



ISSN: 2456-0057

IJPNPE 2019; 4(1): 2037-2041

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www.journalofsports.com

Received: 25-03-2019

Accepted: 28-04-2019

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## Conscientiousness personality trait in relation to anthropometric somatotype of aquatic and non-aquatic players

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### Abstract

Personality has been continuously considered a central constituent in aquatic and non-aquatic sports world and deals with the approach in which various psychological states and traits of the players influence sports performance. To accomplish the study, purposive sampling technique has been used. The sample of the study has been selected from the various colleges and universities. For this purpose, total 240 college and university level players (120 aquatic and 120 non-aquatic) were selected as subjects. The selected subjects were between the age group of 18 to 25 years. Personality big five inventory developed by John and Srivastava (1999) was applied to evaluate the personality and anthropometric somatotype manual developed by Heath and Carter (1990) was administered to assess the anthropometric somatotype of aquatic and non-aquatic players. To determine the relationship of personality with anthropometric somatotype of aquatic and non-aquatic players, Pearson product-moment correlation coefficient was applied through statistical product and service solutions (SPSS) version 20.0. The level of significance was set at 0.05. The results of the study identified the positive relationship between conscientiousness personality trait and somatotype endomorph, mesomorph and ectomorph with regard to aquatic players. The endomorph aquatic players have more conscientiousness personality as compared to mesomorph and ectomorph somatotype whereas mesomorph has more conscientiousness personality when compared with ectomorph somatotype. Non-aquatic players discovered the negative relationship of conscientiousness personality trait with endomorph and ectomorph somatotype. However, the positive relationship was reported between conscientiousness personality trait and mesomorph somatotype. The mesomorph non-aquatic players possess more conscientiousness personality followed by endomorph and ectomorph somatotype. Both the findings of relationship revealed that there is relationship between extraversion personality trait and somatotype of aquatic players but the relationship was not found statistically significant.

**Keywords:** Personality, Conscientiousness, Anthropometric Somatotype, Big Five, Aquatic, Non-Aquatic

### Introduction

Personality has been continuously considered a central constituent in aquatic and non-aquatic sports world and deals with the approach in which various psychological states and traits of the players influence sports performance. The central purpose of personality psychology is to understand the behaviour of an athlete, to modify it according to the demand of sports situations, to optimize the benefits for elite sports performance and excellence. In addition to this, factors such as anthropometric somatotype, mental toughness and emotional maturity also plays a dominant role for winning and higher sports performance. Eysenck (1952) [6] stated personality is the more or less stable and enduring organization of a person's character, temperament intellect and physique that determine his unique adjustment to his environment. Another statement by Mayer (2005) [9] specified personality as an individual's pattern of psychological processes arising from motives, feelings, thoughts and other major psychological function. Personality is expressed through its influences on the body, in conscious mental life, and through the individual's social behavior. (Piedmont, Hill and Blanco, 1999) [12] found that the five-factor model of personality could be used to make predictions about the player's performance in sports. Researchers have always reported the significant effects of personality on sports (Aidman and Schofield, 2004) [1]. The big five

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model serves an integrative function because it can represent the various and diverse systems of personality description in a common framework. The dimensions of big five model include extroversion, agreeableness, conscientiousness, neuroticism and openness to experience. These dimensions of personality are associated with different aspects of an individual's personality traits such as being assertive, emotional stability, and a person's tendency to experience distress. The big five model dimension conscientiousness deals with an individual's will to achieve goals and their dependability. This dimension can also be used to describe a person as careful, responsible and thorough. Conscientiousness depicts socially prescribed impulse control and assists task and goal directed behaviours. This includes characteristics like purposeful in cognition and behaviour, organized, follows rules and norms, delays gratification, strong-minded and self-disciplined.

