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What It Takes to Win: Examining Predicted Versus Actual Swimming Performances at the Paris 2024 Olympic Games, and What Comes Next

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Predictions of performances should be evaluated to confirm their accuracy. Work by this group has resulted in 3 sets of predictions being generated for swimming events at the Paris 2024 Olympic Games, using the same statistical approach for each set. ***Purpose:*** To examine the accuracy of swimming predictions for the Paris 2024 Olympic Games and generate updated predictions for both the Singapore 2025 World Aquatics Championships and Los Angeles 2028 Olympic Games. ***Methods:*** A linear regression and forecasting function was used to generate predictions for the Paris 2024 Olympic Games across 3 performance categories (rank 1st–3rd, 4th–8th, and 9th–16th). Mean absolute error was used to assess the accuracy of the predicted versus actual Paris 2024 Olympic Games times for all events across the 3 performance categories. New predictions for the 2028 Olympic cycle were subsequently generated using results from the World Championships and Olympic Games between 2011 and 2024. ***Results:*** Across all events, a mean absolute error value of 0.84% was observed between the Paris 2024 Olympic Games predicted and actual times. Predicted times were highly correlated with actual times ($r^2 = .99$). Across the 3 sets of predictions (created in 2022, 2023, and 2024), the 2023 set of predictions had the lowest overall mean absolute error value (0.55%). ***Conclusions:*** The methods used to create predictions for swimming performances at the Paris 2024 Olympic Games were deemed accurate. These methods enable national swimming federations to create a series of predictions for a given major championship, inform athlete identification and development pathways, and allocate appropriate resources, including sport-science provision.

Keywords: World Aquatics, major international competitions, predictive modeling, performance analysis