

## **Performance Gap Between Men and Women in Ironman Triathlons**

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### **ABSTRACT**

**PURPOSE:** The increased participation and performance improvement of women in Ironman triathlons (IM) have been showing that the performance gap with men is shorter than ever. Thus, this study aimed to explore this performance gap by discipline (swimming, cycling, and running) and age-groups. **METHODS:** Publicly available data from all IM events from 2002 to 2022 were used for this analysis. Each performance variable (swimming, cycling, running, and overall) were included as dependent variables in general linear model with gender and category (elite, age-groups) as independent factors. The effect size (Cohen's d and delta percentage) was calculated for every "male vs. female" comparison. **RESULTS:** A total of 741,973 entries were analyzed (women=145,008; men=596,965) and 12,670 of those were categorized as elite. For elite athletes, the running portion presented the smallest performance gap (7.3%,  $d = 0.432$ ), whereas cycling and swimming showed a similar gap (swim: 10.7%,  $d=0.676$ ; cycle: 10.0%,  $d = 1.132$ ). For age-groupers, the largest gap was cycling (7.87%,  $d = 0.633$ ). In addition, age-groupers between 30 and 49 years showed the largest performance gap (7.9% - 8.0%), when compared to younger (<30 years old) or older (>49 years old) athletes (5.0 – 6.9%). **CONCLUSION:** Overall, men consistently outperform women in all three disciplines of IM. However, the performance gap varies based on age group, level, and discipline. While elite athletes have small performance gaps in running, age-groupers have their largest performance gap in cycling. Additionally, age-groupers within 30-49 years of age have the largest performance gap amongst amateur athletes in IM.