgan
7	THE EFFECT OF EARLY LIFE PHYSICAL INACTIVITY AND SOCIAL HOUSING DENSITY ON ANXIETY AND DEPRESSION IN EARLY POSTNATAL MICE	Amritesh Bali, Grace Scott, Jackson Yeager, Anna Radke, Paul Reidy FACSM
8	PERCEIVED COPING ABILITY AND KINESIOPHOBIA AFTER PHYSICAL INJURY IN THE CONTEXT OF PSYCHOLOGICAL TRAUMA AND RESILIENCE	Annika Lindstrom, Andrea Francis, Katherine Dillon, Heather Betz FACSM
9	RETURN-TO-PLAY PROTOCOL ADHERENCE AND PSYCHOLOGICAL READINESS FOLLOWING SPORT-RELATED CONCUSSION	Ashton Owen, Alyssa Pollard-Mcgrandy, Reid Davis, Tracey Covassin
10	Strength, Mobility, and Aerobic Fitness as Predictors of Air Consumption During a Fire-Specific Agility Test	Audrey Hare, Jeromy Alt, Daniel L. Carl FACSM
11	INCREASING PHYSICAL ACTIVITY LEVELS MAY BE ASSOCIATED WITH REDUCED DYSAUTONOMIA SYMPTOM BURDEN IN FEMALES	Ava Hess, Katrina Whitlow, Erica Albertin
12	DEVELOPMENTAL PHYSICAL ACTIVITY RESTRICTION AND ENHANCEMENT PROGRAM LONG-TERM METABOLIC AND LOCOMOTOR PHENOTYPES IN MUS MUSCULUS	Ava Ward, Jackson Yeager, Arina Prikhodko, Amritesh Bali, Grace Scott, Julia Beltran, Caleb Gibson, Eric Blum, Dr. PT Reidy FACSM
13	ACUTE LOWER-BODY HOT-WATER IMMERSION AS A PASSIVE PRIMING STRATEGY FOR COUNTERMOVEMENT JUMP PERFORMANCE AND KNEE-EXTENSOR TORQUE PRODUCTION: A PROPOSAL	Mikel I. Avalos, Matteo F. de Leon, Arturo Sosa III, Sophia M. Torne, Liliana Mayo-Dominguez, Emily Percino, Mahgolzahra Kamari, Rachel A. Kowal, Clayton L. Camic, Michael D. Belbis
14	RESISTANCE EXERCISE FOR LIFESTYLE IMPROVEMENT IN FEMALES WITH HYPOTHYROIDISM (RELIEF-H): A STUDY PROTOCOL	Sam Soufi, Ava R. Dow, Sara R. Hermiller, Madison T. Bond, Merina M. Russo, Reganne M. Elliot, Madison L. Kackley.
15	PRE-EXERCISE PASSIVE THIGH HEATING: EFFECTS ON BACK SQUAT VELOCITY AND POWER IN RESISTANCE-TRAINED MEN	Caleb L. Hoekema, Sydney I. Kane, Lauren E. Adamski, Brian C. Rider FACSM, Nigel C. Jiwan
16	COGNITIVE, NEUROPHYSIOLOGICAL, AND EXERCISE PERFORMANCE RESPONSES TO ACUTE CAFFEINE INGESTION FOLLOWING SHORT-TERM CREATINE SUPPLEMENTATION	Cali Prochaska, Owen Dickinson, Carson Allen, Nate Keenan, David Russell, CJ Accola, Connor Thorpe, Jonathan Specht, Kelsey Bourbeau & Terence Moriarty
17	DREAM BIG!: EXAMINING COACHING-RELATED PSYCHOLOGICAL NEEDS, VITALITY, AND GOAL PROGRESS IN A WORKPLACE WELLNESS INTERVENTION	Cameron McCrea, Vanessa M. Martinez Kercher FACSM, Kathleen N. Heeter, Betty Klein, Samantha C. Schaefer, Bailey Ortyl, Kyle A. Kercher
18	PHYSICAL ACTIVITY PATTERNS AND FEASIBILITY OF A GOAL-SETTING INTERVENTION IN RURAL MIDDLE SCHOOL STUDENTS	Sea Woo Cho, Julianna F. King, Vanessa M. Martinez Kercher FACSM, Kyle A. Kercher

19	PARALLEL AGE-RELATED DECLINE IN ATHLETICS AND REACSTICK OFF ACCURACY: IMPLICATIONS FOR CENTRAL NEURAL DECLINE IN AGING ATHLETES	Darby Niyo, Bailey Bowman, James Richardson
20	TRAIL CONNECTIVITY AND ACTIVE TRANSPORTATION: COMPARING RECREATIONAL AND COMMUTER TRAIL USERS	Devin Cunningham, Nora Clary, Ava Sardina, Wade Johnson, Doug McClintock, Jeremy A. Steeves FASCM

Poster Session 1 **Poster 1** **Crown Foyer**

9:00 - 9:55 AM

Body Composition and Muscular Strength Parameters in Recreational CrossFitters against Recreationally Physically Active Individuals

Abby Carroll, Riley Rafferty, Mallory Dinninger, Ayden Miou, Curtis Fennell

BACKGROUND: It is debated whether CrossFit provides greater body composition and muscular strength benefits than other physical activities. A previous study compared body composition and isometric mid-thigh pull (iMTP) strength in younger advanced (28 ± 4 years) and recreational CrossFit athletes (34 ± 8 years) to physically-active controls (28 ± 7 years) (Mangine, 2020). PURPOSE: This study compared the body composition and isometric strength in older recreational CrossFit athletes (CF; 44 ± 11 years) to recreational physically active controls (RPA; 45 ± 7.5 years). In addition, both groups were compared with healthy standards. METHODS: Eight (n=4 females) recreational CrossFit® athletes (CF; 44.4 ± 11.2 years, 67 ± 3 in, 161 ± 21 lbs) and eight (n=4 females) recreational physically active individuals (RPA; 45 ± 7 years, 69 ± 4 in, 181 ± 27 lbs) attended one lab visit. Subjects were matched for age and sex. Participants completed self-reported resistance training sessions/wk, body fat percentage (BF%; BIA), waist-to-hip ratio (WHR), iMTP, elbow flexion (iEF), and handgrip (iHG) assessments. Data are reported as mean ± SD. RESULTS: Independent Samples t-tests revealed the sessions/wk of self-reported resistance training was significantly greater ($p=0.011$) in CF (4.7 ± 0.9 sessions) than RPA (2.5 ± 1.8 sessions). There were no differences between other variables (all $p \geq 0.05$). All tests for both groups were within healthy standards. BF% - CF: 21 ± 5%; RPA: 24 ± 9%. WHR - CF: 0.81 ± 0.1; RPA 0.85 ± 0.1. iMTP - CF: 360 ± 88 lbs; RPA: 322 ± 96 lbs. iEF - CF: 128 ± 48 lbs; RPA: 107 ± 1 lbs. iHG - CF: 93 ± 24 lbs; RPA: 98 ± 26 lbs. CONCLUSION: These data suggest that engaging in CrossFit or other physical activities may contribute to positive body composition and muscular strength in individuals with an average of mid-40's. In addition, two times per week of resistance training may yield similar body compositional and muscular strength outcomes as four times per week.

9:00 - 9:55 AM

PHYSICAL ACTIVITY PATTERNS IN GLP-1 USERS: EXAMINING POTENTIAL CONTRIBUTORS TO CARDIOMETABOLIC RISK

Alena Hagen, Jon Stavres

BACKGROUND: Currently, the effects of glucagon-like-peptide-1 receptor agonist (GLP-1) use on physical activity (PA) behaviors remain unclear. PURPOSE: To determine if GLP-1 users report increases in PA duration, frequency, and motivation for exercise after beginning GLP-1 use, and if these reported values differ from non-GLP-1 users. METHODS: An online survey was distributed nationally, which asked participants about their demographics, health history, GLP-1 medication use, and PA behaviors. PA behaviors were quantified categorically as PA frequency (1-2, 3-4, 5-6, or 7 d/wk) and duration (<20, 20-39, 40-59, >60 min/wk), and motivation for PA was assessed via a digital visual analog scale (scores ranging from 0-100, rounded to the nearest tenth). Frequencies were compared between groups using Pearson chi-square tests or Fisher's exact tests when cell counts were <5. Motivation was compared between groups via Welch's independent-samples t-tests. RESULTS: Of the 1,163 survey respondents, 570 reported currently taking a GLP-1, 577 reported never having used a GLP-1, and 14 reported prior GLP-1 use. 32.8% of GLP-1 users reported a decrease in PA frequency, 40.3% reported a decrease in PA duration, and 49.8% reported a decrease in motivation for PA. 43.3% of GLP-1 users reported an increase in PA frequency, 37.0% reported an increase in duration, and 49.6% reported an increase in motivation. 23.9% of GLP-1 users reported no change in frequency, 22.7% reported no change in duration, and only 0.5% reported no change in motivation. No significant differences were observed between the pre and post GLP-1 use conditions ($p>0.162$), nor were any significant differences observed between current GLP-1 users and non-GLP-1 users ($p>0.305$). CONCLUSIONS: While there appears to be no group-level changes in PA behaviors following GLP-1 use, substantial variability was present in these responses. More research is needed to identify the factors moderating these associations.

9:00 - 9:55 AM

SLEEP AND ACTIVITY DEFICITS EMERGE BEFORE STRESS AND HEART RATE VARIABILITY CHANGES IN EARLY FIREFIGHTER DUTY

Alexa Boillat, Aubrey Knoll, Tess Fightmaster, Jeromy Alt Ph.D., Nathan Elrod Ph.D., & Daniel L. Carl Ph.D. FACSM

Background: The transition from firefighter recruit training to operational duty introduces new occupational demands that may adversely affect sleep, physical activity, and recovery. Wearable technology may help identify early physiological changes associated with long-term health risk.

Purpose: To assess changes in stress, recovery, sleep, and activity from firefighter recruit training through the first six weeks of probationary duty.

Methods: Continuous Garmin (Vivoactive 5) data were collected from 21 recruits (17 male; age 26.9 yr, body fat 18.6%) across 56 recruit-class days and 42 probationary days. Group means were compared with Welch's independent-samples t-tests for stress, HRV, sleep-stage duration, steps, and heart rate.

Results: Compared with recruit training, probationary duty resulted in less total sleep (389.7 vs. 428.9 min; $p<.001$), light sleep (238.5 vs. 271.1 min; $p<.001$), and REM sleep (59.9 vs. 69.1 min; $p<.001$). Deep sleep and awake time did not differ. Probationary firefighters also accumulated fewer daily steps (8,520 vs. 10,109; $p<.001$) and had lower average (72.1 vs. 75.1 bpm; $p<.001$) and resting heart rates (52.3 vs. 53.6 bpm; $p<.001$). Stress scores and HRV were unchanged.

Conclusion: Probationary firefighter duty was associated with reduced sleep and physical activity without corresponding changes in stress or HRV. These findings suggest sleep and activity deficits emerge within the first six weeks of a firefighter's career before traditional stress and recovery markers reflect measurable change. Given their association with cardiovascular disease and premature mortality, continued monitoring and targeted recovery strategies may be warranted.

9:00 - 9:55 AM

PLANT-BASED PROTEIN ASSOCIATED WITH LOWER SYSTOLIC BLOOD PRESSURE IN RECREATIONALLY ACTIVE FEMALE COLLEGE STUDENTS

Alexis Campbell, Ally Walton, Rylee Waslyn, Katie Pain, Christopher Kotarsky

BACKGROUND: Metabolic syndrome (MetS) is a cluster of risk factors (i.e., elevated waist circumference, triglycerides, blood pressure, blood glucose, and reduced high-density lipoprotein cholesterol) associated with increased cardiometabolic disease risk. MetS is often overlooked in active collegiate females, yet identifying early dietary imbalances may help protect against lifelong risk. PURPOSE: This pilot study evaluated associations of relative total (TP), animal-based (ABP) and plant-based (PBP) protein intakes with key MetS risk factors in recreationally active college-aged females. METHODS: 15 females (19-22 yrs) were recruited. The Automated Self-Administered 24-Hour Dietary Assessment Tool (ASA24) was used to record 1 day of dietary intake. Systolic blood pressure (SBP) was taken manually after a 5-minute seated rest. Fasting blood lipid profiles were collected via fingerstick and analyzed using a Cholestech LDX system. Associations were evaluated using Pearson correlations. RESULTS: Mean ± SD values for all 15 females were: SBP 116.1 ± 8.8 mmHg, low-density lipoprotein (LDL) cholesterol 86.5 ± 20.9 mg/dL, TP 1.31 ± 0.39 g/kg/day, ABP 1.25 ± 0.52 g/kg/day, and PBP 0.25 ± 0.13 g/kg/d. A moderate negative correlation was seen between PBP and SBP ($r = -0.571$, $p = 0.026$). LDL and PBP showed a similar trend that approached significance ($r = -0.508$, $p = 0.053$). Non-significant associations were seen between SBP and ABP ($r = 0.260$, $p = 0.358$), LDL and ABP ($r = 0.268$, $p = 0.652$), TP and SBP ($r = -0.255$, $p = 0.358$), and TP and LDL ($r = 0.098$, $p = 0.727$). CONCLUSION: Higher PBP was moderately associated with lower SBP and showed a nonsignificant trend toward reduced LDL. In contrast, ABP and TP showed no significant relation to these variables. The nutrient profile of PBP may contribute to favorable cardiometabolic outcomes, while ABP appears unrelated. Further research with larger samples is needed to confirm these associations and examine other MetS risk factors.

9:00 - 9:55 AM

EFFECTS OF ORAL CAPSAICIN-INDUCED SENSORY STRESS ON STATIC AND DYNAMIC BALANCE

Alyssa Matta, Mackenzie Kroff, Sam Alyward, Joshua Haworth

BACKGROUND: Balance is essential for postural control and reducing fall and injury risk, making it a public health concern. Because balance depends on visual, vestibular, and somatosensory integration, understanding how sensory stress affects postural control may clarify balance regulation. Previous studies suggest capsaicin induces acute sensory stress and may provide a controlled method for investigating its effects on balance. PURPOSE: To determine whether oral capsaicin-induced sensory stress affects static and dynamic balance. It was hypothesized that capsaicin would improve static balance while decreasing dynamic balance performance. METHODS: Data was collected from 62 generally healthy participants using a within-subject design. Participants completed baseline BBT and LOS assessments, then repeated testing after a low oral dose of capsaicin and again after a higher dose. Static balance was assessed with the BTrackS Balance Test (BBT), and dynamic balance with the Limits of Stability (LOS) test. Repeated-measures ANOVA compared performance across conditions ($\alpha = .05$). RESULTS: No significant effect of condition was found for static balance ($p = .970$, $\eta^2 \approx 0.0005$) or dynamic balance ($p = .777$, $\eta^2 = 0.004$). Mean BBT scores were 24.10 ± 6.68, 23.92 ± 6.91, and 24.18 ± 6.61 for baseline, low-dose, and high-dose conditions. Mean LOS scores were 446.50 ± 94.81, 453.02 ± 93.88, and 453.35 ± 83.52. Although small changes were observed, effect sizes were trivial ($|d| < 0.08$). CONCLUSION: The findings did not support the hypothesis, as oral capsaicin-induced sensory stress did not significantly affect static or dynamic balance. Future studies should examine whether different sensory stressors, capsaicin doses, or clinical populations change balance. Better understanding sensory contributions to balance may improve fall-prevention strategies and reduce injury risk. This study was supported by Oakland University through laboratory space and research resources.

Poster Session 1 **Poster 6** **Crown Foyer**

9:00 - 9:55 AM

Physical Therapy Scope of Practice in the United States and the United Kingdom: A Comparative Analysis

Amelia Brogley, Dr. Melinda Petty, Dr. Amy Morgan

BACKGROUND: As the US population grows and demand for physical therapists increases, evaluating whether the current scope of practice effectively meets patient needs is essential. The United Kingdom was selected for comparison because physiotherapists have expanded practice roles, including direct access, prescribing authority, and diagnostic imaging privileges. In contrast, US physical therapists have limitations in these areas. Comparing these systems may identify opportunities to improve patient access, therapist autonomy, and healthcare delivery. PURPOSE: This study compared the scope of practice for physical therapists in the United States and the United Kingdom. Areas of focus include patient access to treatment, delays in each healthcare system, variations in prescribing rights, and differing diagnostic imaging authority. Implications on care, therapist autonomy, and ability to provide treatment will be explored based on the scope of practice regulations. METHODS: A qualitative approach with semi-structured interviews was conducted with five participants: three from the United States and two from the United Kingdom. Interview transcripts were analyzed using thematic analysis. The fifth interview was included as a case study with a US participant. RESULTS: Four key themes emerged: (1) direct access and autonomy, (2) healthcare system barriers and delays, (3) prescriptive authority, and (4) Imaging and diagnostic abilities. Each theme contained subthemes highlighting similarities and differences between US and UK perspectives. CONCLUSION:The United Kingdom is pursuing a system-wide approach to expand physiotherapy's scope of practice to meet healthcare system needs, whereas progress in the United States is more fragmented and often reliant on individual therapists and state legislation. Although research and professional advocacy support expanding physical therapy practice in the United States, legal and political barriers continue to hinder implementation.

9:00 - 9:55 AM

THE EFFECT OF EARLY LIFE PHYSICAL INACTIVITY AND SOCIAL HOUSING DENSITY ON ANXIETY AND DEPRESSION IN EARLY POSTNATAL MICE

Amritesh Bali, Grace Scott, Jackson Yeager, Anna Radke, Paul Reidy FACSM

BACKGROUND: In an investigation of the impact of early-life physical inactivity, we observed a tendency in male mice to fight, which could have been due to either social isolation or physical inactivity. We used the Small Mouse Cage (SMC) model of physical inactivity to limit moving space and change social housing density. The sucrose preference, open-field, and social preference/novelty test are behavioral tests commonly used to evaluate levels of anxiety and depression in mice. PURPOSE: The purpose of this study is to determine the impact of social housing density in a mouse inactivity model on anxiety and depression in male mice. METHODS: 26 male mice, 3 weeks of age, were grouped into: control, SMC-1, SMC-2, and SMC-3, where 1, 2, and 3 correspond to the number of mice housed in each SMC cage compartment for 3 weeks before moving into standard cages. Behavioral testing was performed at 6 weeks old, concluding the experimental period, and again at 10 weeks old. Sucrose preference was conducted with ad libitum 5% sucrose and water options for 72 hours. Open-field and social preference/novelty testing were conducted using Anymaze software and will be presented at the conference. Data are Mean±SD. RESULTS: Sucrose consumption (g/g body weight) at CON (2.3±0.2) was greater ($p<0.05$) than SMC-1 (1.4±0.6) SMC-2 (1.1±0.3), and SMC-3 (1.4±0.1) at 6 weeks. At 10 weeks, sucrose consumption increased ($p<0.05$) compared to week 6 yet CON (2.7±0.5) was still greater ($p<0.05$) than SMC-1 (1.9±0.4) SMC-2 (1.5±0.2), and SMC-3 (1.8±0.1) at 10 weeks. CONCLUSION: At both time points, sucrose consumption was significantly higher in control mice compared to the SMC mice. This indicates a depressive effect at the end of a physical inactivity period that remains even after one month of normal cage housing.

Poster Session 1 **Poster 8** **Crown Foyer**

9:00 - 9:55 AM

PERCEIVED COPING ABILITY AND KINESIOPHOBIA AFTER PHYSICAL INJURY IN THE CONTEXT OF PSYCHOLOGICAL TRAUMA AND RESILIENCE

Annika Lindstrom, Andrea Francis, Katherine Dillon, Heather Betz FACSM

BACKGROUND: Kinesiophobia is the fear of physical movement caused by a sense of vulnerability to pain/reinjury. Kinesiophobia can lead to fear-avoidant behaviors, lower physical activity levels, prolonged rehabilitation, and chronic pain development. Physically traumatic musculoskeletal injury is one example of a potentially psychological traumatic event (PTE; an event that is disruptive, uncontrollable, unexpected, and negative in nature). Perceived coping ability has shown to be important in the development of kinesiophobia after injury, and in the ability to flexibly adapt to constantly changing stressors, which is the likely psychological mechanism allowing most people to exhibit long term resilience following a PTE. PURPOSE: This survey-based correlational study examined perceived coping ability and kinesiophobia following musculoskeletal injury. METHODS: Participants (n = 80) with a history of at least one acute musculoskeletal injury completed a cross-sectional survey assessing perceived coping ability and kinesiophobia. A multiple regression analysis was conducted to determine if perceived coping ability and extent of past injury experience predicted kinesiophobia. RESULTS: A significant interaction between perceived coping ability and amount of injury experience was found ($\beta = -0.398$, $p = 0.002$). CONCLUSION: Results indicated that negative relationship between perceived coping ability and kinesiophobia depends on amount of past injury experience (i.e. having a single past injury or at least two). This finding provides new information about the complexity of psychological responses during physical recovery and the role past musculoskeletal injury history might play in the development of coping patterns and how they relate to fear-based beliefs about physical movement. Future research should continue to investigate effective multi-modal strategies to address fear of movement, while accounting for individual and contextual differences in patients' experiences.

Poster Session 1 **Poster 9** **Crown Foyer**

9:00 - 9:55 AM

RETURN-TO-PLAY PROTOCOL ADHERENCE AND PSYCHOLOGICAL READINESS FOLLOWING SPORT-RELATED CONCUSSION

Ashton Owen, Alyssa Pollard-Mcgrandy, Reid Davis, Tracey Covassin

BACKGROUND: Psychological readiness is important for return-to-play (RTP) after sport-related concussion (SRC). Perceived RTP adherence and helpfulness may influence engagement and confidence during recovery, but associations with readiness are unclear.

PURPOSE: To examine whether perceived RTP adherence predicted psychological readiness after SRC controlling for sex and concussion history, whether this differed by sex, and whether helpfulness added unique variance.

METHODS: NCAA Division I athletes from contact and non-contact sports completed measures at RTP visit within 48 hours of medical clearance. Psychological readiness was assessed using the Injury-Psychological Readiness to Return to Sport scale (I-PRRS). Athletes rated RTP adherence (0=none, 10=complete) and helpfulness (0=not helpful, 10=extremely helpful). Hierarchical regression examined adherence as a predictor of I-PRRS, controlling for sex and concussion history. A sex×adherence interaction was tested. Helpfulness was added to test variance beyond adherence.

RESULTS: Sample: 59 athletes (24 female, 35 male). Females had lower I-PRRS scores than males (86.39±15.52 vs. 98.38±3.93). RTP adherence was 8.88±1.78 for females and 9.29±1.58 for males; helpfulness was 8.21±1.72 and 8.97±1.84, respectively. Adherence improved fit, ΔR^2=.07,F(1,55)=6.38,p=.014. The sex×adherence interaction improved fit, ΔR^2=.13, F(1,54)=12.98, p<.001, and was significant, B=-5.05, SE=1.52, p=.002. In females, greater adherence was associated with higher I-PRRS, B=4.76, SE=1.07, p<.001. In males, adherence was not associated with I-PRRS, B=-0.29, SE=1.43,p=.674. Concussion history was nonsignificant, B=-4.65, SE=2.39, p=.057. Helpfulness explained no additional variance, ΔR^2=.00, p=.844.

CONCLUSION: Self-reported RTP adherence was associated with readiness after SRC mainly in females. Helpfulness added no unique variance, suggesting perceived RTP engagement may be more relevant to readiness than protocol helpfulness alone.

Poster Session 1 **Poster 10** **Crown Foyer**

9:00 - 9:55 AM

Strength, Mobility, and Aerobic Fitness as Predictors of Air Consumption During a Fire-Specific Agility Test

Audrey Hare, Jeromy Alt, Daniel L. Carl FACSM

Background: Excessive air consumption during self-contained breathing apparatus (SCBA) use is a leading contributor to firefighter Mayday declarations. However, the fitness domain most associated with air consumption during fire-specific tasks remains unclear. Purpose: To determine whether muscular strength, mobility, or aerobic capacity best predicts air consumption during a fire-specific agility test, and whether a single domain or combination of domains should be prioritized in recruit preparation. Methods: Ninety-one firefighter recruits completed assessments of strength (1-min body-weight squats, 1-min push-ups, maximal pull-ups), mobility (Functional Movement Screen; FMS), and aerobic capacity (20-m shuttle beep test) before performing a fire-specific agility test in full SCBA while total air consumption (psi) was recorded. Regression analyses identified fitness predictors of air consumption and quantified the contribution of each fitness domain ($p < .05$). Results: The five fitness measures explained 23.0% of the variance in air consumption ($p < .001$). Push-up performance ($p = .003$) and VO2 ($p = .003$) were significant independent predictors, whereas body-weight squats, pull-ups, and FMS were not. Relative-importance analysis attributed 50% of explained variance to aerobic capacity, 42% to strength (primarily push-ups), and 9% to mobility. Conclusion: Aerobic capacity and push-ups were the strongest predictors of SCBA air consumption during a fire-specific agility test, whereas mobility and other strength measures contributed minimally. Although aerobic fitness accounted for the largest proportion of explained variance, push-up performance demonstrated comparable predictive value, suggesting that aerobic conditioning and muscular endurance should be prioritized in firefighter recruit preparation. These findings support an integrated training approach to improve operational efficiency and reduce the risk of excessive air consumption during emergency operations.

Poster Session 1 **Poster 11** **Crown Foyer**

9:00 - 9:55 AM

INCREASING PHYSICAL ACTIVITY LEVELS MAY BE ASSOCIATED WITH REDUCED DYSAUTONOMIA SYMPTOM BURDEN IN FEMALES

Ava Hess, Katrina Whitlow, Erica Albertin

BACKGROUND: Dysautonomia appears to disproportionately affect females, but remains largely under-diagnosed across all populations. Diagnostic criteria relies on biometric measurements and are still widely disagreed upon. This study is essential to understand more about women's health and the connection between an individual's symptom markers, biometrics, and ability to perform physical activity. PURPOSE: To investigate the relationship between symptomatic markers of dysautonomia, biometrics, physical activity level (weekly METs), and 6-minute walk test performance. METHODS: Twelve females completed the COMPASS-31 and International Physical Activity Questionnaire Short Form, followed by a heart rate variability test and 6-minute walk test. Data collected during the 6 min-walk test included distance, steps, HR, and RPE. Continuous data were examined using Pearson, Spearman, or Kendall correlations as indicated and categorical data were compared using Kruskal-Wallis tests, all with $\alpha < .05$. RESULTS: COMPASS-31 score (15.42 ± 7.66) and HRV (48.58+36.62) were nonsignificantly correlated ($\rho = -0.302$, $p = 0.34$). COMPASS-31 score and ΔHR (16.75 + 10.38) were nonsignificantly correlated ($\rho = -0.57$, $p = 0.053$). COMPASS-31 score and weekly METs (3148.25 ± 4243) were moderately but not significantly correlated ($\rho = -0.445$, $p = 0.147$). COMPASS-31 score and walking distance (560.56m ± 116.68m) were not significantly correlated ($\rho = -.319$, $p = 0.313$). A trend toward lower COMPASS-31 score with increasing activity level (light, moderate, heavy) was observed ($H = 5.96$, $p = .051$), but not statistically significant. CONCLUSIONS: Individuals with higher autonomic symptom burden tended to report lower weekly activity, with higher biometric variability and lower functional exercise capacity, but not to a significant degree. Further research is needed to increase the sample size, investigate trends, and understand autonomic nervous system dysfunction in its relationship to exercise.

Poster Session 1 **Poster 12** **Crown Foyer**

9:00 - 9:55 AM

DEVELOPMENTAL PHYSICAL ACTIVITY RESTRICTION AND ENHANCEMENT PROGRAM LONG-TERM METABOLIC AND LOCOMOTOR PHENOTYPES IN MUS MUSCULUS

Ava Ward, Jackson Yeager, Arina Prikhodko, Amritesh Bali, Grace Scott, Julia Beltran, Caleb Gibson, Eric Blum, Dr. PT Reidy FACSM

BACKGROUND: Physical activity and inactivity are known to have opposing impacts on an individual's health throughout their lifespan. Less is known about how different levels of physical activity during early life impact metabolism and locomotor behavior later in life.

PURPOSE: This study investigates the impact of varying levels of physical activity in early life on metabolism and movement in early adulthood.

METHODS: Mice completed a 14-day intervention from 3-5 weeks postnatal, involving voluntary wheel-running (VWR, n=18), early-life activity (ELA, n=10), standard cage sedentary (SED, n=18), small mouse cage (SMC, n=23), or hindlimb unloading (HU, n=17), representing decreasing levels of activity (VWR>ELA>SED>SMC>HU). Following treatment, ELA, SED, SMC and HU mice were placed in standard-size cages while VWR maintained wheel access. At 6 and 12 months, mice underwent 24-hour metabolic and locomotor assessment using the AccuScan system. Locomotor activity (distance, activity count, rest time) and metabolic measures (EE, VO_2, VCO_2, and RER) were assessed. Data are presented as mean±SD and analyzed by one- or two-way ANOVA.

RESULTS: VWR mice demonstrated the greatest locomotor activity at both 6 and 12 months. Distance traveled was highest in VWR (6M: 2726±1411; 12M: 2213±1165) compared to SED (6M: 2304±908; 12M:1616±732), HU (6M: 1921±1108; 12M: 1801±671), SMC (6M: 2101±1289; 12M: 1404±925), and ELA (6M: 1348±970; 12M: 1350±1643). Physical inactivity and energy expenditure decreased with aging (6 vs. 12M).

CONCLUSION: Greater early-life physical activity was associated with sustained increases in locomotor function into adulthood, if activity was maintained with wheel access. Whole-body metabolic measures remained largely unchanged by group, but decreased with aging. These findings suggest early-life physical activity has minimal influence on adults behavior and metabolism and that current activity levels are more crucial.

9:00 - 9:55 AM

ACUTE LOWER-BODY HOT-WATER IMMERSION AS A PASSIVE PRIMING STRATEGY FOR COUNTERMOVEMENT JUMP PERFORMANCE AND KNEE-EXTENSOR TORQUE PRODUCTION: A PROPOSAL

Mikel I. Avalos, Matteo F. de Leon, Arturo Sosa III, Sophia M. Torne, Liliana Mayo-Dominguez, Emily Percino, Mahgolzahra Kamari, Rachel A. Kowal, Clayton L. Camic, Michael D. Belbis

BACKGROUND AND SIGNIFICANCE: Passive heat therapy may enhance neuromuscular performance by elevating muscle temperature, yet its utility as a practical pre-exercise priming strategy remains unclear. Most hot-water immersion (HWI) research has emphasized cardiovascular or recovery outcomes, with comparatively little work examining whether an acute, coach-friendly HWI protocol improves explosive muscle function and jump performance. RESEARCH QUESTION: Does an acute bout of lower-body HWI improve countermovement jump performance and knee-extensor torque production, relative to thermoneutral immersion, in healthy college-aged adults? PROPOSED METHODS: Using a randomized, crossover design, 15 participants will complete three laboratory visits: familiarization plus two experimental trials. Experimental conditions will include 30 min of lower-body immersion in hot water (39-40°C) and thermoneutral water (35-36°C), administered in random order. Tympanic temperature, heart rate, and arterial blood pressure will be obtained before, during, and after immersion as a safety and manipulation check. To capture the expected priming window, performance testing will begin within 5 min of immersion completion. Participants will perform countermovement jumps on a force platform (Just Jump System) before and 5 min after lower-body immersion. Following, isometric and isokinetic knee-extension testing on an isokinetic dynamometer (Biodex System 4) at 60, 180, and 300°/s will be administered for measurements of torque. Jump performance will be assessed via two-way repeated measures analysis of variance (ANOVA), while torque will be analyzed via paired samples t-tests. PROJECTED LIMITATIONS AND OBSTACLES: The perceptible temperature difference between conditions may limit blinding. Since no direct measure of muscle or core temperature will be obtained, mechanistic interpretation will be limited. Participant discomfort in the heat condition may increase dropout risk.

9:00 - 9:55 AM

RESISTANCE EXERCISE FOR LIFESTYLE IMPROVEMENT IN FEMALES WITH HYPOTHYROIDISM (RELIEF-H): A STUDY PROTOCOL

Sam Soufi, Ava R. Dow, Sara R. Hermiller, Madison T. Bond, Merina M. Russo, Reganne M. Elliot, Madison L. Kackley.

BACKGROUND AND SIGNIFICANCE: Hypothyroidism (HT) affects ~11.7% of U.S. adults and is up to ten times more common in women. Despite levothyroxine therapy, many continue to experience fatigue, exercise intolerance, and reduced health-related quality of life (HRQoL). Resistance training (RT) and Social Cognitive Theory (SCT)-based behavior change each improve HT symptoms, and combining them may outperform either alone. Virtual delivery can extend access, yet remote, theory-driven RT programs for this population are lacking. RESEARCH QUESTION: Among women with HT, is a synchronous, virtual, SCT-based RT intervention feasible, safe, and preliminarily effective for reducing fatigue? PROPOSED METHODS: This 4-week, single-arm feasibility trial (optional 4-week extension) will enroll 12-20 women (18-65 yr) with clinically diagnosed HT on stable levothyroxine and chronic fatigue (Fatigue Severity Scale [FSS] >=4). Participants will complete two 30-min virtual RT sessions/week via Zoom, individualized to RPE 3-6 per ACSM guidelines and structured around SCT (mastery, vicarious experience, verbal persuasion, affective states). The primary outcome is change in FSS from baseline to Week 4. Feasibility outcomes include recruitment, retention, adherence, satisfaction, and adverse events. Secondary outcomes include body composition (DEXA), thyroid biomarkers (TSH, T3, T4), heart rate variability, muscular strength (1RM), exercise self-efficacy, HRQoL (ThyPRO), and psychosocial measures. Within-participant change will be assessed via paired t-tests or Wilcoxon signed-rank tests with effect sizes. PROJECTED LIMITATIONS AND OBSTACLES: The single-arm, non-randomized design and small sample preclude causal inference and limit generalizability. Recruiting eligible women and sustaining twice-weekly adherence may be difficult, and self-reported fatigue is subject to expectancy effects. Findings will inform a future fully powered randomized controlled trial.

