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Effect of Weight Training on Selected Physical Fitness Variables among Rajbangsi Boys

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Abstract: ***The purpose of the study was to find out the effect of weight training on selected physical fitness variables such as muscular strength(grip strength), abdominal strength endurance(sit ups) and speed(50 meter dash) among Rajbangsi boys. To achieve this purpose of the study, hundred (100) school going boys (14-16 years) were selected randomly two subdivisions in the district of Uttardinajpur, West Bengal. They were divided into two groups such as Rajbangsi Group (GR) and General Group (GG). Both group were divided into two groups such as experimental and control group, each consisting of twenty five (25) subjects. Selected weight training programme for 16 weeks was assigned as treatment to the entire experimental group. The selected criterion variables were assessed using standard procedures, before and after the training regimen. Data were analyzed with pair t-test and student t-test using SPSS version 19. The level of significance was set as 0.05. Data revealed that the improvement of grip strength and speed were better among Rajbangsi boys in comparison to General boys but on the other hand the improvement of abdominal strength endurance was better among General boys in comparison to Rajbangsi boys. These results suggest that weight training has significant influence in improving selected physical fitness variables.***

Keywords: Rajbangsi, Physical Fitness, Weight Training

1. Introduction

The main essence of the study was embodied on the effect of weight training among an ethnic community of North Bengal called „Rajbangsi" with distinctive physical features along with their observable physiognomy. Anthropometrically the Rajbangsi community is quite different from that of the General population in the same locality due to specific physiognomy of a mixed breed of Koch"s predominantly Mongoloid. Rajbangsi community people have darker skin and some are black, the nose is flat at least the tip of the nose is broad, high chick bones and thick lips, the eyes generally small and slightly oblique (Sanyal, 2002). Rajbangsi is the largest scheduled caste community in the state of West Bengal. According to the latest 2011 census estimate their population is about 3801677 in the state of whom majority (about 80%) are found to live in the northern parts of the state community known as "North Bengal". Rajbangsi occupy an important place in the southern districts of North Bengal which include Malda and two (North and South) Dinajpur districts. Geographically, they have greater concentration in region between river Kulick and river Tangan, an area stretching over the South and parts of North Dinajpur districts. (Mukhopadhyay, 2013).

The effectiveness of resistance training or weight training among children has been addressed recently by several comprehensive reviews, which all come to the conclusion that resistance training can be very effective for developing muscle strength among pre-pubertal children. The American College of Sports Medicine (ACSM, 1995), the International Federation of Sports Medicine (FIMS, 1998) and the National Strength and Conditioning Association (NSCA, 1996) recommend progressive resistance training for children and adolescents.

Vrijens (1978) reported the results of an 8 weeks resistance training programme done three times per week by boy. The adolescents were capable of increasing strength in all muscle groups tested.

Faigenbaum and Myer (2010) indicated that resistance training can be a safe, effective and worthwhile activity for children and adolescents. The purpose of the present study was to find out the effect of weight training on selected physical fitness variables among Rajbangsi boys.

2. Materials And Methodology

2.1 Subjects

Total hundred (100) boys, fifty (50) Rajbangsi community and fifty (50) general community, were selected randomly as subjects from two subdivisions in the district of Uttar Dinajpur, West Bengal. Personal data of the subjects were given in table-1.

2.2 Criterion measures

Three physical fitness measures of the subject were considered as the criterion measures such as: - **i) Muscular Strength:** It was measured by the researcher by using Grip Strength Test. **ii) Speed:** It was measured by using 50m Dash test. iii) **Abdominal strength endurance:** It was measured by sit up test.

2.3 Experimental design

The experiment conducted on 14-16 years school going boys. Total 100 subjects (GR=50 and GG=50) were selected randomly from two subdivisions in the district of Uttar Dinajpur, West Bengal. Both group were divided into two groups such as experimental and control group, each

consisting of 25 subjects. The selected weight training programme(specially for children and adolescent) including bench press, biceps curl, push ups, standing heel raise, squat, triceps extension, abdominal crunches, wrist curl, step ups exercises was assigned as treatment to all the experimental groups. The duration of the experimental period was 16 weeks excluding the days required for initial and final test. The treatment was given thrice (Monday, Wednesday, and Friday) in a week in the afternoon session for duration of approximately 60 minutes which include warm-up for 5-10 minutes and cooling down for 5-6 minutes. The volume and repetitions of the exercises were fixed according to the principles of weight training and goal of the study.

2.4 Statistical analysis

The mean and standard deviation (S.D) were calculated for the analysis of the data as descriptive statistics. Statistical significance of two groups, mean difference was tested by Pair t-test and Student t-test. All the statistics were calculated by using SPSS version 19. The level of significance was set as 0.05.

