



Effect of Linear And Reverse Linear Periodisation on Elastic Strength And Explosive Power For College Men

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ABSTRACT

The purpose of the study was to investigate the effect of Linear and Reverse Linear periodisation training on elastic strength and explosive power for college men .The subjects were selected from St.John's College of Physical Education, Veeravanallur, Tirunelveli District, Tamilnadu. Their age ranged from 19-21. The subjects were divided into three groups as Linear Periodisation training Group 1 (n=16), Reverse Linear Periodisation training Group 2 (n=16) and Control Group 3 (n=16). The experimental groups attended linear and reverse linear periodisation training for 12 weeks; where as the control group did not do any kind of training. The paired sample t-test was used to find out the significant improvement on selected criterion variable's pre and post test. The analysis of covariance (ANCOVA) was used to find out the significant difference among the groups, if any separately for each criterion variable. It was found that there was a significant improvement and significant different existed due to the effect of linear and reverse linear periodization training on elastic strength and explosive power.

KEYWORDS

periodisation, elastic strength, explosive power

INDRODUCTION

Periodisation is a "programmed variation in the training stimuli with the use of planned rest periods to augment recovery and restoration of an athlete's potential" (**Kraemer, 2002**)

Periodisation is a methodology of specific training programme which divided into blocks of different phases to develop a particular skill.

Linear periodisation holds parallels to block scheduling of practice in the field of motor learning, in that one physical capacity is trained without interruption for the length of one mesocycle (block) or an average of four to six weeks. Upon completion of the block, a new block begins with a different physical capacity as the focus of training. The theory is that one block builds upon the results of the previous block in a step like design, until the end goal is reached. Volume and intensity are modified in a linear manner through each of these blocks of training. In motor control, block scheduling for practice requires the subject to perform practice in which "trials are performed sequentially without interruption" (**Wilson J Wilson G**).

Reverse linear periodisation takes the classic strength and power periodization scheme and runs it backward. Reverse linear periodisation follows a schedule of changes in training volume and intensity in reverse order compared with linear periodisation rather than the decreasing volume and increasing intensity reverse linear periodisation is gradually increase volume and decreases intensity.

Elastic Strength is the ability of muscles to exert forces quickly and to overcome resistance with high speed contractions.

Explosive Power is the ability to expend energy in one explosive act or in a series of strong, sudden movements as in jumping or projecting some object, as far as possible (**Kent,1994**).

SELECTION OF SUBJECTS

For this study forty eight male students from St.John's College of Physical Education, Veeravanallur, Tirunelveli District, Tamilnadu, were selected as subjects. All the subjects were informed about the nature of the study and their consent was obtained to cooperate till the end of the experiment. Their

age varied between 19-21years. The subjects were divided into three groups as Linear periodisation training Group 1 (n=16), Reverse linear periodisation training Group 2 (n=16) and Control Group 3 (n=16). The experimental groups attended linear and reverse linear periodisation training for 12 weeks, with varied intensities weight training with warming up and limbering down. Group 3 (n=16) acted as a control group and they did not participate in any specific training program on pa r with experimental group. All the participants in this study were carefully monitored throughout the training program. The training program was scheduled between 6.30 am to 7.30 am in the morning session, three alternative days for twelve weeks. All the subjects underwent a medical check-up to ready- out that they are free from any medical ailments and the subject revealed that they were not consuming any drugs.

SELECTION OF VARIABLES

Independent variables:

- Linear periodisation training
- Reverse linear periodisation training

Dependent variables:

- Elastic strength
- Explosive power

TABLE -1
DEPENDENT VARIABLES AND TEST

S.No	Variables	Tests/Instruments	Unit of Measurements
1	Elastic Strength	Bunny Hops	Meters
2	Explosive power	Standing long jump	Meters

TRAINING PROGRAM

During the training period, the experimental group underwent their respective training programs in addition to their regular program. Group 1 (n=16) underwent linear periodisation weight training with varied intensities. Group 2 (n=16) underwent reverse linear periodisation weight training with varied intensities for three alternative days per week for twelve weeks with warming up and limbering down ,Group 3 (n=16) acted as a control group and they did not participate

in any specific training on par with the experimental groups . The training program was scheduled in the morning session between 6.30 am to 7.30 am.

ANALYSIS OF THE DATA

The effects of Linear and Reverse Linear Periodisation Training on selected criterion variables were analyzed and presented below.

