

## Backstroke Start Performance: The Impact of Using the Omega Backstroke Ledge

**Background:** FINA recently approved use of the “backstroke ledge” (Omega OBL2) to improve backstroke start performance in competition, but its performance has not been thoroughly evaluated. The purpose of this study was to compare starts performed on a flat wall to those performed with the OBL2, and to identify factors that contribute to better start performance. **Methods:** Ten elite backstroke swimmers performed three flat-wall and three OBL2 starts. Horizontal impulse, vertical impulse, takeoff velocity and takeoff angle were calculated from the force plate data. Entry distance, time to 10 m and start of hip and knee extension were recorded using digital video cameras. **Results:** We determined that starts performed with the OBL2 had a faster time to 10 m, less variability in vertical impulse and greater entry distance. Time to 10 m and head entry distance had a significant negative correlation. Starts with the OBL2 also had a trend toward lower resultant takeoff velocity, lower horizontal impulse and greater COM takeoff angle. **Discussion and Conclusions:** The OBL2 appears to provide a performance advantage by allowing an increased head entry distance, rather than larger impulse on the wall. Additional studies are needed to evaluate the factors that contribute to improved performance when using the OBL2. Coaches may consider head entry distance as a training target. Athletes should use the OBL2 in training and competition to ensure optimal start performance. **Interdisciplinary Reflection:** Concepts from physical and biological sciences are combined to explain the factors which affect backstroke start performance.