Michael Scott Gordon* (sgordon@westga.edu), Department of Mathematics, 1500 Maple St., Carrollton, GA 30118. Optimizing Distribution of Power During a Cycling Time Trial.

In this work, we use Lagrange multipliers and calculus of variations to find the optimal distribution of a cyclist’s effort during a time trial. We show that maintaining a constant velocity is optimal if the goal is to minimize total work done but, as this is usually impractical on a non-flat course, we introduce a concept of total exertion and use it to identify the distribution of power that minimizes exertion. (Received August 21, 2004)