VOLUME-8, ISSUE-2, FEBRUARY-2019 • PRINT ISSN No 2277 - 8160

Original Research Paper

Pharmaceutical

COMPARATIVE EFFECT OF THREE TYPES AEROBIC TRAINING ON SELECTED ANTHROPOMETRIC VARIABLES OF TRIBAL BOYS

Mr. Avijit Das Research Scholar, The University of Burdwan, Burdwan, WB

Dr. Hiralal Adhikary * Head Dept. of Physical Education, The University of Burdwan, Burdwan. *Corresponding Author

ABSTRACT Purpose of this study was to find out and compare the comparative effect of three types aerobic training on selected anthropometrical variables of tribal boys. To achieve the purpose of the study 120 school male students were randomly selected as subjects with an average age of 14.9 years. Subjects were divided into four group namely Continuous Training Group, Fartlek Training Group, Interval Training Group and Control Group. Experimental groups underwent their respective trainings for 12 weeks and control group did not participate in any of the training programme other than their regular activities. Anthropometrical variable- upper arm circumference, Hip circumference and Calf circumference were selected for this study. The data were collected before and after the training. The obtained data's were analyzed by Analysis of Covariance (ANCOVA). The level of significant was fixed at 0.05 levels of confidence. The result of the study showed that there was as significantly improvement found in upper arm, Hip and Calf circumference among the experimental groups when compared with control group.

KEYWORDS : Anthropometry, Continuous Training, Fartlek Training, Interval Training.

INTRODUCTION:

Sports training refer to specialized strategies and methods of exercise used in various sports to develop players and athletes and prepare them for performing in sporting events. There are now a diverse range of sports training methods to be found. The main building blocks in all sports are: flexibility, agility, endurance, speed and strength. Nowadays the concept of the mind and its development is also considered a prerequisite to sporting success. In the modern era, anthropometrics have had more practical applications, particularly in the areas of genetic research and workplace ergonomics. Anthropometrics also provide insight into the study of human fossils and can help paleontologists better understand evolutionary processes.

The purpose of the study was to determine the comparative effect of three types aerobic training on selected anthropometrical variables of tribal boys.

Methodology: One hundred twenty (120) Tribal School Boys (Eighth & Ninth grade) were selected randomly out of 150 Tribal students of Jungalmahal of district Bankura, West Bengal, as the subjects of this study. The average ages of the subjects were 14.9 years. All the Subjects were sub divided into four equal groups (N=30 in each group). Three groups were projected as Experimental groups and designated as Continuous Training Group, Fartlek Training Group and Interval Training Group. The fourth one was termed as control group. Three experimental groups were being exposed to the aerobic trainings (Continuous Training, Fartlek Training and Interval Training) for 12 weeks as assigned to them. The control group was being kept away from any such training assigned to the experimental groups. Keeping the feasibility criterion especially in the case of availability of instruments, measuring techniques and acceptability of the test items were discussed with the supervisor and others the following variables were selected: a) Upper arm circumference, b) Hip circumference and c) Calf circumference. Upper Arm, Hip and calf Circumference were measured by flexible metal measuring tape and marker pen. Unit used centimeters. The data was collected for each variable administering their respective procedure. The tests were administered at Sports ground of Machatora Union High School of district Bankura, West Bengal. The data were collected before the starting of experimental treatment (pre-test) and the end of 12 weeks training period (post-test). Analysis of Covariance (ANCOVA) statistics was applied to find out the significant differences among three experimental groups i.e., Continuous Training Group, Fartlek training group and Interval Training Group and with the control group respectively on selected anthropometrical variables i.e., upper arm, hip and calf circumference of school level tribal boys. Tukey's HSD post-hoc test was applied to obtain the comparison between group means.

Table: I: ANCOVA of data on Upper arm circumference between pre and post test of Control group, Continuous running, Fartlek and Interval training group.

	Mean				Sum Of Square	Df	Mean Sum of Square	"F" Ratio
	Control Group	Continuous Group	Fartlek Group	Interval Group				
Pre Test	19.59±0.49	20.36±0.51	20.51±0.41	20.06±0.44	B 14.585 W 746.343	3 116	B 4.862 W 6.434	0.756
Post Test	20.17a±0.46	20.77a±0.52	20.13a±0.45	19.39b±0.43	B 54.618 W 749.928	3 116	B 18.206 W 6.436	2.817**
Adjusted Post Test	21.43a±0.41	20.66a±0.41	19.94ab±0.41	19.42b±0.41	B 68.272 W 570.531	3 115	B 22.757 W 4.961	4.587**

* Significant ($p<0.05$), ** Significant ($p<0.01$) , $F3(115) = 2.68$, $F3(116) = 2.68$

N = 120, B = Between group variance, W = Within group variance

Table-I showed that the adjusted post-test mean values on Upper arm circumference for control group, Continuous running group, Fartlek training group and Interval training group were 21.43±0.41, 20.66±0.41, 19.94±0.41 and 19.42±0.41 respectively. The obtained 'F' value is 4.587 for adjusted post test scores on upper arm circumference, which was higher than the table value of 2.68 for significance with df 3 and 115 at 0.05 level of confidence. The result of the study showed that there was significant difference among Control group, Continuous running group, Fartlek training group and Interval training group on Upper arm circumference. Since the four groups were involved the Tukey's HSD post hoc test was applied to find out the paired mean differences if any, and it is presented in table II.

