



Association of Somatotype, Physical Fitness and Mental Health of Collegiate Students from Pune City

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ABSTRACT

The somatotype is the theory of personality, which links distinct personality traits and behavioral features to different bodily compositions. Somatotypes describe the genetic predisposition individuals have with regard to particular body types, muscle-to-fat ratios, and stature. A somatotype denotes to the bodybuilder or physique of an individual, according to Sheldon, there are three somatotypes: slim ectomorphs, muscular mesomorphs, and smooth endomorphs. Body shape or personality traits have an effect on fitness, it was also established that physical fitness and mental health are very closely associated with each other. Purpose of this endeavor was to study the association of somatotype, physical fitness and mental health among college going students from Pune city. The method of this study was descriptive survey as researchers have collected research data from different colleges of Pune city. Cluster random sample method was applied to select 579 boys students from 25 different colleges affiliated to University of Pune. Ten different body measurements were taken to decide the Somatotype, five health related physical fitness components were measured with different standardized fitness test and the scores were converted to standard scores. Mental health was measured with the inventory developed by Dr. Agashe & Dr. Helode. It is concluded that there exists very good correlation between Somatotype and Physical Fitness. There is no evidence revealed that there exists correlation between Somatotype and Mental Health. Physical Fitness and Mental Health have shown excellent correlation.

Key Words : Somatotype, endomorph, mesomorph, ectomorph, physical fitness, mental health



Introduction:

The Somatotype : It is the theory of personality, which links distinct personality traits and behavioral features to different bodily compositions. A somatotype denotes to the bodybuilder or physique of an individual, according to Sheldon, there are three somatotypes: slim ectomorphs, muscular mesomorphs, and smooth endomorphs. Sheldon in 1940s developed a theory of three basic body types, or somatotype (Based on the three tissue layers: endoderm, mesoderm, and ectoderm).

Endomorphic Body Type

Soft body, love of food, underdeveloped muscles, tolerant & relaxed, round shaped, evenness of emotions, over-developed digestive System, love of comfort. These types of people are sociable, good humoured, and need for affection

Mesomorphic Body Type

Mesomorph people have hard muscular body, desire for power and dominance, overly mature, courageous appearance, rectangular shape, indifference to what others think, bold upright posture, zest for physical activity and are competitive, adventurous, love of risk and chance

Ectomorphic Body Type

Ectomorphic person is thin, self-conscious, preference for privacy, tall, introverted, socially anxious, inhibited, lightly muscled, artistic, mentally intense, emotionally restrained and has delicate build, flat chest, young appearance, stoop-shoulders, and large brain.

The physical type or physique of a person is referred to as their somatotype, also known as constitutional type, especially in relation to their temperament or behavioral traits. Since antiquity, many theorists have put forward various somatotype classifications. The classification system for human physical types created by American psychologist William Herbert Sheldon uses the word “somatotype.”

Body shape or personality traits have an effect on fitness, it was also established that physical fitness and mental health are very closely associated with each other (Pote, 2005). There is no evidence or study been done on the relationship of Somatotype and Mental Health.

The similar genetic background in children and teenagers is the fundamental explanation for associations between somatotype and physical fitness assessments. Youth treatments should therefore take into account that a child's success on physical



fitness tests partially reflects their inherent body type (Silventoinen, 2021).

No research study has been conducted on the relationship of Somatotype and Mental Health. Body type has a key role in everybody's health as well as sports performance. Which body type has better Mental Health can be decided.

According to research, those who frequently exercise have higher mental and emotional well-being, as well as lower rates of mental disease. Exercise appears to lower the likelihood of acquiring mental disease. Additionally, it appears to be effective in treating some mental health issues like anxiety and sadness. Physical fitness is always given plentifully consideration for good reason. A fit and healthy body can avoid conditions such as heart disease and diabetes, and help you maintain independence as you age. Mental fitness shouldn't be neglected as it is just as important as physical fitness. Including fitness into your daily routine can help you reap the benefits of a sharper mind and a healthier body for years to come (Erica, 2017).

Purpose of the study was to investigate relationship between Somatotype, Physical Fitness and Mental Health. This investigation has significant relevance.

The study was restricted for boys only from Pune city in the age group 16 to 20 years i.e. adolescent. Somatotype variables represent many attributes, however only Endomorph, Mesomorph and Ectomorph were selected for the analysis. Geographical conditions, diet, nutrition, psychological variables could not be controlled. Assistance from qualified professionals was taken to collect data.

Method and material

Present study was conducted by Descriptive survey method and the principles of basic research were considered for present investigation. Adolescent collegiate boys from Pune city were decided as population for the present study and employing cluster random sample technique 579 boys from the decided population studying in different colleges from Pune City were selected as sample.

Data collection tools: There were three main variables to be studied in this research viz. Somatotype, Physical Fitness and Mental Health. Researchers selected following tools to collect data for this study.

