ABSTRACT

It is well documented that it is the time of super specialization or time of nano-technology. Gradually, physical education has sprung up like a huge Banyan tree. In recent years sports scientists have guessed to find out those factors which directly and indirectly lend towards the enhancement of performance. Many scientific subjects have been enforced in the field of physical education and sports to heighten the performance of sport person.

Nobody knows precisely how and when sports started and grew in society. However, it appears that nature itself has served humans in the spread of sports. It is certain that participation is inherent in human psyche. Perhaps the first activity a fetus does is sport or play. Though not in contact yet with the outside world and not trained in any activity, the fetus learns and plays inside the mother’s womb by stretching and throwing limbs. It makes the mother feel it lovely presence inside her. Even after taking birth, the baby keeps on playing except when it is sleeping. Even the conception of child is through sporting activity of parents experiencing pleasure, joy and contentment. A constantly increasing interest in sports has become a global phenomenon. Growing health care awareness among people and print and electronic media, and an inmate relation with these add to their popularity. As a result, the demand for making physical education and sports as an integral part of the curriculum is gaining momentum. As physical education and sports are integral parts of educational system, overall sports programmes will need social and individual support; making available adequate sports
facilities and equipments. It is important that there should be promotion of research and development in the realm of physical education and sports. Besides, there should be an emphasis on information and documentation on sports, and an increased link between mass media, physical education and sports.

Body Building and Weight Lifting are the interesting sports and both have been part of physical education. These are the sports in which individual’s psychological and anthropometrical makeup play a significant factor to compete successfully especially at elite level.

Statement of the Problem:

“The Relationship among Self-Concept, Somatotypes and Sensation Seeking Anxiety State in Body Builders and Weight Lifters.”

Objectives of the Study:

The main objectives of the study are given below:-

- To determine differences between body builders and weight lifters on physical self-concept.
- To determine differences between body builders and weight lifters on sports competence.
- To determine differences between body builders and weight lifters on body attractiveness.
- To determine differences between body builders and weight lifters on physical condition.
- To determine differences between body builders and weight lifters on physical strength.
To determine differences between body builders and weight lifters on physical self-worth.

To determine differences between body builders and weight lifters on sensation seeking.

To determine differences between body builders and weight lifters on anxiety state.

To determine the category of somatotypes among body builders and weight lifters.

To find out the relationship of self-concept of body builders and weight lifters.

To find out the relationship of sports competence of body builders and weight lifters.

To find out the relationship of body attractiveness of body builders and weight lifters.

To find out the relationship of physical condition of body builders and weight lifters.

To find out the relationship of physical strength of body builders and weight lifters.

To find out the relationship of physical self-worth of body builders and weight lifters.

To find out the relationship of sensation seeking of body builders and weight lifters.

To find out the relationship of anxiety state of body builders and weight lifters.
To find out the relationship of somatotype of body builders and weight lifters.

To find out the relationship of endomorphy of body builders and weight lifters.

To find out the relationship of mesomorphy of body builders and weight lifters.

To find out the relationship of ectomorphy of body builders and weight lifters.

**Purpose of the Study:**

The purpose of this study was to explore the relationships among self-concept, somatotype and sensation-seeking anxiety state in body builders and weight lifters. Physical self-concept will be assessed along five categories: (1) Perceived sport competence, (2) Body attractiveness, (3) Physical conditioning, (4) Physical strength and (5) Global perception of overall physical self-worth.

Somatotypes of body builders and weight lifters would be expressed in a three number rating representing endomorphy, mesomorphy and ectomorphy, using anthropometric measurements.

The current study would be made to use the theory of physical self-concept to examine the possibility that the proposed links would be affected by the type of sport in which athletes participate. Therefore, the invariance of the model will be examined in body builders and weight lifters.

**Significance of the study:**

The present study may be considered significant in the following manner:
✈️ The result of the study would provide the criteria for the selection of talented players in body building and weight lifting.

✈️ The study would help physical education teachers and coaches to solve the psychological problems of body builders and weight lifters.

✈️ The study may help physical education teachers and coaches to develop systematic and scientific training programme.

