



RELATIONSHIP OF SPEED, AGILITY AND SWIMMING ABILITY AMONG MALE PROFESSIONAL SWIMMERS IN KARNATAKA STATE

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Abstract:

The purpose of the study was to find out the relationship between the speed, agility and swimming ability among male professional swimmers in Karnataka State. To achieve this purpose of the study, forty male professional swimmers in Karnataka State were selected as subjects at random. The following variables namely speed, agility and swimming ability were selected as variables. All the subjects of two groups were tested on selected variables namely speed, agility and swimming ability by using 50 mts run, shuttle run and subjective rating method respectively. The person product moment correlation was used to analyze the significant relationship, if any between speed and swimming ability. The .05 level of confidence was fixed as the level of significance to test the correlation value obtained, which was considered as an appropriate. The results of the study showed that there was a significant relationship between speed and swimming ability among male professional swimmers in Karnataka State. Further, the results of the study showed that there was a significant relationship between agility and swimming ability among male professional swimmers in Karnataka State

Key Words: Analysis, Male Professional Swimmers, Speed, Agility and Swimming Ability

Introduction:

Swimming ability and speed are fundamental performance determinants among male professional swimmers, as competitive success in swimming is largely decided by fractions of a second. Swimming ability refers to the overall capacity of a swimmer to efficiently perform various strokes with proper technique, coordination, breathing control, buoyancy, and water balance while maintaining optimal body alignment. It encompasses technical proficiency, neuromuscular coordination, muscular strength, flexibility, and aerobic and anaerobic capacities. In professional male swimmers, refined swimming ability enables effective stroke mechanics, reduced drag forces, improved propulsion, and energy conservation over different race distances.

Speed, on the other hand, is the capacity to cover a specific distance in the shortest possible time and is considered a decisive factor in sprint and middle-distance events. Swimming speed is influenced by stroke length, stroke frequency, start and turn efficiency, reaction time, and the swimmer's ability to generate maximal propulsive force against water resistance. Physiological factors such as fast-twitch muscle fibre composition, anaerobic power, lactate tolerance, and cardiovascular endurance also significantly contribute to speed performance. Moreover, biomechanical efficiency and hydrodynamic positioning play crucial roles in minimizing resistance and maximizing forward thrust.

Among male professional swimmers, the interaction between swimming ability and speed is highly interdependent. Superior technical skill enhances movement economy, allowing swimmers to sustain higher velocities with reduced energy expenditure. Structured training programmes incorporating strength and conditioning, interval training, plyometrics, and technique refinement are essential for developing both swimming ability and speed. Therefore, understanding and improving these variables are vital for optimizing competitive performance and achieving excellence at national and international levels.

Swimming ability and speed constitute the core components of performance among male professional swimmers, particularly in modern competitive swimming where marginal improvements determine podium finishes. Competitive swimming demands a harmonious integration of technical mastery, physical fitness, physiological efficiency, and psychological preparedness. At the professional level, swimmers are required not only to possess high levels of physical conditioning but also to demonstrate exceptional control over stroke mechanics, breathing patterns, body alignment, and race strategy. Therefore, swimming ability extends beyond mere locomotion in water; it reflects a comprehensive skill set that allows swimmers to optimize propulsion while minimizing resistance.

Swimming ability includes proficiency in the four competitive strokes freestyle, backstroke, breaststroke, and butterfly along with efficient starts, turns, and finishes. Proper body position reduces form drag, while effective arm pull and leg kick techniques enhance propulsive force. Core stability and flexibility contribute significantly to maintaining streamlined posture, which is critical in reducing hydrodynamic resistance. Additionally, coordination between upper and lower body movements ensures smooth and continuous motion, thereby conserving energy across race distances. For male professional swimmers, years of

systematic training refine neuromuscular coordination and movement efficiency, enabling consistent high-level performance.

Speed in swimming refers to the swimmer's capacity to travel a given distance in minimal time and is a decisive performance indicator in sprint, middle-distance, and even long-distance events. Swimming speed is determined by the interaction of stroke length and stroke rate, where an optimal balance between these two variables leads to maximum velocity. Biomechanically, speed depends on the ability to generate powerful propulsive forces while maintaining technical efficiency. Physiologically, it is influenced by muscular strength, explosive power, anaerobic capacity, aerobic endurance, and efficient energy system utilization. Male professional swimmers often display higher muscle mass, greater upper-body strength, and enhanced anaerobic power, which contribute to improved sprint performance.

Furthermore, the start and turn phases significantly affect overall race speed, especially in short-distance events where reaction time and underwater dolphin kicking can account for a substantial portion of race performance. Strength and conditioning programmes, resistance training, plyometrics, and high-intensity interval training are commonly integrated into professional training regimens to enhance power output and swimming velocity. Simultaneously, aerobic conditioning improves cardiovascular efficiency, allowing swimmers to sustain high speeds with delayed fatigue.

