COMPARATIVE STUDY OF SELECTED ANTHROPOMETRIC AND PSYCHOLOGICAL VARIABLES OF ATHLETES AT DIFFERENT LEVELS OF COMPETITION

ABSTRACT

THESIS

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ABSTRACT

The events of long distance runners contain anthropometrical and psychological challenges. However, two runners may be equal in their technique but because of different anthropometrical and psychological responses, there can be much difference in their performances. A runner has to decide the strategy to cross the opponents and must be quick in assessing a situation as well as his response.

Anthropometrical and psychological measures play a vital role while running at different levels of competition. The physique, psychological ability, and body compositions including size, shape, mental presentation, and form are known to play a significant role in this regard.

However, the performance of long distance runners is also dependent on their technique, training, motivation level and several other factors of physiological, psychological, and biomechanical nature i.e. age, sex, physical and mental growth. Never the less, body and mental structure play a very significant role in determining human movement. A particular type of structure predisposes an individual to particular types of movements. The segmental length and width determine the leverage, possessed by the body (position of fulcrum and various lengths of load.
and efforts arms), which, in turn affects the final outcome of force, created by muscles and its ultimate exploitation, for the purpose of motions.

This research study will provide appropriate anthropometrical and psychological characteristics to coaches for identification and promotion of long distance runners at different levels of competitions as per their body structure and mental makeup, for building an individual runner.

This study was an attempt to highlight anthropometrical and psychological differences among long distance runners at different levels of competition. The aim of this study was to compare the selected anthropometrical and psychological parameters of long distance runners at different levels of competition.

For the purpose of collection of data, the researcher visited the following places:-

➢ **68th All India Inter-varsity, Athletics Championship** held at Annamalai University (T.N.), data of 102 Long Distance Runners, was collected from 13th to 17th Jan. 2007-2008.

➢ **69th All India Inter-varsity, Athletics Championship** held at M.G.U.Kottayam (K.R.), data of 125 Long Distance Runners, was collected from 20th to 24th Dec.2008-09.
➢ **Federation Cup** held at Bhopal (M.P.), data of 52 Long Distance Runners, was collected from 26th to 29th Feb. 2008.

➢ **All India SAI Inter Hostels Athletics Meet** held at Saifai-Etawa (U.P.), data of 18 Long Distance Runners, was collected from 19th to 21st Jan. 2009.

➢ **57th All India Police Athletics Meet** held at 35th Bn. P.A.C. Mahanagar Stadium Lucknow (U.P.), data of 61 Long Distance Runners, was collected from 10th to 14th Feb. 2009.

➢ **18th U.P State Annual Open Athletics Championship** held at Madan Mohan Malvaiyev Sports Stadium Allahabad (U.P.), data of 32 Long Distance Runners was collected from 10th to 11th April, 2009.

➢ **Inter Zone SAI Hostel Athletics Meet** held at Saifai-Etawa (U.P.), data of 4 Long Distance Runners, was collected from 14th to 16th Jan, 2009.

➢ **20th North Zone Junior Athletics Championship** held at G.G.S.Sport College Lucknow (U.P), data of 6 Long Distance Runners was collected from 2nd to 3rd August 2008.
SAMPLE:-

For the purpose of this study, three sample groups were formed. 1st group comprised of 227 All India Intervarsity Long Distance Runners 2nd group comprised of 131 National Long Distance Runners & 3rd group comprised of 42 State Long Distance Runners were selected from different level of competition.

Delimitation:

The following anthropometrical and psychological measurements were collected from the long distance runners using standard equipments, techniques, and test.

Physical parameters:

1) Weight
2) Stature
3) Sitting Height
4) Upper arm length
5) Lower arm length
6) Thigh length
7) Lower leg length
8) Foot length
9) Chest width

10) Shoulder width

11) Hip width

12) Humerus bi-epicondyle diameter

13) Femur bi-epicondyle diameter

14) Ankle width

15) Wrist width

16) Biceps muscle girth

17) Calf muscle girth

18) Thigh muscle girth

19) Biceps skin fold

20) Triceps skin fold

21) Suprailiac skin fold

22) Sub-scapular skin fold

23) Calf skin fold

24) Thigh skin fold

25) Body composition

26) Proportionality
i) Sitting height - stature index, ii) Ponderal index, iii) Thigh length - lower leg length index, iv) Upper arm length - lower arm length index, v) Hip width - stature index, vi) Shoulder width - stature index.