The somatotype is defined as the quantification of the present shape and composition of the human body. The technique of somatotyping is used to appraise body shape and composition. The physique of athletes is suggested to contribute to their performance (Carter and Heath, 1990) [4-5]. Barbara Heath and J. E. Lindsay Carter in 1967 modified Sheldon's somatotyping method and developed the Heath-Carter somatotyping method. The Heath-Carter method of somatotyping is the most commonly used today. According to Heath and carter, somatotype is a description of present morphological confirmation. It is expressed in ratings, consisting of three sequential numbers, always recorded in the same order. Each number represents evaluation of one of the three primary components of physique, which describe individual variation in human morphology and composition. Endomorphy, or the first component, refers to relative fatness and leanness of the physique; mesomorphy, or the second component, refers to musculo-skeletal development relative to height; and ectomorphy, or the third component, refers to the relative linearity of individual physique (Carter and Heath, 1990) [4-5].

William Sheldon introduced the concept of body types or somatypes in the 1940s. People are born with an inherited body type based on skeletal frame and body composition. Sheldon classified people according to three body types:

- Endomorphs, who are round, usually short and soft with under-developed muscles and having difficulty losing weight, were said to have a tendency toward a "viscerotonic" personality.
- Mesomorphs, who are square and muscular, hard, rugged, triangular, athletically built with well-developed muscles, thick skin and good posture were said to have a tendency toward a "somatotonic" personality.
- Ectomorphs, who are thin and fine-boned, linear, usually tall, fragile, lightly muscled, flat chested and delicate were said to have a tendency toward a "cerebrotonic" personality.

Sheldon used this classification system to explain delinquent behaviour, finding that delinquents were likely to be high in mesomorphy and low in ectomorphy and arguing that mesomorphy's associated temperaments (active and aggressive but lacking sensitivity and inhibition) tended to cause delinquency and criminal behaviour (Roekelein, 1998) [13]. In his 1954 book, Atlas of Men, Sheldon categorized all possible body types according to a scale ranging from 1 to 7 for each of the three somatypes, where the endomorph is 7-1-1, the mesomorph 1-7-1 and the ectomorph scores 1-1-7.

## Objectives of the Study

1. To find out the relationship between personality and anthropometric somatotype of aquatic players.
2. To find out the relationship between personality and anthropometric somatotype of non-aquatic players.

## Delimitations of the Study

1. The study will be delimited to the male aquatic players of swimming, diving and water polo only.
2. The study will be delimited to the male non-aquatic players of football, hockey and basketball only.
3. The study will be delimited to the college and university level players.
4. The present study will be delimited to Personality and Anthropometric somatotype.
5. The study is delimited to the age group of 18 to 25 years.

## Method and Procedure

To accomplish the study, purposive sampling technique has been used. The sample of the study has been selected from the various colleges and universities. For this purpose, total 240 college and university level players (120 aquatic and 120 non-aquatic) were selected as subjects. The selected subjects were between the age group of 18 to 25 years. Personality big five inventory developed by John and Srivastava (1999) [8] was applied to evaluate the personality and anthropometric somatotype manual developed by Heath and Carter (1990) [4-5] was administered to assess the somatotype of aquatic and non-aquatic players. To determine the relationship of personality with anthropometric somatotype of aquatic and non-aquatic players, Pearson product-moment correlation coefficient was applied through statistical product and service solutions (SPSS) version 20.0. The level of significance was set at 0.05. The scheme of sample distribution of aquatic and non-aquatic players have been presented in figure mentioned below.

