

F25.031 Is it Safe for Elite Athletes to Exercise Vigorously During Pregnancy and at Altitude?

Overview

There is limited research regarding vigorous exercise during pregnancy at sea level and less evidence for altitude (ACOG Committee Opinion, 2020; Yang et al., 2022). The exercise guidelines caution against exercising above 90% max heart rate (HR) during pregnancy (ACOG Committee Opinion, 2020), and evidence of the safety of exercising above 6000 feet is limited; more research is needed.

Despite the lack of evidence, many elite athletes are training at high intensities through most of their pregnancies. Some of these athletes train at high altitudes, including some who are Flagstaff residents.

The purpose of this study will be to assess elite and competitive recreational pregnant athletes' exercise training patterns (intensity, frequency, and duration) over the course of pregnancy and to determine if these patterns from each trimester differ and if any effects of exercise are associated with maternal or fetal health outcomes. Flagstaff, above 6000 feet, is a fitting place for this kind of research; we will recruit athletes from the Flagstaff area. We will use commodity wearable data (e.g., Fitbit, Polar, Garmin) from training sessions to determine these exercise patterns and trends. This study will be a multi disciplinary collaborative research effort with the Winfree (SICCS) research lab.

What the student will DO and LEARN

The student will be required to meet and collaborate with informatics researchers also working on the project. During these meetings, the student will help provide context and information on the practical use of wearables for training and the important variables to analyze. Part of this process will include learning how to conduct a literature search and reviewing those studies. The student may help develop the IRB proposal. Once the project has been approved, the student will learn how to and assist in recruiting, enrolling, and consenting the participants in the study. Once the data has been collected, the student will learn and help analyze and write up the results. This student will focus on this study's human and data collection aspects. Optionally, this student will have the opportunity to work with other students working on the analyses and learn how to complete those analyses using Python Jupyter Notebooks.

Additional benefits

A benefit is that the student will have the opportunity to participate in a multi-disciplinary (multi-lab) study. This may provide the opportunity to learn about a field other than their own and work with students outside of their field. Students will learn how to access and use resources at NAU, such as Cline Library, the librarians, and the IRB staff. The student will most likely get to work on this project from start to finish, so they will get to see the entire research process. Students will get to learn more about the physiological effects of exercise in general and during exercise. The learning process will include an opportunity to work on their research writing. Students may have the opportunity to direct their own project in the future.

Additional qualifications

The student must be open to learning new things and occasionally go outside of their comfort zone with support from the mentor. The student should have some knowledge of health, exercise, or pregnancy or be willing to expand their knowledge of these areas. While the student does not need to have programming or statistical skills, it would be beneficial to be curious about these areas. The ability to work independently at times may be helpful.

Time commitment

4 hrs/week for 30 weeks