9:00 - 9:55 AM

PRE-EXERCISE PASSIVE THIGH HEATING: EFFECTS ON BACK SQUAT VELOCITY AND POWER IN RESISTANCE-TRAINED MEN

Caleb L. Hoekema, Sydney I. Kane, Lauren E. Adamski, Brian C. Rider FACSM, Nigel C. Jiwan

BACKGROUND: Pre-exercise passive heating has emerged as a practical strategy to enhance performance without increasing fatigue. By elevating muscle temperature, passive heating may improve muscle contractility, nerve conduction velocity, and force production; however, the effects of localized heat pads (HP) on velocity and power during squats remain unclear. PURPOSE: To determine the effects of HP on squat velocity and power responses during repeated sets of back squats in resistance-trained men. METHODS: Fourteen resistance-trained men completed a randomized, counterbalanced crossover study comparing passive thigh heating (PTH; 66°C) and a sham condition using HP. Skin temperature (ST) was monitored throughout each trial. Following each intervention, participants performed four sets of back squats at 70% of 1-repetition maximum to volitional failure. Mean velocity (MV), peak velocity (PV), and mean power output (MPO) were recorded using a linear transducer. Velocity loss (VLoss) was calculated as the percent change in mean velocity between the first and last three repetitions. Paired t-tests and repeated-measures ANOVA were used for statistical analysis. RESULTS: PTH significantly increased ST than sham (36.2±1.1vs.32.1±0.8°C;$p<.001$) and no differences were observed for repetitions (41±10vs.40±10reps;$p>.05$). PTH showed trends toward greater MV (0.44±0.07vs.0.43±0.07m·s^{-1};$p=.089$), PV (0.96±0.13vs.0.92±0.12m·s^{-1};$p=.081$), and MPO (437±119vs.423±111W;$p=.051$), but differences were not significant. VLoss was also greater following PTH (39.2±7.0%vs.36.4±9.8%; $p=.081$). CONCLUSION: PTH increased ST but did not significantly enhance repetitions. Nevertheless, trends toward greater MV, PV, and MPO suggest heating may improve movement quality during squats. Greater VLoss observed following heating likely reflects higher initial movement velocities rather than greater fatigue, as the number of repetitions completed was similar between conditions.

9:00 - 9:55 AM

COGNITIVE, NEUROPHYSIOLOGICAL, AND EXERCISE PERFORMANCE RESPONSES TO ACUTE CAFFEINE INGESTION FOLLOWING SHORT-TERM CREATINE SUPPLEMENTATION

Cali Prochaska, Owen Dickinson, Carson Allen, Nate Keenan, David Russell, CJ Accola, Connor Thorpe, Jonathan Specht, Kelsey Bourbeau & Terence Moriarty

BACKGROUND: Creatine and caffeine are among the most commonly used ergogenic aids, yet their combined effects remain unclear. Most studies examining concurrent supplementation have utilized creatine loading protocols, while limited research has evaluated acute caffeine ingestion following a low-dose creatine strategy. PURPOSE: To examine the effects of varying doses of acute caffeine ingestion following 18 days of creatine supplementation on cognitive function and resistance exercise performance. METHODS: Forty healthy adults (28 males, 12 females; 20.8 ± 2.8 y) completed a randomized, double-blind, repeated-measures study. Participants consumed creatine monohydrate (5 g/day) for 18 days and were randomized to receive 0, 100, 200, or 300 mg caffeine in coffee one hour before post-testing. Outcomes included NIH Toolbox measures of attention, working memory, and processing speed, prefrontal cortex oxygenation (PFC O2Hb) assessed via functional near-infrared spectroscopy (fNIRS), estimated one-repetition maximum (1RM) squat and bench press, and repetitions to fatigue at 50% 1RM. Linear mixed models evaluated group and time effects. RESULTS: No significant group × time interactions or group effects were observed for any outcome (p > .05). Significant time effects were observed for estimated squat 1RM (+12.5 kg; p < .001), bench press 1RM (+8.5 kg; p < .001), working memory (+3.7 units; p = .030), and processing speed (+15.3 units; p < .001). PFC O2Hb demonstrated a trend toward a decrease over time (-0.67 µmol, p = .056). CONCLUSION: Eighteen days of creatine supplementation improved maximal strength, working memory, and processing speed and was accompanied by a trend toward reduced PFC O2Hb. However, acute caffeine ingestion produced no dose-dependent effects. Acute caffeine neither enhanced nor impaired the physiological, cognitive, or neurophysiological responses observed following short-term low-dose creatine supplementation in healthy young adults.

Poster Session 1 **Poster 17** **Crown Foyer**

9:00 - 9:55 AM

DREAM BIG!: EXAMINING COACHING-RELATED PSYCHOLOGICAL NEEDS, VITALITY, AND GOAL PROGRESS IN A WORKPLACE WELLNESS INTERVENTION

Cameron McCrea, Vanessa M. Martinez Kercher FACSM, Kathleen N. Heeter, Betty Klein, Samantha C. Schaefer, Bailey Ortyl, Kyle A. Kercher

BACKGROUND: Workplace wellness programs are increasingly used to support employee well-being, yet many lack a strong theoretical foundation. Self-determination theory (SDT) suggests that satisfaction of autonomy, competence, and relatedness may support well-being and goal pursuit. PURPOSE: To examine changes in psychological need satisfaction, vitality, and goal attainment during a 9-month SDT-based workplace wellness coaching program. METHODS: 25 (Mean age = 46.8) employees (faculty & staff) from a midwestern university enrolled in Dream BIG!, a 9-month workplace wellness coaching program. Psychological need satisfaction (autonomy, competence, and relatedness), vitality, and goal attainment were assessed using the Basic Psychological Need Satisfaction Scale in Relationships (BPNS-R), Subjective Vitality Scale (SVS), and Goal Attainment Scale (GAS), respectively. Psychological needs and goal attainment were assessed at 4.5 and 9-months; vitality was assessed at baseline and 9-months. Paired sample t-tests examined changes in each outcome across the respective timepoints. RESULTS: From 4.5 to 9-months, autonomy (6.78 ± 0.46 vs. 6.67 ± 0.59), competence (6.35 ± 0.75 vs. 6.46 ± 0.66), and relatedness (6.54 ± 0.76 vs. 6.58 ± 0.60) mean scores did not significantly change (all $p>0.05$). Vitality mean scores increased from 3.85 ±1.0 at baseline to 5.14 ±1.2 at 9-months ($t(22) =-3.87$, $p<0.01$). Goal attainment increased from 55% ± 22.5 at 4.5 months to 68%±22.3 at 9-months ($p=0.04$). CONCLUSION: Participation in a 9-month workplace wellness coaching program was associated with increased vitality and goal attainment while psychological need satisfaction remained stable. Findings provide preliminary support for SDT-based coaching to promote employee well-being and goal pursuit.

Poster Session 1 **Poster 18** **Crown Foyer**

9:00 - 9:55 AM

PHYSICAL ACTIVITY PATTERNS AND FEASIBILITY OF A GOAL-SETTING INTERVENTION IN RURAL MIDDLE SCHOOL STUDENTS

Sea Woo Cho, Julianna F. King, Vanessa M. Martinez Kercher FACSM, Kyle A. Kercher

BACKGROUND AND SIGNIFICANCE: Rural middle school students face barriers to regular physical activity (PA) due to limited resources. A school-based goal settings program may be a practical strategy to help students set personal activity goals and track progress. However, less is known about how incorporating a college student-led goal-setting intervention strategy may influence PA intensity, sedentary behavior, school-day, and out-of-school PA, as well as whether this approach is feasible to implement in rural middle schools. RESEARCH QUESTION: How do PA, sedentary behavior, and feasibility indicators differ between a traditional PA intervention, Hoosier Sport, and Hoosier Sport enhanced with goal setting? PROPOSED METHODS: Students (n=100) from two rural middle schools will participate in a one-year sport-based PA intervention that includes 7 weeks of Hoosier Sport exposure during fall and spring semesters. The control condition will receive regular Hoosier Sport, while the enhanced condition will receive a goal-setting curriculum in addition to regular Hoosier Sport. Axivity AX3 accelerometers will be used at four timepoints to examine sedentary behavior and light, moderate, vigorous, and total PA. PA outcomes will be examined by weekday/weekend and in-school/out-of-school time. Feasibility indicators, including recruitment, retention, attendance, cost, compliance, and acceptability, will be documented across the program period. Analyses will summarize feasibility indicators using descriptive statistics and examine PA outcomes across timepoints and between conditions. PROJECTED LIMITATIONS AND OBSTACLES: Projected limitations include the limited number of participating schools, challenges with accelerometer compliance in children, and disruptions from absences, school events, or schedule changes. School-level differences in feasibility indicators should also be considered when interpreting the findings.

9:00 - 9:55 AM

PARALLEL AGE-RELATED DECLINE IN ATHLETICS AND REACSTICK OFF ACCURACY: IMPLICATIONS FOR CENTRAL NEURAL DECLINE IN AGING ATHLETES

Darby Niyo, Bailey Bowman, James Richardson

BACKGROUND: Age-related decline (ARD) in athletic performance is linked to neuromuscular and musculoskeletal factors; however, emerging evidence suggests that brain changes in white matter also contribute. PURPOSE: We explored the extent that linear slopes of ARD in track/field performances compared to ARD in standard cognitive tests and ReacStick parameters. METHODS: ReacStick is a validated tool which uses a ruler-drop paradigm with intermittent light cue to provide a short latency (390 milliseconds) go/no-go task. The ARD slopes for 4 athletic performance records (10K, long/high jump and community race 5K winners) were calculated across Masters age groups. Published age-related changes in standard cognitive (Trails B, Pattern Comparison Processing, and Oral Reading Recognition) and ReacStick metrics (All Accuracy and Off Accuracy) were also plotted after cognitive score/athletic record equivalence was established by applying a normalization factor to the youngest age groups and applying it to the older age groups. Best-fit linear slopes evaluated ARD equivalence between cognitive measures and track/field records. RESULTS: Data presented are the cognitive measure slope closest to that of each track/field event. Off Accuracy decline most closely fit athletic decline in all 4 events (event/Off Accuracy slopes: long jump -.77/-.73; high jump -.19/-.21; 10K -.52/-.55; 5K -.42/-.43) with all R2 > .95. The standard cognitive test slopes were markedly dissimilar from athletic performance slopes (all standard cognition slopes > .10 different than each track/field event). CONCLUSION: ARD in track/field athletic performance most closely matches ARD in ReacStick Off Accuracy (i.e., not catching the device when the lights do not illuminate) which requires no motion and is therefore purely cognitive. Off Accuracy is known to relate to diffuse white matter integrity suggesting that age-related changes in brain white matter contribute to declining athletic performance.

Poster Session 1 **Poster 20** **Crown Foyer**

9:00 - 9:55 AM

TRAIL CONNECTIVITY AND ACTIVE TRANSPORTATION: COMPARING RECREATIONAL AND COMMUTER TRAIL USERS

Devin Cunningham, Nora Clary, Ava Sardina, Wade Johnson, Doug McClintock, Jeremy A. Steeves FASCM

BACKGROUND: Urban trails have the potential to support both physical activity and active transportation. Understanding differences between recreational and commuter users may inform trail planning and public health investments.

PURPOSE: To compare trail use patterns and perceived impacts of trail improvements among recreational and commuter users.

METHODS: A cross-sectional survey of 657 trail users was conducted on a regional multi-use trail. Participants reported trip purpose, trail use mode, weekly recreational and commuting activity, and perceived impacts of trail improvements. Chi-square analyses, Mann-Whitney U tests, and independent samples t-tests were used to compare recreational and commuter users.

RESULTS: 89% of respondents used the trail primarily for recreation and exercise, while 11% reported commuting. Commuters were more likely to report trail visits of 30 minutes or less, whereas recreational users typically remained on the trail longer ($p < .001$). Commuters primarily cycled (49.3%) or walked (47.9%), whereas recreational users primarily walked (54.1%) or ran (28.4%). Overall, 66.4% reported they would commute more if trails and bike lanes were better connected. Following trail enhancements, 66.7% reported increased recreational use and 33.0% reported increased commuting. Changes in recreational use and weekly recreational activity did not differ between groups ($p > .05$). However, commuters were more likely to report increased commuting (68.5% vs. 28.6%, $p < .001$) and greater commuting-related trail use (139 ± 190 vs. 27 ± 67 min/week, $p < .001$) than recreational users after enhancements.

CONCLUSION: Trail users were predominantly recreational, but commuters demonstrated greater cycling participation and transportation-related trail use. Connectivity enhancements were associated with increased recreation among all users and greater commuting among commuters. Investments in trail connectivity may support active transportation and public health.

Poster Session 2 Overview (Thursday, Oct. 22) Crown Foyer

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2	Confidence in Motion: Exploring the Impact of Training and Mentorship on Fitness Personnel and Patron Experience	Dylan Reisen, Matt Hutchins, Matt Warner, Biak Mawi, Alma Llamas, Makayla Castle
3	CRITERION ACCURACY AND VALIDITY OF ENERGY EXPENDITURE ESTIMATED BY WEARABLE DEVICES IN ATHLETICS: A SCOPING REVIEW	Eli Stroh, Samantha Brooks, Alex Snyder, Emaly Vatne, Julie Kennel, Paul Jones, Hayley MacDonald, Josh Hagen, William J. Kraemer FACSM, Catherine Saenz
4	EFFECTS OF A SHORT-TERM PHYSICAL ACTIVITY REDUCTION ON NEAR-INFRARED SPECTROSCOPY-DERIVED MICROVASCULAR RESPONSES TO PASSIVE LEG MOVEMENT	Authors: Elizabeth Hudak, Isaiah Stokes, Katie VandeWyngearde, Eric Slattery, Kevin D. Ballard, FACSM, Paul T. Reidy, FACSM, Kyle L. Timmerman, FACSM, Jon Stavres
5	HOLDING STRONG: GRIP STRENGTH AND ANTHROPOMETRIC ASSOCIATIONS WITH STEIN HOLDING PERFORMANCE AT XAVIER UNIVERSITY	Ella Benson, Nick Viola, Alexandria Adams, David Wiley, Brenn Simmons, Michelle Van Dyke, Ashley Varol, Patrick Filanowski, Jeremy A. Steeves FACSM
6	COGNITIVE AND NEUROPHYSIOLOGICAL RESPONSES TO SIX WEEKS OF CREATINE SUPPLEMENTATION IN OLDER ADULTS	Emily Gockel, Kourtney Schmidt, Keevan Jones, Ifeoluwa Ogunduyile, Chase Burke, Alissa Clarke, Kytilin Plate, Jonathan Specht, Kelsey Bourbeau & Terence Moriarty
7	QUALITATIVE ANALYSIS OF UNDERGRADUATE HEALTH EDUCATORS REFLECTIONS: PERSONAL GROWTH AND OTHER THEMES	Emily Kornelson; Diane Dungan; Meredith Craddock, Laura Gerig, Scott Fenstermacher, Brad Kendal
8	ADOLESCENT FEMALE ATHLETES NUTRITION KNOWLEDGE PRIOR TO NUTRITION EDUCATION	Emily Miller, Abigail Peairs, Kalli Sidwell, Megan Christian
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Poster Session 2 **Poster 1** **Crown Foyer**

10:00 - 10:55 AM

AN ANALYSIS OF POSTPARTUM RETURN-TO-SPORT TIMELINES IN ELITE ATHLETES

Donald Mascio, Will Zhang, Jorge Chahla

BACKGROUND: Historically, pregnancy was viewed as a career-ending event for elite female athletes, leaving individuals to navigate maternal return without clear guidelines. Peak reproductive years frequently overlap with competitive prime. PURPOSE: This study aims to identify a critical gap in tailored return-to-sport protocols for female postpartum professional athletes. METHODS: This is an analysis of public data from 55 professional female athletes who gave birth during their athletic careers and successfully returned to elite competition. AI tools such as Gemini and ChatGPT were utilized for athlete selection. Data was drawn from public articles, posts, and sports pages. The data was verified by a two-reviewer manual auditing process. Metrics included baseline demographics, specific return-to-sport timelines, post-return career longevity, and pre- and post-pregnancy elite accolades. RESULTS: Fifty-five athletes (n=34 individual, n=21 team) were analyzed. Individual-sport athletes had a mean maternal age of 28.81 +/- 3.92 years, compared with 26.83 +/- 3.81 years among team-sport athletes. Individual-sport athletes returned after a mean of 9.16 +/- 5.08 months, compared with 5.98 +/- 4.31 months among team-sport athletes (p=0.019). Individual-sport athletes demonstrated a mean continued career duration of 7.39 +/- 4.95 years, compared with 4.92 +/- 4.12 years among team-sport athletes (p=0.057). Within 12 months post-return, 47.3% of athletes earned major competitive accolades 58.1% individual vs. 33.3% team (p=0.076). CONCLUSION: Postpartum professional team sport athletes return to competitive play faster on average than postpartum individual sport athletes. Postpartum career longevity is similar among individual and team sports. Postpartum elite athletes are still able to earn accolades within the first year of returning to competition. Medical providers and athletic organizations must develop highly personalized return-to-play protocols.

10:00 - 10:55 AM

Confidence in Motion: Exploring the Impact of Training and Mentorship on Fitness Personnel and Patron Experience

Dylan Reisen, Matt Hutchins, Matt Warner, Biak Mawi, Alma Llamas, Makayla Castle

BACKGROUND: New fitness staff may lack confidence and support during onboarding, which can influence service quality and patron experiences. Structured training and mentorship may improve readiness, but evidence connecting staff development to patron satisfaction in university recreation settings remains limited.

PURPOSE: To examine how training and mentorship practices influence the confidence and job readiness of fitness personnel and how these practices relate to patron satisfaction.

METHODS: A descriptive design was used. Four QR code surveys were distributed through convenience sampling to group fitness instructors (n=8), personal trainers (n=3), group fitness participants (n=21), and personal training clients (n=4), yielding 36 respondents. Surveys assessed onboarding satisfaction, preparedness, ongoing support, communication, and patron satisfaction. Descriptive statistics were calculated.

RESULTS: Group fitness instructors reported feeling prepared following training (M=1.63, SD=0.86), with 63% indicating they were very well prepared. They also reported satisfaction with ongoing support (M=1.75, SD=0.83). Personal trainers were satisfied with onboarding (M=1.67, SD=0.47). Group fitness participants reported high satisfaction with classes (M=1.33, SD=0.56), and 95% would recommend them to a friend. Dance/Zumba and Cardio/HIIT were the most preferred class types. All personal training clients reported being very satisfied with training quality, had their needs met, and planned to continue training.

CONCLUSIONS: Findings suggest that effective onboarding and mentorship are associated with strong staff preparedness and satisfaction, while patrons report high satisfaction with both group fitness and personal training services. Given the small personal training samples, results should be considered preliminary. Continued attention to onboarding and responsive programming may further enhance staff confidence and patron experiences.

10:00 - 10:55 AM

5) CRITERION ACCURACY AND VALIDITY OF ENERGY EXPENDITURE ESTIMATED BY WEARABLE DEVICES IN ATHLETICS: A SCOPING REVIEW

Eli Stroh, Samantha Brooks, Alex Snyder, Emaly Vatne, Julie Kennel, Paul Jones, Hayley MacDonald, Josh Hagen, William J. Kraemer FACSM, Catherine Saenz

BACKGROUND: Sport wearable devices (e.g., accelerometers (AS), multi-sensor devices (MSD), global positioning system (GPS)/global navigation satellite system (GNSS)) are capable of estimating training-specific energy expenditure (EE). To date, there is no clear synthesis of the accuracy and reliability of wearables-derived EE, limiting data interpretation in athletic populations. PURPOSE: To systematically review the accuracy and validity of wearable devices for estimating EE in athletic populations. METHODS: Boolean searches across five electronic databases were conducted following PRISMA guidelines. Inclusion criteria focused on studies of collegiate, semi-professional, professional, or tactical athletes that evaluated wearable device estimates of EE against laboratory-based criterion measures (indirect calorimetry (IC) or doubly labeled water (DLW)). Records were screened via Rayyan by two independent reviewers, and data were synthesized descriptively. RESULTS: Of the 636 articles screened, 22 studies met inclusion criteria (n=586 athletes; 40% women; mean age 23.6±5.6 yrs) representing team (32%) and individual (50%) sports and tactical settings (18%). AS (7 studies; IC 29%, DLW 71%) and MSD (8 studies; IC 63%, DLW 37%) demonstrated acceptable agreement EE at low to moderate intensity exercise. GPS/GNSS (2 studies, IC 100%) demonstrated accurate EE estimates under linear movement, but greater error as sport-specific movement grew more sporadic. Combined heart rate-accelerometer devices (5 studies; IC 100%) showed the most consistent, acceptable EE agreement likely due to combining multiple derived metrics. Non-locomotor activity was underestimated across device types, and error increased with movement complexity and intensity progression. CONCLUSION: EE estimates varied by device and movement demands, with combined sensors showing the greatest agreement, highlighting the need for targeted validation in sport-and tactical settings.

10:00 - 10:55 AM

EFFECTS OF A SHORT-TERM PHYSICAL ACTIVITY REDUCTION ON NEAR-INFRARED SPECTROSCOPY-DERIVED MICROVASCULAR RESPONSES TO PASSIVE LEG MOVEMENT

Authors: Elizabeth Hudak, Isaiah Stokes, Katie VandeWyngearde, Eric Slattery, Kevin D. Ballard, FACSM, Paul T. Reidy, FACSM, Kyle L. Timmerman, FACSM, Jon Stavres

Background: Passive leg movement (PLM) is an established assessment of endothelial and microvascular function in humans, and reduced physical activity (RPA) is known to impair peripheral vascular function. Purpose: To determine if short-term RPA blunts near-infrared spectroscopy (NIRS) markers of microvascular function during PLM. Methods: Six healthy adults (3 women; age 21±2 y [mean±SD]; BMI: 23.5±2.9kg/m2) completed a 3-week intervention. Habitual PA was assessed for one week (11,814±3,178 steps/d), followed by one week of RPA (8,042±2,835 steps/d), and one week of resumed habitual PA (9,185±1,179 steps/d). PLM was assessed in the right leg via an isokinetic dynamometer at the end of each week. Oxygenated (O2Hb), deoxygenated (HHb), and total hemoglobin (tHb) saturations, and tissue saturation index (TSI) were averaged across a 60 sec baseline period, followed by 10 sec bins during the 3 min PLM period. Responses were examined using a 3 (study week) by 19 (PLM bin) linear-mixed models approach, and post-hoc analyses were adjusted via the Holm correction for multiple comparisons. Results: The average TSI response to PLM was lower during week 3 compared to week 1 ([Estimate±SE] -2.34±0.63%, $p<0.001$) and week 2 (-1.68±0.55%, $p=0.001$), independent of PLM timepoint. The average O2Hb response to PLM was higher during weeks 2 (2.87±0.21Δa.u., $p<0.001$) and 3 (1.31±0.30Δa.u., $p<0.001$) compared to week 1, also independent of PLM timepoint. While significant main effects of PLM timepoint were also observed for TSI and HHb ($F>3.27$, $p<0.001$), no day x time interactions were observed for any NIRS value during PLM ($F<1.01$, $p>1.00$). Conclusions: Our preliminary data support that RPA alters NIRS responses to PLM. Ongoing recruitment for our clinical trial will more definitely determine the effects of altered PA on microvascular function. Funding: NHLBI 1R15HL177798-01.

Poster Session 2 **Poster 5** **Crown Foyer**

10:00 - 10:55 AM

HOLDING STRONG: GRIP STRENGTH AND ANTHROPOMETRIC ASSOCIATIONS WITH STEIN HOLDING PERFORMANCE AT XAVIER UNIVERSITY

Ella Benson, Nick Viola, Alexandria Adams, David Wiley, Brenn Simmons, Michelle Van Dyke, Ashley Varol, Patrick Filanowski, Jeremy A. Steeves FACSM

BACKGROUND: During Xavier's annual Oktoberfest (2025), participants tested upper-body muscular endurance in the Rec Sports Stein Holding Competition by holding a ~5-lb water-filled stein in a standardized position as long as possible. PURPOSE: This study examined the association between grip strength and anthropometric factors with Stein holding performance, with particular emphasis on sex-specific differences. METHODS: Sixty-nine participants completed assessments of grip strength, body mass, height, body mass index (BMI), and wingspan. Stein-holding performance was quantified as time to task failure, and correlations with anthropometric and strength variables were analyzed using IBM SPSS. RESULTS: Participants (67% male) had a mean height of 1.8 ± 0.1 m, body mass of 77.6 ± 15.6 kg, BMI of 25.2 ± 4.1 kg/m², wingspan of 175.6 ± 10.5 cm, and grip strength of 43.9 ± 12.3 kg. Mean Stein holding performance was 139.3 ± 51.5 seconds. Across the full sample, grip strength demonstrated the strongest association with holding performance ($r = 0.65$, $p<0.001$), while body mass and wingspan showed moderate positive correlations ($r = 0.49$ and $r = 0.41$, $p<0.001$; respectively). Among males, grip strength had the strongest association with holding performance, although the relationship was weaker than in the combined sample ($r = 0.47$, $p<0.001$). In females, body mass and BMI exhibited the strongest associations with performance ($r = 0.44$, $p=0.04$ and $r = 0.42$, $p=0.04$), followed by grip strength ($r = 0.36$, $p=0.09$).

CONCLUSION: Grip strength, an indicator of overall muscular strength and function, was most strongly associated with Stein holding performance overall and in males. While grip strength remains influential in females, anthropometric factors such as body mass and BMI appear to play a relatively greater role, suggesting potential sex-specific differences in performance characteristics.

Poster Session 2 **Poster 6** **Crown Foyer**

10:00 - 10:55 AM

COGNITIVE AND NEUROPHYSIOLOGICAL RESPONSES TO SIX WEEKS OF CREATINE SUPPLEMENTATION IN OLDER ADULTS

Emily Gockel, Kourtney Schmidt, Keevan Jones, Ifeoluwa Ogunduyile, Chase Burke, Alissa Clarke, Kytilin Plate, Jonathan Specht, Kelsey Bourbeau & Terence Moriarty

BACKGROUND: Creatine supplementation has well-established benefits for skeletal muscle performance; however, its effects on cognitive function and cerebral oxygenation (O2Hb) in older adults remain incompletely understood. PURPOSE: To determine the effects of six weeks of creatine supplementation on cognitive performance and prefrontal cortex (PFC) O2Hb in adults over 50 years of age. METHODS: Twenty adults (>50 years) completed a six-week creatine supplementation protocol (20 g/day). Outcome measures obtained before and after supplementation included body composition, grip strength, the Montreal Cognitive Assessment (MoCA) in the Memory Index Score (MIS), and NIH Toolbox assessments of processing speed, attention, cognitive flexibility, and episodic memory. PFC O2Hb during cognitive testing was measured using functional near-infrared spectroscopy (fNIRS). Paired-samples t-tests evaluated pre- to post-intervention changes. RESULTS: MoCA scores improved from 26.6 ± 1.8 to 27.7 ± 1.9 ($p = .006$), while MIS improved from 12.8 ± 2.2 to 14.2 ± 1.1 ($p = .003$). NIH Toolbox processing speed improved ($p = .032$), and attention (Flanker) improved ($p = .049$). Cognitive flexibility demonstrated a positive trend ($p = .101$). No significant changes were observed in average PFC O2Hb measured by fNIRS (all $p > .05$). CONCLUSION: Six weeks of high-dose creatine supplementation improved multiple measures of cognitive performance in adults over 50 years of age, including global cognition, memory, processing speed, and attention. These cognitive improvements occurred without significant changes in average PFC O2Hb, suggesting that creatine's cognitive effects may not require detectable alterations in cortical hemodynamics during cognitive testing. Additional studies with larger sample sizes and more detailed neuroimaging analyses are warranted to further investigate the mechanisms underlying these cognitive benefits.

Poster Session 2 **Poster 7** **Crown Foyer**

10:00 - 10:55 AM

QUALITATIVE ANALYSIS OF UNDERGRADUATE HEALTH EDUCATORS REFELECTIONS: PERSONAL GROWTH AND OTHER THEMES

Emily Kornelson; Diane Dungan; Meredith Craddock, Laura Gerig, Scott Fenstermacher, Brand Kendal

Background & Purpose: Experiential learning is an important aspect of preparation for healthcare careers, and reflection on practical experiences can increase learning, awareness, motivation, critical-thinking, and decision making in medical and undergraduate students (Epp, 2008; Levine et al., 2007; Winkel et al., 2017). Prompts, questions, and teaching techniques may influence the content and depth of student reflections (Flemming, 2007; Ng et al., 2022). Understanding how to facilitate self-reflection is important for student growth and development. Methods: Participants were undergraduate students (N=25; Mean age= 20.3 years) working in a health and wellness program and attending weekly supervision. For 9 weeks, students completed a 2-questions form, with instructions: “For the following questions, please focus on your growth and development and not simply patient success or failure.” Question 1: “What is something you did well this week in your work at the clinic? Why do you think this went well?” Question 2: “What is something you would like to improve in your work at the clinic this week? How do you plan to work on improving this?” Researchers conducted thematic analysis using Braun & Clarke’s framework. Six codes emerged from the data, which were sorted into 3 themes. Personal reflection was added as a fourth theme. Results: Analysis of the 360 weekly personal reflections revealed four distinct themes for reflections: Connecting/Communicating with Patients (42.5/%), Time-Management (13.3%), Presenting/Using Learned Clinical Information(38.6%), and Personal Growth (9.2%). Responses indicated health educators focused primarily on what to say and do with patients verses personal reflection focused on their own growth and development. Conclusion: In undergraduate pre-health students, basic reflection prompts did not lead to increased personal reflection. Further research to explore better prompts to promote personal reflection of clinical work is needed.

Poster Session 2 **Poster 8** **Crown Foyer**

10:00 - 10:55 AM

ADOLESCENT FEMALE ATHLETES NUTRITION KNOWLEDGE PRIOR TO NUTRITION EDUCATION

Emily Miller, Abigail Peairs, Kalli Sidwell, Megan Christian

BACKGROUND: Many nutrition education interventions are aimed to increase sports nutrition knowledge among female athletes. In order to accurately assess the effectiveness of nutrition education interventions, an accurate baseline of nutrition knowledge must be established prior to the intervention. PURPOSE: To establish a baseline understanding of nutrition knowledge among the target group of adolescent female athletes prior to intervention. METHODS: Nutrition knowledge data were collected from female adolescent athletes at a local high school. A validated nutrition knowledge questionnaire (Nutrition Knowledge Questionnaire for Young and Adult Athletes) was distributed to athletes prior to any nutrition education intervention. Data were analyzed in Microsoft Excel and SPSS. RESULTS: For the initial group, 19 participants completed the pre-test. The average unscaled knowledge pre-test score was 29.6± 6.6. A following intervention of 64 participants resulted in an average pre-test score of 35.5±8.2 correct questions (approximately 60%). Both group scores are considered to be a “low level” of nutrition knowledge. For the first group, there were no significant differences found by grade level for baseline nutrition knowledge ($p>0.05$). Topics which resulted in the lowest percentage of correct answers included food sources of unsaturated fat and food sources of calcium. CONCLUSION: This information will be used to inform ongoing nutrition education interventions in this group of adolescent female athletes. For future interventions, larger sample sizes may yield a clearer relationship between age/grade level and baseline nutrition knowledge.

10:00 - 10:55 AM

MENSTRUAL CYCLE PHASES IMPACT ON METABOREFLEX ACTIVATION DURING EXERCISE AT SIMULATED HIGH ALTITUDE

Endy B. N. Hora Farias, Chad C. Wiggins

BACKGROUND: Estrogen and progesterone influence vascular and autonomic function and may modulate the metaboreflex, a key mechanism regulating cardiovascular responses to exercise via metabolite-sensitive afferent feedback. These hormonal fluctuations may alter metaboreflex activation, particularly under hypoxic conditions. PURPOSE: To compare the magnitude of the metaboreflex response to fatiguing handgrip exercise across the menstrual cycle phases after a handgrip exercise at a high-altitude simulation. METHODS: Healthy premenopausal females were tested during the early follicular (EF), late follicular (LF), and midluteal (ML) phases of their menstrual cycle (MC). They completed single-arm rhythmic handgrip exercise at an intensity of 50% of their maximal voluntary contraction to fatigue during acute hypoxic exposure (FiO2=0.12). Immediately after exercise, an arm cuff was inflated to 220 mmHg for 3 minutes to trap metabolites produced during exercise. Beat-by-beat mean arterial blood pressure (MAP) was measured continuously using volume-clamp finger photoplethysmography. No statistical tests were performed due to small sample size. RESULTS: To date, five participants have completed the study (age: 24.4 ± 4.5 yr). Baseline MAP was similar across all phases of the MC (93 ± 12 mmHg). During post-exercise ischemia, MAP rose to a greater extent in the EF phase (109±15 mmHg) than in the ML (94±8 mmHg) and LF (94±29 mmHg) phases. CONCLUSIONS: These preliminary data suggest that ovarian hormone fluctuations may influence metaboreflex activation during exercise in acute hypoxia, with a greater response observed during the EF phase. This pattern is compatible with the lower circulating estrogen and progesterone concentrations characteristic of this phase. In contrast, the higher hormone concentrations during the LF and ML phases may attenuate the reflex response. Further data collection is underway to confirm these findings.