Psychological parameters:

1) Competitive anxiety

2) Self-confidence

F -Test and Scheffe’s test at 0.05 level of significance were used to find out the significant difference in long distance runners at different level of competition.

Statistical analysis revealed significant difference in the mean weight, stature, upper arm length, lower arm length, thigh length, lower leg length, Foot length, chest width, shoulder width, ankle width, biceps skin fold, supra-iliac skin fold, calf skin fold, thigh skin fold, mean sum of four skins fold, sitting height-stature index, thigh length- lower leg length index, upper arm length-lower arm length index, hip width-stature index, shoulder width-stature index, among different levels long distance runner.

However insignificant differences were observed in sitting height, hip width, humerus bi-epicondyle diameter, femur bi
epicondyle diameter, wrist width, biceps muscle girth, calf muscle girth, thigh muscle girth, triceps skin fold, subscapular skin fold, ponderal index, competitive anxiety, self-confidence of all India intervarsity, national and state level long distance runner.

Further, Scheffe's test analysis indicated that the all India intervarsity long distance runners mean weight, stature, upper arm length, lower arm length, thigh length, foot length, chest width, shoulder width, biceps skin fold, suprailiac skin fold, calf skin fold, sum of four skin fold, sitting height-stature index, hip width-stature index, shoulder width-stature were greater in value than national level long distance runner.

However insignificant differences were found between mean lower leg length, ankle width, thigh skin fold, thigh length-lower leg length index, upper arm length-lower arm length index of all India intervarsity and national level long distance runners.

Scheffe's test analysis indicated that the all India intervarsity long distance runners' mean shoulder width, ankle width, upper arm length-lower leg length index, and shoulder width-stature index were greater in value than state level long distance runner.

However insignificant differences were found between mean
weight, stature, upper arm length, lower arm length, thigh length, lower leg length, foot length, chest width, biceps skin fold, supra-iliac skin fold, calf skin fold, thigh skin fold, sum of four skin fold, sitting height-stature index, thigh length-lower leg length index, hip width-stature index of all India intervarsity and state level long distance runners.

Scheffe’s test analysis indicated that the national level long distance runners mean upper arm length, lower leg length, chest width, ankle width, biceps skin fold, supra-iliac skin fold, thigh skin fold, upper arm length-lower arm length index were greater in value than state level long distance runners.

However insignificant differences were found between mean weight, stature, lower arm length, thigh length, foot length, shoulder width, calf skin fold, sum of four skin fold, sitting height-stature index, thigh length-lower leg length index, hip width-stature index and shoulder width-stature index of national and state long distance runners.

Thus, the findings of our study had led us to conclude that significant difference exists in most of the anthropometrical variables of long distance runners at different level of competition. However, not
much significant difference exists in the psychological variables of long distance runners at different level of competition.

It is probable that these significant differences had brought the selected long distance runners to different level of competitions. Also, due to lack of certain specific anthropometrical and psychological requirements, the All India intervarsity level runner could not make up to national and state levels.

CONCLUSIONS

The findings of our study had led us to draw the following conclusions:

Physical variables:

- All India intervarsity long distance runners had greater mean of hip width, femure bi epicondyle diameter, ankle width, thigh muscles girth, biceps skin fold, suprailiac skin fold, subscapular skin fold, calf skin fold, thigh skin fold, sum of four skins fold, sitting height- statutre index, ponderal index, hip width-stature index than national level long distance runners.
- All India intervarsity long distance runners had lesser mean of weight, stature, sitting height, upper arm length, lower arm length, thigh length, lower leg length, foot length, chest width,
shoulder width, humerus bi epicondyle diameter, wrist width, biceps muscles girth, calf muscles girth, triceps skin fold, thigh length-lower leg length index, upper arm length-lower arm length index, shoulder width-stature index than national level long distance runners.