✈️ The present study would help physical education teacher and coaches for the selection of team of both discipline based on anthropometric and psychological variables.

✈️ The study would also help and guide the research scholars to undertake similar studies in different games and sports so that the best criteria for selection of players may be constructed for better performance.

✈️ Sports scientists would benefit from such inquiry in those efforts to prepare performers for competition.

✈️ Counseling of athlete (body builders and weight lifters) would be much easier especially during their disappointing phase.

✈️ The outcome of present investigation would also benefit the coaches, trainings, and athlete themselves to formulate and ideal training programme for attainment of peak performance, taking into account the relationships of proposed psycho-physiological variables.

✈️ Body building and Weight lifting are the interesting sports and both have been part of physical education. These are the sports in which individual’s psychological and anthropometrical makeup
play a significant factor to compete successfully especially at elite level.

- When the researcher went through the literature he observed different studies are conducted on body builders and weight lifters but none of researchers tried to study the relationship among psychological variables and somatotypes. For this the researcher had chosen the study with the following hypotheses.

**Research Hypotheses:**

- Body builders would report higher level of self-concept as compared to the weight lifters.
- Body builders would report higher level of the five domains of physical self-concept as compare to the weight lifters.
- Body builders would report higher level of sensation-seeking as compare to the weight lifters.
- Body builders would report higher level of anxiety state as compare to the weight lifters.
- Body builders would show greater somatotype than weight-lifters.
- The five domains of physical self-concept would be negatively correlated with somatotypes among body builders.
- The five domains of physical self-concept would be negatively correlated with sensation-seeking among body builders.
- The five domains of physical self-concept would be negatively correlated with anxiety state level among body builders.
- There would be positive correlation between somatotypes and sensation seeking among body builders.
There would be positive correlation between somatotypes and anxiety state level among body builders.

**Limitations of the study:**

The life style, habits, heredity, study habits, nutritional intake, intrinsic motivation and psychological traits of subjects are beyond the control of researcher. Non-availability of sophisticated instruments and tests were accepted as limitation of the study.

**Delimitations of the study:**

The study was delimited to:

- The study was delimited to the age group of 18-25 years.
- The study was delimited to subjects selected from All India Best Physique and Weight Lifting Intervarsity Competition and similar state and national tournaments.
- The study was delimited to the selected anthropometric variables as linear measurements, girth measurement, diameter and skinfold measurement.
- The study was further delimited three psychological variables i.e. self-concept, sensation seeking and anxiety.
- The study was confined to 250 male (125) body builders and (125) weight lifters randomly selected.

**Design and Methodology**

To work on the preceding hypotheses, 125 male All-India intervarsity level body builders and 125 male All India intervarsity level weight lifters were selected between the age group of 18 to 25 years. Physical Self Perception Profile (PSPP), developed by Fox (1990) was
used to gauge the self-concept of the subjects. Carter and Heath (1990) method was applied to determine somatotypes of subjects. The researcher used the Sensation Seeking and Anxiety State test developed by Neary and Zuckerman (1976) to collect the data on Sensation Seeking and Anxiety State. t-test was used to established differences between means of the body builders and weight lifters scores. Pearson product moment of coefficient correlation was used to establish the relationship between the scores of body builders and weight lifters. All statistical processes were done through the Statistical Package of Social Sciences (SPSS), version 16.

**DISCUSSION ON FINDINGS:**

The aim of the present research was to find the relationship among self-concept, somatotype, sensation-seeking and anxiety state in body-builders and weight-lifters. In this study five dimensions of self-concept and other variables of sensation-seeking, anxiety state and somatotypes of body-builders and weight-lifters there were taken.

