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Dr. Rajeshwari
Assistant Professor, Department of
Physical Education, Post Graduate
Govt. College Sec-11, Chandigarh,
India

Dr. Suman Bala
Assistant Professor, Department of
Physical Education, Post Graduate
Govt. College Sec-11, Chandigarh,
India

Abdominal muscular strength and endurance among rural school girls of Rajasthan

Dr. Rajeshwari and Dr. Suman Bala

Abstract

Background: The purpose of the present study was to find out the abdominal muscular strength and endurance among different age groups of rural school girls of Rajasthan.

Methods: modified sit-ups test was conducted on 1050 girls ranging between 14 to 16 years. Random sampling technique was used to select the subjects. To find out the significance differences among the different three age groups of school girls, Analysis of Variance (ANOVA) was applied. Further Scheffe's post-hoc test was used to see the direction and significance of differences where 'F' ratio was found significant. The level of significance chosen was .05.

Results: There were significant differences obtained on abdominal muscular strength and endurance (Modified sit-ups), among different three age groups of rural school girls. The finding reveals that 16 year age group of rural school girls demonstrated significantly better than their counterparts.

Keywords: Abdominal muscular strength, endurance, rural school girls

Introduction

Some people think that strength is necessary only for highly trained athletes, fitness enthusiasts, and individuals who have jobs that require heavy muscular work. In fact, a well-planned strength training program leads to increase muscle strength and endurance, muscle tone, tendon and ligament strength, and bone density- all of which help to improve functional physical capacity.

One of the most harmful effects of modern-day technology is an increase in chronic conditions related to a lack of physical activity. These hypokinetic diseases include hypertension, heart disease, chronic low back pain, and obesity. Lack of adequate physical fitness is a fact of modern life that most people can avoid no longer. To enjoy modern-day conveniences and still expect to live life to its fullest, however, one has to make a personalized lifetime exercise program a part of daily living. (Hoeger, 2007)

Strength is the sum of power a muscle can apply. One requires strength to increase the capacity to perform work, decrease chances of injury, prevent low back pain, improve posture, and curb the one set of diseases that result from a sedentary life style. Endurance is the capacity of the muscles to work for extended periods of time without too much tiredness. Muscular endurance prevents unwanted fatigue from daily routines and enhances opportunities for success and enjoyment in sport and recreational activities. Muscular strength and endurance are important for good health.

Regular strength training also can help control blood sugar. Much of the blood glucose from food consumption goes to the muscles, where it is stored as glycogen. When muscles are not used, muscle cells become insulin resistant and glucose cannot enter the cells, thereby increasing the risk for diabetes. (Hoeger, 2007)

Methods and Procedures

In this study, a sample of 1050 rural school girls ranging between 14 to 16 years studying in different schools from rural area of Rajasthan was taken as subjects. Random sampling technique was used to select the subjects. The modified sit-ups was used to measure muscular strength and endurance. To determine the significance differences among the different three age groups of school girls, Analysis of Variance (ANOVA) was applied. Scheffe's post-hoc

Correspondence
Dr. Rajeshwari
Assistant Professor, Department of
Physical Education, Post Graduate
Govt. College Sec-11, Chandigarh,
India

test was applied to see the direction and significance of differences where 'F' ratio was found significant. The level of significance chosen was .05.



Fig 1: Illustration of modified sit-ups

Results

Descriptive analysis of abdominal muscular strength and

endurance among different three age groups is presented in table-1.

Table 1: Descriptive Analysis of abdominal muscular strength and endurance of Rajasthan Rural School Girls

Variables	14 Years (N=350)		15 Years (N=350)		16 Years (N=350)	
	Mean	SD	Mean	SD	Mean	SD
Muscular strength and endurance (modified sit-ups)	20.91	5.63	21.83	5.63	22.97	5.50

The Analysis of Variance (ANOVA) among different three age groups of rural school girls on muscular strength and

endurance is presented in Table 2.

Table 2: Analysis of Variance of Rural School Girls on Cardiorespiratory

Variable	Source of Variance	Sum of Squares	Df	Mean Square	F-value
Muscular strength and endurance (modified sit-ups)	Between Group	747.73	2	373.87	11.93*
	Within Group	32786.30	1047	31.31	
	Total	33534.03	1049		

*Significant at .05 level
F.05 (2, 1047) = 2.99

The result presented in table 2 reveals that there was a significant difference between 14 to 16 year age groups of rural school girls. The obtained F-value in modified sit-ups

variable was 11.93. F value was greater than the table value of 2.99, which is required to be significant at .05 level.

Table 3: Significant Differences between the Paired Means of Cardio-respiratory Function among Different Three Age Groups

Variable	Groups			Mean Difference	Sig.
	14 Year	15 Year	16 Year		
Muscular Strength and endurance	20.91	21.83		0.91	.096
	20.91		22.97	2.06*	.000
		21.83	22.97	1.14*	.026

Table 3 clearly indicates that the significant differences existed between 14 years and 16 years & 15 years and 16 years on muscular strength and endurance since the value obtained were 2.06, and 1.14 respectively. But no significant difference was obtained between 14 years and 15 years since the value obtained was 0.91.

Discussion

There was significant difference obtained on muscular strength and endurance among different three age groups of rural school girls. When the paired mean difference of muscular strength and endurance was found that a significant difference existed between 14 years & 16 years, and 15 years

& 16 years of rural school girls of Rajasthan. Above mentioned findings in the case of rural school girls all the three age groups differs significantly. It may be attributed to the facts that the subjects of this study were during growth period and their muscular strength and endurance differed because of their age differences though they were living under the same tropical as well as environmental conditions. Hence, the three different age groups of rural school girls of Rajasthan were differed significantly.

Conclusions

In the light of the findings and limitations of the present study the following conclusions were drawn:

- ❖ There were significant differences obtained on muscular strength and endurance among different three age groups of Rajasthan rural school girls.
- ❖ 16year group rural school girls performed significantly better in muscular strength and endurance than their counterparts.

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