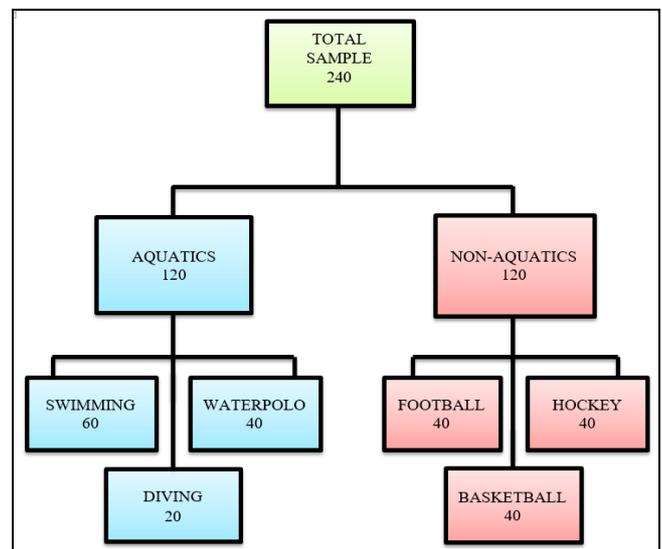


Fig - Scheme of Sample Distribution of Aquatic and Non-Aquatic players

## Scoring and Interpretation

A 44 item Personality big five inventory developed by John and Srivastava (1999) [8] was applied to evaluate the personality of aquatic and non-aquatic players. This scale consists of five dimensions of personality namely: (a) Extraversion (b) Agreeableness (c) Conscientiousness (d) Neuroticism and (e) Openness to experience. Big five

inventory is a self-reporting measure five point scale. Items of the scale are in question form demanding information for each in any of the five options below: (1) Disagree strongly (2) Disagree a little (3) neither agree nor disagree (4) Agree a little (5) Agree strongly. The subject writes a number next to each statement to indicate the extent to which you agree or disagree with that statement. The big five model dimension conscientiousness deals with an individual's will to achieve goals and their dependability. This dimension can also be used to describe a person as careful, responsible and thorough. Conscientiousness depicts socially prescribed impulse control and assists task and goal directed behaviours. This includes characteristics like purposeful in cognition and behaviour, organized, follows rules and norms, delays gratification, strong-minded and self-disciplined.

The anthropometric somatotype manual developed by Heath and Carter (1990) [4-5] was administrated to assess the somatotype of aquatic and non-aquatic players. Ten anthropometric dimensions were needed to calculate the anthropometric somatotype: stretch stature (height), body mass (weight), four skinfolds (triceps, subscapular, supraspinale, medial calf), two bone breadths (bicipondylar humerus and femur) and two limb girths (arm flexed and tensed, calf). The following descriptions are adapted from anthropometric somatotype manual (Heath and Carter, 1990) [4-5].

**Findings of the Study**

The table no.1 and table no.2 represents relationship of

conscientiousness personality trait with anthropometric somatotype of aquatic and non-aquatic players. The table deals with the variable, r - value and sig. (p) value whereas \* indicates significant relationship.

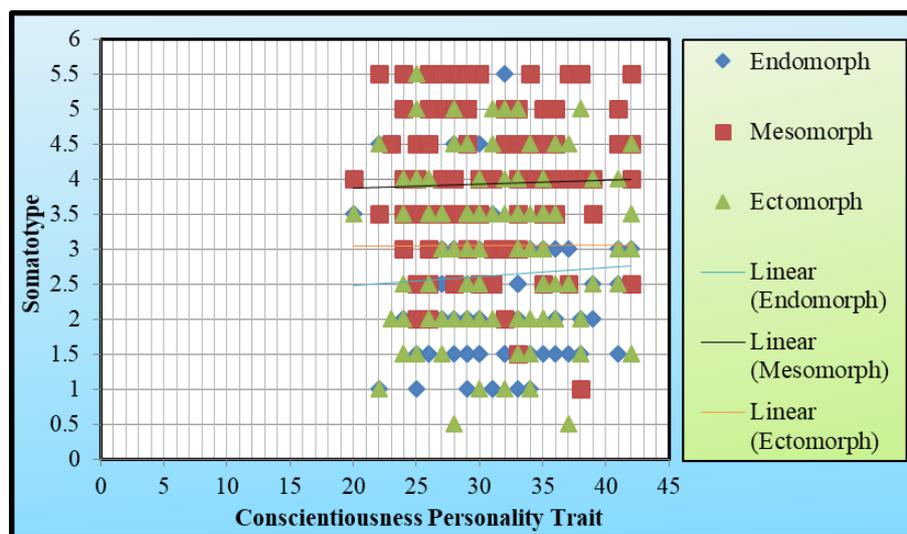
The relationship of conscientiousness personality trait with somatotype of aquatic players has been presented in table-1.