Marsh and Shavelson’s (1985) self-concept theory was applied to the physical domain by numerous researchers (Brettschneider & Heim, 1997; Fox, 1990; Fox & Corbin, 1989; Marsh, 1998; Marsh & Redmayne, 1994). All have concurred that physical self-concept (PSC) is a multidimensional, hierarchical construct. In addition, findings include elite athletes possessing high levels of PSC levels stabilizing with age, and reported low scores on the body or appearance domain of PSC scales for females (Brettschneider & Brautigam, 1990; Marsh, 1998; Marsh et al., 1995; Marsh et al., 1997; Marsh & Redmayne, 1994). However, few studies addressed the athlete’s sport-type as a factor related to PSC. Following discussion on self concept in relation with body builders and
weight lifters has been made with each variable supported by the study. The result of the study showed that the body builders have a higher level of self-concept as compared to weight-lifters. It was also believed that body builders would show higher levels of self concept (Lauren Kelly 2004).

Studies have shown that aesthetic sports persons hold a sense of competence in their chosen sports (Hallinen et al, 1991; Krane et al, 2001). The findings of this study revealed that the sports competence in body builders was calculated higher than the weight lifters. It is due to the fact that body builders have a concrete vision of their goals, i.e. they already know how much competitive practice should be done before their competitions, which make them more concentrated and competent as well, whereas weight lifters, by no means, can know the magnitude of their goal, i.e. how much lift of weight is sufficient to win the competition, which leaves them wandering about their performance level.

The current study proposed that body builders would report higher level of self concept. Another psychological variable result revealed that the body attractiveness was found higher in bodybuilders than the weightlifters. It is because body builders have to produce the best possible sculpted body in front of judges, whereas attractiveness of body does not play any significant role for the weightlifters to win their competitions. This finding of the study is in line with the Lauren Kelly (2004) study which states that the aesthetic sports persons bear more body attractiveness than non aesthetic sports persons.

The t-test revealed that the physical conditioning has a significant mean difference in between bodybuilders and weightlifters. Body builders showed higher amount of physical conditioning in comparison of
weight-lifters because body builders have to undergo various types of weight training ranging from the concentric-eccentric training to negative-only training, with one repetition maximum to hundreds of repetitions for each set, which endow the positive results on physical conditioning to the body builders. As far as weight lifters are concerned, they are primarily concerned with the lifting of the maximum possible weight in their each attempt moreover various studies have suggested intense cardio-respiratory training for weightlifters (Wong et al 1993; Martin & Mach 1996).

The result of the study revealed that the weight lifters have more physical strength than the bodybuilders, which is due to the requirement of the sport for weight lifters and body builders. Aesthetic sports persons need precise and very fine movements while exhibiting strength and power (Martin & Hall 1997; Moreno 2005).

The result showed that the body builders have more physical self worth than the weightlifters. Because the primary aim of each body builder is to focus on the beautification of their body by chiseling with rigorous physical training. Had it been the case that body builders do not give much importance to their physical worth, then it would not be possible for them to win any game. This is consistent with Marsh et al (1995), Marsh et al (1997) and Konstantinos (2008) who found that aesthetic athletes tend to have higher physical self-concept.

The result of the study showed that there was a significant mean difference between body builders and weight lifters in their sensation seeking. Body builders were found to be more sensation-seeking in comparison to weight lifters because they do not visualize the level of competition in their game. They can only ‘see through’ their competitors
but cannot scale the amount of musculature required for overcoming the
opponents. This is consistent with (Marvin 1995) which quantitatively
examined the sensation seeking of amateur body builders.

The result of the study revealed that anxiety state of body builders
and weight lifters was found significant mean difference. This finding
also corroborates the preceding findings of sensation seeking level of
bodybuilders. Cause for this finding also comes from the fact that there is
more ambiguity in the game of body building as compared to weight
lifting.

The result of the study showed that there was a significant
endomorphic difference between body builders and weight lifters.
Weightlifters tend to have more fat percentage than body builders
because of the two facts pertaining to their sport: 1) Weightlifters need
extra mass to counteract the weight lifted during the competition, which
primarily comes from fat depots, and 2) the main purpose of the
weightlifter is to lift the maximum weight during the event, i.e. winning
of competitions for the weightlifters do not come from their body
prettiness and pleasant appearance but brute strength is required.