Table-II: Tukey's post hoc test for the differences between paired adjusted post test means of upper arm circumference.

Treatment Pair	Tukey HSD Q-statistics	Tukey HSD p - value	Tukey HSD infer fence
Control VS Continuous	0.8546	0.8999947	Insignificant

Control VS Fartlek	2.2407	0.3926483	Insignificant
Control VS Interval	3.8350	0.0381325	* p<0.05
Continuous VS Fartlek	1.3861	0.7359691	Insignificant
Continuous VS Interval	2.9804	0.1569134	Insignificant
Fartlek VS Interval	1.5943	0.6537577	Insignificant

*Significant at 0.05 level of confidence, **Significant at 0.01 level of confidence

The Table-II revealed that significant differences exist between the means of Control group and Interval training group.

Discussion of Findings : The Table-I clearly indicated no significant differences in upper arm circumference among three experimental groups (Continuous training group, Fartlek training group and Interval training group) and one control group of tribal boys in pre test phase, which indicate that the random assignment of the groups were quite successful. However, significant differences were observed in post and adjusted post test phases. From such findings it may be clearly stated that after treatment of twelve weeks continuous, fartlek and interval training were having some positive effect on the development of upper arm circumference of tribal boys. However the influence of interval training was found to be more effective in developing upper arm circumference. This result is equivalent to the findings of Ferreira (2013), who had shown that aerobic training have a positive influence on Anthropometric component.

Table: III: ANCOVA of data on Hip circumference between pre and post test of Control group, Continuous running, Fartlek and Interval training group.

	Mean				Sum Of Square	Df	Mean Sum of Square	"F" Ratio
Pre Test	Control Group	Continuous Group	Fartlek Group	Interval Group				
	73.74±1.17	68.75±2.33	73.48±1.16	72.87±1.60	B 490.751 W 9324.069	3 116	B163.584 W 80.380	2.035
Post Test	66.90±2.40	62.61±1.74	68.00±0.70	69.67b±1.49	B 818.700 W 9997.737	3 116	272.900 W 86.187	3.166*
Adjusted Post Test	66.87±1.71	62.69±1.73	67.97±1.71	69.66±1.70	B 765.663 W 9992.950	3 115		2.937*

* Significant (p<0.05), ** Significant (p<0.01), N = 120, B = Between group variance,

W = Within group variance, F3 (115) = 2.68, F3 (116) = 2.68

The adjusted post-test mean values on hip circumference for control group, Continuous running group, Fartlek training group and Interval training group were 66.87±1.71, 62.69±1.73, 67.97±1.71 and 69.66±1.70 respectively. The obtained 'F' value is 2.937 for adjusted post test scores on upper arm circumference, which was higher than the table value of 2.68 for significance with df 3 and 115 at 0.05 level of confidence. The result of the study showed that there was significant difference among Control group, Continuous running group, Fartlek training group and Interval training group on Upper arm circumference. Since the four groups were involved the Tukey's HSD post hoc test was applied to find out the paired mean differences if any, and it is presented in table IV.

Table: IV: Tukey's post hoc test for the differences between paired adjusted post test means of hip circumference.

Treatment Pair	Tukey HSD Q-statistics	Tukey HSD p - value	Tukey HSD infer fence
Control VS Continuous	2.5330	0.2830233	Insignificant
Control VS Fartlek	0.6490	0.8999947	Insignificant
Control VS Interval	1.6362	0.6372209	Insignificant
Continuous VS Fartlek	3.1820	0.1162468	Insignificant
Continuous VS Interval	4.1692	0.0199356	* p<0.05
Fartlek VS Interval	0.9872	0.8933988	Insignificant

*Significant at 0.05 level of confidence, **Significant at 0.01 level of confidence

The above Table-IV revealed that significant differences exist between the means of Continuous training group and Interval training group.

