

**Meeting:** 1003, Atlanta, Georgia, MAA CP D1, MAA Session on Mathematics and Sports, I

1003-D1-188      **Michael Scott Gordon\*** ([sgordon@westga.edu](mailto: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)