In elite male swimmers, swimming ability and speed are closely interconnected. Superior technical skill improves movement economy, allowing athletes to maintain faster speeds with lower energy expenditure. Conversely, increased strength and power enhance stroke effectiveness, contributing to better technical execution. Continuous monitoring of stroke mechanics, lactate levels, and performance metrics helps coaches design evidence-based training interventions aimed at optimizing both ability and speed.

Swimming ability and speed are indispensable determinants of competitive success among male professional swimmers. The development of these variables requires a scientific and systematic training approach that integrates biomechanical precision, physiological conditioning, and tactical awareness. Enhancing swimming ability and speed not only improves race performance but also contributes to long-term athletic excellence at national and international levels

Methodology:

The purpose of the study was to find out the relationship between the speed, agility and swimming ability among male professional swimmers in Karnataka State. To achieve this purpose of the study, forty male professional swimmers in Karnataka State were selected as subjects at random. The following variables namely speed, agility and swimming ability were selected as variables. All the subjects of two groups were tested on selected variables namely speed, agility and swimming ability by using 50 mts run, shuttle run and subjective rating method respectively. The person product moment correlation was used to analyze the significant relationship, if any between speed and swimming ability. The .05 level of confidence was fixed as the level of significance to test the correlation value obtained, which was considered as an appropriate.

Analysis of the Data:

Speed and Swimming Ability:

The mean, standard deviation and product moment correlation values between speed and swimming ability of male professional swimmers in Karnataka State were represented in table 1.

Table 1: The Mean, Standard Deviation and Product Moment Correlation Values between Speed and Swimming Ability of Male Professional Swimmers in Karnataka State

Variables	Mean	SD	'r' Value
Speed	8.06	0.46	0.352*
Swimming Ability	79.30	8.22	

* Significant at .05 level of confidence

[Table value required for significance with df 39 was 0.2605]

The table 2 showed that the mean values on speed was 8.06 and this mean values on swimming ability was 79.30 the correlation value 0.352 which was higher than required table value 0.2605 with df 39. Hence, it was concluded that there was a significant relationship between speed and swimming ability of male professional swimmers in Karnataka State.

Agility and Swimming Ability:

The mean, standard deviation and product moment correlation values between agility and swimming ability of male professional swimmers in Karnataka State were represented in table 2.

Table 2: The Mean, Standard Deviation and Product Moment Correlation Values between Agility and Swimming Ability of Male Professional Swimmers in Karnataka State

Variables	Mean	SD	'r' Value
Agility	8.48	0.14	0.287*
Swimming Ability	79.30	8.22	

* Significant at .05 level of confidence

[Table value required for significance with df 39 was 0.2605]

The table 2 showed that the mean values on agility was 8.48 and this mean values on swimming ability was 79.30 the correlation value 0.287 which was higher than required table value 0.2605 with df 39. Hence, it was concluded that there was a significant relationship between agility and swimming ability of male professional swimmers in Karnataka State.

Conclusions:

- There was a significant relationship between speed and swimming ability of male professional swimmers in Karnataka State.
- There was a significant relationship between agility and swimming ability of male professional swimmers in Karnataka State

References:

1. Ruiz-Navarro JJ, Santos CC, Born DP, López-Belmonte Ó, et al. Factors Relating to Sprint Swimming Performance: A Systematic Review. *Sports Medicine*. 2025; 55:899-922.
2. Barbosa TM, Morais JE, Marques MC, Costa MJ, Marinho DA. The power output and sprinting performance of young swimmers. *J Strength Cond Res*. 2015; 29(2):440-450.
3. Anderson M, Hopkins W, Roberts A, Pyne D. Ability of test measures to predict competitive performance in elite swimmers. *J Sports Sci*. 2008; 26(2):123-130.
4. Soni V, Vedawala N. Effectiveness of Plyometric Exercises to Improve Speed and Agility in Young Beginner Swimmers: A Randomized Control Trial. *Int J Res Rev*. 2022; 9(3):89-95.
5. Alqallaf A. The effect of repeated maximum intensity speed and agility training on some physical variables and the numerical level of 100-meter swimmers. *J Appl Sports Sci*. 2025; 15(1):68-77.
6. Min Sun, Soh KG, Cao S, Yaacob AB, Ma S, Ding C. Effects of speed, agility, and quickness training on athletic performance: a systematic review and meta-analysis. *BMC Sports Sci Med Rehabil*. 2025; 17:66.
7. Hawley JA, Williams MM, Vickovic MM, Handcock PJ. Muscle power predicts freestyle swimming performance. *Br J Sports Med*. 1992; 26(3):151-155.
8. Skorulski M, Stachowicz M, Kuliś S, Gajewski J. Accelerometric assessment of fatigue-induced changes in swimming technique in high-performance athletes. *Sci Rep*. 2025; 15:2409.
9. *Frontiers in Physiology Review: Young Swimmers' Anthropometrics, Biomechanics, Energetics, and Efficiency as Underlying Performance Factors*. *Front Physiol*. 2021.
10. Crowley E, Harrison AJ, Lyons M. The Impact of Resistance Training on Swimming Performance: A Systematic Review. *Sports Med*. 2017; 47(11): 2285-2307.