**TABLE II
SUMMARY OF MEAN AND DEPENDENT 't' – TEST FOR THE PRE AND POST TESTS ON SELECTED VARIABLES OF EXPERIMENTAL GROUPS AND CONTROL GROUP**

S.No	Variables		Pre Test		Post Test		Adjusted Post Test mean	t-value
			mean	sd	mean	sd		
1	Elastic strength	LPG	10.40	0.29	10.62	0.33	10.62	8.65*
		RLPG	10.38	0.21	10.49	0.26	10.51	6.57*
		CG	10.41	0.23	10.42	0.22	10.40	1.57
2	Explosive power	LPG	2.43	0.13	2.53	0.12	2.53	9.79*
		RLPG	2.41	0.13	2.47	0.14	2.49	6.49*
		CG	2.45	0.14	2.46	0.13	2.44	1.58

Table value required for 0.05 level of significance with df 15 is 2.13

The obtained t" ratio value of the experimental groups linear periodisation and reverse linear periodisation on elastic strength 8.65, 6.57 and explosive power are 9.79, 6.49 respectively which were greater than the required table value of 2.13 for df 15 which was significant at 0.05 level of confidence . However the obtained t ratio value of the control group on elastic strength and explosive power were 1.57, 1.58 respectively which were lesser than the required table value of 2.13 for significant at 0.05 level of confidence. It reveals that significant differences between the pre and post test means of experimental groups on elastic strength and explosive power. However no significant differences existed between the pre and post test means of the control group on elastic strength and explosive power.

**Table III
Results of Analysis of Covariance for the Selected Dependent Variables among Experimental AND CONTROL Groups**

Variables	Obtained 'F' Ratio	ETA ²	Account of Variance	Sig.
Elastic Strength	42.23	0.657	66%	.000
Explosive Power	29.49	0.573	57%	.000

Table Value required for significance 0.05 level of confidence for df 2and 44 is 3.21

The F ratio of elastic strength (2, 44) is 42.23 (p=.000). This means that the training methods had main effects on elastic strength. This effect is accounted for 66% of the variance on elastic strength (Eta² =0.657). The F ratio of explosive power (2, 44) is 29.49 (p=.000). This means that the training methods had main effects on explosive power. This effect is accounted for 57% of the variance on explosive power (Eta² =0.573). It is concluded that due to the effect of 12weeks of linear and reverse linear periodisation training the variables elastic strength and explosive power were significantly improved.

TABLE IV Summary of the Scheffe's Post Hoc Pairwise Comparisons on Elastic Strength AMONG EXPERIMENTAL and Control Groups

LPG	RLPG	CG	Mean Difference	C.I. Value
10.62	10.51		0.11*	0.06
10.62		10.40	0.22*	0.06
	10.51	10.40	0.11*	0.06

CI Value- Confidence Interval Value of Scheffe's post hoc test.

***Significant at 0.05 level**

The linear periodisation training (Adjusted Post test Mean = 10.62) significantly outperformed the reverse linear periodisation training (Adjusted Post test Mean = 10.51) in elastic strength with adjusted mean differences of 0.11 (CI = 0.06) and also the experimental groups, linear periodisation training and reverse linear periodisation training significantly outperformed the control group (Adjusted Post test Mean = 10.40) in elastic strength with adjusted mean differences of 0.22 and 0.11 (CI = 0.06).

**Table v
Summary of the Scheffe's Post Hoc Pair wise Comparisons on Explosive Power AMONG EXPERIMENTAL and Control Groups**

LPG	RLPG	CG	Mean Difference	C.I. Value
2.53	2.49		0.04*	0.03
2.53		2.44	0.09*	0.03
	2.49	2.44	0.05*	0.03

CI Value- Confidence Interval Value of Scheffe's post hoc test.

***Significant at 0.05 level**

The linear periodisation training (Adjusted Post test Mean = 2.53) significantly outperformed the reverse linear periodisation training (Adjusted Post test Mean = 2.49) in explosive power with adjusted mean differences of 0.04 (CI = 0.03) and also the experimental groups, linear periodisation training and reverse linear periodisation training significantly outperformed the control group (Adjusted Post test Mean = 2.44) in explosive power with adjusted mean differences of 0.09 and 0.05 (CI = 0.03).

DISCUSSION OF FINDINGS

The results of the study indicates that there was significant improvement on selected dependent variables namely elastic strength and explosive power due to the effect of linear and reverse linear periodisation training.

The results of the study also indicates that linear periodisation training group significantly outperformed reverse linear periodisation training group on all the selected dependent variables namely elastic strength and explosive power .

It is inferred from the literature and from the result of the present study that, designed training develops improvement in

the selected dependent variables namely elastic strength and explosive power and also both group out performed on the dependent variables when compared with control group.

Linear periodisation weight training exercise can therefore enhance athletic power by improving movement speed as well as muscle force. Heavy resistance linear periodisation weight training ultimately produces a greater maximum force; the greater force production comes at a cost in time of application. The present study also the linear periodization training greater force production in elastic strength and explosive power compare to the reverse linear periodization training

CONCLUSIONS

From the analysis of the data, the following conclusions were drawn.

- There was a significant improvement of linear and reverse linear periodisation training group on elastic strength and explosive power
- There was a significant differences existed between experimental groups and control group on selected variables in favour of linear and reverse linear periodisation training group.
- The reverse linear periodisation group showed better performance compare to the reverse linear periodisation training.

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