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EFFECT OF JUMP TRAINING AND STRENGTH TRAINING ON THE DEVELOPMENT OF MOTOR FITNESS COMPONENTS AMONG NAMAKKAL DISTRICT LEVEL MALE STUDENTS

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Abstract:

The purpose of this study was to examine the effects of jump training and strength training on selected motor fitness components-speed, explosive power, cardio-respiratory endurance, and muscular endurance-among male students from Namakkal district, Tamil Nadu. Forty-five students aged 18 to 21 were randomly selected and divided into three groups of fifteen each: Group I (Jump Training), Group II (Strength Training), and Group III (Control). The experimental groups underwent their respective training programs thrice a week for six weeks, while the control group followed their regular routine. Standardized fitness tests were conducted pre- and post-intervention to measure the selected variables. The data were analyzed using Analysis of Covariance (ANCOVA) to determine the significance of differences between the groups.

Results indicated that both jump training and strength training had significant positive effects on all measured motor fitness components compared to the control group. Specifically, jump training showed greater improvements in speed, explosive power, and cardio-respiratory endurance, while strength training was more effective in enhancing muscular endurance. These findings underscore the importance of targeted physical training interventions in improving overall motor fitness among young male athletes.

Key Words: Jump Training, Strength Training, Motor Fitness, Speed, Explosive Power, Muscular Endurance, Cardio-Respiratory Endurance, Namakkal.

Introduction:

Sports Training is a process of athletic improvement, which is conducted on basis of scientific principles through which systematic development of mental and physical efficiency, capacity and motivation enables athletes to produce outstanding. Sports training include physiological changes in almost every system of the body particularly with the skeletal muscle and the cardio-respiratory system. The changes resulting from training are influenced by the frequency, duration and particularly by the intensity of training programme. The effects of training are specific to the type of exercise performed, the muscle group involved, and to the type of training programme used. The specificity of exercise and training has the two broad physiological bases, metabolic and neuromuscular. Strength training is any exercise that causes the muscles to contract against an external resistance with the expectation of increases in strength, tone, mass and endurance. Jump is derived from Latin word jump is interpreted to mean "measurable increases" jump refers to the exercise that enables a muscle to reach maximum strength in as short a time as possible. This speed strength is known as power. For many years coaches and athletes have sought to improve power in order to enhance performance. Throughout this century and no doubt long before jumping, bounding & hopping exercise have been used in various ways to enhance athletic performances (Raghu et al. 2025).

Methodology:

The purpose of the study was to find out the effect of jump training and strength training on the development of motor fitness components. To achieve this purpose of the study, forty five male students were selected as subjects at random from Namakkal district. The age of the subjects ranged from 18 to 21 years. The selected subjects were divided into three equal groups of fifteen subjects each Group I underwent jump training, Group II underwent resistance training, Group III act as control group. The selected criterion variables were assessed using standard tests and procedures, before and after the training schedule. The instruments used for testing the dependent variables were standard and reliable as they were purchased from the reputed companies the variables and tests used are presented in table I.

Table 1: Criterion variables and Tests

S.No	Variables	Tests/Instruments	Unit of Measurements
1	Speed	50 meter dash	Stop watch
2	Explosive Power	Sargeant Vertical Jump	Centimeter
3	Cardio-Respiratory Endurance	Cooper's 12 Run/walk	Meters
4	Muscular Strength	Bent Knee sit-ups	Counts

Training Programme:

During the training period the experimental groups underwent their Respective training program, three days per week (alternate days) for six weeks in addition to their regular programme to the course of study as per their curriculum.

Experimental Design an Statistical Procedure:

The Experimental design used for the present investigation was random group design involving forty five subjects for training effect. Analysis of co-variance (ANCOVA) was used as a statistical technique to determine the significant difference, if any existing between pre test and post test data on selected dependent variables. The level of significance was accepted at $p<0.05$.

Results and Discussion:

The age, height and weight of the selected subjects averaged 20.07±1.34 year, 168.3±4.12cm, and 63.7±3.57kg respectively. The descriptive analysis of data collected on selected motor fitness components before and after six weeks of jump and strength training is presented in table II, III, IV and V.

