



RELATIONSHIP OF HEIGHT, LEG LENGTH 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 height, leg length 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 height, leg length and swimming ability were selected as variables. All the subjects of two groups were tested on selected variables namely height, leg length and swimming ability by using stadiometer, flexible measuring tape and subjective rating method respectively. The person product moment correlation was used to analyze the significant relationship, if any between height 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 height and swimming ability among male professional swimmers in Karnataka State. Further, the results of the study showed that there was a significant relationship between leg length and swimming ability among male professional swimmers in Karnataka State

Key Words: Analysis, Male Professional Swimmers, Height, Leg Length and Swimming Ability

Introduction:

Swimming is a highly technical and physically demanding sport in which anthropometric and physiological characteristics play a crucial role in determining performance. Among these characteristics, swimming ability and height are considered significant factors influencing success, particularly among male professional swimmers. Swimming ability refers to the overall competence of a swimmer in performing various strokes efficiently, maintaining optimal body position, coordinating breathing patterns, and sustaining speed over different distances. It is shaped by technical skill, muscular strength, aerobic and anaerobic capacity, flexibility, and neuromuscular coordination. At the professional level, swimming ability is not merely the capacity to swim but the ability to execute strokes with maximum efficiency, minimal drag, and effective propulsion.

Height is an important anthropometric variable that provides biomechanical advantages in competitive swimming. Taller swimmers generally possess longer limbs, greater arm span, and larger hands and feet, which contribute to increased stroke length and propulsion. A longer body structure can help reduce drag and enhance streamline position in the water. In male professional swimmers, greater height is often associated with improved leverage during the pull and kick phases of swimming strokes, allowing for more powerful and efficient movements. Additionally, taller swimmers may achieve higher stroke efficiency by covering more distance per stroke, which can lead to better race performance, particularly in sprint and middle-distance events.

The relationship between swimming ability and height is complex and interrelated. While height offers mechanical advantages, optimal performance depends on how effectively a swimmer utilises these physical attributes through proper technique and conditioning. Training programmes in professional swimming often aim to maximise the natural advantages of height by enhancing strength, flexibility, coordination, and endurance. However, it is important to recognise that height alone does not determine success; technical proficiency, psychological preparedness, and systematic training also play vital roles. Therefore, understanding the interaction between swimming ability and height is essential for talent identification, performance enhancement, and scientific training among male professional swimmer.

Swimming is a highly technical and physically demanding sport in which success depends upon the effective interaction of physiological capacities, anthropometric characteristics, and biomechanical efficiency. Among male professional swimmers, swimming ability is not determined solely by strength and endurance but also by body structure and proportions, particularly limb length. Anthropometric variables such as height, arm span, and leg length play a crucial role in influencing propulsion, stroke mechanics, and overall performance in competitive swimming.

Swimming ability refers to the swimmer's capacity to efficiently coordinate movements of the arms and legs while maintaining optimal body position in water to minimize drag and maximize propulsion. It is influenced by factors such as muscular strength, flexibility, coordination, buoyancy, aerobic and anaerobic power, and technical skill. In professional male swimmers, refined technique combined with favourable body dimensions enhances stroke length, stroke efficiency, and speed. Effective kicking action, especially in freestyle, butterfly, and backstroke events, depends greatly on lower limb mechanics, which are influenced by leg length and hip flexibility.

Leg length is considered an important anthropometric characteristic in swimming performance. Longer legs may contribute to greater propulsive surface area during kicking movements and improve leverage in underwater phases, particularly during starts and turns. In strokes such as freestyle and butterfly, the flutter and dolphin kicks are essential for maintaining speed and balance, and swimmers with proportionally longer lower limbs may generate stronger propulsion due to increased moment arms and enhanced force application. Moreover, leg length is associated with overall body height, which is often linked to improved stroke length and reduced energy cost per unit distance.

In male professional swimmers, optimal leg length combined with proper strength, neuromuscular coordination, and technique can enhance kick efficiency, streamline position, and start performance. Therefore, the study of swimming ability in relation to leg length is significant for talent identification, performance prediction, and training programme design.

Understanding how anthropometric factors such as leg length contribute to competitive success can help coaches and sports scientists develop more effective training strategies tailored to the individual characteristics of swimmers.

Methodology:

The purpose of the study was to find out the relationship between the height, leg length 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 height, leg length and swimming ability were selected as variables. All the subjects of two groups were tested on selected variables namely height, leg length and swimming ability by using stadiometer, flexible measuring tape and subjective rating method respectively. The person product moment correlation was used to analyze the significant relationship, if any between height 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:

Height and Swimming Ability:

The mean, standard deviation and product moment correlation values between height 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 Height and Swimming Ability of Male Professional Swimmers in Karnataka State

Variables	Mean	SD	'r' Value
Height	179.05	4.18	0.289*
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 height was 8.06 and this mean values on swimming ability was 179.05 the correlation value 0.352 which was higher than required table value 0.289 with df 39. Hence, it was concluded that there was a significant relationship between height and swimming ability of male professional swimmers in Karnataka State.

Leg length and Swimming Ability:

The mean, standard deviation and product moment correlation values between leg length 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 Leg Length and Swimming Ability of Male Professional Swimmers in Karnataka State

Variables	Mean	SD	'r' Value
Leg length	82.50	1.59	0.319*
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 leg length was 82.50 and this mean values on swimming ability was 79.30 the correlation value 0.287 which was higher than required table value 0.319 with df 39. Hence, it was concluded that there was a significant relationship between leg length and swimming ability of male professional swimmers in Karnataka State.

Conclusions:

- There was a significant relationship between height and swimming ability of male professional swimmers in Karnataka State.
- There was a significant relationship between leg length and swimming ability of male professional swimmers in Karnataka State

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