The result of the study showed that significant mean difference was
documented between body builders and weight lifters in terms of their
mesomorph. There was not much difference in the mesomorphy status of
the bodybuilders and weightlifters but the body builders showed more
musculature than weightlifters. Because both athletes need more muscle
fibers in order to compete satisfactorily (Christopher, Deborah & Allen,
2002), but bodybuilders tend to have more musculature as their whole
performance is dependent on it.
The result of the study revealed that significant mean difference was found between body builders and weight lifters in terms of their ectomorph. This finding is also in concordance with all the preceding findings (Christopher, Deborah & Allen, 2002) as body builders tend to be more ectomorph than weightlifters due to the requirement of their sport.

The result of the study showed that negative significant relationship exists between mesomorph and self concept, and positive significant relationship exists between mesomorph and anxiety state and ectomorph and self concept, whereas insignificant negative relationship was found between endomorph and self-concept, ectomorph and sensation seeking, ectomorph and anxiety state, and positive significant relationship were found between endomorph and sensation-seeking, endomorph and anxiety state of body builders. This is in line with the study of Gill and Rao (1992) which assessed the relationship between self-concept and other physical variable among Indian school boys.

The result of the study showed that in body builders positive significant relationship was found between ectomorph and sports competence, whereas a negative insignificant relationship existed between endomorph and sports competence, endomorph and physical conditioning, endomorph and physical strength, endomorph and physical self worth, mesomorph and sports competence, mesomorph and physical conditioning, mesomorph and physical strength, mesomorph and physical self worth positive insignificant relationship was found between the endomorph and body attractiveness, ectomorph and body attractiveness, ectomorph and physical conditioning, ectomorph and physical strength, ectomorph and physical self worth of body builders. In accordance with Marsh (1998), both athletic sport-types scored lowest on the ‘body’
subscale, which is related to physical appearance whereas Pasman and Thompson (1988) postulated positive correlation between body image and eating disturbance in runners, weight lifters and sedentary individuals.

The result of the study revealed that in weight lifters there were a negative significant relationship between endomorph and anxiety state, mesomorph and anxiety state, whereas insignificant positive relationship existed between endomorph and self-concept, endomorph and sensation seeking, mesomorph and self-concept, mesomorph and sensation seeking. Positive significant relationship existed in between ectomorph and anxiety state and negative insignificant relationship was found between ectomorph and self-concept, ectomorph and sensation seeking of weight lifters. This finding has been supported by other studies reporting high predispositions to competition anxiety in individual female athletes with self-presentational concerns (James & Collins, 1997; Marten et al, 1990. Martin & Hall, 1997; Martin and Mach, 1996). It is argued that aesthetic athletes experience greater level of anxiety than non-aesthetic athletes due to this performance environment.

The result of the study showed that in weight lifters a positive significant relationship existed between endomorph and physical strength, mesomorph and physical strength, ectomorph and physical self worth. The result are confirmatory in line with Holloway, Jean Barrett and Baechle (1990). Significant negative relationship existed between endomorph and physical self worth, ectomorph and physical strength, which is supported by Samkhorrarami and John T. Franklin (2007), and insignificant positive relationship existed between endomorph and sports competence, endomorph and body attractiveness, endomorph and physical conditioning, mesomorph and sports competence, mesomorph
and physical conditioning in line with Samkhorrami and John T. Franklin (2007), and negative insignificant relationship existed between mesomorph and body attractiveness, mesomorph and physical self worth, ectomorph and sports competence, ectomorph and body attractiveness, ectomorph and physical conditioning of weight-lifters.

The result of the study showed that in body-builders a negative insignificant relationship existed between sports competence with sensation seeking, body attractiveness with sensation seeking and physical conditioning with sensation seeking, and positive significant relationship existed between physical strength with sensation seeking, and physical self worth with sensation seeking of body builders. The preceding results are in line with Wilson and Rodgers (2002).

The result of the study showed that in weight-lifters a negative insignificant relationship existed between physical strength with sensation seeking, and positive significant relationship existed between sports competence with sensation seeking, body attractiveness with sensation seeking, physical conditioning with sensation seeking, and physical self worth with sensation seeking of weight lifters.

The result of the study revealed that in body-builders a positive insignificant relationship existed between sports competence with anxiety state, body attractiveness with anxiety state, and insignificant negative relationship existed between physical conditioning with anxiety state, physical strength with anxiety state, and physical self worth with anxiety state of body builders. The results are in conjunction with Filby, Maynard and Graydon (1999) and Gould (2001).