10:00 - 10:55 AM

DOES AGING IMPAIR PULMONARY ARTERY REACTIVITY TO HYPOXIA AND NITRIC OXIDE?

Ernesto Ramirez Jr., Qudus Ayomide Ojikutu, Eloisa Herrera-Ospina, Steven H. Steinhubl, Igor A. Fernandes

BACKGROUND: Aging is associated with a higher prevalence of pulmonary hypertension and increased exposure to hypoxemia, both of which may contribute to pulmonary vascular dysfunction. However, it remains unclear whether healthy aging impairs pulmonary vascular function or responsiveness to changes in oxygen availability. PURPOSE: To determine whether aging modifies pulmonary vascular endothelial function and its responsiveness to changes in oxygen tension. METHODS: Eight healthy young adults (YA: 5 females; 25 ± 3 yr) and five healthy older adults (OA: 4 females; 71 ± 5 yr) completed echocardiographic assessments of pulmonary artery systolic pressure (PASP) during normoxia and isocapnic hypoxia ($FiO_2 \approx 0.10$). Inhaled nitric oxide (40 ppm) was administered during the final 5 min of each trial. PASP was quantified from the peak systolic tricuspid regurgitant gradient plus estimated right atrial pressure. Arterial pressure, arterial oxygen saturation (SpO_2), and end-tidal PO_2 and PCO_2 were recorded continuously. RESULTS: Arterial pressure, SpO_2, end-tidal PO_2, and PCO_2 did not differ between conditions or age groups. PASP increased during isocapnic hypoxia in both YA (16 ± 6 → 19 ± 6 mmHg, p = 0.059) and OA (25 ± 11 → 34 ± 18 mmHg, p = 0.036), with a greater response in OA (OA: +7 ± 2 mmHg vs. YA: +2 ± 2 mmHg, p = 0.042). Inhaled nitric oxide reduced PASP during normoxia (OA: −7 ± 7 mmHg vs. YA: −4 ± 2 mmHg) and hypoxia (OA: −11 ± 8 mmHg vs. YA: −11 ± 11 mmHg), with no age-related differences. CONCLUSION: Despite a greater hypoxic vasoconstrictor response in older adults, pulmonary artery vasodilation to inhaled nitric oxide was preserved, suggesting healthy aging does not diminish pulmonary endothelial function.

10:00 - 10:55 AM

Pre-Exercise Passive Heating in Resistance-Trained Females: Preliminary Findings

Gabriel Clark, Sydney I. Kane, Caleb L. Hoekema, Shannon Fiddy, Nidia Martinez, Brian C. Rider, FACSM & Nigel C. Jiwan

BACKGROUND: Increasing muscle temperature before exercise may enhance neuromuscular function by improving muscle contractility, nerve conduction velocity, and metabolic activity. Commercially available heating pads provide a practical and inexpensive means of passive heating; however, their effects on resistance exercise performance in resistance-trained women have not been investigated. PURPOSE: To examine the effects of pre-exercise passive thigh heating (PTH) on back squat velocity, power, repetitions, and perceptual responses in resistance-trained women. METHODS: Preliminary data from an ongoing randomized, counterbalanced crossover study are presented. To date, four resistance-trained women have completed one-repetition maximum (1RM) testing and two experimental visits. Participants completed four sets of back squats to failure at 70% of 1RM following either 45 min of PTH (66°C) or a sham condition. A linear position transducer was used to assess mean velocity (MV), peak velocity (PV), mean power output (MPO), and velocity loss (VLoss). Skin temperature (ST), repetitions (reps), total volume (TV), and ratings of perceived exertion (RPE) were also measured. Paired-samples t-tests and repeated-measures ANOVA were used for statistical analyses. RESULTS: PTH significantly increased ST (34.6±0.8 vs. 29.9±2.7°C;p=.012). No significant differences were found between PTH and sham for total reps (61±14 vs. 62±11reps;p=.297), TV lifted (7385±1272 vs. 7532±909lbs;p=.299), or RPE (17±1 vs. 16±1;p=.196). No differences were observed for MV (0.39±0.10 vs. 0.38±0.09m·s^{-1};p=.581), PV (0.87±0.16 vs. 0.81±0.18m·s^{-1};p=.108), MPO (211±71 vs. 206±62W;p =.564) and VLoss (48±22% vs. 43±17%;p=.243). CONCLUSION: Preliminary findings suggest that PTH via heat pads increases skin temperature but does not significantly influence back squat performance or perceptual responses in resistance-trained women. As data collection is ongoing, a larger sample is needed to confirm these findings.

Poster Session 2 **Poster 12** **Crown Foyer**

10:00 - 10:55 AM

MOVING MATTERS: ASSESSING THE IMPACT OF EARLY LIFE INACTIVITY ON MURINE BEHAVIOR

Grace Scott, Jackson Yeager, Paul Reidy FACSM, Anna Radke, Arina Prikhodko, Amritesh Bali, Ava Ward, Julia Beltran

BACKGROUND: Previous testing shows that adolescent male mice fight around 1-4 months of age, while the females do not. It is unknown if the fighting was a stress response due to early-life treatment or the single housing nature of experiments. PURPOSE: To investigate the behavioral effects on mice (n=38) at 4 months old due to varying levels of early life treatment. METHODS: Treatment conditions were as follows: Voluntary wheel runners/active control (VWR), early life activity (ELA), sedentary control (SED), small mouse cage (SMC), and hind-limb unloaded (HU). Control treatments were maintained throughout the study, whereas the other treatments were applied at 3-5 wk postnatal during a critical growth period and then transferred to SED (standard cage) conditions. Subsequently, they completed open field (OF), social novelty (SN), social preference (SP), and sucrose preference (SucP) testing to determine psychiatric effects. OF measures anxiety, SP measures sociability, SN measures social memory, and SucP measures depression. Two-Way ANOVA statistical analysis was performed. Data are presented as mean±SEM. RESULTS: In OF, there was a significant decrease in time immobile in the center between VWR and SED females. Mean times (seconds) for male VWR, ELA, SED, SMC, and HU were 244±35, 204±56, 121±47, 130±36, and 188±126, respectively. For females, they were 239±55, 159±25, 67±17, 84±41, and 24±17, respectively. Additionally, trends point to the male group spending more time mobile in the center compared to male SED (p=0.08) and to female VWR (p=0.07). There were no significant differences seen in SP, SN, or SucP. CONCLUSION: Treatment groups had similar levels of social interaction, anxiety, and depression. Males exhibited less anxiety. Potential variables affecting this outcome include testing timepoint, isolated vs grouped housing, and other stressors. Funding was provided by the NIH NIAMS 1R15AR084182-01 to Paul T. Reidy.

Poster Session 2 **Poster 13** **Crown Foyer**

10:00 - 10:55 AM

FUTURE HEALTHCARE PROFESSIONALS, IMMEDIATE IMPACT

Graham Beukelman, Diane Dungan, Scott Fenstermacher, Bradley Kendall

Background: Obesity is one of the most prevalent noncommunicable diseases in the United States. Currently, 4 in 10 adults meet the criteria for obesity. Due to the health complications and financial burden, many employers try to provide employees with resources and programs to improve health outcomes. However, success has been limited. Purpose: To examine the effectiveness of an employee weight loss program delivered by pre-healthcare undergraduate students. Methods: Participants were university employees (N = 72; Age = 58.9 ± 9.3 yrs) who volunteered for a 10-week wellness program. Upon enrollment, participants' weight, cholesterol, and Hemoglobin A1c levels were measured. Additionally, participants completed assessments of aerobic capacity (6-minute walk test) and mobility (4-square step test). Employees then met twice a week with undergraduate health educators and covered topics on exercise, nutrition, and stress. Sessions also included 25 minutes of exercise. Results: After 10 weeks, 44 participants completed the program. Weight loss was 6.4 ± 6.3 lbs, which was significantly different compared to starting weight ($t(38) = 5.37$, $p < 0.01$). Weight loss was greater among those classified as obese (7.9 ± 7.78lbs) compared to those at a normal BMI (1.0 ± 2.5lbs). Participants also increased their 6-minute walk distance ($t(38) = -3.13$, $p < 0.01$), reduced their 4-sqaure step time ($t(38) = 4.24$, $p < 0.01$), and reduced their A1c ($t(38) = 2.64$, $p < 0.01$). Cholesterol was not significantly different from baseline ($p > 0.05$). Conclusion: Findings suggest that an employee wellness program delivered by undergraduates may be an effective strategy to improve health outcomes. While the dropout rate was still 40%, those who completed the program lost weight, improved metabolic markers, and improved functional fitness metrics. The use of pre-healthcare students to deliver the program appears to reduce cost demand while still leading to promising outcomes.

10:00 - 10:55 AM

IMPACT OF PHASE II CARDIAC REHABILITATION PARTICIPATION ON FUNCTIONAL EXERCISE CAPACITY AND CARDIOVASCULAR RISK FACTORS

Greta Milnes, Malloree Rice

BACKGROUND: Phase II cardiac rehabilitation (CR) is a supervised outpatient program combining structured exercise, cardiovascular risk factor education, and lifestyle counseling following cardiac events or procedures. Although CR improves aerobic capacity and cardiovascular health, enrollment and adherence remain below recommended levels. PURPOSE: To determine the effects of Phase II CR on functional exercise capacity, blood pressure control, and attendance adherence following cardiac events or procedures. METHODS: A retrospective analysis was conducted using clinical records from patients enrolled in Phase II CR. Functional capacity was assessed using pre- and post-program six-minute walk test (6MWT) distance. Blood pressure was measured at baseline and program completion, with control defined by AACVPR guidelines (<130 mmHg systolic; <80 mmHg diastolic). Attendance adherence was calculated as completed sessions relative to prescribed sessions. Descriptive statistics and paired analyses evaluated changes from baseline to post-program. RESULTS: Mean 6MWT distance increased from 1401.8 ± 291.3 m to 1605.9 ± 348.1 m ($p < 0.001$), representing a 14.6% improvement. Overall, 90.4% (104/115) achieved improvement of ≥10%. Standard errors were 27.17 m pre-program and 32.36 m post-program. Mean systolic blood pressure decreased from 116.6 ± 13.6 to 114.6 ± 10.6 mmHg ($p = 0.0969$; SE 1.27 vs 0.98 mmHg), with control improving from ~85% to 93%. Mean diastolic blood pressure decreased from 68.1 ± 9.5 to 65.3 ± 8.6 mmHg ($p = 0.0008$; SE 0.88 vs 0.81 mmHg), with control improving from ~87% to 93%. Attendance adherence was approximately 80.5% (128/159). CONCLUSION: Phase II CR was associated with improved functional capacity, favorable trends in blood pressure control, and strong adherence. These findings support CR as an effective secondary prevention strategy and highlight the importance of referral and sustained engagement in rehabilitation programs.

10:00 - 10:55 AM

THE EFFECT OF MENSTRUAL CYCLE ON MAINTENANCE OF COGNITIVE PERFORMANCE DURING HIGH-INTENSITY INTERVAL EXERCISE

Harrison Shaffer, Manuela Ospina-Cortes, Alvin Kao

BACKGROUND: Cognitive processes can be impaired during exercise. The reticular activating hypofrontality model suggests limited cerebral metabolic resources are available to support physical and cognitive performance. During intense exercise, resources is redirected toward sensorimotor cortices, downregulating prefrontal cortex and impairing prefrontal dependent inhibitory control (IC). Previous work on high-intensity interval training (HIIT) showed shorter IC response time (RT) at the cost of accuracy (ACC) during exercise intervals. This result was based on a sample of men and women without considering the menstrual cycle phase and the fluctuation of hormones like progesterone, which is known to affect IC. PURPOSE: To determine whether HIIT-Induced fluctuation in IC performance differs between the follicular (FOL) and luteal (LUT) phases. METHODS: This ongoing study will recruit 20 females aged 18-35 with regular menstrual cycles to complete 3 lab visits. During visit 1, participants familiarized with IC tasks and complete a V̇O2max test to identify maximum heart rate (HRmax). Participants are given at home ovulation testing kits to detect the surge of luteinizing hormone (LH), informing the scheduling for visits during LUT and FOL phases. These visits are on separate and counterbalanced days. During each visit, participants complete a 33-minute cycling HIIT session (3-min warmup, three 5-min exercise intervals [>76% HRmax] separated by three 5-min recovery intervals) and complete the IC task during each interval. [HS1.1][MO1.2]RESULTS: Preliminary results from 15 participants show exercise-related impairment in both phases, reflected by lower ACC and longer RT during exercise. Although post-exercise RT reduction was observed during recovery, this restoration was attenuated in LUT compared with FOL phase. CONCLUSION: HIIT may impair IC during exercise in both menstrual phases, while LUT phase may reduce the ability to restore performance speed during recovery.

Poster Session 2 **Poster 16** **Crown Foyer**

10:00 - 10:55 AM

THE INFLUENCE OF PREFERRED MUSIC GENRE ON RESISTANCE EXERCISE

Hope Wasoski, Ahalee Farrow, Bradley Rabquer, Heather Hayes Betz FACSM

Purpose: Understanding how music influences exercise can optimize sports and exercise performance. This study investigated the impact of preferred music genre (PMG) on resistance exercise performance. Methods: The influence of PMG on strength-endurance via trap bar deadlift and maximal strength via handgrip dynamometer exercise, and their RPE ratings was examined. Six resistance-trained college students - five females and one male - aged 20-21 participated in this study. Participants were measured during four music listening conditions in a randomized order: three PMGs (i.e., 1st preferred vs. 2nd preferred vs. 3rd preferred) conditions and one no music condition. RPE was measured with the Borg CR10 scale at the end of the strength tests. Kinetics of the deadlift were measured with the GymAware RS (GymAware, Braddon, Australian Capital Territory, Australia) to investigate strength-endurance performance. Results: Participants significantly improved their strength-endurance performance with increased deadlift repetitions, average concentric mean power, average concentric mean velocity, and average repetition rate with PMG compared to no music ($p<0.05$). Significant differences were found in the deadlift with increased average eccentric peak velocity, average eccentric peak power, and average repetition rate in the first PMG condition compared to the third PMG condition ($p<0.05$). RPE for maximal strength and strength-endurance performance remained unchanged among all four conditions ($p=0.165$). There were no significant findings related to the handgrip exercises. Conclusions: These findings suggest that strength-endurance performance of the lower body can be enhanced with the most PMG and that in some aspects of performance, listening to a music genre that further deviates from the most PMG (i.e., the third most PMG) will not improve resistance exercise to the extent of the most PMG.

10:00 - 10:55 AM

PATIENTS DISSATISFIED WITH THEIR CURRENT KNEE STATE DEMONSTRATE GREATER FEAR OF MOVEMENT FOLLOWING ACL RECONSTRUCTION

Ian Frederick, Jessica Tolzman, Matthew Harkey

BACKGROUND: Fear of movement is a common psychological barrier following anterior cruciate ligament reconstruction (ACLR) that may limit confidence, functional recovery, and return to activity. However, its relationship with satisfaction with the current knee state remains unclear. PURPOSE: To determine whether fear of movement differs between patients who are satisfied and dissatisfied with their current knee state following ACLR. METHODS: Participants completing their first postoperative study visit 3-9 months following primary ACLR were included in this cross-sectional analysis. Satisfaction with the current knee state was assessed using a dichotomous patient-reported question and participants were categorized as satisfied or dissatisfied. Fear of movement was assessed using the 11-item Tampa Scale of Kinesiophobia (TSK-11). Independent-samples t-tests compared TSK-11 scores between groups, and multivariable logistic regression examined the association between TSK-11 scores and satisfaction after adjusting for age and sex. RESULTS: Two hundred sixty-two participants (22.0±8.0 years; 49% female; 5.5±1.4 months post-ACLR) were included (134 dissatisfied, 128 satisfied). Participants dissatisfied with their current knee state demonstrated greater fear of movement than satisfied participants (22.3±4.9 vs. 19.6±5.4; mean difference=2.68; $p<0.001$; Cohen's d=0.52). After adjustment for age and sex, greater TSK-11 scores remained independently associated with lower odds of satisfaction (OR=0.91, 95% CI:0.86–0.95; $p<0.001$). CONCLUSION: Patients dissatisfied with their current knee state demonstrated greater fear of movement during early recovery following ACLR. Fear of movement may represent a modifiable rehabilitation target associated with patients' perceived recovery following ACLR.

Poster Session 2 **Poster 18** **Crown Foyer**

10:00 - 10:55 AM

FEASIBILITY AND ACCEPTABILITY OF A COOKING BASED NUTRITION EDUCATION PROGRAM FOR FEMALE ADOLESCENT ATHLETES

Irene Romero

Emily Miller

Callie Flanagan

Abby Peairs

BACKGROUND: Female adolescent athletes are at risk of developing low energy availability, disordered eating, and micronutrient insufficiencies. Increasing nutrition knowledge can improve diet quality, energy levels, and athletic performance. Culinary interventions provide hands-on experiences that are practical and may be found more acceptable by adolescents than traditional lecture style education.

METHODS: A nutrition education program was developed with each class containing nutrition education, food/skill demonstration, and recipe preparation. One class was pilot tested with students from a local high school to assess feasibility and acceptability of the activities and recipes. A variety of cooking and food preparation techniques were included to provide a wide range of experiences. Recipes were chosen based on nutrient composition, skill/challenge level, and likelihood of acceptability by adolescents. Students were given a QR code to complete surveys to assess feasibility, accessibility, and cooking self-efficacy after class.

RESULTS: Two sessions of the class were held with 24 participants each (48 total), sixteen completed the surveys online (33.3% response rate). Feasibility was evident by the majority (>= 75%) agreeing that the duration, organization, structure, level of difficulty, support provided, and overall process were appropriate and/or favorable. All participants reported feeling confident or very confident in using the cooking equipment included in the cooking class (knives, oven, stovetop, food processor, and a blender). The overall content rating was 4.79/5.0, and all participants who answered this question (14), either agreed or strongly agreed that they were satisfied with the content. Most (75%) found the recipes interesting and indicated they would try them on their own.

CONCLUSION: This cooking class was viewed favorably, and can contribute to nutrition knowledge and self-efficacy in meal preparation in the intended population.

Poster Session 2 **Poster 19** **Crown Foyer**

10:00 - 10:55 AM

Effects of Caregiver-Supported Resistance Training in Adults with Down Syndrome

Isabella Starlin, Aida Rabadi, Shamar Brittman, Juan Vivas Becerra, Avery Yoder, Madison Kackley, Emily Post

BACKGROUND: Adults with Down syndrome (DS) are an underserved population at increased risk for age- and physical inactivity-related health conditions. Resistance training (RT) may provide a unique strategy to improve everyday functional capacity in this population. PURPOSE: To examine the effects of a group-based RT intervention on cognitive, mood, motor skill, and physical performance outcomes in adults with DS while incorporating family and social support to promote exercise participation and adherence. METHODS: Adults with DS (n=7, 28±7.0 years old, weight=79.3±21.2kg, height=152.8±3.0cm, BMI=33.3±10.3 kg/m2) and their parent (n=7, age=62±5.3 years old, weight=75.1±17.5 kg, height 164.0±7.2cm, BMI=29.1±3.9 kg/m2) completed a supervised, individualized RT program consisting of 16 sessions over 8-9 weeks. Cognitive, motor, mood, physical activity, body composition, muscular strength/endurance, and flexibility were assessed before and after the intervention using standardized assessments. RESULTS: All strength metrics for individuals with DS and parent increased ($p< 0.05$). There were no significant changes in body fat or flexibility for all subjects ($p>0.05$). While not significant for parents ($p>0.05$), there was a significant increase in lean mass and body mass for the individuals with DS ($p<0.05$). Although bone density did not significantly change for participants ($p>0.05$), most participants increased their bone density. There were no significant cognitive performance or mood changes for the individuals with DS ($p>0.05$). There was a significant improvement in total gross motor skill for the individuals with DS ($p<0.05$). CONCLUSION: Group-based RT involving caregivers may be a feasible strategy for improving strength, lean mass, and functional motor performance in adults with DS and caretakers, while providing a supportive environment for exercise participation. Larger studies are needed to further evaluate cognitive, psychological, and long-term health outcomes.

10:00 - 10:55 AM

WAVEFORM ASSOCIATIONS BETWEEN QUADRICEPS STRENGTH AND JUMP-LANDING GROUND REACTION FORCES FOLLOWING ACL RECONSTRUCTION

Jagger Wraalstad, Arjun Parmar, Matthew Harkey

BACKGROUND: After ACL reconstruction (ACLR), individuals often exhibit aberrant landing mechanics and reduced quadriceps strength, both risk factors of secondary injury. Traditional analyses focus on peak ground reaction forces (GRFs) but do not capture changes throughout jump landing.

PURPOSE: To examine associations between quadriceps strength and landing forces post-ACLR using statistical parametric mapping (SPM).

METHODS: 87 participants completed maximum strength tests. Quadriceps peak torque was normalized to body mass for ACLR and contralateral limbs, and a limb symmetry index (LSI) was calculated. Participants performed drop vertical jumps onto force plates to record vertical (V), anteroposterior (AP), and mediolateral (ML) GRFs. Waveforms were time-normalized to landing (0-100%) and ensemble averaged. Covariate-adjusted SPM general linear models with omnibus joint F-test and post hoc SPM{t} regressions examined associations between GRFs and quadriceps strength.

RESULTS: Omnibus SPM F-tests identified significant effects of quadriceps strength on V-GRF at 15-24%, 32-50%, and 83-91% of landing, and AP-GRF at 14% and 27-31% (all $p<0.001$). No ML-GRF associations were observed. Post hoc SPM{t} regressions showed greater ACLR-limb strength was associated with higher V-GRF at 15-25%, 31-50%, and 82-91% of landing, and greater AP-GRF at 27-29%. Greater LSI corresponded to higher V-GRF at 17-20% and 42-47%, and higher AP-GRF at 14% and 27-30%. Contralateral-limb strength was not associated with GRFs.

CONCLUSION: Greater quadriceps strength demonstrated higher V-GRF and AP-GRF across landing, primarily driven by ACLR-limb strength. These findings may reflect greater eccentric braking capacity and forward momentum control during deceleration. Compared with LSI, ACLR-limb strength showed stronger associations with landing biomechanics, suggesting restoration of absolute quadriceps strength may be a more important rehabilitation target following ACLR.

Poster Session 3 Overview (Thursday, Oct. 22) Crown Foyer

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3	ACUTE EFFECTS OF PALMAR COOLING ON GRIP STRENGTH AND SHOOTING PERFORMANCE FOLLOWING HIGH-INTENSITY EXERCISE IN COLLEGIATE LACROSSE PLAYERS	John H. Foster, Kaden Jewett, Tyler Amos, Matthew Anderson, Nigel C. Jiwan
4	INJURY, SLEEP, AND PSYCHOSOCIAL HEALTH IN ELITE ADOLESCENT SOCCER PLAYERS	John Kohler, Kristin Haraldsdottir, Brandon Merfeld, Jennifer Sanfilippo, Scott Anderson, Gabriella Lues, and Andrew Watson
5	THE EFFECT OF WEARING EXTERNAL NASAL DILATOR STRIPS DURING SLEEP ON MORNING BLOOD PRESSURE AND HEART RATE	Joseph Vondrasek, Jason Bowden, Casandra Della Rocco, Ella Ashley, Lily Voelkel, Thomas Bissen, Christin Domeier, Alexander Montoye FACSM, Scott Pickett, Joseph Watso
6	A PILOT STUDY EXAMINING THE IMPACT OF RESISTANCE PRIMING INDUCED BY JUMP SQUATS ON STANDING LONG JUMP AND VERTICAL JUMP	Joshua B. Ireland, Nicholas E. Grahovec, Brandon M. Male, Peter J. Chomentowski, III, Michael D. Belbis
7	VARIATION OF WEEKLY JUMP COUNT IN NCAA DIVISION I VOLLEYBALL	Katherine Curtis, William P. Burghardt, Karin A. Pfeiffer FACSM
8	Force Plate Derived Draft Predictors in Professional Hockey Players: Crystal Ball? Or Puddle of Mud?	Keegan Butler, Zack Rourk, Ken Learman, Chad Cook, Tommy Malloy, Tallon Price
9	Dietary supplementation reduces thermal strain and enhances cellular thermal tolerance to occupation-based exertional heat stress.	Kennedy Tidwell, Carly Raymo, Albertas Klugas, Gabriel Russell, Peyton Thibodeau, Isaac Tiguridaane, and Micah Zuhl
10	RELATIONSHIPS BETWEEN CARDIORESPIRATORY FITNESS, BODY COMPOSITION, AND SECRETORY IMMUNOGLOBULIN A	Klara Becker, Brad Kendall, Dan King, Daniel Kaluka, Brandon Dykstra
11	EFFECTS OF WEARING A WEIGHTED VEST DURING A CLOSED KINETIC CHAIN TRAINING PROGRAM ON STATIC BALANCE IN COLLEGE STUDENTS	Laura Zupancic, Sophia Raymond, Kirk Brumels, Brian C. Rider FACSM
12	HIGH-QUALITY WEIGHT LOSS: THE PROTECTIVE ROLE OF EXERCISE AGAINST MUSCLE AND BONE LOSS DURING GLP-1 RA TREATMENT - AN UPDATED SYSTEMATIC REVIEW	Lauren Head, Curtis Fennell
13	The Relationship Between Isokinetic and Countermovement Jump Asymmetries in Female Collegiate Soccer Players	Lauren Powers, Julia Niehaus, Alec Gorman, Carol Mack, Anna Simonson, Jacqueline Zera FACSM
14	RELATIVE AGE, CHRONOLOGICAL AGE, AND SOMATIC MATURATION IN FEMALE YOUTH ICE HOCKEY PLAYERS	Leticia Welser, Katherine C. Curtis, Ken Martel, Karin A. Pfeiffer FACSM
15	NO SEX DIFFERENCE IN OXYGEN UPTAKE DURING WALKING PERFORMED WITH BLOOD FLOW RESTRICTION	Lillian G. Kushnick, Rachel A. Kowal, Michael D. Belbis, Mark L. McGlynn, and Michael R. Kushnick
16	ADAPTING FITNESS ASSESSMENTS FOR VIRTUAL ADOLESCENT OBESITY CARE: A METHODOLOGICAL RATIONALE	Lydia M. Johnson, Visalakshi Ramanathan, Laura A. Richardson FACSM, Susan J. Woolford
17	BEHAVIOR CHANGE TECHNIQUES IN PHYSICAL ACTIVITY BEHAVIORAL INTERVENTIONS IN PEOPLE WITH MULTIPLE SCLEROSIS: SECONDARY ANALYSIS OF A SYSTEMATIC REVIEW	Mackenzie Korff, Luca Beratto, Lara Bressy, Matteo Ponzano
18	IMMEDIATE TRAINING EFFECTS OF ACTIVE ANKLE EXOSKELETON ON SPATIOTEMPORAL GAIT CHARACTERISTICS	Mahgolzahra Kamari, Hanatsu Nagano, Michael Belbis, Paul Wright

19	THE ASSOCIATION BETWEEN RELATIVE HANDGRIP STRENGTH AND THE TRIGLYCERIDE-GLUCOSE INDEX AND TyG-WHtR AMONG CHILDREN WITH OBESITY	Mahya Ardestani, Lucie Silver, Megan Holmes FACSM, Karin Pfeiffer FACSM
20	SEX-BASED DIFFERENCES IN SKELETAL MUSCLE FIBRE-SPECIFIC GLYCOGEN UTILIZATION DURING HIGH-INTENSITY INTERVAL EXERCISE.	Mai Wageh, Stephanie Estafanos, Celine Bailleul, Anna Kupraty, Andrea González-Mariscal, McKinley Kennedy, Cassidy Tinline-GoodFellow, Victoria Bennett, David Lawrence, Daniel Moore, and Jenna Gillen

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Poster Session 3 **Poster 1** **Crown Foyer**

11:00 - 11:55 AM

Relationship of Psychosocial Factors and Physical Health Indicators with Mental Health in Elementary School-Aged Children

Jai Chadha, Andrew Kircher, Evan Sun, Roxane Li, Debra Berkey and Weiyun Chen

BACKGROUND: Children's mental health is shaped by interacting psychosocial and physical factors, yet these influences are often studied separately. Social-emotional learning (SEL), resilience, psychological well-being (vitality), cardiorespiratory fitness (CRF), and physical activity (PA) are each linked to mental health, but their combined and gender-specific associations in elementary-aged children remain unclear. This study examined associations among these factors and mental health in fourth- and fifth-grade students.

PURPOSE: This study examined (1) associations among social emotional learning (SEL) skills, resilience, vitality, cardiorespiratory fitness (CRF), in-school physical activity (PA), and out-of-school PA with mental health in fourth- and fifth-grade students, and (2) whether these associations differed by gender.

METHODS: This was a cross-sectional study conducted in eleven public elementary schools in a Midwestern state. A total of 815 fourth- and fifth-grade students voluntarily participated. Participants completed the PACER test to assess CRF and Qualtrics surveys measuring mental health, SEL skills, resilience, vitality, and PA. Multiple linear regression analyses were conducted for the total sample and by gender.

RESULTS: The full model significantly predicted mental health ($R^2 = 0.317$, $p < 0.001$). Higher self-management, relationship skills, vitality, and CRF were associated with better mental health. In-school and out-of-school PA were associated with greater psychosocial distress. Gender-stratified analyses revealed distinct patterns, with mental health in boys linked to SEL skills, vitality, resilience, and out-of-school PA, while in girls it was associated with self-awareness, self-management, vitality, and CRF.

CONCLUSIONS: Mental health in children is influenced by social-emotional, psychological, and physical factors, supporting school-based interventions that consider gender differences.

11:00 - 11:55 AM

ASSOCIATIONS BETWEEN ACCELEROMETER-MEASURED PHYSICAL ACTIVITY AND PRE-OA ILLNESS 9 MONTHS AFTER ACL RECONSTRUCTION

Jessica Tolzman, Ian Frederick, Matthew Harkey

BACKGROUND: Osteoarthritis (OA) is a leading cause of disability. Individuals who undergo anterior cruciate ligament reconstruction (ACLR) are at greater risk of developing knee OA. Pre-OA illness describes the early symptomatic phase that precedes structural OA, representing a window when the disease course may still be modifiable. Physical activity (PA) is a candidate modifiable factor, yet how it relates to pre-OA illness early after ACLR is poorly understood.

PURPOSE: To examine the relationship between PA and pre-OA illness in individuals 9 months after ACLR.

METHODS: Sixteen individuals wore hip-mounted ActiGraph GT3X+ accelerometers. Non-wear time was removed with the Choi algorithm; a valid day required at least 8 hours of wear, and participants needed at least 3 valid days. Moderate-to-vigorous PA (MVPA) and steps/day were derived from valid wear. Pre-OA illness was defined using OARSI ROC-derived KOOS thresholds (impaired on at least 2 of 5 subscales). Because few participants met the criteria, PA was compared between groups using Mann-Whitney U tests with Hedges g effect sizes.

RESULTS: Three of 16 participants (19%) met pre-OA illness criteria. Participants averaged 44.0 (21.7) minutes/day of MVPA and 7,102 (1,613) steps/day. Steps/day were significantly lower in the pre-OA group (5,050 vs 7,402; p=0.007; Hedges g=-1.54, large). MVPA was also lower in the pre-OA group (25.8 vs 48.2 min/day; p=0.057; g=-1.04, large).

CONCLUSION: Lower PA, particularly steps/day, was associated with pre-OA illness 9 months after ACLR, with large effect sizes despite the small sample. Although likely underpowered, the group differences are consistent and substantial. Longitudinal studies are warranted to determine whether PA is protective against pre-OA illness.

11:00 - 11:55 AM

ACUTE EFFECTS OF PALMAR COOLING ON GRIP STRENGTH AND SHOOTING PERFORMANCE FOLLOWING HIGH-INTENSITY EXERCISE IN COLLEGIATE LACROSSE PLAYERS

John H. Foster, Kaden Jewett, Tyler Amos, Matthew Anderson, Nigel C. Jiwan

BACKGROUND: Palmar cooling may delay fatigue during high-intensity exercise by enhancing heat dissipation through the glabrous skin of the hand. Although benefits have been reported during resistance and repeated-sprint exercise, their effects on sport-specific performance remain unclear. PURPOSE: Examine the effects of palm cooling on handgrip strength, shot accuracy, and velocity in male lacrosse players following high-intensity exercise. METHODS: Twenty male NCAA Division III lacrosse players completed two randomized, counterbalanced crossover trials. Following baseline handgrip assessment, participants performed a high-intensity training circuit (12 exercises; 30 s work, 10 s rest) and repeated handgrip testing. Participants then received either palmar cooling (PC; 7°C) or thermoneutral cooling (TC; 20°C) for 2 min, followed by a handgrip assessment and a three-shot maximal-velocity test. After a second PC or TC intervention, participants completed a shooting accuracy test consisting of 40 shots (10 per quadrant) directed at four target quadrants, with accuracy assessed via video analysis. Palmar skin temperature (PST) was measured before and after each intervention. Outcomes were compared using paired t-tests and repeated-measures ANOVA. RESULTS: PC significantly reduced PST compared with TC following both cooling applications ($p < 0.01$). Left-hand grip strength increased following PC relative to post-HITC values (PC:46.3±7.3 vs. TC:44.0±8.7kg; $p = .018$), with no changes observed in the right hand. No significant differences were detected between conditions for shot velocity (PC:88.3±7.1 vs. TC:88.7±7.1mph; $p=.203$) or shooting accuracy (PC:22±5 vs. TC:20±6 total hits; $p= .144$). CONCLUSION: Palmar cooling reduced palmar skin temperature and modestly improved post-exercise left-hand grip strength but did not affect lacrosse shot velocity or accuracy, suggesting benefits for localized neuromuscular recovery without altering sport-specific performance.

