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## Effects of resistance training with recreational activities on selected physical and physiological variables among sedentary female students with postural deformities

**Evelyn Synthiya and Dr. P Anbalagan**

### Abstract

The purpose of the study was to find out the effects of resistance training with recreational activities on selected physical and physiological variables among sedentary female students with postural deformities. To achieve the purpose of the study, forty postural deformities students were selected randomly 22 to 25 years of age from affiliated colleges at Bharathiar University, Coimbatore district. The selected subjects were divided into two equal groups namely experimental and control groups of 20 subjects each. The training period was limited to twelve weeks and for six days per week. The resistance training with recreational activities was selected as independent variables and Speed, Strength, Breath Holding Capacity and Pulse Rate, were selected as dependent variables and it was measured by 50 mts dash, 1 RM test, Nose clip, and Cardio Radial Pulse respectively. All the subjects were tested two days before and immediately after the experimental period on the selected dependent variables. The obtained data from the experimental group and control group before and after the experimental period were statistically analyzed with dependent 't'-test to find out significant improvements. The level of significance was fixed at 0.05 level confidences for all the cases. Significant improvement was found on speed, strength, breath holding capacity and pulse rate of experimental group due to the effects of resistance training with recreational activities when compared to the control group.

**Keywords:** Speed, strength, breath holding capacity and pulse rate

### Introduction

Postural deformities are pathological deviations of the curvature of the spinal column from normal physiological curves. Non-structural deformities of the spine are due to postural dysfunction, lower limb inability, inflammatory, post-traumatic and other conditions. Structural deformities of the spine include deformities resulting from pathological changes in the structure and morphology of spinal vertebrae that are of etiologically different causes. The results of systematic examinations of children in primary and secondary schools show that the deformities of the spinal column are increasing from year to year. The development of spinal deformity in children in the developmental period is associated with the gender, body weight, body height and age of the child, family burden of the spinal column deformities, hereditary diseases and other conditions, as well as with insufficient physical activity. The diversity of psychophysical abilities of children by age groups indicates that aerobic muscle endurance starts from early childhood, and anaerobic endurance and their strength from puberty and later. In children aged 8-10 years, the elasticity and flexibility of the locomotors system is particularly expressed, while in children from 10-17 years, the strength of muscles dominates, along with the development of movements, speed and coordination. Reduced physical activity, rapid growth and poor life habits lead to the weakness of musculature of the trunk in the stage of rapid growth of children and the appearance of dysfunctional deformities of the spinal column. The changed statics have a tendency to progress with the onset of deformities, such as kyphosis and scoliosis, which can have permanent physical, psychological and social consequences on the growth and development of children. Physical activity is the basis for the preservation of health, it has a favorable effect on growth and it is equally important in all life cycles of the child's development.

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Regular physical activity, through exercises of the appropriate type, intensity and duration, is a prerequisite for preventing the development of spinal deformity in children. Early detection of spinal deformities is of a great importance for the application of preventive measures to prevent the progression of deformities and possible unwanted complications. Bearing in mind the different results in the available literature on the impact of physical activity on deformities of the spinal column, the aim of our study was to examine and determine the effectiveness of regular 6 and individually oriented physical activity on the prevention and appearance of spinal column deformities in children in the developmental period.

**Methodology:** For the purpose of this study, altogether forty postural deformities of sedentary female students were selected randomly in 22 to 25 years of age from affiliated colleges at Bharathiar University, Coimbatore district. They were divided into two groups of 20 each. The Experimental group I would underwent resistance training with recreational activities. The second group of Control group did not undergo any training program. Pre – test and post –test would be conducted. Treatment would be given for twelve weeks. It would be find out finally the effects of resistance training with recreational activities on selected physical and physiological variables among the postural deformities of sedentary female students in scientific methods.