**Table 1:** Relationship of Conscientiousness Personality Trait with Somatotype of Aquatic Players

| Somatotype | r - value | p - value (Sig.) |
|------------|-----------|------------------|
| Endomorph  | .056      | .541             |
| Mesomorph  | .029      | .757             |
| Ectomorph  | .002      | .985             |

Table-1 identified the relationship pattern between conscientiousness personality trait and classifications of somatotype with regard to aquatic players. The positive relationship was identified between conscientiousness personality trait and endomorph with  $r=.056$  and p-value (sig.)=.541, mesomorph with  $r=.029$  and p-value (sig.)=.757 and ectomorph  $r=.002$  and p-value (sig.)=.985. Although, there was relationship between conscientiousness personality trait and somatotype of aquatic players but the relationship was not found statistically significant ( $p>0.05$ ).

The graphical representation of relationship of conscientiousness personality trait with somatotype of aquatics players have been depicted in figure-1.



**Fig 1:** Graphical representation of relationship of Conscientiousness Personality Trait with Somatotype of Aquatic Players

The relationship of conscientiousness personality trait with somatotype of non-aquatic players has been presented in table-2.

**Table 2:** Relationship of Conscientiousness Personality Trait with Somatotype of Non-Aquatic Players

| Somatotype | r - value | p - value (Sig.) |
|------------|-----------|------------------|
| Endomorph  | -.117     | .203             |
| Mesomorph  | .040      | .661             |
| Ectomorph  | -.007     | .943             |

Table-2 discovered the relationship pattern between conscientiousness personality trait and classifications of

somatotype with regard to non-aquatic players. The negative relationship was reported between conscientiousness personality trait and endomorph with  $r=-.117$  and p-value (sig.)=.203, ectomorph with  $r=-.007$  and p-value (sig.)=.943. However, the positive relationship was discovered between conscientiousness personality trait and mesomorph with  $r=.040$  and p-value (sig.)=.661. Although, there was relationship between conscientiousness personality trait and somatotype of non-aquatic players but the relationship was not found statistically significant ( $p>0.05$ ).

Relationship of conscientiousness personality trait with somatotype of non-aquatic players has been depicted in figure-2.

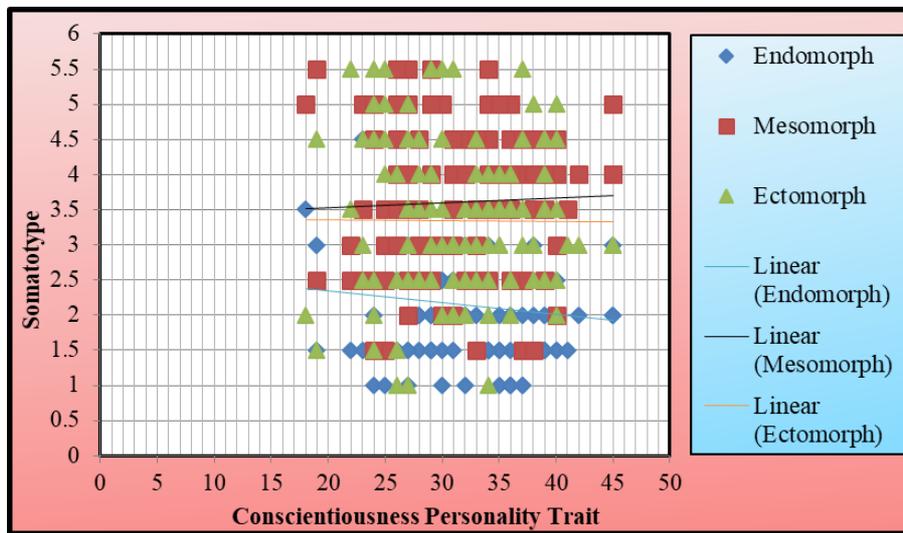


Fig 2: Relationship of Conscientiousness Personality Trait with Somatotype of Non-Aquatic Players