Poster Session 3 **Poster 4** **Crown Foyer**

11:00 - 11:55 AM

INJURY, SLEEP, AND PSYCHOSOCIAL HEALTH IN ELITE ADOLESCENT SOCCER PLAYERS

John Kohler, Kristin Haraldsdottir, Brandon Merfeld, Jennifer Sanfilippo, Scott Anderson, Gabriella Lues, and Andrew Watson

BACKGROUND: Youth sport participation is associated with better mental health (MH) and quality of life (QOL), but these benefits may be disrupted by injury. Prior work links injury to poorer psychosocial outcomes in youth athletes; however, whether age or gender modifies these associations, or whether sleep helps explain them, remains unclear.

PURPOSE: To determine whether age and gender moderate, and whether sleep mediates, the relationship between injury and QOL, anxiety, and depression in elite adolescent soccer players.

METHODS: A total of 668 Elite Clubs National League soccer players aged 13-19 years completed an online survey. Injury was defined as any self-reported injury in the prior six months resulting in missed game participation. MH was assessed using the Generalized Anxiety Disorder-7 (GAD-7) and Patient Health Questionnaire-9 (PHQ-9). QOL was measured using the Pediatric Quality of Life Inventory (PedsQL). Linear models compared outcomes by injury status, tested age and gender as moderators, and evaluated sleep as a mediator.

RESULTS: Overall, 295 athletes (44.2%) reported ≥1 injury. Injured athletes had lower total QOL scores (77.2 vs. 81.1, $p<0.001$) and higher anxiety (GAD-7: 6.1 vs. 5.0, $p=0.002$) and depression (PHQ-9: 5.6 vs. 4.6, $p=0.013$) than uninjured athletes. Age and gender did not significantly moderate associations between injury and QOL or MH (all $p>0.10$). Sleep partially mediated associations between injury and lower QOL (14.8%, $p=0.028$), higher anxiety (18.2%, $p=0.038$), and higher depression (32.5%, $p=0.042$).

CONCLUSION: Injury was associated with lower QOL and greater anxiety and depression symptoms in adolescent soccer players. Sleep significantly mediated these relationships, suggesting that monitoring and supporting sleep during recovery may help mitigate negative psychosocial effects of injury.

11:00 - 11:55 AM

THE EFFECT OF WEARING EXTERNAL NASAL DILATOR STRIPS DURING SLEEP ON MORNING BLOOD PRESSURE AND HEART RATE

Joseph Vondrasek, Jason Bowden, Casandra Della Rocco, Ella Ashley, Lily Voelkel, Thomas Bissen, Christin Domeier, Alexander Montoye FACSM, Scott Pickett, Joseph Watso

BACKGROUND: We previously found that nasal breathing acutely lowers blood pressure (BP). External nasal dilator strips (ENDS) promote nasal breathing. However, it is unknown whether wearing ENDS during sleep affects morning BP, heart rate (HR), or day-to-day HR variability. PURPOSE: Test the hypothesis that wearing ENDS during sleep for 1 week would lower morning BP, HR, and day-to-day HR variability. METHODS: Adults aged 18–30 years without overt chronic conditions or an inability to nose-breathe completed 2 one-week conditions in a random order. During the intervention week (ENDS), participants wore an ENDS while sleeping. Participants did not wear an ENDS during the control (CON) week. Each day, participants measured BP and HR within 1 hour of waking. Participants wore a wrist-worn ActiGraph during both conditions to assess sleep. We quantified HR day-to-day variability as variation independent of the mean (VIM). We report parametric variables as mean±SD, and non-parametric as median[IQR]. We compared conditions via paired t-tests (Cohen's d); α=0.05. RESULTS: Participant (n=17; 9 female, 22[4] years, body mass index of 22.7±1.8 kg/m2) total sleep time (CON:7.2±0.9 vs. ENDS:6.9±0.8 hrs, P=0.32, d=0.22), time from waking to measurements (CON:15[20] vs. ENDS:17[19] min, P=0.27, d=0.11), and morning systolic BP (CON:106±10 vs. ENDS:107±8 mmHg, P=0.42, d=0.20), diastolic BP (CON:67±7 vs. ENDS:67±7 mmHg, P=0.89, d=0.03), and HR (CON:66±9 vs. ENDS:66±9 bpm, P=0.99, d<0.01) did not differ between conditions. However, HR VIM was lower (P=0.04, d=0.55) during ENDS (5.2±2.0) than CON (6.2±2.0). CONCLUSION: Our findings indicate that wearing ENDS does not change morning BP or HR, but may reduce day-to-day variability in morning HR among healthy young adults. Future work is needed to confirm these findings in clinical populations or in individuals with nasal breathing difficulties, and to determine whether chronic ENDS use alters the effects of ENDS on these outcomes.

11:00 - 11:55 AM

A PILOT STUDY EXAMINING THE IMPACT OF RESISTANCE PRIMING INDUCED BY JUMP SQUATS ON STANDING LONG JUMP AND VERTICAL JUMP

Joshua B. Ireland, Nicholas E. Grahovec, Brandon M. Male, Peter J. Chomentowski, III, Michael D. Belbis

BACKGROUND: Resistance exercise priming is a pre-performance strategy proposed to enhance neuromuscular performance for up to 48 h; however, its effects on direction-specific power (horizontal vs. vertical) remain unclear. PURPOSE: To establish the impact of jump squat resistance exercise priming on standing long jump (SLJ) and countermovement jump (CMJ) performance. METHODS: Twenty healthy college students (22.2±0 y; 15M/5F) completed three laboratory visits within a 2-week period: a screening session (including a 3-RM half back squat to estimate 1RM) and two experimental visits separated by ~48h. Participants were randomly assigned to a resistance exercise priming group (PRIME) or a control group (CON). At pre-intervention, all participants completed a standardized warm-up followed by SLJ (tape measure) and CMJ (Vertec) testing (best of 3 attempts). PRIME then performed 3×5 continuous jump squats at 40% 1RM, whereas CON performed no priming exercise. At post-intervention, SLJ and CMJ testing were repeated. Outcomes were analyzed using a 2x2 mixed ANOVA (Group x Time). RESULTS: Data are presented as mean±SE. For SLJ, there were significant main effects of Time ($F(1,18)=10.87, p=0.004$) and Group ($F(1,18)=5.38, p=0.032$), but no Group×Time interaction ($F(1,18)=0.10, p=0.753$), indicating that pre-to-post changes did not differ between conditions (PRIME: PRE 225.0±9.2, POST 231.1±9.1; CON: PRE 192.9±11.1, POST 197.9±10.9 cm). For CMJ, there were no significant main effects of Group ($F(1,18)=0.50, p=0.489$) or Time ($F(1,18)=2.66, p=0.120$), and no Group×Time interaction ($F(1,18)<0.01, p=0.991$), with no significant changes from pre- to post-testing (PRIME: PRE 56.8±3.4, POST 57.5±3.5; CON: PRE 53.1±3.8, POST 53.8±4.1 cm). CONCLUSION: Jump-squat resistance priming 48 h prior did not significantly impact horizontal or vertical jump performance relative to control. Larger studies using different priming protocols and time intervals are needed.

11:00 - 11:55 AM

VARIATION OF WEEKLY JUMP COUNT IN NCAA DIVISION I VOLLEYBALL

Katherine Curtis, William P. Burghardt, Karin A. Pfeiffer FACSM

BACKGROUND The sport of volleyball requires athletes to execute frequent and repetitive high intensity jumps with minimal rest intervals, which can vary by type of player position. Monitoring jump loads to gain a full understanding of the stress levels placed on each athlete is important for athlete health. PURPOSE The purpose of the study was to assess the positional differences in weekly jump counts across NCAA Division I Volleyball season. METHODS A total of 18 players of a division I volleyball team wore their assigned Catapult T7 device for every conditioning session, open gym, practice and game across the entirety of the annual training plan. The players were grouped by their position (Middle blockers, Outside hitters, Setters, and Liberos). Total weekly jump counts were collected for individual athletes and then averaged for each position group. A mixed effects model was used to assess the main and interaction effects of two fixed factors: position and the phase of the season on weekly jump count. RESULTS Position was a dominant factor in weekly jump counts ($F(3, 13.55) = 5.40$, $p=0.0116$). Setters jumped significantly more than other positions. The phase of season was also a factor in weekly jump counts ($F(3,342.61) = 82.1809$, $p <0.001$). Preseason displayed significantly more jumps for all positions, and players experienced the lowest number of jumps during summer. CONCLUSION The findings corroborate with previous literature on positional differences in division I volleyball. Understanding positional differences can aid in tailoring practice structures and tailoring return to play protocols. Additionally, understanding the differences in workload across the season can inform periodization tactics to mitigate potential risks of injury.

11:00 - 11:55 AM

Force Plate Derived Draft Predictors in Professional Hockey Players: Crystal Ball? Or Puddle of Mud?

Keegan Butler, Zack Rourk, Ken Learman, Chad Cook, Tommy Malloy, Tallon Price

BACKGROUND: Force plate metrics are widely used in sport performance and sports medicine for talent identification and player projection. In men's ice hockey, elite junior players become eligible for the NHL Draft while continuing development through the USHL, CHL, and NCAA. As force plate technology becomes increasingly integrated into player performance programs, its utility for talent identification warrants investigation. PURPOSE: To determine whether force plate-derived metrics predict NHL draft status in USHL players. METHODS: Twenty-nine USHL players completed countermovement jump testing throughout the season. Seven variables were analyzed: jump height, modified reactive strength index, peak relative propulsive power, time to takeoff, braking rate of force development, average relative propulsive power, and relative propulsive net impulse. Values were averaged across three trials. Binary logistic regression evaluated whether each variable independently predicted draft status (drafted = 1, undrafted = 0). Greater neuromuscular performance was hypothesized to increase draft likelihood. RESULTS: Drafted and undrafted players demonstrated similar seasonal trends, with modest improvements across most variables. None of the seven force plate metrics significantly predicted draft status ($p > 0.05$). Odds ratios varied across variables, and several models produced wide confidence intervals, indicating unstable parameter estimates likely related to the small sample. CONCLUSION: Off-ice force plate metrics did not independently predict NHL draft status in this sample of USHL players. These findings suggest caution when using isolated force plate measures for talent identification in developmental hockey. Future research should utilize larger samples, incorporate additional force plate variables, and examine multivariable approaches. Analysis of the full sample (N = 103; 19 drafted) will be presented in a future manuscript

11:00 - 11:55 AM

Dietary supplementation reduces thermal strain and enhances cellular thermal tolerance to occupation-based exertional heat stress.

Kennedy Tidwell, Carly Raymo, Albertas Klugas, Gabriel Russell, Peyton Thibodeau, Isaac Tiguridaane, and Micah Zuhl

BACKGROUND: Physically demanding occupations, such as firefighting and military service expose workers to exertional heat stress (ExHS), which reduces job performance and increases absenteeism. A rise in body temperature that occurs during ExHS is accompanied by gastrointestinal damage and heightened cellular stress response. There has been a surge of interest in the benefits of dietary supplements for altering the ExHS response. Several single amino acids and minerals have been shown to be effective when ingested prior to ExHS, but combination formulas have not been tested. PURPOSE: To determine if a dietary supplement consisting of an amino acid and mineral blend alters the response to a bout of occupational ExHS simulation. METHODS: Using a double blinded randomized crossover design, 10 (23±2 years, 9 male, 1 female) non-heat acclimatized participants completed a placebo (PS) and dietary supplementation (DS) trial separated by 2 weeks. The DS formulation cannot be revealed at this time due to US patent protection law. 7-days of supplementation were completed followed by an ExHS trial on day 8 (36C, 35% RH) consisting of 120 minutes of fixed intensity (~60% VO2max) occupational-based exercises (e.g., hiking, shoveling) while wearing full protective gear. Outcomes included rectal temperature, plasma lipopolysaccharide binding protein (LBP), and peripheral blood mononuclear cell (PBMC) expression of heat shock protein 70 (HSP70) RESULTS: Change from baseline in rectal core temperature was higher in the PS vs DS trial (1.55 ± 0.34 vs. 1.24 ± 0.34C, p=0.02). LBP increased at the post-ExHS timepoint in the PS trial only (9.28 ± 3.23 vs. 10.22 ± 3.21 pg/mL, p=0.01). There was a main effect of supplement (F (2,26) = 3.41, p=0.04) for HSP70. CONCLUSIONS: 7 days of supplementation with an amino acid and mineral blend improved thermoregulation, increased thermal tolerance, and prevented a rise in gastrointestinal permeability in response to occupational-based ExHS.

11:00 - 11:55 AM

RELATIONSHIPS BETWEEN CARDIORESPIRATORY FITNESS, BODY COMPOSITION, AND SECRETORY IMMUNOGLOBULIN A

Klara Becker, Brad Kendall, Dan King, Daniel Kaluka, Brandon Dykstra

BACKGROUND: Secretory immunoglobulin A (SIgA) is a protein secreted into saliva and is considered the first line of defense against airway pathogens. Both cardiorespiratory fitness (CRF) and body composition may be related to SIgA, but prior research is equivocal and warrants further exploration. PURPOSE: To investigate the relationships between CRF, body mass index (BMI), and SIgA at rest. METHODS: Participants (females, n=19; males, n=27) visited the laboratory on one occasion. Unstimulated saliva was collected for 5 minutes. Saliva volume was measured to calculate salivary flow rate (SFR, µl/min). SIgA concentration (µg/ml) was determined using enzyme-linked immunosorbent assays. SIgA secretion rate (SR, µl/min) was calculated from SFR and SIgA concentrations. CRF was assessed using a graded exercise test on a cycle ergometer. These data are presented as mean±SD. Relationships between CRF, BMI, and SIgA were assessed using correlations. Significance was set at p≤0.05. RESULTS: There were significant correlations between CRF (46.9±8.6 ml/kg/min) and SFR (477.0±233.8 µl/min; r=0.344, p=0.019), BMI (23.5±3.3 kg/m2) and SIgA concentration (153.8±168.3 µg/ml; r=0.424, p=0.003), and BMI and SR (72.1±81.4 µl/min; r=0.386, p=0.008). Correlations between CRF and SIgA concentration (r=0.117, p=0.437), CRF and SR (r=0.015, p=0.922), and BMI and SFR (r=0.107, p=0.478) were not significant. CONCLUSION: There was a positive correlation between cardiorespiratory fitness and salivary flow rate, while BMI was positively correlated with SIgA concentration and secretion rate.

11:00 - 11:55 AM

EFFECTS OF WEARING A WEIGHTED VEST DURING A CLOSED KINETIC CHAIN TRAINING PROGRAM ON STATIC BALANCE IN COLLEGE STUDENTS

Laura Zupancic, Sophia Raymond, Kirk Brumels, Brian C. Rider FACSM

BACKGROUND: Little is known about whether increasing body weight with external load enhances balance adaptations during balance training. PURPOSE: To examine the effect of adding 10% body weight (BW) with a weighted vest (WV) during a progressive balance training program. METHODS: College students (n=47; age: 18.3 ± 0.6 yr; height: 170.5 ± 9.3 cm; weight: 67.3 ± 12.1 kg) completed pre-training single-leg stance center of pressure (COP) assessments with eyes open (EO) and eyes closed (EC). Participants were grouped by baseline balance performance before randomization to BW or WV training groups. Both groups completed the same supervised balance training program twice a week (wk) for 9 weeks. COP was reassessed every 3 wk. Using SPSS version 29.01.1 a repeated-measures ANOVA assessed the effects of time, vision condition, and training group (α=0.05). RESULTS: Across both groups, EC COP progressively decreased from 194.3 ± 85.8 cm at pre-testing to 146.6 ± 49.4 cm (3 wk), 146.3 ± 49.9 cm (6 wk), and 133.7 ± 29.8 cm (post), whereas EO COP remained relatively unchanged (62.4 ± 16.0, 61.9 ± 15.6, 64.8 ± 16.2, and 60.7 ± 15.3 cm, respectively). Significant effects of time ($p<0.001$) and a time × vision interaction ($p<0.001$) indicated that improvements occurred during EC, but not EO, testing. Similar EC improvements were observed in the BW (190.2 ± 85.2 to 135.9 ± 28.1 cm) and WV (198.2 ± 88.0 to 131.6 ± 31.8 cm) groups, with no group effect ($p=0.83$), time × group interaction ($p=0.29$), or time × vision × group interaction ($p=0.71$).CONCLUSION: A progressive 9-week balance training program improved single-leg balance performance, particularly during EC testing. However, adding external load of 10% of body weight did not improve balance (COP) compared to BW training alone. Future studies should determine whether greater external loads or alternative loading strategies produce additional improvements in balance performance.

11:00 - 11:55 AM

HIGH-QUALITY WEIGHT LOSS: THE PROTECTIVE ROLE OF EXERCISE AGAINST MUSCLE AND BONE LOSS DURING GLP-1 RA TREATMENT - AN UPDATED SYSTEMATIC REVIEW

Lauren Head, Curtis Fennell

BACKGROUND: Recently, popular weight loss drugs known as Glucagon-like Peptide-1 receptor agonists (GLP-1 RA) have demonstrated promising results when used in scientific studies and by the general public. However, the limited research in this area indicates there may be adverse effects to supplementing with these drugs such as loss of skeletal muscle and bone mass. PURPOSE: Review the current evidence on the following: 1) The overall effects of supplementing with GLP-1 RA on body compositional changes in overweight and obese individuals; 2) The body compositional effects of supplementing GLP-1 RA with and without the combination of exercise, including aerobic and resistance training. METHODS: This review synthesized several systematic reviews and original manuscripts. A search for eligible sources was conducted using three electronic databases: PubMed, Google Scholar, and ResearchGate. The search was conducted from August - November 2025. Key search terms included, but were not limited to: GLP-1 RA in conjunction with overweight, obese, weight loss, body composition, skeletal muscle, fat mass, lean muscle mass, bone mineral density, exercise, aerobic exercise, and resistance exercise. In total, 101 sources were incorporated into this review. RESULTS: The results demonstrate GLP-1 RA to exhibit moderate weight loss in overweight and obese adults. This weight loss includes fat and lean tissue loss (skeletal muscle and possibly bone). However, studies reveal that when exercise is added to the GLP-1 RA supplementing regimen, lean tissue, especially skeletal muscle mass, seems to prevail. CONCLUSION: GLP-1 RA use elicits meaningful weight loss in subjects who are overweight and obese. Body composition markers such as skeletal muscle and bone mineral density may be compromised during this weight loss. Therefore, caution must be advised to GLP-1 RA users before treatment. It is suggested to engage in exercise, specifically resistance training, to prevent lean tissue loss.

11:00 - 11:55 AM

The Relationship Between Isokinetic and Countermovement Jump Asymmetries in Female Collegiate Soccer Players

Lauren Powers, Julia Niehaus, Alec Gorman, Carol Mack, Anna Simonson, Jacqueline Zera FACSM

BACKGROUND: Lower-extremity strength asymmetries, common in athletes, may affect movement; their impact on dynamic mechanics may improve assessment. PURPOSE: To examine relationships between lower-extremity strength and countermovement jump (CMJ) asymmetries. METHODS: 19 female collegiate soccer players (height=65.7±3.2 in; weight=140.7±18.3 lb; experience=14.2±2.4 yrs) completed a warm-up (5-min bike, 20 squats, hip add/abd, prone extensions), isokinetic knee flexion/extension (60°/s, Biodex 4 Pro; 1 practice trial: 4 submax reps, 1 test trial: 5 max reps/limb), and 3 CMJs on force plates measuring Peak Braking Force Asymmetry (PBFA), Peak Propulsive Force Asymmetry (PPFA), and efficiency (mRSI). Strength asymmetry was calculated via Bilateral Strength Asymmetry index with directional asymmetries assigned; participants were grouped as low (<10%, n=9) or high (≥10%, n=9) quadriceps torque asymmetry. RESULTS: Correlations revealed weak-to-moderate, non-significant relationships between directional quadriceps strength asymmetry and CMJ kinetic asymmetries in PBFA (Pearson r=0.36, p=0.14) and PPFA (Pearson r=0.40, p=0.09). Nondirectional quadriceps strength asymmetry was not significantly correlated with mRSI (Pearson r=0.13, p=0.61). Non-parametric analysis of hamstring strength asymmetries demonstrated weak, non-significant associations with PBFA (Spearman ρ=0.18, p=0.46) and PPFA (Spearman ρ=0.25, p=0.29). Independent t-tests demonstrated no significant difference between low and high asymmetry groups for PBFA (2.3±7.5% vs. -0.62±6.3%, t(15)=0.86, p=0.41, d=0.42) or PPFA (2.2±6.96% vs. -1.4±5.3%, t(16)=1.2, p=0.25, d=0.57). mRSI did not significantly differ between low (0.34±0.09) and high (0.34±0.03) asymmetry groups (t(15)=-0.10, p=0.93, d=-0.05). CONCLUSION: Isolated strength and CMJ kinetic asymmetries were not strongly related, suggesting isolated reliance on strength asymmetry may overlook dynamic compensations, informing future work in athletic performance.

11:00 - 11:55 AM

RELATIVE AGE, CHRONOLOGICAL AGE, AND SOMATIC MATURATION IN FEMALE YOUTH ICE HOCKEY PLAYERS

Leticia Welser, Katherine C. Curtis, Ken Martel, Karin A. Pfeiffer FACSM

BACKGROUND: Youth sport programs typically group athletes by chronological age (CA), despite within-group differences in biological maturation and relative age, which may advantage those born earlier in the selection year (relative age effect; RAE). However, the relationships among relative age, CA, and somatic maturation remain unclear in female youth ice hockey players. PURPOSE: To examine the relative age distribution and determine if indicators of somatic maturation differed across birth quartiles (BQ), and whether associations between BQ and maturity status persisted after accounting for CA in female youth ice hockey players. METHODS: U13 female ice hockey players (N=75) at a USA Hockey Camp completed assessments of standing height, sitting height, and body mass and were categorized by BQ (Q1–Q4). Somatic maturation was estimated using maturity offset and age at peak height velocity (PHV). Predicted adult height (PAH) and percentage of PAH (%PAH) were estimated using the Khamis–Roche method in athletes with complete parental-height data (n=58). Chi-square, one-way ANOVA, and ANCOVA were performed, with significance set at $p<0.05$. RESULTS: BQ distribution (Q1=24.0%, Q2=32.0%, Q3=26.7%, Q4=17.3%) did not differ from an equal distribution ($p=0.341$). CA and maturity offset differed across BQ ($p=0.003$ and $p=0.005$, respectively), with Q1 (1.06 ± 0.70 years, $p=0.009$) and Q2 (0.95 ± 0.52 years, $p=0.025$) demonstrating greater maturity offset than Q3 (0.44 ± 0.53 years), whereas estimated age at PHV did not differ across BQ ($p=0.976$). %PAH did not differ across BQ ($p=0.060$) and, after adjusting for CA, was not associated with BQ ($p=0.444$). However, CA was strongly associated with %PAH ($p<0.001$, partial $\eta^2=0.479$). CONCLUSION: Unlike our previous findings in males, no significant RAE was observed in female youth ice hockey players. Maturity offset differed across BQ, but estimated age at PHV did not, and %PAH did not differ after accounting for CA.

11:00 - 11:55 AM

NO SEX DIFFERENCE IN OXYGEN UPTAKE DURING WALKING PERFORMED WITH BLOOD FLOW RESTRICTION

Lillian G. Kushnick, Rachel A. Kowal, Michael D. Belbis, Mark L. McGlynn, and Michael R. Kushnick

BACKGROUND: Exercise performed with blood flow restriction (BFR) has been explored as a means to increase physiological stress placed on the body during low-moderate intensity exercise. Previous evidence indicates treadmill walking with BFR increased oxygen uptake (VO2) and altered metabolic responses; however, little evidence exists in sex differences in these responses. PURPOSE: Compare VO2 for traditional (CON) vs BFR treadmill walking at the same mechanical exercise workload between men and women. METHODS: Twenty healthy subjects (10 women: 22±2yrs old, BW 67.5±7.7kg and 26.6±2.7%BF (BodPod, CosMed); 10 men: 21±2yrs old, BW 78.1±9.7kg and 21.8±2.0%BF) performed a CON and BFR 15min treadmill walk trials (3mph, 2% grade) with continuous ventilatory measurements taken. Trials were in random order and separated by at least 48h. A 2×2 ANOVA was performed between sex and trials (BFR & CON; mean data, last third of each trial) with significance set at $p<0.05$ and reported as mean±std. RESULTS: There were no sex differences for relative VO2 within trials (women: CON 13.1±1.0 and BFR 16.58±1.7 vs men: CON 15.1±1.2 and BFR 17.5±1.5 ml/kg/min), nor were there sex differences when VO2 was normalized to fat free mass (women: CON 17.9±1.7 and BFR 22.6±2.7 vs men: CON 19.4±1.6 and BFR 22.4±1.9ml/kgFFM/min). However, independent of gender, absolute VO2 was greater in the BFR trial (1.3±0.3L/min vs. CON 1.0±0.2L/min, $p<0.001$). CONCLUSION: According to this data, BFR increased the VO2 of a standard low-moderate intensity treadmill walk compared to traditional exercise. However, VO2 response to BFR walking was independent of sex when compared relative to body mass (ml/kg/min) or normalized to fat-free mass (ml/kgFFM/min). These data support the application of BFR to expend additional calories in both women and men.

11:00 - 11:55 AM

ADAPTING FITNESS ASSESSMENTS FOR VIRTUAL ADOLESCENT OBESITY CARE: A METHODOLOGICAL RATIONALE

Lydia M. Johnson, Visalakshi Ramanathan, Laura A. Richardson FACSM, Susan J. Woolford

BACKGROUND: Pediatric obesity is a critical public health concern affecting almost one-fifth of children and adolescents in the US. Multidisciplinary weight management programs are recommended as best practice, however, geographic barriers and resource limitations hamper access to these programs. Fully virtual care models, such as the Michigan Intensive Pediatric Lifestyle and Navigation program, can expand access. A critical barrier to virtual weight management programs is the lack of fitness assessment tools for remote administration; traditional fitness assessments require specialized equipment, hands-on administration, and in-person supervision. PURPOSE: To present the methodological selection and rationale for a fitness (including anthropometric) assessment protocol designed for remote delivery to adolescents with obesity. METHODS: A rapid scoping review (JBI methodology, PubMed, 2020-present) was conducted to identify fitness assessments in virtual settings among adolescents. RESULTS: The search identified 514 potentially relevant articles. After full text screening, 3 articles met inclusion criteria (i.e., included virtual fitness assessments for adolescents in weight management programs). Studies mainly addressed anthropometrics. Due to the paucity of literature, consultation from healthcare providers was incorporated to inform the selection of the fitness assessment battery: Anthropometric (Height & Weight [BMI], Waist & Hip Circumference), Cardiovascular Efficiency (Resting Heart Rate, 3-min Step/March in Place), Muscular Endurance (30-s Sit-to-Stand), Muscular Strength (Plank Test), Balance (Stork Test), and Flexibility (Sit-and-Reach). Assessment selection prioritized safety, space, cost requirements, and alignment with developmental capabilities. CONCLUSION: This protocol establishes a framework for remotely assessing adolescent fitness. Future research should explore the feasibility and acceptability of implementing it in virtual programs.

11:00 - 11:55 AM

BEHAVIOR CHANGE TECHNIQUES IN PHYSICAL ACTIVITY BEHAVIORAL INTERVENTIONS IN PEOPLE WITH MULTIPLE SCLEROSIS: SECONDARY ANALYSIS OF A SYSTEMATIC REVIEW

Mackenzie Korff, Luca Beratto, Lara Bressy, Matteo Ponzano

BACKGROUND: Persons living with multiple sclerosis (PwMS) engage in less physical activity (PA) than individuals without disabilities, contributing to poorer physical and mental health. Although behavioral interventions can increase PA among PwMS, uncertainty remains regarding which behavior change techniques (BCTs) are most consistently represented in interventions reporting positive PA outcomes. PURPOSE: To identify the BCTs most frequently delivered in interventions designed to increase PA among PwMS and explore patterns in PA and health-related quality of life (HRQoL) outcomes. METHODS: We conducted a secondary analysis of a systematic review of 14 randomized controlled trials of behavioral PA interventions for PwMS. Two reviewers independently coded BCTs delivered in the included studies using the Behavior Change Technique Taxonomy v1. BCT frequency, average BCTs per intervention, and effect sizes (Cohen's d) for device-measured and self-reported moderate-to-vigorous physical activity (MVPA) and HRQoL outcomes were extracted and summarized. RESULTS: Across 14 studies, we identified 23 unique BCTs, with an average of 10 BCTs delivered per intervention. Social support, instruction on how to perform the behavior, goal setting (behavior), self-monitoring, problem solving, and credible source were the most frequently delivered BCTs in interventions reporting positive MVPA outcomes (d=0.14–0.75). Among studies reporting HRQoL outcomes, social support and goal setting (behavior) were most frequently delivered; however, intervention effects were more heterogeneous (d=0.05–1.20). CONCLUSION: Social support, instruction on how to perform the behavior, goal setting (behavior), self-monitoring, problem solving, and credible source were the most frequently delivered BCTs across interventions reporting positive PA outcomes. These findings may inform BCT selection in future behavioral PA interventions for PwMS.

11:00 - 11:55 AM

IMMEDIATE TRAINING EFFECTS OF ACTIVE ANKLE EXOSKELETON ON SPATIOTEMPORAL GAIT CHARACTERISTICS

Mahgolzahra Kamari, Hanatsu Nagano, Michael Belbis, Paul Wright

BACKGROUND: Assistive devices for the lower extremity are tools designed to help individuals with disabilities. Gait performance is closely linked to fall risk. The Hybrid Assistive Limb (HAL) is a wearable exoskeleton that enhances lower limb neuromotor control. PURPOSE: This study tested the hypothesis that a 5-minute Ankle-HAL training session would improve gait control, reflected by narrower step width and increased ankle power. METHODS: Twelve healthy adults (30.1 ± 10.8 yrs; 171.0 ± 7.4 cm; 74.1 ± 13.6 kg) participated in this investigation. Participants walked on a force-plate treadmill (AMTI) at 4 km/h for 5 minutes before and after a 5-minute Ankle-HAL training session. Gait kinematics were captured using a 12-camera Vicon Bonita system (200 Hz), with marker data filtered at 6 Hz and interpolated for occlusions under 0.1 s. The HAL assistance gain was set to 20/2000, and participants performed cyclic foot movement sequences guided by a 60-bpm metronome. Spatiotemporal parameters and ankle joint mechanics were analyzed. Pearson's correlation analysis was performed for each variable. RESULTS: Following the HAL intervention, participants exhibited a significant reduction in mean step width (−1.7 cm, $p = .026$) and improved step velocity symmetry (−0.7%, $p = .010$). Ankle kinematic variability at toe-off significantly decreased (−1.31°, $p = .027$), while mean ankle power statistically increased (+0.22 W/kg, $p = .049$). Correlation analyses revealed that consistent ankle power generation was associated with reduced step width variability and enhanced gait symmetry. CONCLUSION: Ankle-HAL training session improved neuromotor control and gait consistency. These findings suggest that HAL-induced neuromuscular facilitation can yield measurable improvements in gait control even after short-term use. This research represents the first investigation into the effects of neuromotor training provided by HAL on the ankle joint concerning overall gait functions.

11:00 - 11:55 AM

THE ASSOCIATION BETWEEN RELATIVE HANDGRIP STRENGTH AND THE TRIGLYCERIDE-GLUCOSE INDEX AND TyG-WHtR AMONG CHILDREN WITH OBESITY

Mahya Ardestani, Lucie Silver, Megan Holmes FACSM, Karin Pfeiffer FACSM

BACKGROUND: The triglyceride-glucose (TyG) index is a surrogate marker of insulin resistance and related to cardiometabolic disorders. Modified TyG indices that include central adiposity markers, such as the triglyceride-glucose-waist-height ratio (TyG-WHtR), may provide further information. Handgrip strength (GS), an indicator of muscular fitness, is linked to cardiometabolic health in youth. The relationship between these indices and muscle strength in children with obesity remains unclear. PURPOSE: To examine associations between relative handgrip strength and TyG and TyG-WHtR in children with obesity. METHODS: Participants were 120 children with obesity (>95th BMI percentile; age = 9.80 ± 1.75 years) seeking treatment at the Pediatric Weight Management Clinic in Grand Rapids, Michigan. Age and sex were obtained via medical records. GS was assessed using a hand dynamometer and normalized to body weight. The TyG index was calculated as In[(fasting triglycerides × fasting glucose)/2]. WHtR was calculated as waist circumference (cm) divided by height (cm), and TyG-WHtR was calculated as TyG × WHtR. Pearson correlations and age- and sex-adjusted linear regression analyses were performed. RESULTS: Relative handgrip strength was 0.56 ± 0.14 kg/kg. Relative GS was significantly and negatively correlated with TyG-WHtR ($r = -0.628$, $p < .001$). In analyses adjusted for sex and age, relative GS remained inversely associated with TyG-WHtR ($\beta = -0.623$, $p < .001$), and the overall model ($F(3, 116) = 30.448$, $p < .001$), explained 44.1% of the variance in relative GS. TyG was not significantly associated with relative GS ($p > .05$). CONCLUSION: Previous adult research has reported an inverse association between TyG and relative GS. In contrast, TyG alone was not significantly associated with relative GS in this sample, whereas TyG-WHtR showed a strong inverse association. Further youth-based studies are needed to clarify these associations.

11:00 - 11:55 AM

SEX-BASED DIFFERENCES IN SKELETAL MUSCLE FIBRE-SPECIFIC GLYCOGEN UTILIZATION DURING HIGH-INTENSITY INTERVAL EXERCISE.