**Table 1:** The selected tests were measured by following units for testing:

Criterion Variables	Test Items	Unit Measurements
Speed	50 meters dash	Seconds
Strength	1RM test	Kg
Breath holding capacity	Nose clip	Counting in seconds
Pulse rate	Cardio Radial Pulse	Number of beats per minutes

**Training Programme**

**Table 2:** The following schedule of training was given for the resistance training with recreational activities training group.

Group	Design of the Training
Experimental Group I	Resistance training with recreational activities Training
Control Group II	Did not do any Specific Training
Training Duration	60 Minutes
Training Session	6 Days a week
Total Length of Training	Twelve weeks



**Chart 1:** Experimental Treatment Adopted For Experimental Group-I

**Table 3:** Progression of load for experimental group-i (RTWRATG)

Weeks	Resistance Training (Monday, Wednesday and Friday)	Training (10+45+5=60mins)	Load
I to IV	Warm -up 1. Lateral raise with dumbbells 2. Burpees 3. Triceps extension 4. Deadlift Warm- down	10 minutes 45 minutes 5 minutes	4 to 8rep x 2 sets
V	Warm -up	10 minutes	4 to 8rep x 2 sets

to VIII	1. Lateral raise with dumbbells 2. Burpees 3. Triceps extension 4. Deadlift Warm- down	45 minutes 5 minutes	
IX to XII	Warm -up 1. Lateral raise with dumbbells 2. Burpees 3. Triceps extension 4. Deadlift Warm- down	10 minutes 45 minutes 5 minutes	4 to 8rep x 2 sets

Weeks	Recreational Activities Training (Tuesday, Thursday, and Saturday)	Training (10+45+5=60mins)	Load
I to IV	Warm -up Recreation Activity Minor Games Dodge Ball Raja Rani Treasure Hunt Warm- down	10 minutes 45 minutes 5 minutes	4 to 8rep x 2 sets
V to VIII	Warm -up Recreation Activity Minor Games Good Morning -Good Morning Tunnel Ball Relay Musical Chair Warm- down	10 minutes 45 minutes 5 minutes	4 to 8rep x 2 sets
IX to XII	Warm -up Recreation Activity Minor Games Kidi Kidi Relay Ball relay Slow cychling Warm- down	10 minutes 45 minutes 5 minutes	4 to 8rep x 2 sets

**Experimental Design:** The experimental group was given resistance training with recreational activities exercises after taking an initial test. After the initial test selected resistance training with recreational activities exercises were given for twelve weeks in six days. The time of practice was from 6.00AM to 7.00 AM. The control group was not participating in any of the special training programme. However they were allowed to participate in their regular education classes in the college as per their curriculum.

**Statistical Technique:** The dated were statistically evaluated

with dependent t-test to discovery obtainable significant development. The level of significance was secure at 0.05 level of confidence for all the cases.

**Results and Discussions**

The effect of independent variables on each criterion variables was considered by dependent ‘t’ – test on the data achieved for Speed, Strength, breath holding capacity and pulse rate. The pretest and post- test means of experimental group and control group have been analyzed and existing in Table 4 & 5.

**Table 4:** Mean and Dependant ‘t’ – ratio for the pre and post tests on speed, strength, breath holding capacity and pulse rate of experimental group

S. No	Variables	Pre-test Mean± SD	Post-test Mean± SD	Diff	SE	‘t’ –ratio
1.	Speed	08.20 ± 2.16	07.76 ± 1.88	0.44	0.61	4.86*
2.	Strength	29.14 ± 2.28	30.12 ± 2.32	0.98	0.13	5.76*
3.	Breath Holding Capacity	15.01± 25.03	34.29± 23.67	24	5.01	3.50*
4.	Pulse Rate	70.72+4.83	76.44+6.24	24	.97	5.5*

\*Significance at 0.05 level of confidence (2.09).

