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Comparative analysis of stress and endurance among athletes and non-athletes

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Abstract

Independent randomized research design was used for this study, as the subjects were selected randomly from four independent groups. The responses obtained through standardized questionnaire to measure all the four groups on selected variables stress and endurance (cardio-respiratory endurance) was collected. Fifty athletes and fifty non-athletes studying in different colleges in Andhra Pradesh were selected for this study. The age group of the subjects was between 18 to 25 years. The collected data were subjected to statistical treatment to find out any differences between the groups in the dependent variables selected.

Keywords: Stress and endurance

Introduction

A sound body and a sound mind are man's most precious possessions. Man needs to participate in physical activities to develop his mind and body. The child first starts to move and gradually improves to run, throw, jump, climb according to its interest. So physical education is needed for each and every individual for a better growth and development. Physical fitness is the very basis of our daily life and a sick nation cannot produce healthy attitudes and economically productive capacities.

Physical fitness is a universally accepted and realized terminology. Physical fitness is a capacity to meet the present and potential physical challenges of life with success. The present concept of physical fitness is not only freedom from diseases but also to gain enough strength, agility, flexibility, endurance and skills to meet the demands of daily life and to build sufficient reserve energy to withstand stress and strain.

Need of the study

In the recent years, a great deal of attention has been paid to compare the variations in the behaviourism, humanism and cognitivism of man on his/her psychological factors along with physical fitness and motor fitness variables. Further, there seemed to have differences among athletes and non-athletes in their socio economic status. To find out the differences among athletes and non-athletes' psychological, sociological and motor fitness variables, this research was undertaken.

Objectives of the study

The objective of this study was

- a) to find out the status of athletes and non-athletes in selected psychological variables, sociological and motor fitness variables, and
- b) To compare the selected variables between athletes and non-athletes to find out whether any significant differences existed between the two groups of students.

Statement of the problem

The purpose of the study was to make a comparative analysis of stress and endurance among athletes and non-athletes.

Hypotheses

It was hypothesized that

1. There will be no significant difference in stress between athletes and non-athletes.
2. There will be no significant difference between men athletes and men non-athletes in stress.

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3. There will be no significant difference between women athletes and women non-athletes on stress.
4. There will be no significant difference between men athletes and women athletes in stress,
5. There will be no significant difference between men non-athletes and women non-athletes in stress.
6. There will be no significant difference in cardiovascular endurance between athletes and non-athletes.
7. There will be no significant difference between men athletes and men non-athletes in cardiovascular endurance.
8. There will be no significant difference between women athletes and women non-athletes on cardiovascular endurance.
9. There will be no significant difference between men athletes and women athletes in cardiovascular endurance.
10. There will be no significant difference between men non-athletes and women non-athletes in cardiovascular endurance.

Significance of the study

1. The present study would acquaint the physical education administrators with the psychological factors anxiety, stress and aggression among athletes and non-athletes.
2. It would facilitate to find out the differences among the two groups of students.
3. It would facilitate to find out the whether these groups of students have any significant differences in socio economic status.
4. This research would facilitate to find out the differences between athletes and non-athletes on selected motor fitness variables, endurance, strength and balance.
5. The results of the study would add further knowledge to the existing literature of psychology, socio economic conditions and motor fitness variables.
6. The findings of the study would provide a guideline to the future research investigators in psychology, sports psychology and sports sciences to conduct further research in this field.

Delimitations

1. The study is delimited to the following independent variables:
2. Stress
3. Endurance (Cardiovascular Endurance)
4. Fifty athletes and fifty non-athletes studying in different colleges in Andhra Pradesh were selected for this study.
5. The age group of the subjects was between 18 to 25 years.

Limitations

The study was limited in the following respects and this limitation would be taken into consideration while interpreting the results;

1. The athletes were under different training methods depending upon their game. The effect of training were not considered in this study.
2. Heredity and environmental factors which contribute to psychological factors have not been controlled.
3. The scholar confined himself only to the college students who are studying in different colleges in Andhra Pradesh.

Methodology

Selection of subjects

To facilitate the study fifty athletes (25 boys and 25 girls) and

fifty non-athletes (25 boys and 25 girls) from different college in Andhra Pradesh were randomly selected. The subjects were selected in the age group of 18 to 25 years.