Mai Wageh, Stephanie Estafanos, Celine Bailleul, Anna Kupraty, Andrea González-Mariscal, McKinley Kennedy, Cassidy Tinline-GoodFellow, Victoria Bennett, David Lawrence, Daniel Moore, and Jenna Gillen

BACKGROUND: Previous research suggests that females use less muscle glycogen from the vastus lateralis during exercise than males, though findings remain inconsistent. Given known sex differences in fibre type distribution, a fibre-type-specific approach may better capture these differences in glycogen utilization. PURPOSE: The purpose of this study was to determine whether sex influences fibre-type-specific glycogen utilization during high-intensity interval exercise (HIIE).

METHODS: Recreationally active males (n=12, 26±5yr, 24±3kg/m2, 52±6mlO2/kgFFM/min) and females (n=12, 26±7yr, 23±3kg/m2, 51±4mlO2/kgFFM/min) performed 12x1-min cycling intervals at ~85% peak power output, interspersed with 1-min recovery. Vastus lateralis biopsies were obtained before and immediately after exercise with fibre type (I, IIa, IIx) identified via immunohistochemistry and glycogen via periodic acid-Schiff staining. Stain brightness was measured via ImageJ and converted to optical density (OD). A minimum of 50 fibres of type I and IIa were analyzed; all available type IIx fibres were analyzed (3-47 fibres; n=8 males, n=6 females). Two-way ANOVAs (sex*time) were conducted for each fibre type separately.

RESULTS: There was a main effect of time such that glycogen decreased in type I (OD: 0.69±0.08 to 0.62±0.06; p=0.0001) and IIa fibres (OD: 0.70±0.08 to 0.63±0.07; p=0.0001) with no differences between sexes (p=0.44-0.52). There was a sex*time interaction for type IIx fibres (p=0.0031) whereby glycogen decreased in males (OD: 0.71±0.06 vs. 0.60±0.03; p=0.003) but not females (OD: 0.67±0.06 vs. 0.63±0.04; p=0.07).

CONCLUSION: Although glycogen utilization was similar between sexes in type I and IIa fibres, type IIx fibre glycogen was reduced only in males, indicating a sex-specific effect on glycogen metabolism during HIIE.

Poster Session 4 Overview (Thursday, Oct. 22) Crown Foyer

Poster	Presentation	Authors
1	Cardiometabolic Parameters in Recreational CrossFitters against Recreationally Physically Active Individuals	Mallory Dinninger, Riley Rafferty, Ayden Miou, Abby Carroll, Curtis Fennell
2	THE EFFECTS OF REPEATED HOT WATER IMMERSION ON CARDIOVASCULAR HEMODYNAMICS IN HEALTHY ADULTS	Marianne E. Kaiser, McKenna K. Gelinas, Parker R. Matheny, Keegan J. Honig, Morgan L. Worley, & James R. Sackett
3	MULTISENSORY CONTRIBUTIONS TO POSTURAL CONTROL IN TYPE 2 DIABETES: LINKING PROPRIOCEPTIVE AND VISUAL DEFICITS TO MICROVASCULAR COMPLICATIONS	Matthew Colletti, Trevor Lopatin, Joshua Haworth
4	PHYSICAL INTENSITY AND PARTICIPATION OUTCOMES: A COMPARISON BETWEEN RED BALL TENNIS, TRADITIONAL TENNIS, AND CARDIO TENNIS	Megan Blake, Keonyoung Chung, Christian Burke, Haeyong Chun, Leticia Welser, Jennifer Roth, Sanghoon Kim, Spyridoula Vazou, Karin Pfeiffer FACSM
5	Physical ACTIVITY, LEISURE-TIME HABITS, AND GROSS MOTOR SKILL: A CASE STUDY	Melanie Resnik and Emily Post
6	MICRONUTRIENT INTAKE MAY AFFECT EARLY CARDIOMETABOLIC RISK INDICATORS IN YOUNG, ACTIVE FEMALES	Mia Kennedy, Emily Gehrke, Sarah Sucietto, Haley Campbell, Dylan Lewis, Cassie Schultheis, Christopher J. Kotarsky, University of Cincinnati, Cincinnati, OH
7	SHORT- AND LONG-DISTANCE RUNNING PERFORMANCE ACROSS AGE AND SEX IN SENIOR GAMES ATHLETES	Mingyi Ye, Vitor AAA Sequira, Emerson Sebastiao
8	BEHAVIOR CHANGE TECHNIQUES IN YOUTH SPORT SETTINGS: A SCOPING REVIEW	Skyler Taaffe, Elizabeth Prible, Kyle Kercher, Julianna King
9	EFFECTS OF 24-HOUR JUMP-SQUAT PRIMING ON HORIZONTAL AND VERTICAL JUMP PERFORMANCE: A PROPOSAL	Sophia M. Torne, Joshua B. Ireland, Michael E. Sauber, Hannah N. Filandrinos, Nicholas E. Grahovec, Brandon M. Male, Peter J. Chomentowski, III, Michael D. Belbis
10	Effects of Six Weeks of Recreational Pickleball Participation on Forearm Strength, Muscle Density, and Bone Mineral Density	Tumani Wahhab and Alex Claiborne
11	PERCEIVED VS. IMPLEMENTED GOLF-SPECIFIC TRAINING	Philip Herder, Zachary Rourk, Greg Ruegsegger
12	Electric-assist Bicycle Use and Glucose Metrics in Individuals with Type 2 Diabetes	Rachel Barth, Sophia Georgekopolous, Natalie Norgren, Bhumi Patel, Mitchell MacDowell, Tricia Neu, Helaine Alessio, FACSM, Alex Claiborne
13	MODELING THE IMPACT OF A TRANSGENDER ATHLETE ON ELITE TEAM RELAY SPORTS	Revati J. Ignaczak, Lauren E. Opielinski, Letitia Sim, Jonathon W. Senefeld, FACSM, and Sandra K. Hunter, FACSM
14	Resistance Exercise Effects on Circulating vWF, PAI-1, and D-Dimer Levels in College-Aged Men	Roy Nunez, Zaccari Starkman, Teagan Cover, Fakiha Siddiqui, Omer Iqbal, Georgios Grigoriadis, Jack Maggiore, David Sanders, Jawed Fareed
15	EFFECTS OF A 4-WEEK FINNISH SAUNA INTERVENTION ON PERCEPTIONS OF SLEEP QUALITY AND HEALTH IN ADULTS	Sajal Pearson, Mason T. Lentz, Maimuna Ahsan, Corey Washington, Gregory D. Fink, Nigel Paneth, Katharine D. Currie FACSM
16	FIRST-RAY RADIOGRAPHIC ALIGNMENT IS PRESERVED AFTER SESAMOIDECTOMY	Sanket Gundaliya, Paul Talusan
17	EFFECTS OF PASSIVE THIGH HEATING ON SQUAT REPETITIONS TO FAILURE AND PERCEPTUAL RESPONSES IN RESISTANCE-TRAINED MALES	Sydney I. Kane, Caleb L. Hoekema, Lauren E. Adamski, Gabriel Clark, Shannon Fiddy, Nidia Martinez, Brian C. Rider FACSM, Nigel C. Jiwan

18	COMBINED EFFECTS OF HEAT AND CAFFEINE ON THERMOREGULATORY RESPONSES DURING CONSTANT-SPEED RUNNING	Tyler Seimetz, Lilin Lan, Kona Maruyama, Nicholas Hanson
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Poster Session 4 **Poster 1** **Crown Foyer**

2:30 - 3:25 PM

Cardiometabolic Parameters in Recreational CrossFitters against Recreationally Physically Active Individuals

Mallory Dinninger, Riley Rafferty, Ayden Miou, Abby Carroll, Curtis Fennell

BACKGROUND: The most effective exercise program is debated. One study measured cardiometabolic differences in younger individuals who participated in CrossFit training at an elite level (28 ± 4 years) and recreationally (34 ± 8 years) against non-CrossFit participating, physically active individuals (28 ± 7 years) (Mangine, 2020).

PURPOSE: To examine self-reported physical activity and sedentary behavior, and physiological cardiometabolic parameters in adults who participate in CrossFit training compared with physically active individuals. In addition, both groups' data were used to identify if healthy standards were met.

METHODS: Eight (n=4 females) recreational CrossFit athletes (CF; 44 ± 11 years, 67 ± 3 in, 161 ± 21 lbs) and eight (n=4 females) recreationally physically active individuals (RPA; 45 ± 7 years, 69 ± 4 in, 181 ± 27 lbs) visited the lab on one occasion. Participants in the two groups were matched for age and sex. Participants completed the International Physical Activity Questionnaire, resting blood pressure (BP), resting heart rate (RHR), resting metabolic rate, and VO2peak assessments. All data are reported as mean ± SD.

RESULTS: Data were normally distributed. Independent Samples t-tests revealed significantly lower (p=0.02) diastolic BP in the CF (68 ± 6 mmHg) versus the RPA (77 ± 7 mmHg) group. There were no differences between other variables (all $p \geq 0.05$). In comparison, healthy standards demonstrated that both groups met the recommended values for all variables. Physical activity (MET/min/wk) - CF: 5339 ± 4288; RPA: 6812 ± 3538. Systolic BP (mmHg) - CF: 114 ± 1; RPA: 124 ± 1. RHR (bpm) - CF: 52 ± 1; RPA: 63 ± 1. VO2peak (ml/kg/min) - CF: 41 ± 8; RPA: 35 ± 9; these tend to be in the 50th to 75th percentile.

CONCLUSION: Long-term participation in both CrossFit and recreational physical activity (non-CrossFit) may contribute to positive cardiometabolic health-related outcomes in individuals with an average age of mid-40's.

2:30 - 3:25 PM

THE EFFECTS OF REPEATED HOT WATER IMMERSION ON CARDIOVASCULAR HEMODYNAMICS IN HEALTHY ADULTS

Marianne E. Kaiser, McKenna K. Gelinas, Parker R. Matheny, Keegan J. Honig, Morgan L. Worley, & James R. Sackett

BACKGROUND: Eight weeks of heat therapy improves cardiovascular health. However, the optimal duration of heat therapy for cardiovascular adaptations remains unknown. PURPOSE: It was hypothesized that repeated hot water immersion (HWI) for four weeks improves hemodynamics in healthy adults when compared to repeated thermoneutral immersion (NWI). METHODS: 23 subjects were assigned to four weeks of either NWI (n=12, age: 20.8±1.9 y, BMI: 22.4±3.7 kg/m², 5 F, 35.0±0.3℃) or HWI (n=11, age: 19.7±1.5 y, BMI: 22.5±3.4 kg/m², 8 F, 39.9±0.3℃). Training consisted of three 30-minute immersion sessions per week for four weeks. Data were collected prior to (PRE) and following (POST) the training during which hemodynamic data were measured and averaged for five minutes of seated rest, measured continuously via a cuff worn on the subject's middle finger. Mean arterial pressure (MAP, mmHg), heart rate (HR, bpm), and cardiac output (Q, L/min) were recorded. A repeated measures ANOVA was used to compare NWI to HWI and significance was set a priori to $P<0.05$. RESULTS: There were no significant differences ($P=0.069$) for MAP between groups at PRE (NWI: 87.2±8.6 vs. HWI: 91.0±7.6 mmHg) or POST (NWI: 88.6±9.4 vs. HWI: 94.3±6.8 mmHg). There were no significant differences ($P= 0.847$) for HR between groups at PRE (NWI: 69.6±12.6 vs. HWI: 67.2±12.2 bpm) or POST (NWI: 67.7±8.4 vs. HWI: 66.9±14.6 bpm). Lastly, there were no significant differences ($P=0.889$) for Q between groups at PRE (NWI: 5.9±0.4 vs. HWI: 5.9±0.4 L/min) or POST (NWI: 5.9±0.3 vs. HWI: 6.0±0.7 L/min). CONCLUSION: No significant differences in MAP, HR, or Q were found between conditions, indicating that there were no cardiovascular hemodynamic adaptations after four weeks of repeated HWI. Further research is required to determine if repeated HWI improves cardiovascular health for other populations, and what duration of training may be needed to achieve such improvements.

2:30 - 3:25 PM

MULTISENSORY CONTRIBUTIONS TO POSTURAL CONTROL IN TYPE 2 DIABETES: LINKING PROPRIOCEPTIVE AND VISUAL DEFICITS TO MICROVASCULAR COMPLICATIONS

Matthew Colletti, Trevor Lopatin, Joshua Haworth

BACKGROUND: Type 2 diabetes (T2D) is associated with microvascular complications that impair somatosensory, visual, and vestibular function, potentially compromising postural stability and increasing fall risk. The modified Clinical Test of Sensory Interaction and Balance (mCTSIB) objectively assesses sensory-specific postural stability under varying sensory conditions. PURPOSE: This study examined whether sensory-specific postural sway was associated with self-reported diabetic peripheral neuropathy (DPN), diabetic retinopathy (DR), and diabetic vestibulopathy (DV) among adults with T2D. METHODS: 90 adults with physician-confirmed T2D completed four 20-second mCTSIB conditions on a Balance Tracking System (BTrackS). Center-of-pressure (COP) path length during proprioceptive (eyes closed, firm), visual (eyes open, foam), and vestibular (eyes closed, foam) conditions was recorded. One-way ANOVA tests examined group differences, logistic regression evaluated associations, and receiver operating characteristic (ROC) analyses assessed discrimination. RESULTS: DPN participants demonstrated greater proprioceptive sway than T2D-only participants (52.67±23.71 vs. 31.46±14.09 cm, $p<.05$). DR participants demonstrated greater visual sway than T2D-only participants (61.75±19.79 vs. 40.78±13.97 cm, $p<.05$). Greater proprioceptive sway was associated with higher odds of DPN (OR=1.063, 95% CI=1.021–1.105, $p<.01$; AUC=0.80), while greater visual sway was associated with higher odds of DR (OR=1.078, 95% CI=1.078–1.149, $p=.02$; AUC=0.84). Vestibular sway was not significantly associated with DV (OR=1.007, 95% CI=0.991–1.024, $p=.39$; AUC=0.71). CONCLUSION: Sensory-specific postural sway measured by the mCTSIB was associated with corresponding microvascular complications, particularly DPN and DR. These findings suggest that sensory-specific balance assessments may provide a practical approach for identifying individuals who may warrant further evaluation for sensory complications of T2D.

2:30 - 3:25 PM

PHYSICAL INTENSITY AND PARTICIPATION OUTCOMES: A COMPARISON BETWEEN RED BALL TENNIS, TRADITIONAL TENNIS, AND CARDIO TENNIS

Megan Blake, Keonyoung Chung, Christian Burke, Haeyong Chun, Leticia Welser, Jennifer Roth, Sanghoon Kim, Spyridoula Vazou, Karin Pfeiffer FACSM

BACKGROUND: The United States Tennis Association (USTA) has introduced a new sport program, Red Ball Tennis, aimed at promoting long-term physical activity and expanding recreational opportunities for adult players. It is unknown how Red Ball tennis compares to other tennis formats (traditional and cardio) in terms of physiological intensity and participant experiences. PURPOSE: To examine whether three tennis formats (Red Ball, Traditional, and Cardio Tennis) differ in physiological intensity, participant experiences, and future participation intention. METHODS: Twenty-one adult participants completed Red Ball, Traditional, and Cardio Tennis sessions while wearing a heart-rate watch. After each session, they completed a survey assessing perceived exertion, enjoyment, attitude, and future intention. One-way repeated-measures ANOVA with Bonferroni post hoc comparisons was used for data analysis in SPSS. RESULTS: There was no significant difference in average heart rate (beats per minute) between Red Ball (M = 114.76) and Traditional Tennis (M = 114.67), whereas Cardio Tennis (M = 125) indicated significantly higher heart rates than both. Perceived exertion showed no significant difference between Red Ball (M = 11.81) and Traditional Tennis (M = 12.38), whereas Cardio Tennis (M = 14.14) indicated significantly higher levels. Enjoyment and attitude were high for Red Ball (enjoyment: M = 4.30; attitude: M = 4.13), comparable to Traditional (M = 4.50; M = 4.40) and Cardio (M = 4.20; M = 4.00). Future intention was significantly higher for Traditional (M = 4.50), compared to Red Ball (M = 4.00) and Cardio Tennis (M = 3.86). CONCLUSION: Red Ball Tennis appears to deliver physiological benefits comparable to Traditional Tennis, while remaining easy to learn, helping counter the perception that “easier” tennis is less of a workout, and providing practical evidence to support the USTA’s promotion and implementation of Red Ball Tennis programming for adults.

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Physical ACTIVITY, LEISURE-TIME HABITS, AND GROSS MOTOR SKILL: A CASE STUDY

Melanie Resnik and Emily Post

BACKGROUND: Many elementary-aged children are not meeting the recommended guidelines set by the US Dept. of Health, leading to a rise in obesity in the USA. PURPOSE: To examine potential connections between physical activity (PA), gross motor (GM) skills, and leisure activities (LA) in elementary school-aged children. METHODS: The Test for Gross Motor Development was used to assess GM skills. One parent of each child took the Children's Leisure Activities Study Survey (CLASS) to track PA and LA. There were three case study subjects (subject 1: 6.5 YO, female, height: 111.8 cm, weight: 24.1 kg; subject 2: 8.5 YO, male, height: 130.8 cm, weight: 27.2 kg. subject 3: 6 YO, female, height: 115.6 cm, weight: 20.4 kg). RESULTS: Subject 1: M-F PA= 18 hrs, Sat-Sun PA= 3.5 hrs, 7-day PA= 21.5 hrs, M-F LA= 47 hrs, Sat-Sun LA= 31 hrs, 7-day LA= 75 hrs, TGMD-3 total motor score= 59, 7-day TV time= 10 hrs. Subject 2: M-F PA= 22.3 hrs, Sat-Sun PA= 3.5 hrs, 7-day PA= 25.8 hrs, M-F LA= 38 hrs, Sat-Sun LA= 33 hrs, 7-day LA= 71 hrs, TGMD-3 total motor score= 90, 7-day TV time= 8 hrs. Subject 3: M-F PA= 14 hrs, Sat-Sun PA= 5 hrs, 7-day PA= 19 hrs, M-F LA= 23.5 hrs, Sat-Sun LA= 38 hrs, 7-day LA= 61.5 hrs, TGMD-3 total motor score= 73, 7-day TV time= 9 hrs. Across all subjects, weekend LA took up a larger portion of their days compared to PA. All 3 subjects had a comparably higher TV time during the weekends. Subject 2 had the highest PA and motor score and was also the oldest subject. Subject 1 had the highest LA time and the lowest motor score. Subject had the lowest PA but had an average motor score. Subject 1 had the highest TV time and the lowest GM score. Subject 2 had the lowest TV time and the highest GM score. CONCLUSION: Findings suggest that higher PA and lower leisure/TV time may be associated with better gross motor skills in elementary-aged children, highlighting the need for larger-scale studies.

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MICRONUTRIENT INTAKE MAY AFFECT EARLY CARDIOMETABOLIC RISK INDICATORS IN YOUNG, ACTIVE FEMALES

Mia Kennedy, Emily Gehrke, Sarah Sucietto, Haley Campbell, Dylan Lewis, Cassie Schultheis, Christopher J. Kotarsky, University of Cincinnati, Cincinnati, OH

BACKGROUND: Cardiometabolic health reflects the integrated function of cardiovascular and metabolic systems. In emerging adult females, early dietary patterns may solidify with age, making this population important for identifying modifiable risk factors. Females face a disproportionate cardiometabolic burden once metabolic syndrome (MetS) develops. Elevated systolic blood pressure (SBP) is one MetS risk factor, and high low-density lipoprotein cholesterol (LDL) increases cardiometabolic risk in females. PURPOSE: To examine the relationship between micronutrient intake and cardiometabolic health risk factors in college aged (18–25 yrs), recreationally active females. METHODS: Fifteen female participants agreed to participate. Eligibility required the completion of a Health History and Physical Activity Questionnaire. Dietary intake was assessed using the ASA24. SBP and fasting glucose and lipid profiles were collected using a sphygmomanometer and Cholestech LDX system, respectively. Associations were evaluated using Pearson correlations. RESULTS: Mean ± SD values for all 15 females were: SBP 116.1 ± 8.8 mmHg, LDL 86.5 ± 20.9 mg/dL, dietary cholesterol 334.8 ± 237.9 mg/day, and dietary magnesium 333.4 ± 99.9 mg/d. A significant, strong negative correlation was observed between dietary cholesterol intake and LDL ($r = –0.610$, $p = 0.016$). Dietary magnesium intake and SBP also demonstrated a significant negative correlation ($r = –0.542$, $p = 0.037$). CONCLUSION: These findings suggest that micronutrient intake may influence early indicators of cardiometabolic health in young, active females. Participants with greater dietary intake of cholesterol and magnesium exhibited lower cardiometabolic risk, specifically reduced LDL and SBP, respectively. These results indicate that dietary habits in emerging adult females may meaningfully affect cardiometabolic health, though further investigation is needed to clarify the extent and mechanisms of these relationships.

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SHORT- AND LONG-DISTANCE RUNNING PERFORMANCE ACROSS AGE AND SEX IN SENIOR GAMES ATHLETES

Mingyi Ye, Vitor AAA Sequira, Emerson Sebastiao

BACKGROUND: Age-related performance decline and sex differences may vary by running distance. PURPOSE: Compare the performance in short- and long-distance running across age and sex in National Senior Game (NSG) athletes. METHODS: We analyzed 50-m dash and 1500-m run results from the last five National Senior Games (2017–2025) for athletes aged ≥60 y. Age groups followed NSG categories, with ≥80 years grouped together. Event-year-adjusted linear regression tested sex and age-group differences. Analyses used Stata 18; α=.05. RESULTS: Data from 1,354 participants in the 50-meter dash (39.7% female) and 716 participants in the 1500-meter run (36.9% female) were included. For the 50-meter dash, mean times were 11.8±8.1 s for females and 9.3±2.9 s for males. For the 1500-meter run, mean times were 594.9±360.2 s for females and 437.8±128.7 s for males. Linear models adjusted for event year showed significant age-group effects for both the 50-meter dash, $F(4,1340)=60.04$, $p<.001$, and 1500-meter run, $F(4,702)=33.03$, $p<.001$. In the 50-meter dash, sex, $F(1,1340)=5.17$, $p=.023$, and sex*age group interaction, $F(4,1340)=12.13$, $p<.001$, were significant. Males had faster adjusted 50-meter performance than females across all age groups, with sex differences increasing from 1.35 s in ages 60–64 to 6.52 s in ages 80+. In the 1500-meter run, the main effect of sex was not significant, $F(1,702)=2.14$, $p=.144$, but the sex*age group interaction was significant, $F(4,702)=5.01$, $p<.001$. Sex differences in 1500-meter time were not significant in ages 60–64 but were significant from ages 65–69 onward, favoring males, with the largest difference in the ages 75–79. CONCLUSION: Males were faster in most age groups in both events. Age-related performance decline differed by event: 50-meter performance was relatively preserved until 80 years old, whereas 1500-meter performance declined earlier and more progressively, with marked slowing after age 75, particularly among females.

Poster Session 4 **Poster 8** **Crown Foyer**

2:30 - 3:25 PM

BEHAVIOR CHANGE TECHNIQUES IN YOUTH SPORT SETTINGS: A SCOPING REVIEW

Skyler Taaffe, Elizabeth Prible, Kyle Kercher, Julianna King

BACKGROUND AND SIGNIFICANCE: Low physical activity (PA) is associated with an increased risk of cardiovascular disease, the leading cause of mortality worldwide. Existing literature highlights the positive impact sport-based youth programs have on PA, but participation often fails to translate to out-of-school time. It is known that youth PA participation is influenced by a variety of factors, including internal and external motivations. Behavior Change Techniques (BCTs) are replicable elements used to form long-lasting behaviors and habits in an intervention. While research suggests that BCTs could be beneficial, there is a lack of evidence on the impact within programs to influence out-of-school time PA.

RESEARCH QUESTION: Which behavior change techniques are being used in youth sport programs, and what are the gaps and limitations in their application?

PROPOSED METHODS: In accordance with PRISMA-ScR guidelines, studies were extracted from six databases (PubMed, SPORTDiscus, PsychInfo, Web of Science, Embase, and Cochrane). Studies that report qualitative data relating to PA out-of-school time (device-measured or self-report) with the inclusion of at least one BCT were included in this review. Furthermore, peer-reviewed experimental studies involving middle school adolescence (11-14 years of age) of any gender or ethnicity were included. Data extraction will be conducted within Covidence to extract study characteristics, recruitment and participation data, identified BCTs, and outcome measures. Findings will be synthesized to analyze intervention strategies, identify gaps in BCT applications, and outline implications for health promotion research and practice.

PROJECTED LIMITATIONS AND OBSTACLES: Potential limitations include lack of agreement or oversight on certain studies during the screening process.

2:30 - 3:25 PM

EFFECTS OF 24-HOUR JUMP-SQUAT PRIMING ON HORIZONTAL AND VERTICAL JUMP PERFORMANCE: A PROPOSAL

Sophia M. Torne, Joshua B. Ireland, Michael E. Sauber, Hannah N. Filandrinos, Nicholas E. Grahovec, Brandon M. Male, Peter J. Chomentowski, III, Michael D. Belbis

BACKGROUND AND SIGNIFICANCE: Resistance priming is an acute strategy used to enhance subsequent neuromuscular performance. Prior work supports improvements in lower-body power; however, most studies emphasize the 6 h window, leaving the 24 h response to lower-body priming less clear. Given that lower-body muscle cross-sectional area (CSA) reflects potential force-generating capacity and may influence jump performance, accounting for quadriceps, hamstring, and calf CSA may help clarify whether any priming-related changes are independent of underlying muscle morphology. RESEARCH QUESTION: Do jump squats performed 24 h before testing improve standing long jump (SLJ) and/or countermovement jump (CMJ) performance after accounting for estimated quadriceps, hamstring, and calf CSA? PROPOSED METHODS: Fifteen healthy men and women (18–28 yr) will complete a randomized crossover design with 5 laboratory visits. Visit 1 will include assessing body composition (InBody 570), lower-body circumference and skinfold measures to estimate quadriceps, hamstring, and calf muscle CSA, and a 3-repetition maximum back squat to estimate one-repetition maximum (1RM). During visits 2 and 4, participants will complete pre-intervention SLJ (tape measure) and CMJ (Vertec) testing, followed by either a jump-squat priming bout (3 sets × 5 repetitions at 40% estimated 1RM) or a control condition, with the order randomized. Participants will complete post-intervention SLJ and CMJ testing 24 h later (visits 3 and 5). Primary outcomes are SLJ distance and CMJ height. Condition effects will be examined using a two-way repeated measures analysis of variance (ANOVA), with estimated lower-body muscle CSA included as a covariate. PROJECTED LIMITATIONS AND OBSTACLES: Individual responses to priming may vary, and this study will not determine each participant's optimal priming window. However, evaluating a standardized 24-h window will provide data to inform pre-competition priming recommendations.

Poster Session 4 **Poster 10** **Crown Foyer**

2:30 - 3:25 PM

Effects of Six Weeks of Recreational Pickleball Participation on Forearm Strength, Muscle Density, and Bone Mineral Density

Tumani Wahhab and Alex Claiborne

BACKGROUND AND SIGNIFICANCE: Pickleball is among the fastest-growing sports in the US, yet its impact on upper-extremity musculoskeletal health remains understudied. While racket sports generally improve muscular strength and bone health, data specific to pickleball are limited. Evaluating whether recreational pickleball elicits favorable upper-body adaptations will clarify its value as an accessible activity for promoting musculoskeletal health in young adults.

RESEARCH QUESTION: Does a 6-week recreational pickleball intervention improve forearm grip strength, endurance, lean mass, muscle density, and bone density in healthy adults compared to sedentary controls?

PROPOSED METHODS: Healthy adults (18 and up) will be recruited and randomized to a sedentary control group or the pickleball intervention group that requires a minimum weekly volume of 3 hours of supervised play for 6 weeks. Assessments will take place at baseline, week 3, and week 6 will evaluate: body composition and upper-extremity lean mass via bioelectrical impedance analysis (InBody); bone density via dual-energy X-ray absorptiometry (DXA); forearm muscle thickness and density via diagnostic ultrasound; and grip strength/endurance via hand dynamometry with simultaneous indirect calorimetry.

PROJECTED LIMITATIONS AND OBSTACLES: Potential challenges include participant recruitment/retention, adherence to play volume, variability in match intensity, and reliance on self-reported compliance regarding outside physical activity.

2:30 - 3:25 PM

PERCEIVED VS. IMPLEMENTED GOLF-SPECIFIC TRAINING

Philip Herder, Zachary Rourk, Greg Ruegsegger

BACKGROUND: Strength and conditioning coaches frequently emphasize sport-specific training when working with golfers, though it remains unclear how coaches define and implement “golf-specific” exercises. PURPOSE: To examine how strength and conditioning coaches conceptualize golf-specific training and compare perceived use of golf-specific exercises to observable programming practices. METHODS: Eighteen strength and conditioning coaches with ≥5 years of golf training experience and Titleist Performance Institute certification participated in this study. Participants completed a survey, semi-structured interview, and submitted a representative training program. Exercises were classified as golf-specific or non–golf-specific according to an operational definition based on golf swing biomechanics and dynamic correspondence. Perceived versus observed proportions of golf-specific exercises were compared using a paired-samples t-test. RESULTS: Coaches agreed that golf-specific exercises should be incorporated into training programs (4.17 ± 0.92 on a 1-5 scale) and rated golf-specific training as important (3.94 ± 1.06). Participants estimated that 70.3% ± 33.9% of exercises within their programs were golf-specific. However, analysis of submitted programs indicated that only 11.3% ± 6.97% of exercises met the study’s operational definition of golf-specific exercise ($p < 0.001$). Squat variations, deadlift variations, and core exercises were the most commonly prescribed exercise categories. Interview findings indicated that coaches defined golf-specific exercises according to perceived impact on golf performance rather than biomechanical similarity to the golf swing. CONCLUSION: Strength and conditioning coaches working with golfers widely endorse golf-specific training; however, discrepancies exist between perceived and observed implementation of golf-specific exercises. Coaches appear to apply broader, outcome-oriented definitions of sport specificity.

2:30 - 3:25 PM

Electric-assist Bicycle Use and Glucose Metrics in Individuals with Type 2 Diabetes

Rachel Barth, Sophia Georgekopolous, Natalie Norgren, Bhumi Patel, Mitchell MacDowell, Tricia Neu, Helaine Alessio, FACSM, Alex Claiborne

BACKGROUND Over 40 million Americans (12% of the US population) have diabetes, with 90-95% identified as Type 2 diabetes (T2D), a chronic metabolic disorder characterized by insulin resistance and high blood glucose levels. Exercise improves insulin resistance and blood glucose levels, however exercise adherence is poor in many adults, including those with T2D. This study evaluates 3 months of e-bike riding - an exercise that may increase adherence due to its novelty and appeal - as an adjuvant therapy to standard pharmacological treatment in adults with T2D. PURPOSE To assess the efficacy of e-bike usage on improvement of glucose regulation in individuals with Type 2 Diabetes. METHODS Individuals (61.4 ± 16.9 yrs; 5M 2F) diagnosed with Type 2 Diabetes Mellitus were given e-bikes to use for 3 months. Preliminary data was collected via continuous glucose monitor (CGM) at week 2 of an ongoing intervention. Baseline (pre) and 2-week intervention data were obtained for fasting glucose (md/dL) and Time-in-range (TIR, %). Two-tailed, paired t-tests compared baseline and 2-week glycemic outcomes within participants. RESULTS Just two weeks into the study, e-bike riders showed a healthy trend in fasting glucose from 142.2 ± 21.6 to 130.8 ± 15.7 mg/dL, although this change was not statistically significant ($p = 0.130$). Glucose time in range also trended in a healthy direction from 83.6 ± 13.1% to 90.8 ± 8.2%, corresponding to a 7.2 percentage-point improvement that approached statistical significance ($p = 0.062$). These preliminary findings suggest that e-bike use may improve glycemic control in individuals with Type 2 Diabetes, and further time points could give a more definitive conclusion. CONCLUSION E-bike use appears to be a promising and efficacious mode of exercise to improve glucose metrics in individuals with Type 2 Diabetes.

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MODELING THE IMPACT OF A TRANSGENDER ATHLETE ON ELITE TEAM RELAY SPORTS

Revati J. Ignaczak, Lauren E. Opielinski, Letitia Sim, Jonathon W. Senefeld, FACSM, and Sandra K. Hunter, FACSM

BACKGROUND: Debate continues regarding performance, inclusion, and eligibility of transgender women in elite female sports. However, relatively little is known about the potential impact of transgender women in team-based events where individual contributions can be quantified. PURPOSE: This study examined the estimated effect of including a transgender woman athlete (male sex, female gender identity) on elite team relay performance. METHODS: Individual split times were obtained from 1,492 swimmers competing in World Aquatics Championship and Olympic Games Finals (2015-2025;1st-8th place) in the men's and women's 4x100m and 4x200m freestyle relays. Performance times were also obtained from 1,483 track athletes competing in World Athletics Championships and the Olympic Games Finals (2015-2025; 1st-8th place) in the 4x100m and 4x400m relays. Women's relay performances were recalculated by substituting the estimated transgender woman athlete's performance for one female athlete. RESULTS: As expected, male athletes were about 10% faster than female athletes across all swimming and track relay events. For example, the sex difference in the 4x100m swimming relay was 10.6% (47.98s vs 53.69s, $p < 0.0001$) and in the 4x400m track relay was 11.75% (44.90s vs 50.88s, $p < 0.0001$). In both swimming and track, relay performances improved remarkably with the substitution of a transgender woman. In swimming, for example, women's team relay performance improved by 5.43s (4x100 m; 8th to 3rd, or 5th to 1st place) and 8.09s (4x200m; 6th to 3rd, or 4th to 1st place). CONCLUSION: Modeling inclusion of a transgender woman athlete who experienced male puberty suggests substantial improvements in elite relay team performances across swimming and track, increasing the likelihood of medal-winning performances. These results provide a quantitative framework that may inform considerations around fair inclusion and competition for all athletes.