3. Results and Discussion

3.1. Results

Table 1: Personal Data of Group RExpt and GExpt

	RExpt.(Mean SD)	GExpt.(Mean SD)	t-value
Age(Years)	15.02±0.50	14.96±0.56	0.43
Height(Meters)	1.588±0.082	1.596±0.064	0.42
Weight(Kg.)	46.8±6.37	45.92±7.62	0.44
BMI	18.64±2.00	17.84±1.82	1.48

*Significant at 0.05 level of confidence. RExpt. - Raibangsi experimental, GExpt. - General experimental

Table-1 represents age, height, weight and BMI as personal data of the subject. After comparing the means of the above mentioned data and corresponding t-values show no significant difference at 0.05 level of confidence which may be considered both the experimental group as equated group.

Table 2: Comparison of means of Speed, Muscular Strength and Abdominal Strength Endurance of General Expt. (GExpt) Group after 16 weeks experimental period

Parameters	Mean± SD	SED	df	t	Sig .(2-tailed)
50 mt dash (Sec) Pre (N=25) Post	7.93 ± .29 7.76 ± .30	.04	24	4.16*	.000
Grip Strength (Kg) Pre (N=25) Post	25.04 ± 6.82 28.52 ± 7.73	.58	24	5.96*	.000
SitUp (Nos) Pre (N=25) Post	23.52 ± 6.34 24.60 ± 6.18	.27	24	3.99*	.000

*Significant at 0.05 level of confidence.

Table 2 represents the comparison of means of Speed, Strength and Endurance of General Expt. (G Expt) after 16 weeks experimental period. The t-value of Speed, Strength and endurance were 4.16, 5.96 and 3.99 respectively.

Table 3: Comparison of means of Speed, Muscular Strength and Abdominal Strength Endurance of Rajbangsi Expt. (RExpt) Group after 16 weeks experimental period

Parameters	Mean ± SD	SED	df	t	Sig. (2-tailed)
50 mt dash (Sec) Pre (N=25) Post	7.78 ± .28 7.56 ± .17	.07	24	3.34*	.002
Grip Strength (Kg) Pre (N=25) Post	26.92 ± 6.14 32.76 ± 6.91	.80	24	7.27*	.000
Sit Up (Nos) Pre (N=25) Post	19.48 ± 5.56 21.16 ± 5.51	.44	24	3.80*	.001

*Significant at 0.05 level of confidence.

Table 3 represents the comparison of means of speed, muscular strength and abdominal strength endurance of RExpt. Group after 16 weeks experimental period. The t-value of Speed, Strength and endurance were 3.34, 7.27 and 3.80 respectively.

Table 4: Comparison of means of Speed, Muscular Strength and Abdominal Strength Endurance of General control (GCon) group after the study

Parameters	Mean ± SD	SED	df	t	Sig. (2-tailed)
50mt dash (Sec) Pre (N=25) Post	7.82 ± .28 7.80 ± .26	.021	24	0.998	.328
Grip Strength (Kg) Pre (N=25) Post	23.92 ± 6.12 24.32 ± 5.96	1.707	24	0.234	.816
SitUp (Nos) Pre (N=25) Post	23.48 ± 5.55 23.56 ± 5.50	.162	24	0.492	.627

*Significant at 0.05 level of confidence.

Table -4 represents the comparison of means of speed, muscular strength and abdominal strength endurance of General control group. The t-value of 50 mt dash, Grip Strength and Sit Ups were 0.998, 0.234 and 0.492 respectively.

Table 5: Comparison of means of Speed, Muscular Strength and Abdominal Strength Endurance of Rajbangsi control (RCon) group after the study.

Parameters	Mean ± SD	SED	df	t	Sig. (2-tailed)
50 mt dash (Sec) Pre (N=25) Post	7.86 ± .42 7.84 ± .43	.006	24	1.49	.149
Grip Strength (Kg) Pre (N=25) Post	24.88 ± 8.39 25.16 ± 8.34	.28	24	1.000	.327
Sit Up (Nos) Pre (N=25) Post	19.12 ± 3.49 19.56 ± 3.70	.217	24	2.031	.054

*Significant at 0.05 level of confidence.

Table 5 represents the comparison of means of speed, muscular strength and abdominal strength endurance of Rajbangsi control group. The t-value of of Speed, Strength and endurance were 1.49, 1.000 and 2.031 respectively.

Table 6: Comparison of means of Speed, Muscular Strength and Abdominal Strength Endurance between GExpt and RExpt Group after experimental period.

