

1163-F5-1566 **Cameron C Cook*** (ccook54@vols.utk.edu), Knoxville, TN 37919. *Fuel Allocation and Nutrition Management for a Runner Competing in a Race*. Preliminary report.

Nutrition is an integral part of successfully running long distance races such as a marathon and needs to be included in models of running strategies. We formulate a system of ordinary differential equations to represent the velocity, energy, and nutrition for a runner competing in a long-distance race. The energy compartment represents the energy available in the runner's muscles. The food consumed during the race is a source term for the nutrition differential equation. With our model, we are investigating strategies to manage the nutrition and force (source in velocity differential equation), to minimize the running time in a fixed distance race. (Received September 15, 2020)