

Support women's running shoe performance research

Stephen F. Austin State University

Research Project: Effects of "Super Shoes" on Running Economy in Women

About This Project

Since the advent of Nike's Vaporfly line of racing shoes that include thicker, more responsive midsole foam and a carbon fiber plate in the shoe, road racing times have improved dramatically among competitive runners. This is largely due to improvements in running economy which allow runners to race at a faster speed while at the same physiological intensity. However, most of the academic research showing the benefits of these advanced shoes has looked at faster running speeds (sub-three-hour marathon paces). Furthermore, there is comparatively less research in women than men. Despite the lack of empirical data to show the benefits of these shoes at slower paces and across genders, these shoes are marketed and sold to the masses at high prices. Therefore, the purpose of this study is to determine the effects of the Nike Vaporfly Next% 2 racing shoe on running economy in women at 10-12 km/hr (~3:30 to 4:15 marathon paces).

Budget

Funding for this project will go to the purchase of women's running shoes. In this way, support for this project will help to reduce the gender gap that exists in exercise science research. Following the project, and when the shoes can no longer be used for research purposes, they will be donated to local high school girls cross country and track programs. Anticipated budget is outlined below.

- Nike Vaporfly Next% 2: Women's Sizes 7 through 10 (\$250 x seven sizes)
- Asics Hyper Speed (Control Shoe): Women's Sizes 7 through 10 (\$90 x seven sizes)

- Total: \$2,380

Methods

Eligible subjects will complete 4 x 5 minute trials at 10 km/hr, wearing the experimental shoe (Nike Vaporfly Next% 2) and control shoe (Asics Hyper Speed) twice each. There will be a five-minute seated rest between trials to change shoes. The speed will then be increased to 12 km/hr and the same procedures repeated for another 4 x 5 minute trials. Select subjects may also test at 14 km/hr. Oxygen consumption (VO_2) will be measured to determine running economy throughout each trial using a metabolic cart. Running mechanics (ground contact time, cadence, and vertical oscillation) and heart rate will also be measured throughout each trial.

About the Researchers

Dustin Joubert is an associate professor at Stephen F. Austin State University in the Department of Kinesiology and Health Science. He completed his doctoral degree in exercise physiology from Texas A&M University. Recently, he completed a large-scale comparison study on the effects of seven different carbon-plated racing shoes on running economy, which can be found here: <https://scholarworks.sfasu.edu/kinesiology/33/>.