The requirements for the collection of data through administration of questionnaires were explained to the subjects so as to avoid any ambiguity of the effort required on their part and prior to the administration of the questionnaire. All the subjects participated in this study voluntarily and responded to the questionnaire without bias.

Selection of variables

The research scholar reviewed the various scientific literatures pertaining to the selected psychological and motor fitness variables from books, journals, periodicals, magazines and research papers. Taking into consideration of feasibility criteria, availability of instruments and the relevance of the variables of the present study, the following variables were selected.

Dépendent Variables

Psychological variables

- a. Stress

Motor Fitness Variables

- b. Endurance (Cardiovascular Endurance)

Independent Variables

1. Twenty five Athletes (Boys)
2. Twenty five Athletes (Girls)
3. Twenty five Non-athletes (Boys)
4. Twenty five Non-athletes (Girls)

Research design

Independent randomized research design was used for this study, as the subjects were selected randomly from four independent groups. The responses obtained through standardized questionnaire to measure all the four groups on selected variables, stress and cardiovascular endurance were collected. The collected data were subjected to statistical treatment to find out any differences between the groups in the dependent variables selected.

Statistical technique

The purpose of the study was to make a comparative analysis of selected psychological, socio economic and motor fitness variables among athletes and non-athletes. The collected data were compared between athletes and non-athletes, boys and girls. Hence, the investigator analysed the mean differences between the groups on criterion variables, using students' *t*' test.

Results on stress: The data collected on stress were compared between the four independent groups.

Table 1: Showing Means, Standard Deviation, Standard Error and obtained '*t*' Value between Athletes and Non-athletes on in Stress

| Group | Mean | MD | SD | SDM | <i>t</i> ' |
|---------------------|-------|-------|------|------|------------|
| Athletes (N=50) | 23.77 | -0.67 | 5.70 | 1.15 | 0.58 |
| Non-athletes (N=50) | 24.43 | | 4.48 | | |

Required table value '*t*' 0.05 (99),= 1.66

The above Table 1 shows the comparison of stress among athletes and non-athletes. Table 1 shows that the athletes mean values on stress was 23.77 and non-athletes was 24.43 with mean difference of 0.67. The means values were

subjected to statistical treatment using ‘t’ test and the obtained ‘t’ value of 0.58 was less than the required ‘t’ value 1.66. Thus, it was proved that there was no significant difference between athletes and non-athletes. The null hypothesis that “there will be no significant difference in stress between athletes and non-athletes” was accepted. The obtained means were presented through bar diagram in Figure 6 for better understanding of the results.

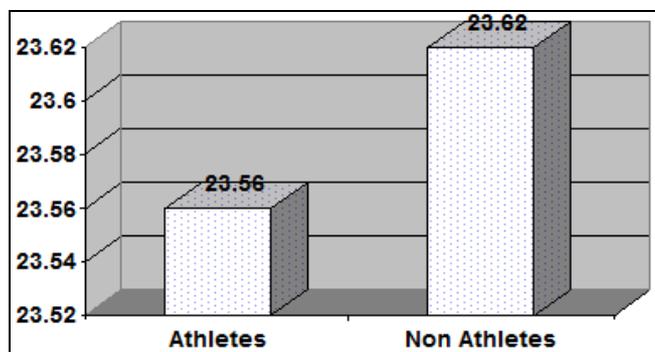


Fig 1: Bar Diagram Showing the Mean Values of Stress Athletes and Non-athletes

Table 2: Showing Means, Standard Deviation, Standard Error and obtained ‘t’ Value between Men Athletes and Men Non-athletes on Stress

| Group | Mean | MD | SD | SDM | t’ |
|-------------------------|-------|-------|------|------|------|
| Men Athletes (N-25) | 25.15 | -0.40 | 6.01 | 1.58 | 0.25 |
| Men Non-athletes (N-25) | 25.55 | | 3.73 | | |

Required table value ‘t’ 0.05 (1,49),= 1.677

The above Table 2 shows the comparison of stress between men athletes and men non-athletes.

