

Fastest Ironman Race Courses and the Fastest Ironman Age Group Triathletes found in Europe

A recent study published found that the European countries of Austria, Belgium, Denmark, Finland, Germany, and Switzerland had the fastest Ironman [triathletes](#) and that the Ironman racecourses in Europe were some of the fastest triathlon racecourses.



Study

The present study aimed to identify the fastest Ironman racecourses to help [athletes](#) formulate training and pacing strategies to improve their chances of qualifying for the Ironman World Championships in Hawaii.

The researchers analyzed data from 677,702 Ironman age-group finishers from 228 countries, covering 444 events across 66 different [race](#) locations between 2002 and 2022.

For the analysis, the researchers gathered data on race locations, triathlete performances, and environmental variables from the official website for the [Ironman race](#). The final dataset contained records for recreational age-group athletes who participated between 2002 and 2022.

Detailed information on the athlete's race location, age, [gender](#), and country, performance in the three segments of the race, and transition from one segment to the next was collected.

Additionally, environmental variables such as the [air](#) and water temperatures and types of terrains, including hilly, rolling, or flat, were recorded.

The swim locations were categorized as [ocean](#), lake, river, bay, or reservoir for the analysis.

The [environmental variables](#) were used to analyze how the race would impact overall performance. Categorical variables such as gender and age groups were encoded numerically for the analysis.

Additionally, event [locations](#) and countries were also coded based on the frequency of events or number of participants, respectively.

Various statistical methods were used to analyze the data. The researchers also employed [machine learning](#) models to predict race finish times based on all the data.

Four machine learning-based [regression models](#), Random Forest, Decision Tree, CatBoost, and XGBoost, were chosen based on their target prediction effectiveness.

The machine learning models used categorical and [numerical variables](#) to predict the race times.

Additionally, the study used metrics such as mean [absolute error](#) to evaluate the accuracy of the models.

Furthermore, the researchers also used the results from the models to determine which variables or factors have the strongest impact on the [athlete's race performance](#).

Findings

The study found that although the largest number of participants in the Ironman races were from the United States (U.S.) followed by the [United Kingdom](#) (U.K.) and Canada, these countries exhibited average overall race times that were significantly slower compared to the fastest countries.

The triathletes from Austria, [Belgium](#), Denmark, Finland, Germany, and Switzerland had the fastest Ironman race times.

Furthermore, the fastest race times were recorded during Ironman races held in Copenhagen, Frankfurt, Kalmar, [Barcelona](#), Hawaii, and Florianópolis, indicating that Europe also had some of the fastest Ironman racecourses.

[Younger athletes](#) of both genders had faster race times than older athletes. The fastest male athletes were in the 30 to 34 age group, while the fastest female athletes were in the 25 to 29 age group.

Despite the U.S. having the highest number of participating [Ironman triathletes](#), these athletes did not achieve the fastest race times. This contrast between participation and performance highlights the dominance of European athletes in terms of speed.

The characteristics of the athlete that had the strongest influence on the race performance were the age group and country of origin, with three out of the four machine learning models identifying these two factors as the [strongest influencers](#).

Furthermore, while air and water temperatures did not seem to impact race performance, the course characteristics, such as [flat cycling](#) and running routes, were linked to faster race times.

Conclusion

In summary, the study found that despite the U.S. having the highest number of participating Ironman triathletes, the fastest triathletes were from [European countries](#). Europe also had some of the fastest racecourses. Additionally, younger age group triathletes had faster race times than older athletes, and environmental factors did not impact the race times as much as athlete demographics and course types did.

Source:

<https://www.news-medical.net/news/20240909/European-athletes-claim-fastest-Ironman-times-outpacing-Americans-despite-higher-US-participation.aspx>