



Research Article

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Weight Training Protocol: Impact of Diverse and Organized Exercise on Certain Components of Motor Fitness and Functional Variables Amongst Males

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ABSTRACT

The main objective of this exploration was to observe the influence of structured resistance training with varied intensities on certain motor fitness and functional variables in males. Sixty moderately trained sprinter males were selected as the subjects and equally divided into 3 groups (n= 20). Group I was designated as varied resistance group (VRT), group II was the structured resistance training group (SRT) and group III was the control group (CG). The selected physiological and motor components were resting pulse rate, breath holding time, flexibility and cardiovascular endurance. The training protocol of SRT and VRT was for a period of 12 weeks, twice per week and 50 minutes per session. ANCOVA and post hoc test were the statistical tools used for analysis of the data. SPSS version 16 was used and 0.05 was taken as the level of significance.

Keywords: Protocol, Diverse, Organized, Functional

INTRODUCTION

Sports involvement and physical fitness are extensively constructive for every single individual. Consistent physical movement is significant for the health and mental comfort of individuals; has long-lasting health and cardiovascular benefits; and has affirmative effects on the human body [1-5]. Research has also revealed that partaking in sport teams' aids above and beyond those seen with physical activity. In an organized examination of studies that observed the benefits of sports involvement for young people [2], it was testified that dynamic partakers saw progresses in physical, physiological, psychological and social traits and recounted scarcer indications associated with nonparticipants.

Sport training is a highly organized, thoughtful preparation dedicated to sports-specific skill improvement where emphasis is placed on developing and realizing ample skill levels to shine at countless levels of competition [6-9]. There are diverse approaches of precise training programs accessible for the improvement of speed, muscular strength, endurance, cardio respiratory endurance and other related fitness variables. The training methods comprise weight drill, fartlek exercise, circuit training, isometric drill, isotonic exercise, isokinetic training, etc.

Weight training or resistance training is a workout which affects the muscles to bond alongside an outward resistance with the anticipation of surges in power, tenor, frame, and stamina. The modality that can be used as resistance may vary from one's body weight, blocks of any material or may be an additional entity that roots the muscles to contract. There are numerous techniques of resistance exercise. Resistance training régime benefits the body by boosting the lean body mass and helps in burning calories [10]. Almost all categories of resistance training do not ensure identical

volume of muscle mass or muscle hypertrophy. It has been observed that strength training with definite category of weight accomplishes paramount results. The authentic contrivance is still vibrant.

Structured exercise is exercise that is executed with a chief resolve and aim. Usually, time is set aside to perform structured exercise, and the routine is documented to keep the amount of progress. In a structured program, modifications are frequently made to challenge the body to new levels. Whereas varied intensities are how tough you work out. Describing it more specifically, they are the percentage of 1 repetition maximum. The nearer your working weight to 1RM, – the tougher you exert, the greater the intensity, the fewer reps you will accomplish in a set, the less added time you'll require to totally recuperate amid sets, the reduced overall sets you'll be able to execute, etc. Intensity is very significant in attaining strength apart from forming muscles, as well as in sparring muscles during calorie restraint nutrition. It should be retained extortionate if your objective is absolute strength and/or getting ripped. Conversely, if your aim is developing abundant muscles, you essentially require a bit lesser intensity to permit extra volume.

Enhanced performances can be the creation of several factors. They can be achieved through proficient procedures, the advancement of swiftness and the progressive competitive approaches on a comprehensive foundation of overall stamina, exceptional power and overall suppleness [11]. Any exercise protocol is prepared not only to affect positive outcomes with the manipulations of intensity but also it should create interest to indulge in it with a touch of pleasure and delight. Almost all the accomplishments in the arena of sports are achieved with the interval principles. It is a foregone conclusion that individuals who undertake physical exertion in breaks rather than relatively completing abundant work continuously, will achieve elite performances, which is otherwise termed as structuring the intensities of training [12]. Hence, in this study the researchers structured the selected resistance training and varied intensities of weight training on the motor fitness components like flexibility, cardiovascular endurance and physiological parameters like resting pulse rate and breath holding time.

MATERIALS & METHOD

Sixty moderately trained males whose event was the sprint event were selected as the subjects and equally divided into 3 groups (n= 20), Group I was designated as varied resistance group (VRT), group II was the Structured resistance training group (SRT) and group III was the Control group (CG). The selected physiological and motor components were resting pulse rate, breath holding time, flexibility, and cardiovascular endurance. The training protocol of SRT and VRT was for a period of 12 weeks, twice per week and 50 minutes per session. The training protocol for the VRT group was military press, barbell curls, bench press, lying triceps extensions, barbell rows, squats, standing calf raises and leg press. At the beginning, the group was asked to engage in the exercise program for 10-15 repetition in each set and for a total of 3 sets. The load was augmented with an increase of repetitions, and the sets were augmented at the conclusion of each week. The subjects were instructed to complete the exercise in pairs with a fixed rest of 1 minute between sets. The package for the SRT group was mate assisted let-go's, mate tubbing-assisted acceleration drill, towed running (pulley), mate resisted starts and weighted starts (varied weighted iron shoe running, weight jackets running, varied weighted forearm iron plates running). Flexibility was measured with the sit and reach machine, cardiovascular endurance was measured with Harvard step test, resting pulse rate was measured at the wrist, and breath holding time was recorded with a stop watch. ANCOVA and post hoc test were the statistical tools used for analysis of the data. SPSS version 16 was used and 0.05 was taken as the level of significance.