2:30 - 3:25 PM

Resistance Exercise Effects on Circulating vWF, PAI-1, and D-Dimer Levels in College-Aged Men

Roy Nunez, Zaccari Starkman, Teagan Cover, Fakiha Siddiqui, Omer Iqbal, Georgios Grigoriadis, Jack Maggiore, David Sanders, Jawed Fareed

Background: Von Willebrand factor (vWF), plasminogen activator inhibitor-1 (PAI-1), and D-dimer are biomarkers involved in endothelial activation, fibrinolysis, and thrombosis. Pulse wave velocity (PWV) measures arterial stiffness. Although aerobic exercise has been associated with changes in these biomarkers, limited research has examined resistance exercise in college-aged individuals.

Purpose: To examine acute changes in vWF, PAI-1, D-dimer, and PWV following resistance exercise and assess correlations among these measures.

Methods: 8 untrained, college-aged males completed 2 laboratory visits at Loyola University Chicago. After determining repetition maximums, participants completed a 90-minute resistance exercise protocol. Blood samples and PWV measurements were obtained pre-exercise, immediately post-exercise, and 1-hour post-exercise. Plasma vWF, PAI-1, and D-dimer were quantified using enzyme-linked immunosorbent assays. Data were summarized as medians and interquartile ranges, with Spearman correlations assessed. Baseline biomarkers were compared with 12 controls using the Mann-Whitney U test.

Results: Baseline D-dimer was significantly lower in the exercise cohort than in controls (66.8 vs. 158.6; $p<0.05$), representing a 0.42-fold difference. Baseline vWF was strongly negatively correlated with BMI ($r=-0.78$) and positively correlated with baseline PAI-1 ($r=0.83$). PWV immediately post-exercise was negatively correlated with vWF at 1-hour post-exercise ($r=-0.75$). PAI-1 immediately post-exercise was positively correlated with D-dimer at 1-hour post-exercise ($r=0.70$), while vWF immediately post-exercise was positively correlated with D-dimer immediately post-exercise ($r=0.70$).

Conclusion: These preliminary findings suggest associations among hemostatic biomarkers and vascular function following resistance exercise. Larger studies are needed to determine whether resistance exercise produces changes in these biomarkers and vascular measures.

2:30 - 3:25 PM

EFFECTS OF A 4-WEEK FINNISH SAUNA INTERVENTION ON PERCEPTIONS OF SLEEP QUALITY AND HEALTH IN ADULTS

Sajal Pearson, Mason T. Lentz, Maimuna Ahsan, Corey Washington, Gregory D. Fink, Nigel Paneth, Katharine D. Currie FACSM

Heat therapies, such as Finnish sauna (FS), are commonly used for pleasure and relaxation and produce several health benefits. There is limited evidence on the effects of FS use on sleep quality and perceived health, specifically in American populations. PURPOSE: To examine the effects of a 4-week FS intervention on perceptions of sleep quality and general health in American adults. METHODS: Participants with stable physical activity levels and prescription medication therapies were recruited to complete four, 30-minute sauna sessions per week for 4 weeks. Sleep quality and general health were assessed pre- and post-intervention using the Pittsburgh Sleep Quality Index (PSQI) and the Short Form-36 (SF-36), respectively. Paired t-tests and Wilcoxon signed–rank tests were used to analyze questionnaire data depending on normality and are reported as mean±SD or median [IQR]. Statistical significance was set to P≤0.05. RESULTS: Seventeen participants (55±14 years; 4 males) completed the intervention. Global PSQI scores decreased from 6.0 [3.5-9.0] to 4.0 [2.0-7.5] (P=0.001) following the FS intervention indicating better perceived sleep quality. Of the eight SF-36 domains, only Vitality demonstrated an improvement from 61±26 to 69±21 (P=0.015) following FS use. The seven remaining SF-36 health domains showed no meaningful change from pre- to post-intervention (Physical Functioning: 95[83-100] to 95[85-100]; Role-Physical: 100[100-100] to 100[88-100]; Role-Emotional: 100[100-100] to 100[100-100]; Social Function: 100[78-100] to 100[78-100]; Bodily Pain: 90[50-100] to 90[63-100]; General Health: 69±23 to 68±23; Mental Health: 90[71-92] to 92[77-94]; all P>0.05). CONCLUSION: Our short-term FS intervention improved perceived sleep quality and vitality (i.e., energy and fatigue) levels in adults, suggesting that regular FS use may lead to better sleep and more energy throughout the day.

This study was funded by a TETRAD Grant from Michigan State University

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FIRST-RAY RADIOGRAPHIC ALIGNMENT IS PRESERVED AFTER SESAMOIDECTOMY

Sanket Gundaliya, Paul Talusan

BACKGROUND: Sesamoidectomy is an effective treatment for treating sesamoid pathology that persists after nonoperative management. However, concern exists for first-ray malalignment following an isolated tibial or fibular sesamoidectomy. Radiographic data for this concern are limited. PURPOSE: To determine whether sesamoidectomy alters first-ray radiographic alignment and whether any change occurs depending on which sesamoid is removed. METHODS: A retrospective review was performed of patients who underwent sesamoidectomy at a single institution. Intermetatarsal angle (IMA) and hallux valgus angle (HVA) were measured on weight-bearing radiographs preoperatively and postoperatively. Patients with incomplete preoperative or postoperative weight-bearing radiographs or who underwent concurrent first-ray procedures were excluded. 17 patients had met the inclusion criteria. Preoperative and postoperative angles were compared using paired t-tests, and the change in alignment was compared between tibial and fibular sesamoidectomy using two-sample t-tests. Combined sesamoid cases were excluded from the sesamoid type comparison. Data are presented as mean±SD. RESULTS: No significant change in alignment was observed. Mean IMA change was -0.4±2.0° (p=0.41) and mean HVA change was 0.0±5.1° (p=1.00), which are unlikely to be clinically meaningful. There was no significant difference in change by sesamoid type as IMA change was -0.3±2.9° in tibial cases (n=6) versus -1.1±1.3° in fibular cases (n=7, p=0.52), and HVA change was -1.3±2.7° versus −0.1±6.1° (p=0.67). CONCLUSION: Tibial and fibular sesamoidectomy was not associated with significant or clinically meaningful changes in IMA or HVA, and alignment change did not differ between tibial and fibular excision. These findings do not support a substantial risk of first-ray malalignment. Limitations include the small sample size and radiographic-only assessment.

2:30 - 3:25 PM

EFFECTS OF PASSIVE THIGH HEATING ON SQUAT REPETITIONS TO FAILURE AND PERCEPTUAL RESPONSES IN RESISTANCE-TRAINED MALES

Sydney I. Kane, Caleb L. Hoekema, Lauren E. Adamski, Gabriel Clark, Shannon Fiddy, Nidia Martinez, Brian C. Rider FACSM, Nigel C. Jiwan

BACKGROUND: Passive heating (PH) is commonly used to reduce soreness and enhance performance by increasing tissue temperature and neuromuscular function. However, despite their practicality and accessibility, the effects of heat pads on performance remain largely unexplored. PURPOSE: Determine the effects of PH on squat to failure and perceptual responses in resistance-trained males. METHODS: Fifteen resistance-trained males completed a randomized, counterbalanced crossover study across three visits. Visit 1 included 1 repetition maximum (RM) back squat testing. On separate experimental visits, participants completed 45 minutes of thigh PH (66°C) or a sham before performing four sets of back squats at 70% 1RM to failure, with 2 minutes of rest between sets. Skin temperature (ST), repetitions (reps), ratings of perceived exertion (RPE) after each set, and perceived muscle fatigue (PMF) assessed via a visual analog scale following heating and immediately post-exercise were recorded. Performance outcomes were compared using paired-samples t-tests, and repeated-measures ANOVA was used to assess ST, reps, RPE, and PMF.RESULTS: PH significantly increased ST (36.1±1.1 vs.32.1±0.8°C; p<.001). No significant differences were found between PH and sham for total repetitions (40±10 vs.40±9reps; p=.465), total volume lifted (8,935±2,090 vs.9,003±2,318lbs; p=.419), or RPE (17±1 vs.17±1; p=.260). A significant (p<.05) main effect of set was observed, with repetitions decreasing and RPE increasing across sets. Set 1 elicited greater repetitions and lower RPE than Sets 2–4, while Set 2 produced more repetitions than Sets 3–4 and a lower RPE than Set 4. PMF increased from pre- to post-exercise in both PH (0.77±1.0 vs.4.6±2.5cm) and sham (0.98±1.5 vs.3.6±2.5cm;p<.05), with no differences observed between conditions at either time point. CONCLUSION: Passive thigh heating increased ST but did not enhance performance or perceptual responses during repeated sets of back squats to failure.

2:30 - 3:25 PM

COMBINED EFFECTS OF HEAT AND CAFFEINE ON THERMOREGULATORY RESPONSES DURING CONSTANT-SPEED RUNNING

Tyler Seimetz, Lilin Lan, Kona Maruyama, Nicholas Hanson

BACKGROUND: The effect of caffeine on thermoregulatory responses during exercise in the heat is unclear. This study examined the effects of heat and caffeine supplementation on core temperature and heat storage during a 15-minute constant-speed treadmill run.

METHODS: Nine recreationally trained runners (7 males; age: 25±6.4 years; BMI: 25.4±3.5 $kg \cdot m^{-2}$; body fat: 20.7±7.8%; VO_2max: 42.8±6.8 $mL \cdot kg^{-1} \cdot min^{-1}$) completed three trials: cool/caffeine (CC), a heat/placebo (HP), and heat/caffeine (HC). CC was set at 12.2°C and 30%RH; HP and HC were at 31.1°C and 50%RH. The caffeine dose was 6 $mg \cdot kg^{-1}$ body mass. Subjects completed a 15-min treadmill run at 85% vVO2max (velocity at VO_2max). Core temperature (Tc) was recorded each minute. Heat storage was calculated after each trial using the following formula (S=body mass x 3470J/kg°C x (ΔT°C/900s). 3 (condition) x 15 (time) rmANOVAs were performed to compare Tc between conditions. A one-way rmANOVA was used to analyze heat storage.

RESULTS: Tc increased significantly over time ($p<.001$), and a significant condition × time interaction ($p=.007$) was observed; there was not a main effect of condition ($p=.246$). Heat storage differed significantly between conditions ($p<.001$), with mean values of 256.2±23.9, 350.1±62.0, and 393.7±87.3 W for the CC, HP and HC conditions, respectively. Pairwise comparisons showed significantly lower heat storage in the cool condition than both placebo ($p=<.05$) and caffeine ($p=<.05$), while placebo and caffeine did not differ ($p=.082$).

CONCLUSION: Caffeine supplementation did not increase heat storage compared to the placebo. Although not significant, there may be some factors involved, such as sex, training, body mass, etc. that influenced these results, as further analysis showed seven of the nine subjects had elevated heat storage in HC condition compared to the placebo. Future studies should be performed to determine what possible covariates are involved may cause this increased heat storage.

2:30 - 3:25 PM

EVALUATION OF AUTOMOBILE RACING SUIT CONSTRUCTION ON THERMOREGULATION

Vaun Slimak, Evan Gilmour, Shashank Pagadala, Laura Groner, Aidan Davis, David P. Ferguson FACSM

BACKGROUND: Thermal strain represents a critical limitation to performance and safety in motorsport. PURPOSE: This study evaluated the thermophysiological responses to multiple racing suit configurations, with particular emphasis on the comparative effectiveness of passive (fabric breathability) versus active (blower-assisted airflow) cooling strategies. METHODS: 11 aerobically fit participants (VO_2max ≥5 $ml \cdot kg^{-1} \cdot min^{-1}$) completed 4 randomized trials in an environmental chamber (32°C, 80% RH) while wearing: (1) standard Stand21 suit, (2) Formula 1 competitor suit, (3) breathable Stand21 suit, and (4) Stand21 suit with integrated blower system. Participants performed 60 minutes of cycling at a fixed workload. Core temperature, skin temperature, heart rate, microclimate temperature, and perceptual responses were collected continuously. Repeated-measures ANOVA assessed effects of suit condition and time. RESULTS: Thermal strain increased across all conditions ($P<0.001$); however, the blower-assisted suit significantly reduced microclimate, skin, and core temperatures compared to all other conditions ($P \leq 0.038$). The breathable suit elicited moderate reductions in core temperature relative to standard and Formula 1 suits ($P=0.038$), whereas no differences were observed between the latter two. Exercise tolerance was greatest in the blower condition (91% trial completion), followed by the breathable suit (81%), compared to standard (73%) and Formula 1 suits (70%) ($P=0.043$). No differences were observed in heart rate, perceptual responses (at matched time), sweat loss, or hydration status between conditions ($P>0.05$). CONCLUSIONS: Racing suit thermoregulatory effectiveness is primarily determined by the ability to enhance evaporative and convective heat loss within the suit microclimate. Passive improvements in fabric breathability provide modest benefit, whereas active airflow systems produce substantial reductions in thermal strain and improve exercise tolerance.

2:30 - 3:25 PM

EFFECTS OF SELF-MANAGEMENT INTERVENTIONS ON ADHERENCE TO PHYSICAL ACTIVITY IN PEOPLE WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE: AN UMBRELLA REVIEW.

Vilma Gómez, Olga Vargas, Jingxin Yao, Emerson Sebastião

BACKGROUND: Self-management (SM) interventions play an important role in helping patients manage symptoms, adhere to treatment, and adopt healthy lifestyle behaviors. Adherence to SM interventions is essential for achieving these benefits in patients with Chronic Obstructive Pulmonary Disease (COPD) who require long-term treatment and sustain healthy behaviors to maintain health and prevent disease worsening. PURPOSE: This umbrella review investigated whether SM interventions improve adherence to physical activity (PA) among people with COPD. METHODS: We searched PubMed, CINAHL, Web of Science, Embase, PEDro, and LILACS from inception to February 2026, incorporating three core concepts: COPD (population), self-management (intervention), and adherence (outcome). Titles, abstracts, full texts, and methodological quality using ARMSTAR2 were independently assessed by two reviewers. We included systematic reviews (SRs) evaluating single component or multicomponent SM interventions delivered in person or online. Reviews focused exclusively on smoking cessation or supervised exercise/PA were excluded. Relevant data were extracted directly from original studies within both high and low quality SRs and summarized descriptively. Meta analysis was conducted when sufficient data were available. RESULTS: Of 783 records, 19 SRs met inclusion criteria. PA was measured using wearable devices, self report questionnaires, walking diaries, and activity logs. Objective PA data were extracted from 14 studies; among these, 12 incorporated behavioral strategies such as goal setting, feedback, coaching, and social support, and eight used pedometer based interventions. Short term PA improved at 3 months (8 studies, N=1,089), with a mean difference of 1,220 steps/day (95%CI: 868–1,572). Few studies evaluated outcomes at 6 and 12 months. CONCLUSIONS: SM interventions in COPD improve objectively measured PA in the short term, but long term effects remain unclear.

Poster Session 5 Overview (Thursday, 3:30 – 4:25) Crown Foyer

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2	Differential Associations between Direct and Indirect Measures of Body Fat with Functional and Lower-Limb Muscular Parameters in Active Older Adults	Vitor Siqueira and Emerson Sebastião
3	CHANGES IN EMPLOYEE COMMUTE-RELATED PHYSICAL ACTIVITY FOLLOWING A PARKING POLICY REVISION AT XAVIER UNIVERSITY	Yanis Bengana, Lauren Gard, Patrick Filanowski, Jeremy Steeves
4	The Relationship Between Movement and Sedentary Behaviors and Menopause-Specific Quality of Life in Postmenopausal Women	Alyssa Bloser, Kara Whitaker, Isaac Wedig, Megan Nelson
5	FAMILY PREFERENCES FOR PHYSICAL ACTIVITY RESOURCES: HOW DO PARENTS WANT TO ENGAGE?	Anna Schwartz, Lisa Jo Gagliardi, Heather Lewis, Scott Martin, Nick Jaskiw, Nancy J. Jaskiw, Rebecca Hasson FACSM
6	EFFECTS OF MAGNETIC NASAL STRIPS ON PERCEIVED NASAL PATENCY, DYSPNEA, AND MOUTH BREATHING DURING CYCLING EXERCISE: A PROPOSAL	Arturo Sosa III, Mikel I. Avalos, Matteo F. de Leon, Sophia M. Torne, Liliana Mayo-Dominguez, Emily Percino, Rachel Kowal, Clayton L. Camic, Michael D. Belbis
7	HEALTH BEHAVIOR THEORIES AND THEORETICAL CONSTRUCTS APPLIED TO MUSCLE-STRENGTHENING EXERCISE AMONG ADULTS WITH TYPE 2 DIABETES: A SCOPING REVIEW	Christina Johnson, Joshua Haworth, Elise Brown FACSM
8	THE EFFECTS OF GOLF CLUB GRIP SIZES ON UPPER EXTREMITY MUSCLE ACTIVITY AND GOLF SWING KINEMATICS	Clayton Schwiebert, Jake Francis, Henry Wang
9	PSYCHOSOCIAL PREDICTORS OF MUSCLE-STRENGTHENING EXERCISE PARTICIPATION AMONG POSTMENOPAUSAL WOMEN	Courtney Kuenn, Karrie Curry
10	BEYOND DATA COLLECTION: UNDERGRADUATE INCLUSION IN SCHOLARLY RESEARCH AND PUBLICATION	Elizabeth Prible, Anna Witte, Kyle A. Kercher, Julianna King, Vanessa M. Martinez Kercher FACSM
11	Group vs Solo Exercise and Independence in Rural Older Adults	Gaelle Crosnier, Lukus Klawitter, Isaac Wedig, Lanae Joubert
12	EFFECTS OF PASSIVE CYCLING ON SEX DIFFERENCES IN POSTPRANDIAL PLASMA GLUCOSE RESPONSES	Gevon Hannawa, Kathryn M. Rougeau
13	Assessing Contextual Fit for InPACT in Brazilian Schools: A Needs Assessment to Inform Adaptation and Implementation	Hala I. Abbas, NaRi Shin, Isabella Aviles, Marianne Serra, Regina Cabral, Rebecca E. Hasson FACSM
14	THE IMPACT OF ANTIBACTERIAL MOUTH RINSE ON BLOOD PRESSURE, MUSCLE OXYGENATION, AND COGNITION DURING AEROBIC EXERCISE	Ifeoluwa Ogunduyile, Olamilekan Oluborode, Terence Moriarty, Jonathan Specht, Kelsey Bourbeau
15	Achilles Tendon Loading During False-Step and Staggered-Stance During Rapid Movement Initiation	Jake Francis, Clayton Schwiebert, Henry Wang, D. Clark Dickin
16	EFFECT OF AN EXTERNAL ANKLE BRACE ON DYNAMIC POSTURAL STABILITY DURING SINGLE-LEG LANDING	Jana Abdullah, D. Clark Dickin
17	THE EFFECT OF A COMBINED LAND-WATER EXERCISE (CLE) ON AMYOTROPHIC LATERAL SCLEROSIS (ALS) DISEASE PROGRESSION.	Jose I Pareja, Kevin Ballard, FACSM, Paul Reidy, FACSM
18	IMPLEMENTATION OF HOOSIER SPORT BY COLLEGE STUDENT MENTORS IN RURAL MIDDLE SCHOOLS	Kaden Del Real, Julianna F. King, Noah Cumming, Vanessa M. Martinez Kercher FACSM, Kyle A. Kercher

19	PHYSICAL ACTIVITY AND STATIN UTILIZATION IN INDIVIDUALS WITH IDIOPATHIC PERIPHERAL NEUROPATHY	Katelyn Latour, Angela Ridgel FACSM
20	PROPOSED SCOPING REVIEW OF FACTORS ASSOCIATED WITH THE DEVELOPMENT OF ILIOTIBIAL BAND SYNDROME IN FEMALE RUNNERS	Megan Moriarty, Scott Nixon, Jonathan Simoes, Joshua Haworth

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Poster Session 5 **Poster 1** **Crown Foyer**

3:30 - 4:25 PM

INTEGRATING PHYSICAL ACTIVITY AND EXERCISE LITERACY IN A VIRTUAL PEDIATRIC WEIGHT MANAGEMENT PROGRAM: A RAPID SCOPING REVIEW INFORMING THE DEVELOPMENT OF A DUAL-COMPONENT CURRICULUM FOR ADOLESCENTS WITH OBESITY

Visalakshi Ramanathan, Lydia M. Johnson, Jocelyne Clancy, Laura A. Richardson FACSM, Susan J. Woolford

BACKGROUND: The prevalence of childhood obesity is rising, contributing to adverse health complications in millions of US youth. The American Academy of Pediatrics recommends at least 26 contact hours of multidisciplinary treatment; however, frequent in-person visits are a barrier for many families. Furthermore, conventional interventions often emphasize weight loss over enjoyment of movement and exercise literacy, hampering long-term active lifestyles. The Michigan Intensive Pediatric Lifestyle And Navigation program delivers convenient, virtual care directly to homes, grounded in Self-Determination Theory, which posits that sustainable behavior change requires intrinsic motivation via autonomy, competence, and relatedness. PURPOSE: This study presents the rationale for a virtual, dual-component exercise curriculum for adolescents with excess weight. METHODS: A rapid review (Medline, ProQuest, JMIR 2010-2026) identified virtual exercise curricula for patients (7-18 years) with excess weight. Inclusion criteria: English-language studies from the US, Canada, Australia, or the UK on adolescent weight management. RESULTS: The search identified 578 studies; 24 met the inclusion criteria, informing a structured exercise curriculum built around seven modalities to keep movement enjoyable and varied: (1) Cardiovascular, (2) Stretch & Chill Yoga, (3) Strength & Conditioning, (4) Sports-Inspired, (5) Trends & Challenges, (6) Mind-Body Connection, and (7) Functional Fitness. Each modality pairs 10 minutes of education to improve exercise literacy with 50 minutes of physical activity. CONCLUSION: This curriculum prioritizes intrinsic motivation by centering adolescent autonomy and fostering positive relationships with physical activity. This pilot offers a scalable, stigma-free blueprint for pediatric telehealth weight management programs. Future work should assess patients’ and practitioners' perceptions of the program.

3:30 - 4:25 PM

Differential Associations between Direct and Indirect Measures of Body Fat with Functional and Lower-Limb Muscular Parameters in Active Older Adults

Vitor Siqueira and Emerson Sebastião

BACKGROUND: Older adults commonly experience increased adiposity and myosteatosis. These age-related alterations in body composition are associated with declines in physical function and quality of life. Accurate assessment of body fat is essential for the identification of individuals at risk for functional impairment, metabolic disorders, and for informing targeted interventions. Although both direct and indirect methods are widely used to estimate body fat, their associations with functional and muscular outcomes may differ. PURPOSE: To investigate the association between direct and indirect measures of body fat with functional outcomes in older adults. METHODS: 24 older adults (Age: 74.9±6.6 years; BMI: 27.3±4.2 kg/m2; 72% female) underwent body composition assessment. Direct measures included body fat percentage (%BF), assessed using dual-energy X-ray absorptiometry (DXA), while indirect measures included body mass index (BMI), assessed using a fully automated digital stadiometer, and waist circumference, assessed using an anthropometric tape measure. Functional performance assessment included the 10-meter Walk Test (10MWT), Short Physical Performance Battery (SPPB), Timed Up and Go (TUG), and Stair-Climbing Test (SCT). Muscular parameters included muscle strength (Peak Torque) and muscle power (Peak Power), assessed using an isokinetic dynamometer following standard protocol. RESULTS: %BF showed a significant moderate positive correlation with 10MWT ($r = 0.60$, $p<0.05$) and strong negative correlations with Peak Torque ($r = -0.72$, $p<0.05$) and Peak Power ($r = -0.71$, $p<0.05$). BMI was moderately negatively correlated with SPPB gait performance ($r = -0.41$, $p<0.01$). No significant associations with waist circumference were observed. CONCLUSION: Direct measures of body composition (i.e., % BF) derived from DXA may provide greater insight into muscular performance and functional performance than indirect anthropometric measures in older adults.

3:30 - 4:25 PM

CHANGES IN EMPLOYEE COMMUTE-RELATED PHYSICAL ACTIVITY FOLLOWING A PARKING POLICY REVISION AT XAVIER UNIVERSITY

Yanis Bengana, Lauren Gard, Patrick Filanowski, Jeremy Steeves

BACKGROUND: A new parking program implemented on August 1, 2025, transitioning from free to paid parking with remote free lots. PURPOSE: This study examined the effects of the university parking policy change on employee commute-related physical activity. METHODS: Participants completed a Qualtrics survey assessing demographics, commuting behaviors, and self-reported physical activity, including commute-related physical activity before and after policy implementation. Participants were categorized based on parking status (paid vs. non-paid). Paired and independent t-tests compared commute-related physical activity before and after policy implementation by parking status and between paid vs. non-paid using IBM SPSS. RESULTS: Participants included 48 faculty (70%) and staff (30%) who had worked at Xavier for an average of 9.6 ± 8.8 years. The average commute distance was 12.8 ± 10.2 miles, with most participants commuting 6–15 miles (46.8%). Among those who paid for parking, average commute-related physical activity time did not change following the policy implementation (2.48 ± 1.72 vs. 2.19 ± 1.40 minutes; $p = 0.25$). In contrast, participants who did not pay for parking increased their average commute-related physical activity time from 2.70 ± 2.38 to 7.30 ± 3.32 minutes ($p < 0.001$). Nearly all participants who paid for parking (95.8%) reported no perceived change in commute-related physical activity. Among those who did not pay, 37.5% reported a significant increase, 25.0% a slight increase, and 37.5% no change. CONCLUSION: The parking policy change was associated with increased commute-related physical activity among employees who did not pay for parking, while little change was observed among those who paid.

3:30 - 4:25 PM

The Relationship Between Movement and Sedentary Behaviors and Menopause-Specific Quality of Life in Postmenopausal Women

Alyssa Bloser, Kara Whitaker, Isaac Wedig, Megan Nelson

BACKGROUND AND SIGNIFICANCE: Menopause is associated with changes in reproductive hormones that increase the risk of chronic disease and cause a variety of symptoms. Menopause symptoms affect around 80% of women, last an average of 7.4 years, and approximately one-third of women report their symptoms are very disruptive to daily life. Additionally, aging is associated with engaging in more sedentary behavior (SB) and less moderate-to-vigorous physical activity (PA), and in postmenopausal women, these behavioral patterns may influence menopause symptoms and quality of life. Menopause-specific quality of life (MENQOL) specifically captures how women perceive the disruptiveness of menopause symptoms on daily life. However, there is limited evidence on the associations between objectively-measured SB, prolonged SB, and light PA and MENQOL.

RESEARCH QUESTION: Are there associations among total daily sedentary time, uninterrupted sedentary bouts (>1 h), sit-to-stand transitions, light PA, and MENQOL scores in postmenopausal women?

PROPOSED METHODS: We will use a cross-sectional design where participants will attend two laboratory data collection sessions. Our target sample is n=56 postmenopausal women between the ages of 45-65 y, who have experienced menopause naturally within the past 10 years, and do not have injuries affecting participation usual activities. Participants will complete demographic and menopause history questionnaires, undergo anthropometric measurements and body composition assessment, partake in 7 consecutive days of objective activity monitoring, and complete the MENQOL questionnaire (7-day recall version). Pearson correlations and linear regressions will be used to examine associations between movement behaviors and MENQOL.

PROJECTED LIMITATIONS AND OBSTACLES: We anticipate recruiting 56 participants within the time frame will be our greatest challenge. There is also the possibility of poor adherence to activity monitoring.

3:30 - 4:25 PM

FAMILY PREFERENCES FOR PHYSICAL ACTIVITY RESOURCES: HOW DO PARENTS WANT TO ENGAGE?

Anna Schwartz, Lisa Jo Gagliardi, Heather Lewis, Scott Martin, Nick Jaskiw, Nancy J. Jaskiw, Rebecca Hasson FACSM

BACKGROUND AND SIGNIFICANCE: Schools are an important setting for promoting child and family health, with opportunities to share physical activity (PA) and health information. With digital communication advancements, resources can be shared in multimedia formats (e.g., text, video, audio). The Interrupting Prolonged sitting with ACTivity (InPACT) Family Toolkit consists of twelve modules focused on health topics relevant to children and families, with PA integrated throughout. Modules are available in four formats: 1) Text-based; 2) Audio-recording; 3) Podcast; 4) Animated video. Text-based modules were developed by a multidisciplinary expert team. Audio recordings were developed through live voice recording of the text. Podcasts and animated videos are being developed using AI software (Wondercraft AI). However, parent and caregiver preferences for receiving InPACT family health and PA information are underexplored. This study will evaluate these preferences. Findings will inform future dissemination efforts using existing school-based routes, ultimately strengthening home-school connections.

RESEARCH QUESTION: What are parent and caregivers' preferred formats for receiving InPACT family health and PA information? PROPOSED METHODS: Fifty parents/caregivers will be recruited to participate in an online survey delivered through Qualtrics (XM). Participants will review all formats for a standard module and rank-order their preferences. Open-ended questions will be used to capture insights into their choices, including time needed to engage with each format. Rankings will be analyzed with descriptive statistics and text-based responses will be analyzed using qualitative content analysis. PROJECTED LIMITATIONS AND OBSTACLES: Administering the survey online may exclude families without internet access. All delivery formats are currently only available in English, potentially limiting recruitment and generalizability to families that prefer materials in other languages.

3:30 - 4:25 PM

EFFECTS OF MAGNETIC NASAL STRIPS ON PERCEIVED NASAL PATENCY, DYSPNEA, AND MOUTH BREATHING DURING CYCLING EXERCISE: A PROPOSAL

Arturo Sosa III, Mikel I. Avalos, Matteo F. de Leon, Sophia M. Torne, Liliana Mayo-Dominguez, Emily Percino, Rachel Kowal, Clayton L. Camic, Michael D. Belbis

BACKGROUND AND SIGNIFICANCE: External nasal dilator strips (ENDS) are used by athletes to improve nasal breathing by expanding the nasal valve. Prior research on traditional ENDS shows mixed effects on performance and physiological responses. Magnetic nasal strips have recently gained popularity and are marketed to improve breathing during exercise, but their effects on perceived nasal patency, dyspnea, and breathing behavior remain unclear. As these devices act at the nose, their primary effects are likely related to breathing comfort and the ability to maintain nasal breathing rather than whole-body performance. RESEARCH QUESTION: Do magnetic nasal strips improve perceived nasal patency, reduce dyspnea, and delay the transition to mouth breathing during cycling exercise in healthy adults? PROPOSED METHODS: In a randomized crossover trial, 20 healthy adults (18–35 years) will complete moderate- and severe-intensity constant-load cycling under magnetic strip and sham conditions. During a nasal-breathing challenge, participants will breathe through the nose as long as possible during moderate-intensity cycling exercise before transitioning to mouth breathing. Perceived nasal patency and dyspnea will be assessed before, during, and after exercise as primary outcomes. Secondary outcomes include time to first mouth opening, percentage of exercise completed with nasal-only breathing, heart rate, arterial blood pressure, rating of perceived exertion, and time-to-exhaustion (severe-intensity cycling only). Separate two-way analyses of variance (ANOVAs) with repeated measures and paired-samples t-tests will be used to assess the effects of condition across time. PROJECT LIMITATIONS AND OBSTACLES: Nasal airflow resistance and anatomy will not be directly measured. Responses may vary due to anatomy, congestion, allergies, and expectations. Blinding may be limited due to strip sensation. At higher intensities, early transition to mouth breathing may reduce observable effects.

3:30 - 4:25 PM

HEALTH BEHAVIOR THEORIES AND THEORETICAL CONSTRUCTS APPLIED TO MUSCLE-STRENGTHENING EXERCISE AMONG ADULTS WITH TYPE 2 DIABETES: A SCOPING REVIEW

Christina Johnson, Joshua Haworth, Elise Brown FACSM

BACKGROUND AND SIGNIFICANCE: Muscle-strengthening exercise (MSE) is a critical component of physical activity for adults with type 2 diabetes (T2D). Current MSE recommendations state that those with T2D should engage in MSE 2-3 times per week at moderate or greater intensity on nonconsecutive days. Despite recommendations, MSE participation among adults with T2D is low (~20%). Health behavior theories (HBTs) are utilized to provide a framework for understanding correlates that influence adoption and maintenance of health behaviors. However, it is currently unclear how HBTs or theoretical constructs have been applied specifically to MSE among adults with T2D. This work is significant as mapping the literature could establish a theoretical foundation for future efforts aimed at understanding and promoting MSE in this population. RESEARCH QUESTION: What HBTs or theoretical constructs have been applied to understanding and promoting MSE among adults with T2D? METHODS: This scoping review will be conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR). PubMed, PsycINFO, CINAHL, SPORTDiscus, and Scopus will be searched using terms related to T2D, MSE, and HBTs or theoretical constructs. Studies involving adults with T2D that apply HBTs or theoretical constructs to MSE will be considered for inclusion. Titles and abstracts will be screened by two independent reviewers for inclusion, followed by full-text review. Data will be charted on study characteristics, theories, theoretical constructs, their application to MSE, and relevant outcomes. Findings will be summarized descriptively and narratively to identify patterns and gaps in the theoretical application of MSE research among adults with T2D. PROJECTED LIMITATIONS AND OBSTACLES: Inconsistent terminology and application of HBTs or theoretical constructs may make relevant studies difficult to identify and compare across the literature.