Table 2 shows that the stress mean values of men athletes was 25.15 and men non-athletes was 25.55 with mean difference of 0.25. The mean values were subjected to statistical treatment using ‘t’ test and the obtained ‘t’ value of 0.25 was less than the required ‘t’ value 1.677. Thus, it was proved that there was no significant difference between men athletes and men non-athletes in stress. The null hypothesis that “there will be no significant difference between men athletes and men non-athletes in stress” was accepted. The obtained means were presented through bar diagram in Figure 7 for better understanding of the results.

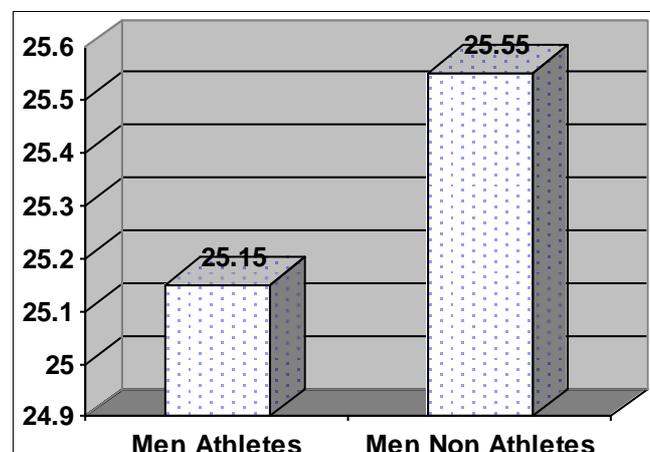


Fig 2: Bar Diagram Showing the Mean Values of Stress Men Athletes and Men Non-athletes

Table 3: Showing Means, Standard Deviation, Standard Error and obtained ‘t’ Value between Women Athletes and Women Non-athletes on Stress

| Group | Mean | MD | SD | SDM | t’ |
|---------------------------|-------|-------|------|------|------|
| Women Athletes (N-25) | 24.45 | -0.15 | 5.55 | 1.38 | 0.11 |
| Women Non-athletes (N-25) | 24.60 | | 2.68 | | |

Required table value ‘t’ 0.05 (1,99),= 1.66

The above Table 3 shows the comparison of stress between women athletes and women non-athletes.

Table 3 shows that the mean values of women athletes on stress was 24.45 and women non-athletes was 24.60 with mean difference of 0.15. The means values were subjected to statistical treatment using ‘t’ test and the obtained ‘t’ value of 0.11 was less than the required ‘t’ value 1.677. Thus, it was proved that there was no significant difference between women athletes and women non-athletes. The null hypothesis that “there will be no significant difference between women athletes and women non-athletes on stress” was accepted. The obtained means were presented through bar diagram in Figure 8 for better understanding of the results.

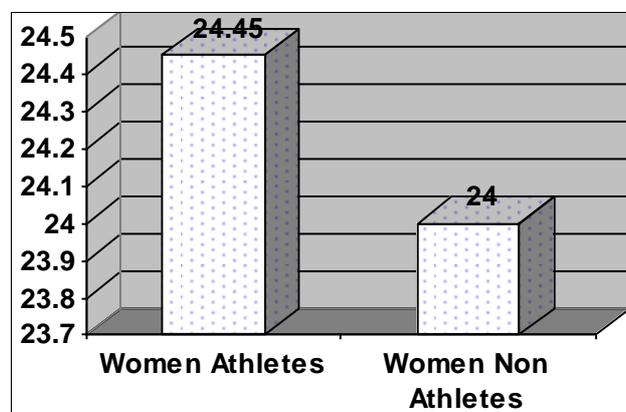


Fig 3: Bar Diagram Showing the Mean Values of Stress Women Athletes and men Non-athletes

Table 4: Showing Means, Standard Deviation, Standard Error and obtained ‘t’ Value between Men Athletes and Women Athletes in Stress

| Group | Mean | MD | SD | SDM | T’ |
|-----------------------|-------|------|------|------|------|
| Men Athletes (N-25) | 25.15 | 0.70 | 6.01 | 1.83 | 0.38 |
| Women Athletes (N-25) | 24.45 | | 5.55 | | |

Required table value ‘t’ 0.05 (59),= 2.045

The above Table 4 shows the comparison of stress between men athletes and women athletes.