RESULT AND DISCUSSION

Table 1. showing the analysis of co-variance on the component of flexibility

	Structured Resistance Training Group	Varied weight Training Group	Control Group	Sources Of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre-test Mean	14.25	15.10	14.75	Between	7.30	2	3.65	1.38
				Within	151.30	57	2.65	
Post-test Mean	18.55	17.00	15.50	Between	93.03	2	46.52	12.51*
				Within	211.95	57	3.72	
Adjusted Post-test Mean	18.74	16.83	15.48	Between	104.95	2	52.48	15.81*
				Within	185.93	56	3.32	
Mean Diff.	4.30	1.90	0.75					

*Significant at 0.05

The data analyzed with regard to flexibility in table 1, showed that there was no significant difference in the pre-test scores of the subjects of three study groups. The acquired post-test mean of the SRT was 18.55, VRT was 17.00 and that of the CG was 15.50 with the F-value of 12.51, which revealed that there exists a substantial difference among the post-test scores of the subjects. When analysis of covariance was carried out, it was found to yield an F-value of 15.81 which determined that there is a significant metamorphosis among the treated groups. When the post-hoc analysis was ordered, it produced a positive result between the SRT and the VRT group, and between the SRT and CG, but no significant difference occurred between the VRT and CG.

Table 2. showing the analysis of co-variance of cardiovascular endurance

	Structured Resistance Training Group	Varied weight Training Group	Control Group	Sources of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre-test Mean	71.35	72.41	73.76	Between	58.15	2	29.08	0.49
				Within	3416.16	57	59.93	
Post-test Mean	79.37	80.47	73.69	Between	529.23	2	264.61	5.01*
				Within	3008.83	57	52.72	
Adjusted Post-test Mean	80.07	80.53	72.92	Between	718.25	2	359.12	11.62*
				Within	1730.05	56	30.89	
Mean Diff.	8.02	8.06	-0.07					

*Significant at 0.05

Table 2 illustrates the subjects' figures on cardiovascular endurance, where there were no major differences in the preliminary tallies of the three study groups. The assimilated post-test mean of the SRT was 79.37, VRT was 80.47 and that of the CG was 73.60 with the F-value of 5.01 which revealed that there happens to be a considerable change amid the post-test totals of the subjects. The analysis of covariance on cardiovascular endurance generated an F-value of 11.62 resulting in a substantial transmutation amongst the treated groups. When the post-hoc analysis was ordered, it yielded a positive result between the SRT and the CG, and VRT and CG, but no significant difference occurred between the VRT and SRT.

Table 3. showing the analysis of co-variance of resting pulse rate

	Structured Resistance Training Group	Varied weight Training Group	Control Group	Sources of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre-test Mean	62.70	58.60	62.25	Between	202.23	2	101.12	2.30
				Within	2506.25	57	43.98	
Post-test Mean	59.75	56.45	62.75	Between	397.20	2	198.60	6.39*
				Within	1772.45	57	31.10	
Adjusted Post-test Mean	59.22	57.36	62.38	Between	247.81	2	123.90	4.74*
				Within	1464.68	56	26.16	
Mean Diff.	-2.95	-2.15	0.50					

*Significant at 0.05

The examination of the above table proves that in resting heart rate, there were no key variations in the initial records of the three groups. The post-test mean of the SRT was 59.75, VRT was 56.45, and that of the CG was 62.75 with the F-value of 6.39 which revealed that there happens to be a considerable change amid the post-test totals of the subjects. The analysis of covariance on resting pulse rate produced an F-value of 4.74 causing in a sizable alteration in the midst of the treated groups. The post-hoc analysis conceded a progressive end between the VRT and the CG and but no significant difference occurred between the experimental VRT and SRT groups, SRT and CG.

Table 4. showing the analysis of co-variance of Breath holding time

	Structured Resistance Training Group	Varied weight Training Group	Control Group	Sources of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre-test Mean	33.20	30.60	32.25	Between	69.23	2	34.62	0.85
				Within	2327.75	57	40.84	
Post-test Mean	36.75	33.20	32.75	Between	192.03	2	96.02	3.39*
				Within	1616.70	57	28.36	
Adjusted Post-test Mean	35.89	34.23	32.58	Between	108.96	2	54.48	8.06*
				Within	378.30	56	6.76	
Mean Diff.	3.55	2.60	0.05					

*Significant at 0.05

The investigation of table 4 corroborates that in breath holding time there were no discrepancies in the early values of three groups. The post-test mean of the SRT was 36.75, of the VRT was 33.20, and that of the CG was 32.75 with the F-value of 3.39, which was discovered that there arises to be a sizeable modification among the post-test totals of the trained males. The analysis of covariance on breath holding time fashioned an F-value of 8.06, initiating in a substantial amendment among the treated groups. The post-hoc analysis acknowledged an affirmative conclusion between the SRT and the CG, and but no significant difference occurred between the experimental VRT and SRT groups, and the VRT and CG groups.

