Doctoral Dissertation Committee

Co-Directors

Adam R. Jajtner, Ph.D.
Associate Professor
Exercise Physiology
Health Science
Kent State University

Angela L. Ridgel, Ph.D.
Professor
Exercise Physiology
Health Science
Kent State University

Meghan K. Magee, Ph.D.
Assistant Professor
Exercise Physiology
Health Science
Kent State University

Aryn C. Karpinski, Ph.D.
Associate Professor
Research, Measurement, and Statistics
Foundations, Leadership, and Administration
Kent State University

Graduate Faculty Representative
Andrew Lepp, Ph.D.
Associate Professor
Recreation, Park, and Tourism Management
School of Foundations, Leadership, and Administration

Kent State University
College of Education, Health, and Human Services

Doctoral Dissertation Defense of
Emily C. Tagesen
Degree of Doctor of Philosophy

Major: Exercise Physiology

THE EFFECT OF REPEATED, HIGH-INTENSITY CYCLING ON IMMUNE FUNCTION AND RECOVERY

Thursday, March 21st
2:00 pm
MACC Annex 272
Kent State University

Microsoft TEAMS: Link

Emily C. Tagesen

M.S. Exercise Physiology
Kent State University, 2020

B.S. Exercise Science
University of Louisiana at Lafayette, 2018

Emily has been a researcher in exercise physiology for the past 8 years. She completed her Bachelor of Science at the University of Louisiana, Lafayette. She then completed her Master of Science in Exercise Physiology at Kent State University. Her research focus has surrounded exercise performance and recovery with an emphasis on muscle recovery and the immune response to exercise.

Emily has instructed various courses during her time at Kent State including Exercise Leadership, Physiology of Exercise, Professional Certification Preparation, and Statistics for Exercise Science.

Emily has presented at university, regional, and national conferences on topics such as exercise induced inflammation, exercise response to environmental stress, immune cell response to exercise, and the relationship between oral contraception and muscle recovery following resistance exercise. She plans to continue investigating the influence of physiological stressors on immune recovery and its implications on heath.

THE EFFECT OF REPEATED, HIGH-INTENSITY CYCLING ON IMMUNE FUNCTION AND RECOVERY

The purpose of this study was to observe the influence of repeated exercise on immune cell mobilization over the course of 24 hours of recovery. Intensified training without adequate recovery attenuates immediate immune mobilization but there is a paucity in the impact of repeated exercise on later stage trafficking. Changes in transient trafficking may reduce cell readiness to protect an individual against opportunistic infection. Ten recreationally active men completed eight consecutive bouts of high-volume, moderate intensity exercise. On the first and eighth day of exercise, blood samples were collected before, immediately after, 30 minutes, two hours, six hours, and 24 hours after exercise to assess total leukocytes, including lymphocytes, monocytes, and granulocyte subsets in circulation. Counts in circulation were analyzed via two-factor (trial by time), repeated measures analysis of variances (ANOVA). Interactions were explored via one-factor ANOVA on time and paired samples T-tests between trials. Main effects of time and trial were explored via least significant differences pairwise comparisons.

The data support that eight bouts of repeated exercise diminish immediate cell mobilization, as well as subsequent suppressions from circulation. There were fewer circulating lymphocytes, monocytes, and granulocytes after the eighth compared to initial bout of exercise. Both helper T- and natural killer-cells experienced a greater suppression from circulation six hours after exercise after the initial bout compared to the eighth, indicative of greater mobilization. These results highlight the need to investigate the implications of repeated physiological stress on cell mobilization and trafficking.