- a) **Somatotype :** Height (Cm), weight (kg), triceps, subscapular, suprailiac, calf skin fold (mm.), humeral and femoral bicondylar width (cm), upper arm circumference (cm), calf circumference (cm), BMI (Points), Body fat (%)
- b) **Physical Fitness :** 1 Mile Run walk test, 1 Min. Sit ups test, Sit and Reach test, body weight and height (BMI)



c) **Mental health** : Inventory developed by Dr. Agashe & Dr. Helode

Data Processing an Analysis:

Data was converted to numeric form with different standard methods. Scores for endomorph, mesomorph and ectomorph were derived with the help of a formula developed by Heath & Carter. Four physical fitness tests were conducted and the scores were converted to standard scores for composite score. Mental health was measured by the inventory developed by Dr. Agashe & Dr. Helode's, numeric scores were derived through the given method for further statistical analysis. Spearman's correlation method was applied to find the relationship as data scores collected on different variables were ordinal and interval in nature.

Collegiate students from Pune city of different colleges affiliated to University of Pune were evaluated by measuring their different Somatotype, Physical Fitness factors, Mental Health. They were categories as per their body type i.e. Somatotype. Descriptive statistics and Spearman's Correlation method was applied to analyze the data for interpretation. According to the Somatotype category Physical Fitness and Mental Health are analyzed as follows.

Table No. 1 : Summary of Descriptive Statistics of Fitness Scores of Endomorph, Mesomorph and Ectomorph Collegiate Students

	Endo (N=267)	Meso (N=108)	Ecto (N=204)	Total (579)
Mean	197	304	261	254
SD	41.42	41.02	65.68	66.70
Max	243	365	361	365
Min	216	280	192	120

Form table 1 it is found that the mean score of Physical Fitness of Mesomorph collegiate students is greater than both ectomorph and endomorph students. It is also very clear that average Physical Fitness scores of endomorph students is less than other two categories of Somatotype.

From the derived statistics it is proved that the hierarchy of Physical Fitness with respect to Somatotype is mesomorph, ectomorph and endomorph i.e. mesomorph students are the most fit and the endomorph students are least compare to each other.



Table 2 : Summary of Descriptive Statistics of Mental Health Scores of Endomorph, Mesomorph and Ectomorph Collegiate Students

Mental Health	Endo (N=267)	Meso (N=108)	Ecto (N=204)	Total (N=579)
Mean	26	26	23	25
SD	3.06	3.31	2.56	3.21
Max	35	36	31	35
Min	17	16	15	15

Form table 2 it is found that the mean score of Mental Health of endomorph and mesomorph collegiate students is equal. It is also shows that ectomorph students have scored less than both other category students. It reveals that there is no much difference found between Mental Health of endomorph, mesomorph and ectomorph collegiate students.

From the derived statistics it is proved that the hierarchy of Physical Fitness with respect to Somatotype is mesomorph, ectomorph and endomorph i.e. mesomorph students are the most fit and the endomorph students are least compare to each other.

As researchers were interested in relationship of Somatotype, Physical Fitness and Mental Health Spearman's correlation method was applied and the coefficients are given in table 3.

Table No. 3 : Summary of Spearman's Coefficient of Correlation of Somatotype, Physical Fitness and Mental Health

Variables	Fitness	Sig.	Mental Health	Sig.
Endomorph	0.20	0.047	0.03	0.641
Mesomorph	0.92	0.00	-0.04	0.604
Ectomorph	0.89	0.00	0.02	0.783
Fitness	--	--	0.893	0.00
Mental Health	0.893	0.00	--	--

Table 3 indicate the coefficients of correlation. It is found that coefficient of correlation between fitness and endomorph is 0.2 and is not found significant as significant value



is greater than 0.01 level of significance. Fitness and mesomorph scores showed 0.92 coefficient which is very high and significant at 0.01 level. Coefficient of correlation of Fitness and ectomorph is 0.89 which is also found significant at 0.01 level.

Statistics of coefficient of correlation given in table 3 show that there is excellent correlation occurs between fitness and all category of Somatotype.

Coefficient of correlation of fitness and mental health is found very high i.e. 0.893. it proves that the coefficient is significant at 0.01 level and there occurs excellent correlation between fitness and mental health.

Mental health and Somatotypes did not show significant correlation as the coefficient of mental health and endomorph is found 0.03, mental health and mesomorph is found -0.04 and mental health and ectomorph is found 0.02. all the three coefficients of correlation show that there occurs no correlation between mental health and somatotype.

From the above description it can be interpreted that mesomorph and ectomorph category students are fit but it is not possible to predict about the fitness of endomorph category student.

It is interpreted that as fitness increases mental health also increases and vice versa. It is interpreted that mental health and somatotype can not be predicted as no correlation found.

Conclusion and Major findings

- Physical Fitness is highly correlated with Somatotype, it is generalized that mesomorph and ectomorph categories individuals are fit or fit individuals are either mesomorph or ectomorph.
- It is generalized that endomorph individuals are not physically fit.
- Physical Fitness and Mental Health are also very highly correlated with each other which concludes that a fit college student has good mental health and vice versa.
- There is NO EVIDENCE revealed in the present study that there exist relationship between Somatotype and Mental Health. It is concluded that an individual of any category of somatotype may have mental health or may not.

Recommendations

- As the results are interesting, further investigation in this direction on girls and other large group of population seems to be valuable.



- The relationship may be considered for selection of players in different games and sports.
- More studies on psychological factors specifically Mental Health and Somatotype in Indian context to be conducted.

Contribution to the knowledge

- Literature of Indian Physical Education with a new direction special reference to Somatotype
- The knowledge expanded from this study can provide guidelines concern to relationship of one's body type and his Mental Health
- This study would contribute to create awareness and importance of Body structure and Mental Health.

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