Parameters	Mean ± SD	SED	df	t	Sig. (2-tailed)
50mtdash(Sec) GExpt (N=50) RExpt	7.76 ± .30 7.56 ± .17	.07	48	2.830*	.006
GripStrength(Kg) GExpt (N=50) RExpt	28.52 ± 7.73 32.76 ± 6.91	2.072	48	2.046*	.046
Sit Up(Nos) Gexpt (N=50) RExpt	24.60 ± 6.18 21.16 ± 5.51	1.657	48	2.076*	.043

*Significant at 0.05 level of confidence.

Table -6 represents the comparison of means of speed, muscular strength and abdominal strength endurance between GExpt and RExpt group after experimental period. The t-value of speed, muscular strength and abdominal strength endurance were 2.830, 2.046 and 2.076 respectively. The t-values of speed, muscular strength and abdominal strength endurance were significant at 0.05 level of confidence.

Table 7: Comparison of means of Speed, Muscular Strength and Abdominal Strength Endurance between GCon and RCon Group after the study

Parameters	Mean ± SD	SED	df	t	Sig. (2-tailed)
50mtdash(Sec) GCon (N=50) RCon	7.80 ± .26 7.84 ± .42	.100	48	0.487	.628
GripStrength(Kg) GCon (N=50) RCon	24.32 ± 5.96 25.16 ± 8.34	1.91	48	0.482	.632
Sit Up(Nos) GCon (N=50) RCon	23.56 ± 5.50 19.56 ± 3.70	1.326	48	3.018*	.004

*Significant at 0.05 level of confidence.

Table -7 represents the comparison of means of speed, muscular strength and abdominal strength endurance between GCon and RCon group after the study. The t-value of speed, muscular strength and abdominal strength endurance were 0.487, 0.482 and 3.018 respectively. The t-value of abdominal strength endurance was significant at 0.05 level of confidence.

Table 8: Comparison of mean differences of GExpt and RExpt group on Speed, Muscular Strength and Abdominal Strength Endurance after 16 weeks experimental period

Parameters	Mean ± SD	SED	df	t	Sig. (2-tailed)
50mtdash(Sec) GExpt (N=50) RExpt	-0.14 ± .11 -0.22 ± .33	.07	48	1.223	.227
GripStrength(Kg) GExpt (N=50) RExpt	3.48 ± 2.92 5.84 ± 4.02	.993	48	2.377*	.021
Sit Up(Nos) Gexpt (N=50) RExpt	1.08 ± 1.35 1.92 ± 2.00	.482	48	1.741	.088

*Significant at 0.05 level of confidence.

Table 8 represents the comparison of mean differences of GExpt and RExpt group on speed, muscular strength and abdominal strength endurance after 16 weeks experimental period. The t-value of speed, muscular strength and abdominal strength endurance were 1.223, 2.377 and 1.741 respectively. The t-value of muscular strength was significant at 0.05 level of confidence.

3.2. Discussion

The main essence of the present study was embodied on the effect of weight training among an ethnic community of North Bengal called „„Rajbangsi" with distinctive physical features along with their observable physiognomy. Anthropometrically the Rajbangsi community is quite different from that of the General population due to specific physiognomy of a mixed breed of Koches and predominantly Mongoloid. In the present study it was observed that the speed of RExpt as well as GExpt group were significantly improved after the experimental period. But none of the group was superior in increment of speed ability after 16 weeks weight training programme. The comparison in speed ability among GExpt and RExpt group showed that RExpt group was superior in speed ability after 16 weeks weight training programme. It was also observed from the present study that the grip strength of both the RExpt and GExpt group were increased significantly after the 16 weeks weight training programme. But RExpt group was superior in increment of grip strength in comparison to GExpt group. Grip strength of both the experimental group was increased as a result of 16 weeks weight training programme. When muscles work against a resistance muscle strength increases. The Grip strength of both the experimental group were increased as a result of growth factor and as well as treatment factor. Due to growth factor the protein contain of the muscles have been increased and due to training factor the contractile ability of muscle has also increased which is the positive factor for the increment of strength. Comparison of Grip strength among RExpt and GExpt group was made after 16 weeks weight training programme which showed that RExpt group was superior in increment in Grip strength. It was further observed from the present study that abdominal strength endurance of both the RExpt and GExpt group was increased significantly after the 16 weeks weight training programme. But none of the group was superior in increment of abdominal strength endurance after 16 weeks weight training programme. Comparison of strength endurance among RExpt and GExpt group was made after 16 weeks weight training programme which showed that GExpt group was superior in abdominal strength endurance after treatment programme.

4. Conclusion

The finding of the present study demonstrated that speed, grip strength and abdominal strength endurance of both the Rajbangsi boys as well as General boys were significantly improved due to 16 weeks weight training programme. But only Rajbangsi experimental group was superior in increment in grip strength. Based on the result of this study it may be concluded that the improvement in speed and grip strength were better among Rajbangsi group in comparison to General group but the abdominal strength endurance was better among General group in comparison to Rajbangsi group.

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