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The Effect of Static and Dynamic Exercises on the Strength of the Muscles of the Lower Extremities.

Physical Education

KEYWORDS : Static exercise, dynamic exercise, strength Extremities

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ABSTRACT

1) To study awareness regarding HIV/AIDS & STI amongst adolescents. 2) To assess the impact of health awareness programme on knowledge of STI & HIV/AIDS. Materials & Method: Present cross-sectional study was conducted among representative group of 68 adolescents from Mrs. N.C.Gandhi & Mrs. B.V.Gandhi Mahila Arts & Commerce College, Bhavnagar city. Pre test were carried out before beginning the programme followed by post test to assess the impact of health awareness programme. Results: Most of the girls (66.2%) didn't heard about STI, in contrast to it 88.2% of them were heard about HIV/AIDS & main source of information was media (51.5%). Television, radio & News paper were quoted as the most common source of information. However only 33.8% of them mentioned that it was transmitted by sexual route. Regarding prevention of STI, 58.8% of them didn't know about any modalities of prevention, while 23.5% were mention use of condom in case of HIV/AIDS. After giving various lectures and demonstration, the knowledge regarding HIV/AIDS & STI has been significantly improved. (p<0.05)

INTRODUCTION

The sports physiotherapist emphasized that a good physique demands certain amount of physical strength along with the mental health. Physical activities promote muscular strength, size, endurance, speed, agility and co-ordination. Muscular strength is the basis for all physical work of the human body. The strength of a muscle is very important and necessary factor for an individual to perform his/her daily normal duties and activities in a more efficient manner. Among the different factors of strength, leg strength occupies a prominent place. It is an essential factor for indulging in almost all games and sports. So the legs are to be adequately strengthened.

STATEMENT OF THE PROBLEM

The purpose of the study was to find out the effect of static and dynamic exercises on the strength of the muscles of lower extremities.

HYPOTHESIS

It is hypothesized that there may not be any significant difference in the effect of static and dynamic exercises on the strength of the muscles of the lower extremities.

METHODOLOGY

The purpose of the study was to find out the effect of static and dynamic exercises on the leg strength of the lower extremities. Selecting static exercise – straight leg raising exercises (weight boot and cuff weight) are executed. Selecting dynamic exercises free weight exercises are executed. Forty athletes studying M.P.Ed., course at college of physical education, Alagappa University, Karaikudi formed the subjects for the study. The students were divided into two groups of twenty each randomly, one group of students did static exercises, and the other group did dynamic exercises. Before allowing the students to perform the exercises, the initial performance of the students was recorded. To find out the leg strength of lower extremities, leg Dynamometer was used. The student's Knees were flexed between 115 and 125 degrees. The students were asked to lift the spring balance straight up. At this time the reading on the spring balance was recorded. In this way, the leg strength of Forty students were found out and recorded. Three trials were given and the best score was taken into consideration. The static exercise group and the dynamic exercise group were subjected to the treatment of two static exercises and two dynamic exercises respectively. The students performed the exercises for thirty minutes in alternate days and for a period of six weeks. The exercises were properly demonstrated and then they were practiced by the students. After the performance of the exercises for a period of 6 weeks leg strength of the lower extremities of the two groups were measured and recorded in the same manner as the initial scores. Mean and standard deviations were calculated and t-test was applied to find out whether there was any significant difference between the initial readings and final readings. Bar diagrams were used to show the difference between initial readings and final readings.

ANALYSIS OF THE DATA

TABLE – I

PRE AND POST TEST MEAN OF STATIC EXERCISE GROUP

LEG	N	INITIAL READING	FINAL READING	MEAN GAIN
STRENGTH (in Kgs)	20	138.55	147.6	9.05

The above table clearly shows that the average of the leg strength of static exercise group students has increased from 138.55 Kgs in the initial level to 147.6 Kgs, in the final level, with a mean gain of 9.05. To find out whether the difference in the mean, standard deviation and 't' test was applied Table II

TABLE – II

MEAN, STANDARD DEVIATION AND 't' -VALUE OF STATIC EXERCISE GROUP IN THE LEG STRENGTH

READINGS	N	M	STANDARD DEVIATIONS	t
INITIAL	20	138.55	9.8106	2.9067*
FINAL	20	147.6	9.8813	

* Significant at 0.05 level

(Table value required for 0.05 level of significant with df 19 is 2.093)

The calculated 't' value was greater than the table value at 0.05 level. Hence the hypothesis is rejected null hypothesis is accepted. There was significant difference between the means. The higher mean of the post test than that of the pre test, showed that the performance of the students after treatment was better. This showed that the static exercises have helped the students to perform better than before.