DISCUSSION

The main objective of this probe was to discern the influence of structured resistance training with varied intensities on certain motor fitness and functional variables in the males.

Body movements have been the daily routine of most people's lives. We become physically active when we participate in sports and games. We need such kind of physical fitness for surviving the daily lives such as walking, running, and etc. Exercises are a vital part of our sports participation, and those of us who play organized sports, or participate in recreational activities have reaped rich dividends in our lives. A medical related research has confirmed that exercises is not only a recreational pursuit, but also essential to the health and well-being of our mind and bodies [13]. To have peak fitness, one has to follow a systematic program of aerobic and resistance training which affects the motor system and the physiological variables of individuals.

Flexibility epitomizes vital elements to efficient upkeep of the joints. A reduction in flexibility is linked with high damage of joints, bones, and muscles, apart from loss of functional competency [14]. Several studies have stressed gains of resistance actions on flexibility because of the practice of extensive activities to be executed [15]. [16] in their research with 10 weeks of weight training found results which were encouraging in the component of flexibility. [17] in their investigation for 11 weeks of RT found surges in total values in flexibility. [18-20] in their research investigations have testified that weight training aids in the significant increases in the flexibility. Further, [21] in their experimental analysis saw major progresses in the physical fitness components (Speed, endurance, muscular endurance, explosive power and flexibility) of the underweight, normal weight, and overweight groups and to certain extent the obese groups of KFUPM. The results of our study are in line with these studies where the experimental groups showed increases in flexibility due to the resistance training.

Cardiovascular endurance or Aerobic endurance or aerobic capacity denotes to the capacity of the body to constantly convey oxygen to its numerous systems for prolonged phases of time. By sustaining the movement of oxygen, an individual is able to exercise endlessly for extensive stages of time without exhaustion [22]. [19] found that the use of resistance training not only increases cardiovascular endurance, but also allows an individual to elicit the unique benefits of each mode of exercise. [23] have reported that resistance training has a profound effect on the aerobic capacity of males. [16] have concluded that endurance training followed by strength training produced greater improvements in endurance performance and aerobic capacity. [24-26] have reported significant improvements in

cardiovascular endurance in their researches. All the above studies confirm the outcomes of the present investigation where there were training effects on both the VRT and SRT groups when compared with the control group.

Heart rate is a standard for general cardiovascular fitness. The resting heart rate is the number of heart beats per minute during true rest, and ranges between 60 to 80 beats per minute. Strength training has an impact on the heart rate, but that depends on other factors like age, sex, workout frequency. Heart rate will be a bit elevated when performing resistance (weight) training, but usually not to the point so as to be effective at burning fat or losing weight [27]. A study conducted by [28] found differences in recovery heart rates of endurance and strength athletes. They concluded that post-exercise heart rate recovery may be carried out differently in strength and endurance trained athletes. [29] made a similar suggestion that resistance exercise seems to increase vagal tone (defined as release of acetylcholine by the vagus nerve on the heart's auto rhythmic cells and increased receptor number/sensitivity) more than parasympathetic modulation. This suggests that it would be most useful to use several different variables to study the effect of the training mode on overall post-exercise autonomic shift to account for specific influence of different training modes. Research studies showed that exercise heart rates are often in the Target Heart Rate Zone during weight training. The heart rate is lowest when you begin each exercise, and highest when you end each exercise set. In terms of chronic adaptations, there appears to be a reduction in heart rate from resistance training, which is considered favorable [20]. The results of the study revealed that there were significant differences in the resting heart rate between the VRT and CG groups. [11,30-33] have reported changes in the heart rate after the weight training protocol. All the above studies contour the results of our study.

Breath holding is the voluntary or involuntary cessation of breathing and holding it after a deep inhalation [34]. The result of the study pointed out that there were increases in the breath holding time of the groups in the post tests, but actually there was significant difference between the SRT and CG only. This affirmative result holds good that resistance training to certain extent escalates the breath holding time in the subjects. The observations are in line with the study of [35] who indicated that the resistance exercises had a significant influence on the selected variables such as vital capacity and breath holding time after undergoing systematic strength training over 12 weeks' duration.

CONCLUSION

It was concluded that the weight training ominously caused enrichment in resting pulse rate, flexibility and cardiorespiratory endurance, breath holding time and reduction in the resting heart rate, but the increments differed with the type of the embarked exercises.

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