3:30 - 4:25 PM

THE EFFECTS OF GOLF CLUB GRIP SIZES ON UPPER EXTREMITY MUSCLE ACTIVITY AND GOLF SWING KINEMATICS

Clayton Schwiebert, Jake Francis, Henry Wang

BACKGROUND AND SIGNIFICANCE: Golf participation has increased over the last decade, concurred with a high prevalence of overuse injuries among amateur golfers. Lateral and medial epicondylitis are caused by repetitive acceleration and deceleration forces at the elbow. The extensor carpi radialis brevis (ECRB) flexor carpi ulnaris (FCU), pronator teres (PT), and biceps brachii (BB) are commonly associated with these injuries. Surface electromyography (EMG) studies have shown high muscle activity during the golf swing; however, limited research has examined the influence of golf grip size on muscle activation and swing mechanics. This study aims to characterize injury mechanisms associated with epicondylitis by evaluating muscle activity, kinematics, and golf grip size in amateur golfers. RESEARCH QUESTION: Does the undersize and midsize golf grip show higher EMG activity of the ECRB, FCU, PT, and BB? Furthermore, differences in kinematic measures in lead and trial arm compared to the normal size grip? PROPOSED METHODS: In this prospective repeated-measures study, 10-20 subjects will participate. An a priori G*Power analysis will be conducted to estimate how many participants will be needed for the study based on pilot data. During a single visit amateur and sub-elite golfers will attend three testing sessions (undersize, regular, and midsize golf grip) in randomized order. Subjects will complete a dynamic warm up and complete 20 practice swings. Following, surface EMG will be placed over the ECRB, FCU, PT, and BB muscles bilaterally and reflective markers will be placed onto the body for motion capture analysis. Testing consists of 10 swings with a 7-iron for each condition. Data from the 10 swings will be analyzed using a repeated-measures ANOVA. PROJECTED LIMITATIONS AND OBSTACLES: Testing will occur on artificial turf in a biomechanics laboratory, which may not fully replicate on-course conditions.

3:30 - 4:25 PM

PSYCHOSOCIAL PREDICTORS OF MUSCLE-STRENGTHENING EXERCISE PARTICIPATION AMONG POSTMENOPAUSAL WOMEN

Courtney Kuenn, Karrie Curry

BACKGROUND AND SIGNIFICANCE: Muscle-strengthening exercise is recommended at least 2 days per week for adults and may support musculoskeletal health and physical function after menopause; however, participation remains low among middle-aged and older women. Psychosocial factors may influence exercise behavior, but their relationships with usual weekly muscle-strengthening exercise participation among postmenopausal women are not well understood. RESEARCH QUESTION: To what extent do self-efficacy, enjoyment motivation, appearance motivation, family exercise support, friend exercise support, exercise outcome expectations, and perceived barriers collectively and individually predict usual weekly muscle-strengthening exercise participation among postmenopausal women? PROPOSED METHODS: This cross-sectional, predictive correlational study will recruit approximately 129 postmenopausal women ages 50–75 from Sioux City and surrounding Siouxland communities to obtain at least 103 analyzable cases. Participants will complete an anonymous Qualtrics survey. Participation will be measured as days per usual week (0–7) using the Muscle-Strengthening Exercise Questionnaire. Predictors will be assessed using established measures of self-efficacy, enjoyment and appearance motivation, family and friend exercise support, outcome expectations, and perceived barriers. Simultaneous multiple linear regression will evaluate the collective and unique contributions of the seven predictors to participation. PROJECTED LIMITATIONS AND OBSTACLES: The cross-sectional design will not establish temporal or causal relationships. Convenience sampling, self-report, English-only online administration, and community-based recruitment may introduce selection, recall, social-desirability, and digital-access bias. Recruiting women across the full range of muscle-strengthening participation may also be challenging.

Poster Session 5 **Poster 10** **Crown Foyer**

3:30 - 4:25 PM

BEYOND DATA COLLECTION: UNDERGRADUATE INCLUSION IN SCHOLARLY RESEARCH AND PUBLICATION

Elizabeth Prible, Anna Witte, Kyle A. Kercher, Julianna King, Vanessa M. Martinez Kercher FACSM

BACKGROUND AND SIGNIFICANCE: Undergraduate students are encouraged to participate in research, yet their involvement often remains limited to tasks such as data collection, recruitment, transcription, or administrative support. While this can be valuable, few undergraduates are meaningfully included in higher-level scholarly activities such as study design, data interpretation, manuscript writing, grant development, peer review responses, or journal authorship. Findings will contribute to conversations about mentorship, identity development, equity, and access within higher education. By identifying both the benefits of meaningful undergraduate involvement and the factors that hinder such opportunities, the study may inform practices that support students' transition from research assistants to emerging scholars and active contributors to knowledge production. RESEARCH QUESTION: How do undergraduates describe their involvement in higher-level scholarly activities and its influence on their academic identity, confidence, sense of belonging, and future educational or career decisions? PROPOSED METHODS: This exploratory study will use qualitative interviews with approximately 20 undergraduate health science students who have participated in publication-related research activities. We will use survey questions from the Undergraduate Research Student Self-Assessment (URSSA). Questions focus on experiences with research mentorship, perceptions of authorship and contribution, benefits of participation, and students' identity and belonging in a scientific community of practice. From this, we will gain insight on the complexity of students' personal gains within research and perform thematic analysis to divide them into subgroups. PROJECTED LIMITATIONS AND OBSTACLES: Due to the use of personal interviews and in-depth analysis, there may be obstacles in recruiting students who are willing to participate and share their experiences which we will combat by offering incentives.

3:30 - 4:25 PM

Group vs Solo Exercise and Independence in Rural Older Adults

Gaelle Crosnier, Lukus Klawitter, Isaac Wedig, Lanae Joubert

BACKGROUND AND SIGNIFICANCE: Regular physical activity improves strength, mobility, balance, and mental well-being, promoting independence and quality of life in older adults. However, rural older adults experience health disparities due to social determinants such as limited healthcare access, fewer recreational facilities, transportation barriers, lower socioeconomic status, and geographic isolation, reducing opportunities for physical activity. Although exercise helps maintain day to day independence and quality of life, it is unclear whether group- or solo-based exercise provides greater benefits for independence and mood in rural older adults. RESEARCH QUESTION: This study will determine whether group- or solo-based exercise is associated with greater independence, measured by the Basic Activities of Daily Living (BADL) and Instrumental Activities of Daily Living (IADL), and improved mood among adults aged 55+ living in rural communities of Michigan's Upper Peninsula. PROPOSED METHODS: This cross-sectional study will recruit (n=110) rural adults aged 55+ through community outreach. Participants will complete a 67-item Qualtrics survey assessing demographics, health status, exercise habits, mood using the Center for Epidemiologic Studies Depression Scale (CES-D), and independence using the Katz Index of BADL and the Lawton IADL Scale. Participants will be categorized as non-exercisers, solo exercisers, or group exercisers based on current self-reported exercise habits. An ANCOVA will compare mood across groups while controlling for functional status and demographic variables. Separate ANOVAs with Bonferroni-adjusted post hoc tests will compare BADL and IADL scores, and Pearson correlations will examine relationships between mood and independence. PROJECTED LIMITATIONS: Self-reported data may include recall error and response bias. Differences in health status, exercise intensity, and other unmeasured factors may influence outcomes despite statistical adjustment.

3:30 - 4:25 PM

EFFECTS OF PASSIVE CYCLING ON SEX DIFFERENCES IN POSTPRANDIAL PLASMA GLUCOSE RESPONSES

Gevon Hannawa, Kathryn M. Rougeau

BACKGROUND AND SIGNIFICANCE: Insulin resistance impairs glucose regulation and increases the risk of type 2 diabetes. Although regular exercise improves insulin sensitivity and glucose control, many individuals are unable or unwilling to participate in traditional exercise. Passive cycling (PC) has been shown to improve postprandial glucose responses in physically inactive non-lean males, but its effects in females remain unknown. Determining whether biological sex influences responses to PC may identify alternative strategies to improve glucose regulation. RESEARCH QUESTION: Does sex influence postprandial plasma glucose responses to PC compared with seated rest and active cycling (AC) in healthy, young, inactive adults? PROPOSED METHODS: Participants will report to the laboratory following an overnight fast. At T0, a peripheral IV catheter will be placed, and a fasting blood sample collected before participants consume a 75g oral glucose tolerance test (OGTT). Additional blood samples will be collected at T45 (before condition), T80 (immediately post-condition), every 20 minutes thereafter (T100, T120, T140), and T165 (2-h post OGTT). Participants will complete three randomized conditions: seated rest, PC (low/no intensity), and AC (moderate-intensity). Cycling will include a 5-minute warm-up at 35 RPM, 30 minutes at 65 RPM, and a 5-minute cool-down at 35 RPM; seated rest will last 40 minutes. Body composition, menstrual cycle status, and hormonal contraceptive use will be noted. Plasma glucose responses will be compared across conditions and between sexes. PROJECTED LIMITATIONS AND OBSTACLES: Limitations include variability in fasting compliance, physical activity, menstrual cycle phase, and baseline insulin sensitivity. Recruiting balanced sex ratios and accounting for body composition differences may further increase variability despite standardized testing.

3:30 - 4:25 PM

Assessing Contextual Fit for InPACT in Brazilian Schools: A Needs Assessment to Inform Adaptation and Implementation

Hala I. Abbas, NaRi Shin, Isabella Aviles, Marianne Serra, Regina Cabral, Rebecca E. Hasson FACSM

BACKGROUND AND SIGNIFICANCE: Physical activity (PA) programs developed for one setting often require adaptation before being successfully implemented in a new context. Interrupting Prolonged sitting with ACTivity (InPACT) is an evidence-based classroom PA program designed for low-resourced schools in the United States. InPACT has been shown to be effective, acceptable, and feasible for increasing students' PA opportunities during the school day. Given its success in US schools, InPACT represents a promising strategy for expanding school-based PA opportunities in other countries. In Brazil, only 29.9% of youth achieve 60 minutes of moderate-to-vigorous PA daily, highlighting the need for additional PA opportunities throughout the school day. Before implementing InPACT in Brazil schools, it is essential to understand the cultural and contextual factors that affect its fit and identify adaptations to support successful implementation. RESEARCH QUESTION: What cultural and/or contextual factors influence the intervention-context fit of InPACT in Brazilian schools? PROPOSED METHODS: Researchers will conduct virtual, semi-structured interviews with teachers from Formação's educational network in Maranhão, Brazil, with support from an English-speaking translator. Guided by the Consolidated Framework for Implementation Research (CFIR) 2.0, interviews will explore perceptions of classroom PA, implementation barriers and facilitators, and recommendations for adapting InPACT to local contexts. Interviews will be analyzed using inductive thematic analysis. Themes will then be deductively mapped to CFIR 2.0 constructs to characterize contextual determinants across policy, organizational, and environmental domains. Participants will review findings to ensure accuracy. PROJECTED LIMITATIONS AND OBSTACLES: Nuances in participant responses may be lost in translation despite efforts to ensure accuracy through professional interpretation and member checking.

3:30 - 4:25 PM

THE IMPACT OF ANTIBACTERIAL MOUTH RINSE ON BLOOD PRESSURE, MUSCLE OXYGENATION, AND COGNITION DURING AEROBIC EXERCISE

Ifeoluwa Ogunduyile, Olamilekan Oluborode, Terence Moriarty, Jonathan Specht, Kelsey Bourbeau

BACKGROUND AND SIGNIFICANCE: Evidence suggests that daily use of antibacterial mouthwash (AM) can elevate systolic blood pressure (SBP). AM reduces oral bacteria involved in nitric oxide production, potentially impairing peripheral vasodilation, resulting in blunted post-exercise hypotension. In addition, impairments in peripheral vasodilation may negatively impact exercise performance and cognition with evidence suggesting that regular AM use alters skeletal muscle (SKM) oxygenation and cerebral blood flow. Limited research exists regarding the impact of daily AM use on exercise blood pressure (BP), cognition, and SKM oxygenation. Thus, this study aims to address this gap.

RESEARCH QUESTION: Does a 7-day antibacterial mouthwash intervention impact BP, SKM oxygenation, or cognition during or post aerobic exercise?

PROPOSED METHODS: This study uses a single-blind, randomized, crossover design with 24 healthy active adults (12F, ages 18–35). Participants will complete 3 separate visits. During visit 1, baseline cognition (Color Word Stroop Test, CWST), salivary nitrates, and aerobic fitness will be assessed. After, subjects will be provided either AM or placebo and instructed to use the rinse 2x/day for 7 days with a 7 day washout period between visits 2 and 3. During visits 2 and 3, subjects will perform a time to exhaustion (TTE) cycle test at the workload that corresponds to 75% VO2max. During and after the TTE, cognition (CWST), muscle oxygenation (NIRS), and BP responses will be assessed. Salivary nitrates will also be measured pre- and post-TTE. Data will be analyzed using a two-way repeated measures ANOVA to compare differences across conditions and timepoints.

PROJECTED LIMITATIONS AND OBSTACLES: This is a pilot study (n=24), so findings may be limited by sample size and may not generalize to clinical populations or individuals with poorer or better aerobic fitness. Participant compliance with pre-visit guidelines could also introduce variability.

3:30 - 4:25 PM

Achilles Tendon Loading During False-Step and Staggered-Stance During Rapid Movement Initiation

Jake Francis, Clayton Schwiebert, Henry Wang, D. Clark Dickin

BACKGROUND AND SIGNIFICANCE: Explosive movements are crucial for athletic performance because rapid force production provides a competitive advantage in sport-specific tasks. The Achilles tendon (AT) is central to force transmission and propulsion during acceleration and deceleration. However, high mechanical demands on the AT increase injury risk, particularly in sports requiring jumping, cutting and rapid acceleration using the false step (a backward step at sprint initiation). Previous research has examined performance benefits of the false-step and staggered-stance starts, but their effects of AT loading remain unclear. Understanding AT loading during explosive movements may inform performance optimization and injury prevention. RESEARCH QUESTION: Does the AT experience higher loads during the false step when compared to a staggered stance? PROPOSED METHODS: 20 healthy recreationally active adults will be recruited. Upon arrival, participants will begin with a 5-minute walk on a treadmill and a dynamic warm up. Participants will start in either a neutral or staggered stance and randomly be prompted to accelerate forward, backward or at a 45-degree angle as quick as possible. Randomized movement directions will be used to reduce anticipatory postural adjustments. The backward trials will be excluded in the analysis. Three-dimensional kinematic data will be collected using a motion capture system and force plate data to estimate AT loading using inverse dynamics. Peak AT loading will be compared between stance conditions using a paired-samples t-test. PROJECTED LIMITATIONS AND OBSTACLES: AT loading is based on inverse dynamics and can’t be directly measured, we will also use recreational athletes instead of highly-trained athletes.

3:30 - 4:25 PM

EFFECT OF AN EXTERNAL ANKLE BRACE ON DYNAMIC POSTURAL STABILITY DURING SINGLE-LEG LANDING

Jana Abdullah, D. Clark Dickin

BACKGROUND AND SIGNIFICANCE: Lateral ankle sprains are among the most common injuries in physically active populations and frequently occur during landing tasks. Prophylactic ankle braces are commonly used to reduce ankle injury risk, but it is unclear whether they improve dynamic postural stability during landing. Because ankle braces primarily restrict frontal-plane motion, they may influence the medial-lateral stability index (MLSI) more than the anterior-posterior stability index (APSI), vertical stability index (VSI), or composite Dynamic Postural Stability Index (DPSI). RESEARCH QUESTION: How does wearing an external ankle brace influence composite DPSI and its directional components (MLSI, APSI, and VSI) during a single-leg landing task in physically active adults? PROPOSED METHODS: Approximately 18-20 physically active adults will participate in a within-subjects, counterbalanced design, completing testing under braced and non-braced conditions on their dominant limb. In each condition, participants will perform standardized single-leg drop landings onto a force platform (2000 Hz), with hands on hips, stabilizing as quickly as possible after landing. Ground reaction forces during the stabilization period will be used to calculate composite DPSI, MLSI, APSI, and VSI, where lower values indicate greater stability. Conditions will be compared with paired-samples t-tests (alpha = 0.05), and effect sizes reported. It is hypothesized that the braced condition will produce lower MLSI (improved medial-lateral stability), with minimal change in APSI and VSI, so changes in composite DPSI may be limited. PROJECTED LIMITATIONS AND OBSTACLES: Participants cannot be blinded to brace use, which may introduce expectancy effects. Laboratory-based landing tasks may not fully replicate sport-specific demands. Additionally, findings from healthy adults may not generalize to individuals with chronic ankle instability or previous ankle injury.

3:30 - 4:25 PM

THE EFFECT OF A COMBINED LAND-WATER EXERCISE (CLE) ON AMYOTROPHIC LATERAL SCLEROSIS (ALS) DISEASE PROGRESSION.

Jose I Pareja, Kevin Ballard, FACSM, Paul Reidy, FACSM

BACKGROUND AND SIGNIFICANCE: Amyotrophic lateral sclerosis (ALS) is a rapidly progressive neurodegenerative disease causing motor neuron loss, paralysis, and death within 2–5 years of diagnosis. Emerging scientific evidence shows that moderate-intensity resistance and aerobic exercise exert neuroprotective effects. In ALS animal models, swimming delays disease onset and increases survival and motor performance. In humans with similar disorders (e.g., Multiple sclerosis, Parkinson's), water-based exercise enhances quality of life and improves motor impairments. To our knowledge, no study has evaluated a combined land-water exercise intervention in individuals with ALS. This project will provide preliminary evidence to refine current physical activity/therapy guidelines aimed at enhancing quality of life for ALS patients. RESEARCH QUESTION: Does a combined land-water exercise + standard care (CLE+SC) maintain physical function better in individuals with ALS? We hypothesize that the combined land-water exercise intervention will result in a slower loss of physical function over time compared to a land-based exercise + standard care (LBE+SC) or standard care (SC) alone, PROPOSED METHODS: This study will evaluate individuals recently diagnosed (<6 months) with ALS, who will be randomly assigned to one of three groups (n=20/group): 1) CLE+SC, 2) LBE+SC, or 3) SC alone. We will determine the longitudinal effects of different exercise interventions on disease progression, using change in the ALS Functional Rating Scale-R (ALSFRS-R) and Forced Vital Capacity (FVC) at 0, 90, 180, and 270 days. PROJECTED LIMITATIONS AND OBSTACLES: Water-based exercise can present inherent safety hazards for individuals with ALS due to progressive muscular and respiratory deterioration, necessitating key monitoring and support. ALS rapid, and heterogeneous progression poses an obstacle to patient compliance, retention, and data collection consistency during the prolonged study intervention.

Poster Session 5 **Poster 18** **Crown Foyer**

3:30 - 4:25 PM

IMPLEMENTATION OF HOOSIER SPORT BY COLLEGE STUDENT MENTORS IN RURAL MIDDLE SCHOOLS

Kaden Del Real, Julianna F. King, Noah Cumming, Vanessa M. Martinez Kercher FACSM, Kyle A. Kercher

BACKGROUND AND SIGNIFICANCE: Youth from rural areas often experience lower levels of physical activity and face barriers to health promotion, including limited access to facilities, transportation, and organized physical activity opportunities. School-based interventions such as Hoosier Sport may help address these disparities through sport participation and health education delivered by college student mentors. The proposed study evaluates how college student mentors implement an enhanced Hoosier Sport intervention that incorporates a structured goal-setting component in two rural middle schools. Further evaluation is needed to identify facilitators and barriers to implementation and inform strategies that support successful delivery of the intervention in rural middle schools. RESEARCH QUESTION: How do college mentors contribute to the implementation of Hoosier Sport, including goal setting, in two rural middle schools, and what facilitators and barriers influence program delivery? PROPOSED METHODS: College mentors will deliver sport-based youth development programming in two rural middle schools. A multi-component implementation evaluation will assess program delivery. Trial- and intervention-related feasibility indicators to be assessed include recruitment, retention, attendance, compliance, fidelity, cost, and acceptability. Fidelity will be evaluated using the System for Observing Staff Promotion of Activity and Nutrition (SOSPAN). Descriptive statistics will summarize implementation outcomes, while qualitative responses from surveys will identify facilitators, barriers, and opportunities for program improvement. PROJECTED LIMITATIONS AND OBSTACLES: Potential limitations include a small sample size of mentors, which may limit the generalizability of results. Additionally, findings may be influenced by contextual differences between the two schools, which could affect implementation processes.

Poster Session 5 **Poster 19** **Crown Foyer**

3:30 - 4:25 PM

PHYSICAL ACTIVITY AND STATIN UTILIZATION IN INDIVIDUALS WITH IDIOPATHIC PERIPHERAL NEUROPATHY

Katelyn Latour, Angela Ridgel FACSM

BACKGROUND AND SIGNIFICANCE: Idiopathic peripheral neuropathy (IPN) is a complex neurological disorder characterized by unexplained nerve damage, resulting in pain, weakness, motor control deficits, and reduction in quality of life. IPN impacts 5-8 million Americans. Physical activity (PA) can reduce IPN symptoms, improve quality of life, and reduce LDL cholesterol. However, Statin Associated Muscle Symptoms (SAMS) result in lower extremity muscle weakness, pain, and fatigue, which can reduce physical activity. Atorvastatin, a generic form of Lipitor, (LDL lowering medication) is the most prescribed pharmaceutical medication in the U.S. It has been suggested that statin-induced neuromuscular symptoms may create a paradox in which treatment prescribed to reduce LDL may simultaneously hinder participation in PA. RESEARCH QUESTION: What is the association between self-reported physical activity levels and the severity of idiopathic peripheral neuropathy (IPN) symptoms among individuals currently taking statin therapy? PROPOSED METHODS: Study recruitment will utilize strategic flyer placement in community centers and outreach presentations within support group settings to target approximately 130 participants (aged ≥25) excluding history of smoking, chemoradiation, or type 1/type 2 diabetes-induced PN will be recruited by community flyers and support group presentation. Self-reported questions include Overall Neuropathy Limitations Scale, International Physical Activity Questionnaire, mobility aid dependency, and past/present statin utilization involving duration of use, brand and dosage. The surveys will be distributed via Qualtrics. PROJECTED LIMITATIONS AND OBSTACLES: Low response rate and recall bias may compromise data validity.

3:30 - 4:25 PM

PROPOSED SCOPING REVIEW OF FACTORS ASSOCIATED WITH THE DEVELOPMENT OF ILIOTIBIAL BAND SYNDROME IN FEMALE RUNNERS

Megan Moriarty, Scott Nixon, Jonathan Simoes, Joshua Haworth

BACKGROUND AND SIGNIFICANCE: Iliotibial (IT) band syndrome is the second most common knee injury in runners, with women being more likely to develop this condition. The IT band helps maintain hip and knee stability while running, and IT band syndrome may involve altered lower-extremity biomechanics during running. Weakness of gluteal muscles may contribute to IT band syndrome and a Trendelenburg gait. RESEARCH QUESTION: What factors are identified in the literature that are associated with the development of IT band syndrome in female runners? PROPOSED METHODS: Databases will include PubMed Central, ScienceDirect, and Wiley Online Library. Search terms will include: "iliotibial band syndrome", "female runners", "running biomechanics", "running gait deviations", "gluteal muscle activation", and "IT band anatomy". Only English-written articles focusing on female runners will be included, and peer-reviewed anatomical studies, case reports, cross-sectional biomechanics studies, narrative reviews, prospective cohort studies, randomized pilot studies, and systematic reviews, including an anatomy textbook. The exclusion criteria will include non-English studies, non-runners, unrelated to the IT band, male participants only, and non-human subjects. Articles will be screened by title, abstract, and full-text review. Articles that fail to meet inclusion criteria or the exclusion criterion will be omitted. Data extraction will include authors, study design, publication date, anatomical and biomechanical parameters, participant demographics, and research findings on the development of iliotibial band syndrome in female runners. Findings will be categorized by anatomical and biomechanical characteristics. PROJECTED LIMITATIONS AND OBSTACLES: Challenges may include limited availability of female-specific biomechanics studies on the development of IT band syndrome, various research methods, and differences in biomechanical assessments.

Student Oral Session 7 Overview (Friday, 9:00 – 9:50)

Pearl Moderator: Jeremy Steeves

Time	Presentation	Authors
9:00 - 9:12 AM	WITHIN-SESSION RELIABILITY AND MINIMAL DETECTABLE CHANGE FOR COUNTERMOVEMENT JUMP METRICS IN MIDDLE-AGED AND OLDER ADULTS	Cooper Jacobsen, Cameron Peterson, Sheeba Davis, Fiddy Davis
9:12 - 9:24 AM	HOW PERCEPTIONS SHAPE PARKING PERMIT SELECTION: IMPLICATIONS FOR COMMUTE-RELATED PHYSICAL ACTIVITY	Lauren Gard, Yanis Bengana, Patrick Filanowski, Jeremy A. Steeves FACSM
9:24 - 9:36 AM	THE ACUTE EFFECT OF RESISTANCE AND AEROBIC EXERCISE ON AUTONOMIC REGULATION AND BALANCE: A WITHIN-SUBJECTS CROSSOVER TRIAL	Matthew Deemer, Amy Rickman FACSM, Ava Urda, Alec Jerome, Mattea Marra, Brielle Chaney, Jennifer Rivera, Mingchia Yeh
9:36 - 9:48 AM	EXERCISE-CONDITIONED HUMAN PLASMA EXTRACELLULAR VESICLES PRESERVE OXIDATIVE FIBER TYPE AND ATTENUATE COLLAGEN ACCUMULATION IN FEMALE MICE FOLLOWING DISUSE	Sung Jun Choi, Ane Nishitha Vijayan, Takeshi Barnes, Amalia A Rudofski, Nicholas Burd, Marni D Boppart FACSM

9:00 - 9:12 AM

WITHIN-SESSION RELIABILITY AND MINIMAL DETECTABLE CHANGE FOR COUNTERMOVEMENT JUMP METRICS IN MIDDLE-AGED AND OLDER ADULTS

Cooper Jacobsen, Cameron Peterson, Sheeba Davis, Fiddy Davis

BACKGROUND: The countermovement jump (CMJ) is increasingly used to assess lower-limb neuromuscular function in aging, yet its trial-to-trial reliability in middle-aged and older adults has not been established. Because reliability is specific to the task and population, it cannot be assumed from other tests such as handgrip dynamometry. PURPOSE: To evaluate the within-session reliability of force-plate-derived CMJ peak power, jump height, and peak propulsive force in adults aged 40-65. METHODS: Thirty-seven participants (aged 40-65) each performed three countermovement jumps under standardized conditions on Bertec force plates, with a brief reset between trials. Peak power, jump height, and peak propulsive force were recorded per jump; each participant's score was the mean of three trials. Within-session reliability was evaluated using the intraclass correlation coefficient (ICC; two-way random-effects, average-measures, absolute agreement) with 95% confidence intervals, coefficient of variation (CV%), and minimal detectable change (MDC, 95% level). One peak propulsive force trial from a single participant was excluded because of a recording artifact. RESULTS: All three metrics demonstrated excellent within-session reliability. Peak power: ICC 0.996 (95% CI 0.99-1.00), CV 3.6%, MDC 146 W (7.1%). Jump height: ICC 0.991 (95% CI 0.98-1.00), CV 6.3%, MDC 1.6 cm (10.7%). Peak propulsive force: ICC 0.985 (95% CI 0.97-0.99), CV 4.9%, MDC 137 N (9.6%). Across all metrics, ICCs exceeded 0.98 and trial-to-trial variability was low (CV<7%). CONCLUSION: Force-plate-derived CMJ metrics show excellent within-session reliability in middle-aged and older adults, supporting their use for monitoring neuromuscular performance. The MDC values indicate that an individual change exceeding roughly 7-11% of a typical score can be interpreted as real rather than measurement noise.

9:12 - 9:24 AM

HOW PERCEPTIONS SHAPE PARKING PERMIT SELECTION: IMPLICATIONS FOR COMMUTE-RELATED PHYSICAL ACTIVITY

Lauren Gard, Yanis Bengana, Patrick Filanowski, Jeremy A. Steeves FACSM

BACKGROUND: In Fall 2025, Xavier University implemented a revised parking policy that transitioned from free to paid parking, with free options relocated to remote lots. Because parking location influences walking distance between vehicles and campus destinations, parking permit selection may affect opportunities for commute-related physical activity. PURPOSE: To examine perceptions, beliefs, and values associated with the selection of paid versus free parking permits among university employees. METHODS: University employees completed a Qualtrics survey assessing the influence of parking availability, convenience (proximity), cost, and social factors on parking permit decisions. Differences between paid and free permit holders were examined using chi-square analyses and independent samples t-tests. RESULTS: 48 employees participated. Demographic characteristics (age, gender, race, and employment status) did not differ between paid and free permit holders. Perceived parking availability was similar between groups (33.3% vs. 29.2% rating it very important; $p = 0.38$). Paid permit holders were more likely to rate convenience as very important (58.3% vs. 20.8%; $p = 0.06$), whereas free permit holders were more likely to rate cost as very important (79.2% vs. 33.3%; $p = 0.002$). Paid permit holders estimated lower use of free or peripheral parking among coworkers (30.6% vs. 44.7%; $p = 0.03$) and were less likely to report willingness to use peripheral parking if more colleagues did so ($p = 0.002$). CONCLUSION: Parking permit selection was influenced by cost, convenience, and social perceptions. Free permit holders prioritized cost, whereas paid permit holders prioritized proximity and perceived remote parking as less common among coworkers. Because permit choice determines walking distance between parking locations and workplace destinations, parking policies may represent an underrecognized factor influencing commute-related physical activity on university campuses.

9:24 - 9:36 AM

THE ACUTE EFFECT OF RESISTANCE AND AEROBIC EXERCISE ON AUTONOMIC REGULATION AND BALANCE: A WITHIN-SUBJECTS CROSSOVER TRIAL

Matthew Deemer, Amy Rickman FACSM, Ava Urda, Alec Jerome, Mattea Marra, Brielle Chaney, Jennifer Rivera, Mingchia Yeh

BACKGROUND: Using z-scored high-frequency heart rate variability (zHF) for parasympathetic (PNS) and pre-ejection period (zPEP) for sympathetic (SNS) activity, Cardiac Autonomic-Balance (CAB) and -Regulation (CAR) can be quantified. PURPOSE: To compare the effects of aerobic (AE) and resistance exercise (RE) on CAB and CAR. METHODS: Thirty participants completed both RE and AE conditions in a randomized, within-subjects crossover design with ≥24 hours between conditions. Prior to the experimental visits, subjects completed a 5-repetition maximum (5RM) for three exercises. The RE session consisted of repetitions performed to failure at 65-85% 5RM. For AE, an incremental cycling protocol was used until volitional fatigue was reached. Measures of zPEP and zHF were collected at baseline (BL), immediately post-exercise (IPE), and 15 minutes post-exercise (15PE). Two condition x time repeated-measures multivariate analyses of variance with Bonferroni-adjusted post hoc analyses were used to assess differences in CAB and CAR with alpha set to $p<0.05$. RESULTS: Data are reported as mean difference ± standard error. CAR demonstrated a significant interaction and main effects of time and condition ($p<0.01$). Following RE, CAR decreased from BL to IPE (-2.10±0.46, $p<0.01$) but recovered to BL by 15PE (0.35±0.26, $p=1.00$). For AE, CAR increased from BL to IPE (1.37±0.14, $p<0.01$) and remained above BL at 15PE (0.68±0.22, $p<0.01$). CAR was lower in RE than AE at IPE (-3.65±0.28, $p<0.01$) but higher at 15PE (0.77±0.17, $p<0.01$). CAB demonstrated a significant interaction and main effect of time ($p<0.01$) with no main effect of condition. CAB decreased from BL to IPE (-2.64±0.26, $p<0.01$) and trended towards BL by 15PE (-1.52±0.24, $p<0.01$). CONCLUSION: CAR exhibited a modality-specific response, while CAB exhibited SNS dominance regardless of modality. These findings highlight the value of a two-dimensional autonomic view, beyond the one-dimensional perspective of heart rate variability.

9:36 - 9:48 AM

EXERCISE-CONDITIONED HUMAN PLASMA EXTRACELLULAR VESICLES PRESERVE OXIDATIVE FIBER TYPE AND ATTENUATE COLLAGEN ACCUMULATION IN FEMALE MICE FOLLOWING DISUSE

Sung Jun Choi, Ane Nishitha Vijayan, Takeshi Barnes, Amalia A Rudofski, Nicholas Burd, Marni D Boppart FACSM

BACKGROUND: Skeletal muscle recovery from disuse is often incomplete, and alternative therapeutic strategies are needed to enhance recovery. Human plasma extracellular vesicles (EVs) collected from young healthy men after exercise training (ExerVs) reduce collagen and accelerate Type I fiber recovery in male mice following disuse. Whether these benefits extend to females is unknown. PURPOSE: To determine the extent to which female ExerVs support muscle recovery from unloading in female mice and alter myogenesis and angiogenesis in vitro. METHODS: 10 healthy females (20-40 y) completed 6 weeks of progressive resistance and endurance training; EVs were isolated from plasma before (SedVs) and after (ExerVs) training. Female C57BL/6 mice (4 mo, n=5/group) received 4 intraperitoneal injections of PBS, SedVs, or ExerVs (3×10^8 particles, 30 µL) during 14-day hindlimb unloading, followed by 7 days of reloading; weight-bearing (WB) mice served as controls. Soleus fiber cross-sectional area (fCSA), fiber type distribution, collagen I&III, and capillary:fiber (C:F) ratio were quantified. HUVEC tube formation and C2C12 differentiation were assessed. RESULTS: Relative muscle weight did not differ among treatments, and global fCSA remained below WB (ExerVs 595±56 vs WB 1,167±95 µm², $p<0.0001$). ExerVs preserved Type I proportion at WB levels (40.4±4.6 vs 44.6±4.0%, $p=0.4914$), whereas it was lower in PBS (19.2±11.0%, $p<0.001$) and SedVs (24.2±13.8%, $p<0.01$). Collagen I&III was lower with ExerVs than SedVs (14.2±4.6 vs 23.8±6.9%, $p<0.01$), whereas C:F ratio was not restored with any treatment (2.11±0.07 to 2.76±0.62 vs WB 3.11±0.32). In vitro, C2C12 myotube number increased with SedVs (25.4±5.1, $p<0.01$) and ExerVs (27.9±8.1, $p<0.001$) vs control (8.5±3.2), whereas neither enhanced HUVEC network formation. CONCLUSION: Female ExerVs preserve the oxidative fiber phenotype and limit collagen accumulation in female mice following disuse without restoring fiber size or capillarization.

