

Abstract Submitted
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Drag and Side Force Reduction for Cyclists in Echelon Formation IVAYLO NEDYALKOV, ALEC CUNNINGHAM, ADAM LOVELL, University of New Hampshire — When riding directly behind another cyclist (drafting), a rider can use up to 30% less energy. This technique is often used during competitions, yet drafting in the presence of a cross wind has not been studied extensively. To investigate the effect of side-wind on drafting, 1:11 scale models of two different cyclists were rapid-prototyped and tested in a wind tunnel. The drag and side forces were measured in formations of up to 4 models. The results suggest that there is a significant decrease in both drag and side force when a cyclist is riding in another cyclist's wake. Positioning with no off-stream-wise offset result in the largest reduction of forces. When riding in a group of four cyclists, the second and third cyclist experience the largest force reduction. The size of the leading cyclist affects the reduction of forces, particularly when the leading cyclist is smaller. The results are dependent on the Reynolds number, but appear to be independent at higher Reynolds numbers. Initial full scale tests were conducted at the UNH Flow Physics Facility.

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