TABLE – III

PRE AND POST TEST MEAN OF DYNAMIC EXERCISE GROUP

LEG	N	INITIAL READING	FINAL READING	GAIN SCORE
STRENGTH (in Kgs)	20	136.35	159.45	23.1

The table shows that the average of the leg strength of the dynamic exercise group students has increased from 136.35 Kgs, in the initial to 159.45 Kgs in the final level, with a mean gain of 23.1.To find out whether the differance in the mean, standard deviation and 't'test was applied Table IV

TABLE – IV
MEAN, STANDARD DEVIATION AND 't' VALUE OF THE DYNAMIC EXERCISE GROUP IN LEG STRENGTH

READINGS	N	M	STANDARD DEVIATIONS	t
INITIAL	20	136.35	9.488	9.2950*
FINAL	20	159.45	5.7877	

* Significant at 0.05 level

(Table value required for 0.05 level of significant with df 19 is 2.093)

The calculated 't' value was greater than the table value at 0.05 level. Hence the hypothesis is rejected null hypothesis is accepted.

There is significant difference between the means in the pre test and post test in the leg strength of the dynamic exercise group. This implies that by performing dynamic exercises the leg strength of the students has significantly increased. So, dynamic exercises help in increasing the leg strength of the students.

TABLE – V
MEAN, STANDARD DEVIATION AND 't' – VALUE OF THE STATIC EXERCISE GROUP AND DYNAMIC EXERCISE GROUP IN THE PRE TEST IN LEG STRENGTH

GROUP	N	M	STANDARD DEVIATIONS	t
LEG STRENGTH				
Static	20	138.55	9.8106	0.7209
Dynamic	20	136.35	9.488	**

** No Significant

(Table value required for 0.05 level of significant with df 19 is 2.093)

Since the calculated t-value is less than the table value at 0.05 level of significance, Hence the hypothesis is accepted null hypothesis is rejected

This shows that there is no significant difference between the two groups in initial readings in leg strength. This further shows that both groups are equal in the initial level.

TABLE – VI
MEAN, STANDARD DEVIATION AND 't' – VALUE OF THE STATIC EXERCISE GROUP AND DYNAMIC EXERCISE GROUP IN THE POST TEST IN LEG STRENGTH.

GROUP	N	M	STANDARD DEVIATIONS	t
LEG STRENGTH				
Static	20	147.6	9.8813	4.6278*
Dynamic	20	159.45	5.7877	

* Significant at 0.05 level

(Table value required for 0.05 level of significant with df 19 is 2.093)

The calculated t-value is greater than the table value at 0.05 level of significance Hence the hypothesis is rejected. Null hypothesis is accepted. There is significant difference between the two groups in the leg strength. The higher mean value of the dynamic exercise group suggests that, the dynamic exercise group have helped the students to attain more leg strength than the static exercise group.

This implies that leg strength of the students can be increased better by performing dynamic exercises than by performing static exercises.

CONCLUSIONS

1. It is concluded that the study clearly revealed that both the exercises have helped the students to develop leg strength. At the same times, dynamic exercises helped the students better to develop the leg strength than the static exercises.
2. It is concluded that the dynamic exercises were better than the static exercises in the development of the leg strength of the muscles of the lower extremities.

REFERENCE

1) S.Lakshmi Narayanan, Text book of Therapeutic exercises, first edition, Jaypee Brothers Medical Publishers (P) Ltd, New Delhi,2005 2) M. Dena Gardiner, The Principles of exercises therapy, Fourth edition, CBS Publishers and Distributors, Delhi,1985 3) Carolyn Kisner MS, PT and Lynn Allen Colby MS. PT, Therapeutic exercise foundations and Techniques, Third edition Jaypee Brothers, New Delhi,1996 4) Margaret hollis with contribution by BarBara Sanford Patricia Jwaddinoton, Practical exercise therapy, Blackwell Scientific Publications,1995