OFFICIAL ABSTRACT and CERTIFICATION

Analyzing Long-Term Improvement in Adolescent Cross Country Performance

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Running is a rich area to study decision making. When people run, they make decisions about their speed and pace, which determine their overall race performance. Adolescents with minimal experience running, particularly boys, have been studied to be emotionally aggressive when running, sometimes tending to overconfidence, which can lead to a drop in race speed and a loss in time overall. Statistical analysis and qualitative studies of the course itself can be used to identify how these adolescents improve when running long distances.

Male high school runners from Nassau County had their deidentified race times at two courses, Bethpage and Sunken Meadow State Parks, over four years recorded. The data was graphed and analyzed for variance and accuracy through an ANOVA test and Monte Carlo simulation. Runners had much higher variance (f-statistic) on the Sunken Meadow course, though all data was statistically significant with very low p-values. This may be due to obstacles on the course which challenge inexperienced runners to make difficult decisions on pacing and time management, which can trigger feelings of stress and anger.

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