Table 4 shows that the mean values men athletes on stress was 25.15 and women athletes was 24.45 with mean difference of 0.70. The means values were subjected to statistical treatment using ‘t’ test and the obtained ‘t’ value of 0.38 was less than the required ‘t’ value 1.677. Thus, it was proved that there was no significant difference between men athletes and women athletes in stress. The null hypothesis that “there will be no significant difference between men athletes and women athletes in stress” was accepted. The obtained means were presented through bar diagram in Figure 0 for better understanding of the results.

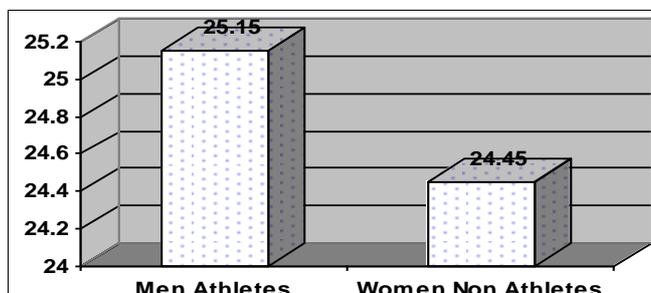


Fig 4: Bar Diagram Showing the Mean Values of Stress Men Athletes and Women Non-athletes

Table 5: Showing Means, Standard Deviation, Standard Error and obtained 't' Value between Men Non-athletes and Women Non-athletes in Stress

| Group | Mean | MD | SD | SDM | T' |
|---------------------------|-------|------|------|------|------|
| Men Non-athletes (N=25) | 25.55 | 0.95 | 3.73 | 1.03 | 0.92 |
| Women Non-athletes (N=25) | 24.60 | | 2.68 | | |

Required table value 't' 0.05 (59),= 2.045

The above Table 5 shows the comparison of stress between men non-athletes and women non-athletes.

Table 5 shows that the mean values men non-athletes on stress was 25.55 and women non-athletes was 24.06 with mean difference of 0.95. The means values were subjected to statistical treatment using 't' test and the obtained 't' value of 0.92 was less than the required 't' value 1.677. Thus, it was proved that there was no significant difference between men non-athletes and women non-athletes in stress. The null hypothesis that "there will be no significant difference between non-athletes and women non-athletes in stress" was accepted. The obtained means were presented through bar diagram in Figure I0 for better understanding of the results.

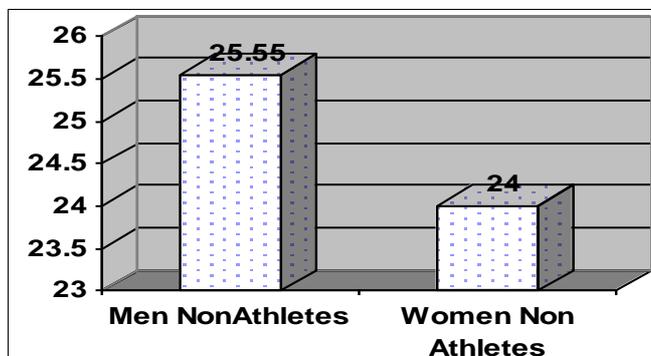


Fig 5: Bar Diagram Showing the Mean Values of Stress Men Non-athletes and Women Non-athletes

Results on cardiovascular endurance

The data collected on cardiovascular endurance were compared between the four independent groups.

Table 6: Showing Means, Standard Deviation, Standard Error and obtained 't' Value between Athletes and Non-athletes on in Cardiovascular endurance

| Group | Mean | MD | SD | SDM | t' |
|---------------------|---------|--------|--------|-------|-------|
| Athletes (N=50) | 2767.06 | 261.34 | 282.31 | 61.30 | 4.26* |
| Non-athletes (N=50) | 2505.72 | | 328.89 | | |

Required table value 't' 0.05 (99),= 1.66

The above Table 6 shows the comparison of cardiovascular endurance among athletes and non-athletes.

Table 6 shows that the athletes mean values on cardiovascular

endurance was 2767.06 and non-athletes was 2505.72 with mean difference of 261.34. The means values were subjected to statistical treatment using 't' test and the obtained 't' value of 4.26 was greater than the required 't' value 1.66. Thus, it was proved that there was significant difference between athletes and non-athletes. The null hypothesis that "there will be no significant difference in cardiovascular endurance between athletes and non-athletes" was rejected. The obtained means were presented through bar diagram in Figure 26 for better understanding of the results.