Table 2: Computation of Analysis of co-variance on Speed

	Experimental Group I (Jump)	Experimental Group II (Strength)	Control Group III	Sources of Variance	Sum of Squares	Df	Mean Squares	F-Ratio
Pre-test Mean	7.81	7.73	6.92	B: W:	1.27 12.07	2 43	.64 .21	3.05
Post-test Mean	7.92	7.09	5.08	B: W:	2.22 11.01	2 43	1.11 .19	5.84
Adjusted post test Mean	6.95	7.15	6.09	B: W:	4.85 8.40	2 42	1.03 .15	3.53

Table 2 shows the analyzed data on speed, the pre-test, post test and adjusted post test means of speed were (7.81, 7.73, 6.92)(7.92, 7.09, 5.80) (6.95, 7.15, 6.09) for the experimental group I, II & III respectively. The obtained `F` ratio for pre-test 3.05, post test 5.84, and adjusted post test 3.21. The table value is 3.15 at .5 level of significant for the degree of freedom (2 and 43 and 2 and 42) hence the obtained `F` ratio adjusted post test were greater than the table `F` ratio. Therefore it is proved those jump training groups have been better the other two groups.

Table 3: Computation of Analysis of co-variance on Explosive Power

	Experimental Group I (Jump)	Experimental Group II (Strength)	Control Group III	Sources of Variance	Sum of Squares	Df	Mean Squares	F-Ratio
Pre-test Mean	33.87	31.01	31.70	B: W:	1.98 141.01	2 43	133.5 3.27	2.95
Post-test Mean	40.87	38.09	31.23	B: W:	76.12 143.12	2 43	143.12 4.27	12.09
Adjusted post test Mean	41.85	40.85	31.89	B: W:	101.02 78.39	2 42	121.02 3.01	3.03

Table 3 shows the analyzed data on explosive power, the pre-test, post test and adjusted post test means of speed were (33.87, 31.01, 31.70)(40.87, 38.09, 31.23) (41.85, 40.85, 31.89) for the experimental group I, II & III respectively. The obtained `F` ratio for pre-test 2.95, post test 12.09, and adjusted post test 3.03. The table value is 3.15 at .5 level of significant for the degree of freedom (2 and 43 and 2 and 42) hence the obtained `F` ratio adjusted post test were greater than the table `F` ratio. Therefore it is proved those jump training groups have been better the other two groups.

Table 4: Computation of Analysis of co-variance on Cardio respiratory Endurance

	Experimental Group I (Jump)	Experimental Group II (Strength)	Control Group III	Sources of Variance	Sum of Squares	Df	Mean Squares	F-Ratio
Pre-test Mean	2487.5	2248.5	1985.5	B: W:	403073.3 7791150	2 43	201531.65 136818.95	1.5
Post-test Mean	2567.5	2478.5	1980.5	B: W:	319740 1579240	2 43	159865 27706.1	5.77
Adjusted post test Mean	2545.82	2506.32	1981.5	B: W:	65758.6 584310.2	2 42	32869.8 10241.2	3.2

Table 4 shows the analyzed data on explosive power, the pre-test, post test and adjusted post test means of speed were (2487.5, 2248.5, 1985.5) (2567.5, 2478.5, 1980.5) (2545.82,2506.32, 1981.5) for the experimental group I, II & III respectively. The obtained `F` ratio for pre-test 1.5,post test 5.77, and adjusted post test 3.2. The table value is 3.15 at .5 level of significant for the degree of freedom (2 and 43 and 2 and 42) hence the obtained `F` ratio adjusted post test were greater than the table `F` ratio. Therefore it is proved those jump training groups have been better the other two groups.

Table 5: Computation of Analysis of co-variance on Muscular Endurance

	Experimental Group I (Jump)	Experimental Group II (Strength)	Control Group III	Sources of Variance	Sum of Squares	Df	Mean Squares	F-Ratio
Pre-test Mean	21.40	22.41	21.03	B: W:	3.07 14.08	2 43	.98 .43	2.78
Post-test Mean	27.29	28.37	21.53	B: W:	4.57 13.08	2 43	2.38 .85	6.78
Adjusted post test Mean	25.33	27.38	22.04	B: W:	5.27 5.01	2 42	4.27 .61	3.21

Table 5 shows the analyzed data on explosive power, the pre-test, post test and adjusted post test means of speed were (21.40, 22.41, 21.03) (27.29, 28.37, 21.53) (25.33, 27.38, 22.04) for the experimental group I, II & III respectively. The obtained `F` ratio for pre-test 2.78, post test 6.78, and adjusted post test 3.21. The table value is 3.15 at .5 level of significant for the degree of freedom (2 and 43 and 2 and 42) hence the obtained `F` ratio adjusted post test were greater than the table `F` ratio. Therefore it is proved that Weight training groups have been better the other two groups.

Conclusions:

Within the limitation of present study, the following conclusions were drawn:

- Speed, Explosive power, Cardio-respiratory Endurance and Muscular Endurance can be improved through Jumps and Strength training as compared with control group.

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