**Table 5:** Mean and Dependant ‘t’ – ratio for the pre and post tests on speed, strength, breath holding capacity and pulse rate of control group

S. No	Variables	Pretest Mean±SD	Post test Mean± SD	Diff	SE	‘t’ –ratio
1.	Speed	08.26 ± 2.16	08.24 ± 1.88	0.02	0.61	1.16
2.	Strength	29.14 ± 2.28	29.20 ± 2.32	0.06	0.13	1.59
3.	Breath holding capacity	36.18± 22.99	34.30± 24.87	23	4.07	1.84
4.	Pulse Rate	76.28+6.48	75.19+6.50	24	1.14	2.02

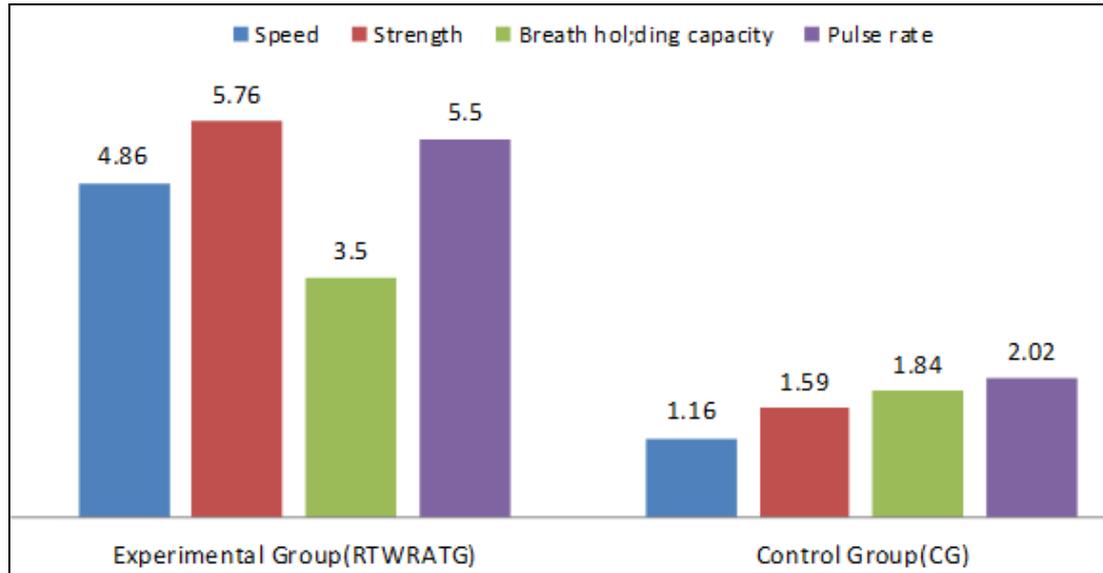
\*Significance at 0.05 level of confidence (2.09).

The table 4 and 5, shows that, the obtained ‘t’–ratio between the pre and post-test means of experimental group were 4.86, 5.76, 3.50, 5.5 and control group were 1.16,1.59,1.84,2.02 respectively. The table values required for significant

difference with df 24 at 0.05 level of confidence. Since the obtained ‘t’ – ratio value of experimental and control group on speed, strength, breath holding capacity and pulse rate were greater than the table value 2.09,it was concluded that

the resistance training with recreational activities training exercises had significantly improved speed, strength, breath holding capacity and pulse rate of experimental group.

The pre and post- test mean value of experimental and control group on speed, strength, breath holding capacity and pulse rate were graphically represented in the figure 1.



**Fig 1:** The pre and post- test mean value of experimental and control group on speed, strength, breath holding capacity and pulse rate were graphically represented

### Discussion on Findings

The finding of the study reveals that the resistance training with recreational activities training group had significant improvement in their physical and physiological variables. In the view of control group there was no significant improvement in their physical and physiological variables. The findings of the study had close relationship with the results of the previous study conducted by Neha Westcott, Wayne L. (2012) Resistance training is medicine: effects of strength training on health.

### Conclusions

Improvement on speed, strength, breath holding capacity and pulse rate was found significantly on experimental group due to the effects of resistance training with recreational activities on physical and physiological variables when compared to the control group.

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