The result of the study showed that in weight-lifters a positive insignificant relationship existed between sports competence with anxiety
state, body attractiveness with anxiety state, and physical self worth with anxiety state, and insignificant negative relationship existed between physical conditioning with anxiety state, and physical strength with anxiety state of weight-lifters.

**Conclusion**

In conclusion, the findings of the study indicated that significant links between physical self-concept, sensation seeking, anxiety state and somatotypes among bodybuilders and weightlifters existed. However, the research techniques used in this study are only an initial step for research in this field. Alterations should be considered in order to find more specific and expounding results.

**Discussion on Hypotheses:**

The first hypothesis proposed that body builders would report higher levels of self-concept as compared to weight lifters. t-test was performed to test the first hypothesis which revealed the significant difference of self-concept between body builders and weight lifters. Body builders achieved high scores as compared to the weight lifters. Hence, the first hypothesis is verified in this study.

The second hypothesis proposed that the body builders would report higher levels of five domains of self-concept as compared to weight- lifters. t test was performed to test the second hypothesis which revealed a significant difference of self-concept between body builders and weight lifters. The first domain of self-concept was sports competence, which was revealed as a significant difference between body builders and weight lifters. Body builders achieved the high scores as compared to the weight lifters. Hence, the first component of the second hypothesis is verified and accepted.
The second domain of self-concept was body attractiveness which was revealed as significant difference between body builders and weight lifters. Body builders achieved higher scores as compared to the weight lifters. Hence, the second component of the second hypothesis has been verified and accepted.

The third domain of self-concept was physical condition which was also revealed as significant difference between body builders and weight lifters. Body builders achieved higher scores as compared to the weight lifters. Hence, the third component of the second hypothesis is verified and accepted.

The fourth domain of the self-concept was physical strength, which was also revealed as significant difference between body builders and weight lifters. Weight lifters achieved high score as compared to body builders. Hence, the forth component of the second hypothesis could not be verified and was rejected.

The fifth domain of the self-concept was physical self worth, which was revealed as a significant difference between body builders and weight lifters. Body builders achieved high scores as compared to weight lifters. Hence, the fifth component of the second hypothesis is verified and accepted.

The third hypothesis proposed that body builders would report higher levels of sensation seeking as compared to weight lifters. $t$-test was performed to test the third hypothesis, which revealed a significant difference of sensation seeking between body builders and weight lifters. Body builders achieved high scores as compared to weight lifters. Hence, the third hypothesis is verified in this study.
The fourth hypothesis proposed that body builders would report higher levels of anxiety state as compared to weight lifters. t-test was performed to test the forth hypothesis which revealed a significant difference of anxiety state existed between body builders and weight lifters. Body builders achieved high scores as compared to weight lifters. Hence, the forth hypothesis is also achieved in this study.

The fifth hypothesis proposed that body builders would show greater somatotype than weight-lifters. t test was performed to test the fifth hypothesis, which revealed a significant difference between body builders and weight lifters in their endomorph. Weight lifters showed high endomorphy as compare to the body builders. Hence, the first component of the fifth hypothesis is rejected. Second component of somatotypes is mesomorph and significant difference was found between body builders and weight lifters. Body builders showed slightly higher musculature as compared to the weight lifters. Hence, the second component of fifth hypothesis has been verified. And in the third component of somatotypes significant difference was found between body builders and weight lifters in their ectomorph. Body builders are more ectomorphic as compared to weight-lifters. Hence, the third component of fifth hypothesis has been accepted.

The sixth hypothesis proposed that the five domains of physical self-concept would be negatively correlated with somatotypes among body builders. Pearson product moment coefficient of correlation was used to test the sixth hypothesis. There was negative correlation between the endomorph and sports competence, endomorph and physical conditioning, endomorph and physical strength, endomorph and physical self-worth, mesomorph and sports competence, mesomorph and physical conditioning, mesomorph and physical strength, mesomorph and physical
self-worth, within all these components of five domains of self concept and somatotypes our hypothesis achieved. But, in the endomorph and body attractiveness, mesomorph and body attractiveness, ectomorph and sports competence, ectomorph and body attractiveness, ectomorph and physical conditioning, ectomorph and physical strength, ectomorph and physical self-worth, all these components of five domains of self concept and somatotypes showed positive relationship; here we have not achieved our hypothesis. Within these components our hypothesis has been rejected.