Student Poster Session 6 Overview (Fri. 9:00 – 9:55) Crown Foyer

Poster	Presentation	Authors
1	How Eccentric Lifting Variables Effect Change of Direction Ability in Female College Athletes	Brady Torborg, Garrett Eggleston
2	Biomechanical and Structural Effects of Passiflora ligularis (Granadilla) Polyphenols on Orthopedic Tissue in Aged C57BL/6J Mice	Brenton Halvorson, Carlos J. Padilla, Eduardo M. Alvarez, Alvaro N. Gurovich FACSM, Clara H. González-Correa
3	FUNCTIONAL AND MAXIMAL LOWER-LIMB POWER DECLINE PROPORTIONALLY WITH AGE IN MIDDLE-AGED AND OLDER ADULTS	Cameron Peterson, Cooper Jacobsen, Sheeba Davis, Fiddy Davis J
4	EFFECTS OF BIOFEEDBACK-BASED VISION AND BREATHING TRAINING ON PERFORMANCE IN COLLEGIATE ICE HOCKEY PLAYERS	Jonas Larsen, Qianhe Shi, Jonathan Jun Han Chia, Olivia Lugo, Kelsey Wolma, Katharine Polasek, Maureen Dunn
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9:00 - 9:55 AM

How Eccentric Lifting Variables Effect Change of Direction Ability in Female College Athletes

Brady Torborg, Garrett Eggleston

Introduction: Change of Direction (COD) and curved linear running performance are decisive components of sport success in athletics, yet the neuromuscular determinants of these performance variables remain undefined. Curved linear running is defined as a curved run fulfilling a 180-degree half circle path. Concentric power strengthening has been researched in agnosia for COD speed, but the eccentric strength component has yet to be fully explored. This study examines the relationships between routinely collected eccentric strength metrics and standardized COD times in female college athletes.

Purpose: The aim of this study was to investigate the relationship of eccentric lifting variables effect on COD and curved linear running times in collegiate female athletes.

Methods: This retrospective study design with 17 female college athletes (lacrosse and soccer) who completed a summer training program at a single location. The fastest curved linear run times were recorded for the study's COD variable, based on a course of a half circle (180 deg) run (10-yard diameter). Their individual training/lifting programs were recorded via PERCH (velocity-based training). This is where each athlete's max Eccentric Efficiency (mean eccentric velocity/max eccentric velocity) and max Eccentric Power (weight lifted x velocity) from the summer program (Squat, Hex Bar) correlated with Curved Linear Runs times.

Results: There was a small but significant correlation between Max Eccentric Power and Faster Curved linear runs ($R=-0.28$, $p=0.013$). The correlation between Eccentric Efficiency and Curved linear runs ($R=.21$, $p=0.06$).

Conclusions: Maximal eccentric power demonstrated a small but significant association with faster curved linear running performance in collegiate female soccer and lacrosse athletes. Training interventions targeting eccentric power development may enhance multidirectional sport performance. Further research is needed to confirm these findings.

9:00 - 9:55 AM

Biomechanical and Structural Effects of Passiflora ligularis (Granadilla) Polyphenols on Orthopedic Tissue in Aged C57BL/6J Mice

Brenton Halvorson, Carlos J. Padilla, Eduardo M. Alvarez, Alvaro N. Gurovich FACSM, Clara H. González-Correa

INTRODUCTION: Polyphenols from Passiflora ligularis (granadilla) may modulate age-related musculoskeletal deterioration through antioxidant and anti-inflammatory mechanisms. Examining the effects of P. ligularis may identify novel strategies for treatment of age related orthopedic decline.

PURPOSE: To evaluate bone and tendon mechanical properties in aged C57BL/6J mice following supplementation of P. ligularis polyphenols.

METHODS: Two cohorts of aged C57BL/6J mice (19-22 months; n = 10/sex) received water supplemented with 3.0 g/L of Passiflora ligularis polyphenol extract for 12 weeks ad libitum. Viable tail tendons underwent tensile testing and femoral strength assessed using three-point bending on an MTS Insight electromechanical system. Data was analyzed using two-way ANOVA ($\alpha = 0.05$).

RESULTS: Femoral peak load was 18.70 N in treatment group compared with 13.54 N in controls, corresponding to a ~38% difference. Although the treatment main effect did not reach statistical significance ($p = 0.2285$), the response was directionally consistent across sexes. Femoral peak load was ~35% greater in supplemented females than controls and ~40% greater in supplemented males, with no sex/treatment interaction ($p = 0.7456$). Tendon peak load demonstrated a significant main effect of sex, with males exhibiting approximately 40% greater peak load than females (27.87 vs. 19.96 N; $p = 0.0257$). No treatment effect was observed for tendon peak load ($p = 0.8555$). Tendon elastic modulus showed no significant treatment ($p = 0.2387$), sex ($p = 0.2266$), or sex/treatment interaction ($p = 0.1052$).

CONCLUSION: Although not statistically significant, the magnitude and consistency of the effect support future adequately powered investigations. Tendon properties were unaffected, though males exhibited greater peak load than females. These findings provide preliminary effect estimates for future studies examining polyphenols role in age related bone integrity and underlying mechanisms.

9:00 - 9:55 AM

FUNCTIONAL AND MAXIMAL LOWER-LIMB POWER DECLINE PROPORTIONALLY WITH AGE IN MIDDLE-AGED AND OLDER ADULTS

Cameron Peterson, Cooper Jacobsen, Sheeba Davis, Fiddy Davis J

BACKGROUND: Aging is associated with declining lower-limb muscular power. The countermovement jump (CMJ) assesses maximal power, while the five-time sit-to-stand (5STS) is a functional power test feasible in older populations and used clinically to identify age-related neuromuscular change. It is unclear whether STS and CMJ peak power show similar age-related change and whether their relationship holds across the adult lifespan. PURPOSE: To compare the peak power from CMJ and submaximal 5STS and determine how this relationship changes with age. METHODS: Thirty-five community-dwelling adults aged 40-65 (55.7±7.6 y; 29 F, 6 M) completed the study as a part of a larger research study. Height, weight, and leg dominance were recorded. Lower-limb power was measured on triaxial Bertec force plates during the 5STS and, after three minutes of rest, three CMJs (three-second pauses between trials). Power was normalized to body mass. STS-CMJ convergence was analyzed with Pearson correlation; STS-

to-CMJ ratio, STS power, and CMJ power versus age were analyzed with Spearman correlation. RESULTS: STS peak power averaged 8.23±2.09 W/kg and CMJ peak power 27.85±6.37 W/kg (STS-to-CMJ ratio 29.9±6.0%). STS and CMJ power converged strongly (r=0.70; 95% CI 0.47-0.84). Both declined with age, with CMJ declining more steeply (rho=-0.54; 95% CI -0.74 to -0.27) than STS (rho=-0.37; 95% CI -0.62 to -0.03). The STS-to-CMJ ratio did not change with age (rho=0.18; 95% CI -0.14 to 0.47, p=0.295). CONCLUSION: The functional STS task tracks age-related change in maximal lower-limb power but does not replace its direct measurement. Because both measures decline together, the relative "cost" of the functional task, reflected by the STS-to-CMJ ratio, remained stable across this age range. Given the sample (n=35), these findings are preliminary and warrant investigation in larger samples to test whether the relationship shifts within and across age groups.

Poster Session 6 **Poster 4** **Crown Foyer**

9:00 - 9:55 AM

EFFECTS OF BIOFEEDBACK-BASED VISION AND BREATHING TRAINING ON PERFORMANCE IN COLLEGIATE ICE HOCKEY PLAYERS

Jonas Larsen, Qianhe Shi, Jonathan Jun Han Chia, Olivia Lugo, Kelsey Wolma, Katharine Polasek, Maureen Dunn

BACKGROUND AND SIGNIFICANCE: The proposed study will examine a commercially available biofeedback-based vision and breathing training program whose selling point is its ability to deliver results in brief training sessions lasting 7-15 minutes. Vision and breathing training may support complementary aspects of athletic performance and well-being. Vision training may enhance visual tracking, visual-motor coordination, reaction time, and decision-making, whereas breathing training may support attentional control, sleep quality, mood, and stress regulation. This work is significant because vision and breathing training protocols could be used to enhance athletic performance through cognitive training and physiological self-regulation, complementing sport-specific training. RESEARCH QUESTION: Does a biofeedback-based vision and breathing training program improve sensorimotor abilities, cognitive function, heart rate variability, and sport-specific performance in NCAA Division 3 ice hockey players? PROPOSED METHODS: In this proposed study, 26 male ice hockey players will be randomly assigned to either the breathing and vision training program or a sham-control version for the 24-week season. Multiple assessments will be completed before and after the intervention. Assessments will include heart-rate variability, breaths/minute, convergence and divergence, near point of convergence, Eriksen Flanker performance, pro-/anti-saccade performance, multiple-object tracking, and multiple-identity tracking. Self-report measures will assess sleep quality, depression and anxiety. Additionally, head-mounted eye tracking will measure gaze behavior during decision-making tasks in virtual-reality and on-ice hockey drills. Outcomes will be assessed longitudinally to evaluate between-group differences in change over time. PROJECTED LIMITATIONS AND OBSTACLES: The demands of the collegiate hockey season may reduce participant motivation and adherence, potentially affecting study outcomes.

9:00 - 9:55 AM

ASSOCIATIONS OF MIND DIET COMPONENTS AND CARDIORESPIRATORY FITNESS WITH WORKING MEMORY ACROSS MENSTRUAL CYCLE

Kaitlin Yang, Manuela Cortes-Ospina, Brandon Kistler, Shih-Chun Kao

BACKGROUND AND SIGNIFICANCE: Women during their luteal phase report declined cognitive function due to elevated progesterone. MIND diet research has been linked to lower inflammation and oxidative stress, which can enhance cognition. Additionally, cardiovascular fitness (CRF) is positively associated with executive function and memory potentially through increased cerebral blood flow and neurotrophic factors. Determining if MIND diet and CRF can mitigate cognitive deficits during the luteal phase is significant as it helps identify potential interventions to stabilize cognitive function throughout the menstrual cycle. RESEARCH QUESTION: Does higher MIND diet adherence or higher CRF protect against deficits in working memory during the luteal phase when progesterone is elevated compared to the follicular phase? PROPOSED METHODS: Sixty women aged 18-35 will be recruited to complete three visits. On the first day, participants will familiarize with a computerized Sternberg task requiring varying memory load to assess working memory, complete a treadmill-based graded exercise test to assess $\dot{V}O_2$max as a CRF measure, and later detail their typical diet to identify MIND diet components. On each of the follicular/luteal days, done in counterbalanced order, participants will complete the Sternberg task and provide a 25 ml blood sample to verify their progesterone and estradiol levels. Between-phase difference in working memory will be first verified using a 2 (Phase: follicular, luteal) x 2 (Load: low, high) ANOVA. The relationship between individual MIND diet components and working memory scores in high versus low fit adult women will be assessed to determine the correlation. PROJECTED LIMITATIONS AND OBSTACLES: Since diet is self-reported, collected MIND diet component levels may be under/overestimated. Because the luteal phase was used to contrast with the follicular phase, the associations of MIND diet and CRF with working memory in other phases will not be captured.

9:00 - 9:55 AM

POTENTIAL SEX DIFFERENCES IN THE EFFECTIVENESS OF SODIUM BICARBONATE TO IMPROVE 5-KILOMETER RUNNING PERFORMANCE

Kayla Young, Meghan Wheatley, Camden Parker, Micah Rees, Kelsey Bourbeau, Terence Moriarty, Jonathan W. Specht

BACKGROUND AND SIGNIFICANCE: Intense endurance exercise leads to the accumulation of hydrogen ions in the blood, contributing to metabolic acidosis and fatigue. Sodium bicarbonate (SB) has emerged as a widely used ergogenic aid to attenuate acidosis due to its role in increasing extracellular buffering capacity. While previous research has demonstrated performance benefits, much of the existing literature has primarily focused on male participants, leaving a significant gap in understanding how SB affects female athletes. RESEARCH QUESTION: How does SB supplementation impact 5-kilometer running performance and associated physiological responses in females compared to males? PROPOSED METHODS: This study will use a repeated-measures experimental design in which participants complete baseline and experimental trials with and without SB supplementation (0.3 g per kg of body weight). The collection of 5-kilometer times, capillary blood measures (pH, bicarbonate, lactate), urine pH, and expired gas levels will reveal if SB affects performance. Neuromuscular fatigue will also be assessed using a vertical jump test before and after supplementation, as well as post-exercise. The comparison of results from both male and female participants will allow for further understanding of the effects of SB on female endurance athletes. Highly-trained runners aged 18-45 years who self-report at least 300 min per week of moderate-to-vigorous intensity endurance exercise over the last six months will be invited as participants. PROJECTED LIMITATIONS AND OBSTACLES: While the purpose of this study is to focus on the differences between male and female athletes, this brings forth the difficult task of recruiting participants from both genders that are estimated to have similar fitness levels. Female runners are naturally slower than their male counterparts with the same fitness level, so not all participants will be producing similar performance results for the 5K time trial.

9:00 - 9:55 AM

Perinatal Muscle Size as a Possible Predictor for Labor Duration

Leah Meier, Sydney Pontious, Sara Thompson, Abby Stancey, Ashlyn Claywell, Macy Dunlay, Elizabeth Cheuvront, Mikayla Lair, Elin Lappin, Katie Bettendorf, Claire Steffen, Claire Ressler, Sophia Lach, Aiden Orlowski, Alex Claiborne

BACKGROUND AND SIGNIFICANCE Prolonged labor is defined by the Cleveland Clinic as labor that progresses slowly or fails to progress. For those having their first baby, labor is prolonged when it lasts 25 hours or more, and 20 hours or more for those who've had at least one baby. Prolonged labor can increase the risk of both delivery and postpartum complications for the parent and baby, as well as increasing the chances of needing a different delivery method. Prenatal exercise is linked to shorter duration of labor, indicating that muscle thickness may also be positively correlated with shorter labor duration. This study will examine one potential factor that may contribute to reduced chances of prolonged labor occurring during delivery. RESEARCH QUESTION How does lower extremity muscle thickness measured during pregnancy correlate to labor duration? PROPOSED METHODS This study will employ a longitudinal prospective design in which pregnant individuals are enrolled for measurements of thigh muscle thickness via ultrasound imagery. Measurements will be taken early (12-24wks) and late (32-36wks) in pregnancy, alongside other metabolic function indices. Technicians will use the Butterfly iQ3 portable point-of-care ultrasound to measure thigh muscle thickness, as well as the quadriceps muscles individually. After delivery, participant questionnaires will be used to obtain labor and delivery outcomes such as duration of labor. PROJECTED LIMITATIONS AND OBSTACLES One possible limitation of this study is finding enough participants utilizing different birthing method(s), such as standing, supine, or water birth, to be able to control for how those may affect labor duration. This limitation is also present when trying to for control for how participant health conditions, such as gestational diabetes and other conditions, may affect labor duration. Another potential obstacle is participants over or underreporting the duration of their labor in the postpartum survey.

9:00 - 9:55 AM

IMPACT OF PREVIOUS NIGHT ALCOHOL CONSUMPTION ON MARKERS OF ACUTE KIDNEY INJURY RISK

Madalynne White, Dakotta Owens, Piper Donohoe, Koryn Osier, Brynn Acton, Tate Martin, Chandler Riehle, Finley Starr, Terence Moriarty, Kelsey Bourbeau, Jonathan W. Specht

BACKGROUND AND SIGNIFICANCE: Recent evidence indicates that previous night alcohol consumption may contribute to elevated biomarkers of acute kidney injury (AKI) the following day. The mechanisms contributing to this outcome and differences based on patterns of alcohol consumption have not been fully explored. This research is significant to help individuals understand the greater risk of consuming alcohol. RESEARCH QUESTION: How do alcohol type, quantity, and blood alcohol content impact next day biomarkers of AKI? PROPOSED METHODS: In this study, we will be conducting a urine analysis on 70 individuals above the age of 21 years. We will run three trials for each subject, the first being a baseline, then two experimental trials in a randomized order either a night of alcohol consumption or after 48 hours of no alcohol consumption (control). Each participant will be given a sheet to record the drinks they consume, along with the percentage of alcohol in them. The participant will also be provided with a breathalyzer and data sheet to record their BAC after each drink. They will also be sent with a single water bottle to drink out of on the morning of the data collection to ensure accuracy in the amount of water the subject consumed. The product of urinary IGFBP7 and TIMP-2 [IGFBP7✕TIMP-2] will serve as our primary biomarker of AKI. A forward stepwise regression will be created to determine factors most associated with change in markers of AKI from previous night alcohol consumption. PROJECTED LIMITATIONS AND OBSTACLES: Although we plan to standardize fluid intake in the morning, we will not control fluid intake the previous evening, which may impact hydration and thus our AKI biomarkers. Additionally, some alcohol types (e.g. beer) may be drunk more frequently, making it difficult to compare to less common alcohol types.

9:00 - 9:55 AM

Validity and Reliability of Single- and Dual-Timer Stopwatch Methods During Multiple Agility Tests: Research Proposal

Nidia M. Martinez, Shannon Fiddy, Brandon Soltis, Sydney I. Kane, Caleb L. Hoekema, Gabriel Clark, Brian C. Rider, FACSM, Nigel C. Jiwan

BACKGROUND AND SIGNIFICANCE: Agility is an important component of athletic performance, and accurately measuring small differences in performance time is essential for evaluating performance. Electronic timing systems eliminate human error and provide precise measurements but can be expensive and inaccessible to coaches and athletic programs. Manual stopwatches provide a practical and accessible alternative to electronic timing; however, most validity and reliability research has relied on a single stopwatch timer. Using two independent timers and averaging their measurements may reduce reaction-time error and improve the accuracy and reliability of manual timing. RESEARCH QUESTION: Does averaging two independent stopwatch timers improve the validity and reliability of manual timing when compared to a single stopwatch when using laser timing gates as the criterion measure across multiple agility tests? PROPOSED METHODS: Fifty recreationally active males and females (18–45 years) will complete four agility tests during one visit. Following informed consent, medical history, anthropometrics, a dynamic warm-up, and familiarization, participants will complete three trials of the Agility T-Test, Illinois Agility Test, Pro Agility Test, and 505 Agility Test. Rest periods of 2–3 minutes between trials and 3–5 minutes between tests will be provided. Each trial will be timed simultaneously using laser timing gates and two independent testers. Individual and averaged stopwatch times will be compared against laser timing gates using ICCs, correlations, Bland–Altman analysis, and measurement error to assess validity and reliability. PROJECTED LIMITATIONS AND OBSTACLES: Potential limitations include variability in timer reaction time and experience, participant learning or fatigue across repeated trials, and differences in identifying the exact start and finish of each test.

9:00 - 9:55 AM

POTENTIAL VARIABLES ASSOCIATED WITH COGNITIVE IMPAIRMENT FROM PREVIOUS NIGHT ALCOHOL CONSUMPTION

Piper Donohoe, Koryn Osier, Dakotta Owens, Madalynne White, Brynn Acton, Tate Martin, Chandler Riehle, Finley Starr, Terence Moriarty, Kelsey Bourbeau, Jonathan W. Specht

BACKGROUND AND SIGNIFICANCE: The brain is vulnerable to the consequences of alcohol consumption, as alcohol (ethanol) can easily cross the blood-brain barrier. Symptoms associated with previous night alcohol consumption include anxiety and impairments in cognitive function, which are particularly problematic for all individuals. It is believed that major factors include direct toxicity of acetaldehyde, systemic inflammation, congeners, dehydration, disruption of sleep quality, hypoglycemia, and gamma-aminobutyric acid (GABA) rebound. The proposed project will help us understand how alcohol hangover impairs specific domains of cognitive function. RESEARCH QUESTION: What variables are associated with cognitive impairments from previous night alcohol consumption? PROPOSED METHODS: Seventy subjects will be assessed utilizing cognitive assessments from the NIH toolbox and the Stroop test. Three trials will be conducted with each subject: baseline, control, and alcohol. The baseline trial will familiarize the subject with the tests and allow them to complete paperwork and fill out questionnaires. In the control trial, the subject must not consume alcohol for at least 72 hours prior to the trial. In the alcohol trial, the subject will consume alcohol the night before the trial, on their own terms, with no influence from researchers. In both trials, subjects will keep a log of food consumption for 24 hours before the trial and will be asked to replicate that food consumption for the final trial. Hydration (urine specific gravity), blood alcohol content, alcohol type, age, sex, and self-reported sleep will be assessed as potential predictors of cognitive impairment. PROJECTED LIMITATIONS AND OBSTACLES: This project will be limited as the type, timing, and quantity of alcohol being consumed will not be controlled. Furthermore, many participants will likely be recruited around the university campus, potentially skewing our sample and limiting application of findings.

9:00 - 9:55 AM

Effects of Passive Thigh Heating on Functional Mobility in Older Adults: Research Proposal

Shannon Fiddy, Nidia Martinez, Brandon Soltis, Gabriel Clark, Sydney I. Kane, Caleb L. Hoekema, Nigel C. Jiwan

BACKGROUND AND SIGNIFICANCE: Age-related declines in neuromuscular function and muscle strength impair mobility, limit independence, and increase fall risk in older adults. Passive heating may improve physical function by increasing muscle temperature in the localized area, enhancing blood flow and muscle contractility before physical activity. Commercially available heat pads provide a safe, affordable, and accessible way to locally heat essential muscle groups that contribute to their mobility; however, their effects on functional mobility in older adults remain unknown.

RESEARCH QUESTION: What is the effect of acute heat pad application on functional mobility in older adults? PROPOSED METHODS: Thirty older adults (≥65 years) will complete a randomized, counterbalanced crossover study across three visits. Visit 1 will include informed consent, health and heat-specific questionnaires, anthropometrics, body composition, and familiarization with mobility assessments. During Visits 2 and 3, participants will complete either passive heating or sham in randomized order. Heating pads will be applied bilaterally to the thighs for 45 minutes at 66°C; sham will use inactive pads. Skin temperature will be monitored throughout the intervention and recorded immediately post-heating. Following the 45-minute session, participants will complete a series of standardized functional mobility tests: Timed Up and Go, Five-Times Sit-to-Stand, and 50-Meter Loaded Walk. Secondary outcomes include skin temperature, perceived readiness, thermal comfort, and ratings of perceived exertion. Performance outcomes will be compared between conditions using paired t-tests and repeated-measures ANOVA. PROJECTED LIMITATIONS AND OBSTACLES: Potential limitations and obstacles include difficulty blinding participants to the heating condition, variability in individual heat tolerance, recruitment of older adults, and fatigue associated with the functional performance battery.

9:00 - 9:55 AM

ASSESSMENT OF VALIDITY AND BETWEEN-SESSION RELIABILITY DURING A CHOICE RESPONSE TIME TEST USING REACTION PODS

Skyler Cavins, Kelsey Stamm, Emma Piercy, Bryce Ezell, Connor Morris, Nathanial R. Eckert, Mindy Hartman Mayol FACSM, Trent E. Cayot

BACKGROUND AND SIGNIFICANCE: Response time is a key performance indicator that is commonly assessed in athletic and tactical populations that can be affected by physical fatigue. Reaction pods allow the opportunity to measure response time in the field during more physically demanding movements compared to traditional response time tests completed on laptop computers. However, the concurrent validity and between-session reliability of the reaction pods measuring choice response time (CRT) compared with traditional laptop tests remains to be demonstrated. RESEARCH QUESTION: Do reaction pods provide valid and reliable CRT when compared to the traditional laptop test? PROPOSED METHODS: Thirty healthy adults will complete both CRT testing methods (laptop, reaction pod) in random order during two testing sessions. During the laptop test, subjects will have their CRT assessed by the Deary-Liewald Task. CRT will be measured as the time between the presented stimulus ('X' appears in one of four boxes on the screen) and the subject's response (pressing the correct button on the keyboard). During the reaction pod test, CRT will be measured by the time between the presented stimulus (one of four reaction pods light up) and the subject's response (pressing the correct reaction pod). The reaction pods will be placed on a wall at the subject's shoulder height spaced 25 cm away from each other. Pearson correlation will be used to determine concurrent validity of the CRT between the two testing methods. Mixed absolute agreement intraclass correlations will be used to assess the between-session reliability of the CRT during each testing method. Statistical significance will be established at $p<0.05$. PROJECTED LIMITATIONS AND OBSTACLES: CRT might be longer in duration during the reaction pod test compared to the laptop test due to the time it takes the subject to raise their hands from hip level and press the correct reaction pod.

Poster Session 6 **Poster 13** **Crown Foyer**

9:00 - 9:55 AM

ASSOCIATIONS BETWEEN CAFFEINE CONSUMPTION AND BIOMETRIC MARKERS IN FEMALES: A PILOT STUDY

Molly Mason, Ava Hess, Katrina Whitlow, Erica Albertin

BACKGROUND: Caffeine is a stimulant that affects specific biometric markers of the autonomic nervous system including heart rate and blood pressure[1]. The effect of caffeine on heart rate variability (HRV) has been studied more extensively in males[2]. Further research is needed to better understand the autonomic nervous system and responses to exercise in females. PURPOSE: Examine the association between 24 hour caffeine consumption, a three minute HRV test, and six-minute walk test in females. METHODS: 12 females (age 35.5±18.58 years) completed a five minute supine heart rate variability test using the Polar10 Heart Rate Sensor with the Kubios app. Heart rate variability, resting heart rate, and resting blood pressure were collected, along with data from the Caffeine Intake Tool survey. Participants then completed a 6-min walk test. Continuous data were checked for normality with Shapiro Wilks tests, then relationships were tested using Pearson/Kendall correlations as needed, $\alpha<.05$. RESULTS: Caffeine consumption was not significantly correlated with the tested variables. There was a borderline trend between caffeine consumption and higher resting systolic blood pressure (118 mmHg ± 7.0, p = 0.085). The calculated relationships for resting diastolic blood pressure (78 mmHg ± 7.2) and heart rate (77.3 bpm ± 15.34) were positive (p = 0.43). Heart rate variability (48.6 RMSSD ± 36.62, p = 0.61) and distance traveled during a 6-minute walk test (560.6 m ± 116.7, p = 0.114) were negatively, but not significantly, correlated with increased caffeine consumption. CONCLUSIONS: Further research on this study can be done on larger sample sizes with differing doses of caffeine, times of consumption, and habitual coffee users.

9:00 - 9:55 AM

Electric-assist Bicycle Use and Physical Activity in Individuals with Type 2 Diabetes

Natalie Norgren, Sophia Georgekopolous, Bhumi Patel, Rachel Barth, Mitchell MacDowell, Tricia Neu, Helaine Alessio, FACSM, Alex Claiborne

BACKGROUND: Physical activity (PA) has been reported to reduce symptoms associated with Type 2 diabetes (T2D), however adherence to regular PA is often poor, especially in adults with T2D. Finding an exercise that is appealing and sustainable is a challenge. E-bikes have high potential for appeal and adherence due perceptions of being fun to ride. Further, research has shown that despite the electric assist, e-bike riding requires sufficient intensity for health benefits. This study aims to demonstrate if e-bike riding might be an exercise mode that is appealing and sustainable over 3 months time in adults with T2D. PURPOSE: To assess the efficacy of electric-assist bicycle usage on physical activity in individuals with Type 2 Diabetes. METHODS: Individuals (61.4 ± 16.9 yrs; 5M 2F) diagnosed with Type 2 Diabetes Mellitus were given electric pedal-assist bicycles to use for 3 months. Preliminary data was collected via accelerometer (ActivPAL) at week 2 of an ongoing intervention. Baseline (pre) and 2-week intervention data were obtained for daily steps (steps/day) and MET*hours (MET*h). Two-tailed, paired t-tests compared baseline and 2-week physical activity outcomes within participants. RESULTS Among e-bike riders, average daily activity volume trended upward from 33.1 ± 1.5 to 34.5 ± 0.7 MET·h during e-bike use, corresponding to an increase of 1.4 MET·h (n = 3). Although this change was not statistically significant (p = 0.111), the within-subject effect size was large (Cohen's dz = 1.59). Daily steps also trended upward from 6,574 ± 2,403 to 7,559 ± 1,417 steps/day, representing an average increase of 986 steps/day (n = 4). This change was not statistically significant (p = 0.263), although the within-subject effect size was moderate-to-large (Cohen's dz = 0.69). CONCLUSION: Electric-assist bicycle use appears to be a mode of exercise for individuals with T2D that is appealing and sustainable with potential efficacy for addressing symptoms of T2D in adults.

9:00 - 9:55 AM

TRAVEL SPEEDS OF EMERGING MICROMOBILITY DEVICES AND ASSOCIATED SAFETY PERCEPTIONS ON A SHARED-USE URBAN TRAIL

Nora Clary, Devin Cunningham, Ava Sardina, Wade Johnson, Doug McClintock, Thomas Lange, Jeremy A. Steeves FACSM

BACKGROUND: Shared-use urban trails are increasingly used by pedestrians, cyclists, and micromobility users. As motorized and electric transportation modes become more common, speed differences may influence trail safety perceptions. PURPOSE: To compare objectively measured travel speeds across transportation modes and rider characteristics and assess trail users' perceptions of safety and e-bike use. METHODS: Travel speeds were collected using a hand-held laser speed gun (Laser Technology, Inc.) from 300 trail riders at three trail locations. Riders were categorized by transportation mode, sex, and helmet use. A survey of 657 trail users (44 ± 17 years; 52% male) assessed perceptions of trail safety and e-bike use. One-way ANOVA compared speeds across transportation modes, and independent samples t-tests compared speeds by sex and helmet use. Survey data were summarized descriptively. RESULTS: Travel speed differed significantly by transportation mode ($p < .05$). Motorized bikes (21.5 ± 5.2 mph) and one-wheel e-boards (19.0 ± 14.1 mph) traveled significantly faster than all other observed modes, including e-scooters (14.3 ± 3.6 mph), throttle-operated e-bikes (14.0 ± 4.3 mph), pedaling e-bikes (13.4 ± 2.9 mph), traditional bicycles (13.0 ± 3.5 mph), and Red Bike bikeshare bicycles (10.9 ± 4.0 mph). Male riders traveled faster than female riders (13.7 ± 4.1 vs. 11.8 ± 3.3 mph, $p < .001$), and helmeted riders traveled faster than non-helmeted riders (13.6 ± 4.0 vs. 12.4 ± 3.9 mph, $p = .02$). While 93% of respondents reported feeling safe, 50% believed e-bikes made the trail less safe, and only 44% were aware of e-bike regulations and trail speed limits. CONCLUSION: Although most trail users reported feeling safe, concerns regarding e-bike and motorized device use were common. Higher observed speeds among motorized bikes and one-wheel devices may contribute to these concerns.

9:00 - 9:55 AM

CHRONIC SEQUELAE OF A NEONATAL BRACHIAL PLEXUS INJURY IN A YOUNG ADULT

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HISTORY: A 22-year-old left-hand dominant male presented with lifelong right shoulder/elbow pain and weakness. Birth history notable for traumatic delivery with right shoulder dystocia and clavicle fracture, consistent with neonatal brachial plexus injury (Erb's palsy). He reported lifelong limited right shoulder/arm motion, intermittent pain over the superior/anterior shoulder and medial elbow, and paresthesias after >1 minute overhead. Right elbow "locks up" more easily than shoulder. Visible right forearm atrophy and increased right-sided sweating. Plays pickleball but struggles lifting heavier weights, bicep curls, and overhead press. Denies prior surgery, recent trauma, or neck pain.

EXAM: Visible atrophy of right deltoid, biceps, forearm musculature. Visible contracture at right elbow, lacking last 20 degrees of full extension. Right UE shorter/smaller than left (right: 24 cm; left: 26 cm). Full ROM of bilateral shoulders; weakness with right shoulder external rotation and supination of right biceps. Impingement testing negative. Roos test positive for thoracic outlet symptoms. Right UE more diaphoretic than left, skin otherwise intact. Peripheral pulses +2, symmetrical bilaterally. Sensation intact.

DIFFERENTIAL DIAGNOSIS: Sequelae of neonatal brachial plexus injury; adhesive capsulitis; rotator cuff pathology; cervical radiculopathy; thoracic outlet syndrome.

TESTS AND RESULTS: Right shoulder/elbow radiographs showed no fracture, preserved joint spaces, no effusion, and no degenerative changes.

FINAL WORKING DIAGNOSIS: Chronic sequelae of neonatal brachial plexus injury (Erb's palsy) with residual upper trunk (C5-C6) weakness and elbow flexion contracture.

TREATMENT AND OUTCOMES: Managed conservatively with PT referral. Discussed PM&R/brachial plexus specialist referral for further workup, including possible EMG given significant atrophy/weakness of the RUE, versus Botox. Also discussed possible contracture release if function declines