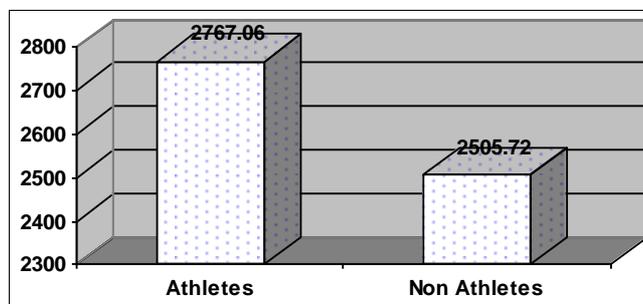


Fig 6: Bar Diagram Showing the Mean Values of Cardiovascular endurance Athletes and Non-athletes

Table 7: Showing Means, Standard Deviation, Standard Error and obtained 't' Value between Men Athletes and Men Non-athletes on Cardiovascular endurance

| Group | Mean | MD | SD | SDM | t' |
|---------------------|---------|--------|--------|-------|-------|
| Men Athletes (N=25) | 3039.40 | 242.72 | 191.87 | 52.71 | 4.60* |
| Men Non-athletes | 2796.68 | | 180.72 | | |

Required table value 't' 0.05 (1,49),= 1.677

The above Table 7 shows the comparison of cardiovascular endurance between men athletes and men non-athletes.

Table 7 shows that the cardiovascular endurance mean values of men athletes was 3039.40 and men non-athletes was 2798.68 with mean difference of 242.72. The mean values were subjected to statistical treatment using 't' test and the obtained 't' value of 4.6 was greater than the required 't' value 1.677. Thus, it was proved that there was significant difference between men athletes and men non-athletes in cardiovascular endurance.. The null hypothesis that "there will be no significant difference between men athletes and men non-athletes in cardiovascular endurance" was rejected. The obtained means were presented through bar diagram in Figure 27 for better understanding of the results.

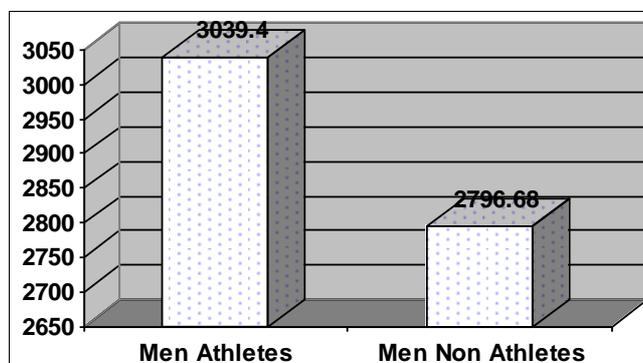


Fig 8: Bar Diagram Showing the Mean Values of Cardiovascular endurance Men Athletes and Men Non-athletes

Findings

The results proved that there was no significant differences between the athletes and non-athletes in anxiety and stress.

There was differences between athletes (men) and athletes (women) in aggression, athletes (men) and non-athletes (women) in socio economic status.

There was no significant differences between athletes and non-athletes in balance backward. There was significance differences on leg strength and cardiovascular endurance between athletes and non-athletes, athletes (women) and non-athletes (women), non-athletes (men) and non-athletes (women). The comparisons in standing broad jump revealed that there was significant difference between athletes and non-athletes and athletes (women) and non-athletes (women).

Based on the results and discussions made in the previous chapter the following conclusions were drawn.

Conclusions

Within the limitations and delimitations of this study, the following conclusions are drawn.

1. Based on the findings and discussions made in comparing selected psychological variables stress and endurance between athletes and non-athletes, it was concluded that there were no significant differences on endurance and stress between athletes and non-athletes.
2. Based on the findings and discussions made in comparing selected motor fitness variable cardiovascular endurance between athletes and non-athletes, it was concluded that there were significant differences and men athletes were significantly having better stress and cardiovascular endurance comparing with other groups.
3. However, it was concluded that as far balance backward, even though athletes found to be better than non-athletes, the differences were not significant, as it was concluded that there was no significant difference on balance between athletes and; non-athletes.

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