➢ No significant differences were found between mean lower leg length, ankle width, thigh skin fold, thigh length-lower leg length index, upper arm length-lower arm length index of all India intervarsity and national level long distance runners.

➢ All India intervarsity long distance runners had greater mean of upper arm length, lower leg length, femur bi-epicondyle diameter, ankle width, wrist width, biceps muscles girth, calf muscles girth, triceps skin fold, supra-iliac skin fold, sub-scapular skin fold, sum of four skin fold, sitting height-stature index, ponderal index, upper arm length-lower arm length than state level long distance runners.

➢ All India intervarsity long distance runners had lesser mean of weight, stature, setting height, lower arm length, thigh length, foot length, chest width, shoulder, hip width, humerus bi-epicondyle diameter, thigh muscles girth, biceps skin fold, calf skin fold, thigh skin fold, thigh length-lower leg length index,
hip width-stature index, shoulder width-stature index than state level long distance runners.

- No significant differences were found between mean weight, stature, upper arm length, lower arm length, thigh length, lower leg length, foot length, chest width, biceps skin fold, supra-iliac skin fold, calf skin fold, thigh skin fold, sum of four skin fold, sitting height-stature index, thigh length-lower leg length index, hip width-stature index of all India intervarsity and state level long distance runners.

- National level long distance runners had greater mean of weight, stature, sitting height, upper arm length, lower arm length, thigh length, lower leg length, foot length, chest width, humerus bi epicondyle diameter, femure bi epicondyle diameter, ankle width, wrist width, biceps muscles girth, calf muscles girth, triceps skin fold, subscapular skin fold, upper arm length-lower arm length index than state level long distance runners.

- National level long distance runners had lesser mean of shoulder width, hip width, thigh muscles girth, biceps skin fold, suprailiac skin fold, calf skin fold, thigh skin fold, sum of four skin fold, sitting height-stature index, ponderal index, thigh length-lower leg length index, hip width-stature index, shoulder width-stature
index than state level long distance runners.

➢ No significant differences were found between mean weight, stature, lower arm length, thigh length, foot length, shoulder width, calf skin fold, sum of four skin fold, sitting height-stature index, thigh length-lower leg length index, hip width-stature index and shoulder width-stature index of national and state long distance runners.

Psychological variables

➢ All India intervarsity long distance runners had greater mean of self-confidence than national level long distance runners.

➢ All India intervarsity long distance runners had lesser mean of competitive anxiety than national level long distance runners.

➢ No significant differences were found in competitive anxiety, self-confidence of All India intervarsity and national long distance runners.

➢ All India intervarsity long distance runners had lesser mean of competitive anxiety and self-confidence than state level long distance runners.
No significant differences were found in competitive anxiety, self-confidence of All India intervarsity and state level long distance runners.

National long distance runners had greater mean of competitive anxiety than state level long distance runners.

National long distance runners had lesser mean of self-confidence than state level long distance runners.

No significant differences were found in competitive anxiety, self-confidence of national and state long distance runners.

SUGGESTIONS FOR FURTHER STUDY

Keeping in view the findings of the present study, the following suggestions for the further study are being forwarded:

1. Talent selection among male athletes at college and state level between the age range of 18 to 25 years can be conducted on the basis of present study.

2. It is suggested that similar studies may be conducted on the female long distance runners and also on the players related to other games.
3. The result of the study can be helpful for the self-evaluation of long distance runners.

4. Congenial and suitable atmosphere may be created in schools and colleges for mass participation of male students in sport activities.

5. The study may be helpful for coaches and teachers to solve psychological problems of male long distance runners.

RECOMMENDATIONS:

1. The findings of the study should be taken into consideration while going for talent hunts for probable potential long distance runners at different level of competition. Children with inherited anthropometrical and psychological characteristics as observed in our study may be recommended for long distance running.

2. The coaches and physical teachers should take these findings into considerations for designing specific training programmes to develop athletes of repute in the long distance running events at different levels of competition.

3. Along with these physical and psychological variables, biomechanical parameters of long distance runners at different levels
of competition should also be studied.

4. Further, the study should be conducted to compare International level long distance runners at different levels of competition in relation to physical and psychological components.