

## **Novel Application of a Performance Prediction Model During Altered Running Gait Strategies**

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### **ABSTRACT**

Currently, there is limited research demonstrating that gait retraining can significantly impact running economy and subsequent running performance in distance runners with most of the research showing no or minimal change. Recently, a novel model was developed that predicts running performance based on changes in running economy but has not previously been applied when altering running gait strategies.

**PURPOSE:** The goal of the study was to determine the effect of altering running strategy on predicted running performance in distance runners through application of this novel prediction model. **METHODS:** Fifteen male (n=10; Age: 22.2 ± 4.9 years; Height: 177.7 ± 7.4 cm; Mass: 68.6 ± 6.7 kg) and female (n=5; Age: 21.8 ± 4.1 years; Height: 167.4 ± 7.8 cm; Mass: 59.3 ± 8.1 kg) long distance runners were recruited to participate in the study. Participants' oxygen consumption (VO<sub>2</sub>) and carbon dioxide (VCO<sub>2</sub>) were measured by a metabolic cart using a face mask. After a brief warm-up, participants rested for the initial five minutes then ran at their preferred speed for five minutes. Participants rested for another five minutes while their oxygen consumption returned to baseline measurements and ran for five minutes while increasing step rate by 7.5%. **RESULTS:** There was no significant difference between conditions for VO<sub>2</sub> measurements and energetic cost ( $P > 0.05$ ). There was also no significant difference in the baseline speed and predicted speed resulting from the increase in step rate ( $P > 0.05$ ). **CONCLUSION:** Increasing stride rate 7.5% resulted in an average decrease in predicted running speed of 1%. While statistically insignificant, small decrements in running speed can accrue over time and negatively impact running performance.