Discussion of Findings: The Table-III clearly indicated that the mean values of control group, continuous training group, fartlek training group and interval training group in pre test phase was almost equal and hence no significant difference in pre test phase was observed. However, significant differences were observed in post (3.166) and adjusted post test (2.937) phases. Both continuous and interval training group show significant differences with fartlek training group, whereas, there was no significant difference between control and continuous training group, Further, it was observed that, no significant difference was recorded between the control and other experimental groups with regard to this parameter in the present study. Result of this study substantiated by Wanda-Pilch et al, (2017).

Table-V: Analysis of Covariance of data on Calf circumference between pre and post test of Control group, Continuous running, Fartlek and Interval training group.

	Mean				Sum Of Square	Df	Mean Sum of Square	"F" Ratio
	Control Group	Continuous Group	Fartlek Group	Interval Group				
Pre Test	26.63±0.61	27.18±0.50	27.74±0.53	26.63±0.61	B 25.677W 1113.499	3 116	B 8.559 W 9.599	0.892
Post Test	24.15a±0.83	26.16ab±0.30	28.27b±0.53	27.38b±0.56	B 286.219W 1205.765	3 116	B 95.406 W 10.395	9.179**
Adjusted Post Test	24.28a±0.57	26.12b±0.56	28.05c±0.57	27.51bc±0.57	B 23.104 W 1097.870	3 115	B 84.368 W 9.547	8.837**

* Significant (p<0.05), ** Significant (p<0.01) , F3 (115) = 2.68, F3 (116) = 2.68

N = 120, B = Between group variance, W = Within group variance

The adjusted post-test mean values on calf circumference for control group, Continuous running group, Fartlek training group and Interval training group were 24.28±0.57, 26.12±0.56, 28.05±0.57 and 27.51±0.57 respectively. The obtained 'F' value is 8.837 for adjusted post test scores on upper arm circumference, which was higher than the table value of 2.68 for significance with df 3 and 115 at 0.05 level of confidence.

The result of the study showed that there was significant difference among Control group, Continuous running group, Fartlek training group and Interval training group on Upper arm circumference.

Since the four groups were involved the Tukey's HSD post hoc test was applied to find out the paired mean differences if any, and it is presented in table VI.

Table: VI: Tukey's post hoc test for the differences between paired adjusted post test means of Calf circumference.

Treatment Pair	Tukey HSD Q-statistics	Tukey HSD p - value	Tukey HSD infer fence
Control VS Continuous	3.4260	0.0786084	Insignificant
Control VS Fartlek	6.9993	0.0010053	** p<0.01
Control VS Interval	5.4873	0.0010053	** p<0.01
Continuous VS Fartlek	3.5733	0.0611391	Insignificant
Continuous VS Interval	2.0613	0.4674794	Insignificant
Fartlek VS	1.5120	0.6862605	Insignificant

*Significant at 0.05 level of confidence, **Significant at 0.01 level of confidence

The above Table-VI revealed that significant differences exist between the means of control group & fartlek training group and Control group & Interval training group.

Discussion of Findings

The Table-V clearly indicated that no significant differences in calf circumference among three experimental groups (Continuous training group, Fartlek training group and Interval training group) and one control group of tribal boys in pre test phase, which indicate that the random assignment of the groups were quite successful. However, significant differences were observed in post and adjusted post test phases.

Further it was observed from the said table that pre test of "F" value is 0.892, post test 'F' value is 9.179, and adjusted post test value is 8.837. That means calculated "F" value of post test and adjusted post test were greater than tabulated 'F' value (2.68). From such results it may be assumed that there was significant difference among the groups. From the result it was assumed that aerobic training play highly positive effect on the improvement of calf circumference, however the effect of fartlek and interval training programme was found more effective in developing calf circumference. Result of this study is equivalent of the findings of Karve & Tiwari (2010).

CONCLUSION: Upper arm circumference, hip circumference and calf circumference was significantly improved by the specific aerobic training programme.

REFERENCES

1. Leonardo Gomes Ferreira, "Effects of a Program "Circuit Training" on Anthropometric Variable and Composition
2. Body in Military Police". Ferreira, Anat Physiol 2013, 3:2 DOI: 10.4172/2161-0940.1000125, ISSN:2161-0940 Physiol, an open access journal. Volume 3 Issue 2 1000125
3. Rajkumar Karve & Pratap Singh Tiwari, "Running training on different surfaces have different effects on performance". Br J Sports Med: 44(Suppl I):i1–i82, first published 10.1136/bjsm.2010.078725.90 on 17 December 2010. WandaPilch, ŁukaszTota,2 EwaSadowska-pa3 AnnaPiotrowska,1MagdalenaKępińska 1 TomaszPałka, "The Effect of a 12-Week Health Training Program on Selected Anthropometric and Biochemical Variables in Middle-Aged Women". BioMed Research International Volume 2017, Article ID 9569513, 7 pages https://doi.org/10.1155/2017/9569513