The seventh hypothesis proposed that the five domains of physical self-concept would be negatively correlated with sensation-seeking among body builders. Pearson product moment correlation was performed to test the five domains of self-concept and sensation seeking of body builders. In these components negative correlation was found between the Sports Competence with Sensation seeking, body attractiveness with sensation seeking, physical conditioning with sensation seeking, in three components out of five we have achieved our hypothesis. But, the other two components namely physical strength with sensation seeking and physical self worth with sensation seeking having positive correlations. Hence, in these two components our hypothesis has been rejected.

The eighth hypothesis proposed that the five domains of physical self-concept would be negatively correlated with anxiety state among body builders. Pearson product moment correlation was performed to test the five domains of self-concept with anxiety state of body builders. In these components negative correlation was found between physical conditioning with anxiety state, physical strength with anxiety state and physical self worth with anxiety state, in three components out of five we
have achieved our hypothesis. But, the other two components such as sports competence with anxiety state and body attractiveness with anxiety state having positive correlation. Hence, in these two components our hypothesis is rejected.

The ninth hypothesis proposed that there would be positive correlation between somatotypes and sensation seeking among body builders. Pearson product moment correlation was performed to test the positive correlation between somatotypes and sensation seeking among body builders. Positive correlation was found between the endomorph with sensation seeking, mesomorph with sensation seeking. In these two components our hypothesis achieved, but in ectomorph with sensation seeking having negative correlation in this component our hypothesis is rejected.

The tenth hypothesis proposed that there would be positive correlations between somatotypes and anxiety state levels among body builders. Pearson product moment correlation was performed to test the positive correlation between somatotypes and anxiety state among body builders. Positive correlation was found between the endomorph with anxiety state, mesomorph with anxiety state. In these two components our hypothesis achieved but in ectomorph with anxiety state having negative correlation in this component our hypothesis is rejected.

**Recommendations:**

Researches and explorations are not the end in itself, but merely open the way for future investigations. Similarly, the present work is not the end in this area. In fact, all the variables can never be studied in a single research. So the present study was confined to study the
psychological and somatotypical variables only. The results of the present investigation led to certain possibilities for further researches.

Further researches may be conducted on somatotype towards life of sports persons in relation to other personality dimensions which were not included in the present study. Moreover, demographic variables could give some interesting findings. This type of study may also be conducted in cross cultural context.

It is suggested that further studies in this area may compare sports persons from different games and sports.

Larger samples provide better results but the present research work is confined to only 250 sports persons. Thus it cannot claim for its comprehensiveness. Future researches may be conducted on even much larger samples. The results may provide greater insight for sports persons and their coaches and scientists.

Future research in this area should include a greater variety of aesthetic (e.g. figure skating, diving etc.) and non-aesthetic sports (e.g. softball, basketball etc.).

For future research, different instrumentations may be necessary. There are several alternative methods of measuring the current study’s variables. The Physical Self-Perception Profile is one way of many ways that physical self-concept can be measured. Although the scale reliability and validity are well established, there was one issue of concern throughout the study. The questionnaire is a four-choice structured alternative item format. This was a cause of confusion to a majority of the subjects and required the researcher to administer additional verbal instruction. While this scale was chosen for its length (only 30 items), a
questionnaire with a Likert-scale format might produce less confusion for the participants.

More specific kinanthropometrical instruments may be used to determine the contents of fat and muscles like Hydrostatic Weighing, Air Displacement Plethysmography, Bioelectric Impedance Analysis etc.

Future models should examine the determining factors of physical self-concept, sensation seeking, and anxiety state in all the other aesthetic sports like gymnastics, rhythmic swimming etc. as well as coping strategies and performance perception of these athletes.