### Discussion

The results from (table-1) of aquatic players identified the positive relationship between conscientiousness personality trait and somatotype endomorph, mesomorph and ectomorph. The endomorph aquatic players have more conscientiousness personality as compared to mesomorph and ectomorph somatotype whereas mesomorph has more conscientiousness personality when compared with ectomorph somatotype. The relationship between conscientiousness personality trait and somatotype was not found statistically significant ( $p > 0.05$ ). Positive relationship revealed that if conscientiousness personality trait increase, the somatotype endomorph, mesomorph and endomorph also increase or vice versa. Hence, conscientiousness personality trait was directly proportional to endomorph, mesomorph and ectomorph somatotype.

The results from (table-2) of non-aquatic players discovered the negative relationship of conscientiousness personality trait with endomorph and ectomorph somatotype. However, the positive relationship was reported between conscientiousness personality trait and mesomorph somatotype. The mesomorph non-aquatic players possess more conscientiousness personality followed by endomorph and ectomorph somatotype. The relationship between conscientiousness personality trait and somatotype was not found statistically significant ( $p > 0.05$ ). Negative relationship revealed that if conscientiousness personality trait increase, the endomorph and ectomorph somatotype decrease, whereas the positive relation revealed that if conscientiousness increase, mesomorph somatotype also increase or vice versa. Hence, conscientiousness personality trait was inversely proportional to endomorph and ectomorph somatotype whereas directly proportional to mesomorph somatotype.

Athletes who have acquired the optimal physique for a particular event are more likely to succeed than those who lack the general characteristics. Studies on somatotype of athletes, elite athletes and Olympic athletes have generally shown that strength and speed dependent athletes tended to be basically mesomorphic while distance dependent athletes were found to be more ectomorphic with limited amount of mesomorphic muscularity. Investigations of somatotypes in elite sportsmen play an important role in the study of the dynamics of development of a specific shape of the human body under the influence of various intensive purposeful training processes and competitive periods. It is well known

that the anthropometric profile may indicate whether a player would be suitable to participate at the highest level in a specific sport (Bourgeois *et al.* 2000) [2]. Specific anthropometric characteristics are needed to be successful in certain sporting events. It is also important to note that there are some differences in body structure and composition of sports persons involved in individual and team sports. This process whereby the physical demands of a sport lead to selection of body type best suited to that sport is known as "morphological optimization". The quantification of morphological characteristics of high profile athletes can be a key aspect of relating body structure to sports performance (Orhan, Sagir and Zorba, 2013) [11].

### Conclusion

On the basis of analysis of data, it may be concluded that among aquatic players, the positive relationship was identified between conscientiousness personality trait and somatotype endomorph, mesomorph and ectomorph. The endomorph aquatic players have more conscientiousness personality as compared to mesomorph and ectomorph somatotype whereas mesomorph has more conscientiousness personality when compared with ectomorph somatotype. Non-aquatic players discovered the negative relationship of conscientiousness personality trait with endomorph and ectomorph somatotype. However, the positive relationship was reported between conscientiousness personality trait and mesomorph somatotype. The mesomorph non-aquatic players possess more conscientiousness personality followed by endomorph and ectomorph somatotype. Both the findings of relationship revealed that there is relationship between extraversion personality trait and somatotype of aquatic players but the relationship was not found statistically significant.

Researchers have conducted significant research in regard to sports performance and the five factor model of personality. The research conducted by Eysenck (1992) [7], McCrae and Costa (1995) [10] provide enough evidence to highlight influence of personality factors and sports performance and impact of sports upon the personal development of athletes. There appears to be a formidable connectivity between personality and sports performance. The big five model dimension conscientiousness deals with an individual's will to achieve goals and their dependability. This dimension can also be used to describe a person as careful, responsible and thorough. Conscientiousness depicts socially prescribed

impulse control and assists task and goal directed behaviours. This includes characteristics like purposeful in cognition and behaviour, organized, follows rules and norms, delays gratification, strong-minded and self-disciplined.

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