9 to 11 weeks

Days	Distance	Repetitions	Set	Load	Volume
Monday	100	3	4	1200 meters	3600
Wednesday	100	3	4	1200 meters	meters
Friday	100	3	4	1200 meters	

Load = Distance x Repetitions x Sets

Volume = Total load of the weeks

Recovery in-between repetitions – 90-100 beat/min

Recovery in-between sets – 10 Minutes

12th week

Days	Distance	Repetitions	Set	Load	Volume
Monday	100	3	2	600 meters	1800
Wednesday	100	3	2	600 meters	meters
Friday	100	3	2	600 meters	

Load = Distance x Repetitions x Sets

Volume = Total load of the weeks

Recovery in-between repetitions – 90-100 beat/min

Recovery in-between sets – 10 Minutes

3.18.3. Training intervention for Group 3: Interval Sprinting (IS)

1 to 4 weeks:

During the first four weeks the subject performed the distance of 150 meters with two repetitions. The total numbers of set was two. The recovery in between repetition was 120 beats/min and the recovery in between set was 10 minutes. The total volume of the first four weeks was one thousand eight hundred (1800) meters.

5 to 8 weeks:

For the period in between 5^{th} to 8^{th} week the subject performed the distance of 150 meters with three repetitions. The total numbers of set was two. The recovery in between

repetition was 1:4 work rest ratio and the recovery in between set was 5 minutes. The total volume of the 5th to 8th week was two thousand seven hundred (2700) meters.

9 to 11 weeks:

For the period in between 9th to 11th week the subject performed the distance of 150 meters with four repetitions. The total numbers of set was two. The recovery in between repetition was 1:5 work rest ratio and there was no recovery in between sets. The total volume of this week was three thousand six hundred (3600) meters.

12th week:

During the twelfth week the subject performed the distance of 150 meters with two repetitions. The total numbers of set was two. The recovery in between repetition 1:3 work rest ratio and the recovery in between set was 3 minutes. The total volume of 12th week was one thousand eight hundred (1800) meters.

TABLE – 5
INTERVAL SPRINT TRAINING SCHEDULE

1 to 4 weeks

Days	Distance	Repetitions	Sets	Load	Volume
Monday	150	2	2	600 meters	1800
Wednesday	150	2	2	600 meters	meters
Friday	150	2	2	600 meters	

Load = Distance x Repetitions x Sets

Volume = Total load of the weeks

Recovery in-between repetitions – 120 beats/min

Recovery in-between sets – 10 Minutes

5 to 8 weeks

Days	Distance	Repetitions	Sets	Load	Volume
Monday	150	3	2	900 meters	2700
Wednesday	150	3	2	900 meters	meters
Friday	150	3	2	900 meters	

Load = Distance x Repetitions x Sets

Volume = Total load of the weeks

Recovery in-between repetitions – 1:4 work rest ratio

Recovery in-between sets – 5 Minutes

9 to 11 weeks

Days	Distance	Repetitions	Set	Load	Volume
Monday	150	4	2	1200 meters	3600
Wednesday	150	4	2	1200 meters	meters
Friday	150	4	2	1200 meters	

Load = Distance x Repetitions x Sets

Volume = Total load of the weeks

Recovery in-between repetitions -1:5 work rest ratio

Recovery in-between sets – nil

12th week

Days	Distance	Repetitions	Set	Load	Volume
Monday	150	2	2	600 meters	1800
Wednesday	150	2	2	600 meters	meters
Friday	150	2	2	600 meters	

Load = Distance x Repetitions x Sets

Volume = Total load of the weeks

Recovery in-between repetitions – 1:3 work rest ratio

Recovery in-between sets – 3 Minutes

3.19 STATISTICAL APPROACHES

Analysis of covariance statistical techniques was used to test the significant difference among four groups. If the adjusted post test results were significant than the Scheffe's post hoc test was administered to determine the paired mean difference.

CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

The statistical analysis of data collected pertaining to experimental study on the effect of three methods of training namely Acceleration Sprinting, Repetition Sprinting and Interval Sprinting on selected speed parameters for College men students is presented in this chapter.

The selected subjects were initially tested on criterion variables used in this study and this was considered as the pre-test. After assessing the pre-test, the subjects in the experimental G - 1, G - 2 and G - 3 were treated with their respective treatments for three alternate days a week and for a duration of 12 weeks.

The statistical tool of Analysis of covariance (ANCOVA) was applied to determine whether the three programmes of training produced significantly different improvements in selected variables after 12 weeks of training. If the mean difference was significant the pairs of adjusted final group mean was tested for significance by applying Scheffe's post hoc test. To test the obtained results, 0.05 level of significance was chosen, which was considered appropriate for the purpose of study.

The influence of Acceleration Sprinting (Group 1), Repetition Sprinting (Group 2) and Interval Sprinting (Group 3) on selected speed parameters of College men students was analyzed separately for each variable and is presented in table 6 to table 11.

4.1. RESULTS AND DISCUSSIONS

TABLE – 6

ANALYSIS OF COVARIANCE ON SPEED OF DIFFERENT GROUPS

(Scores in Seconds)

Test	G - 1	G – 2	G – 3	G – 4	SV	SS	Df	MS	'F'
Test	AS	RS	IS	CG	5 V	33	Ы	MIS	Ratio
Pre-test									
Mean	6.81	6.78	6.80	6.83	Between	0.02	3	0.0056	1.28
S.D.	0.07	0.08	0.05	0.06	Within	0.24	56	0.0043	
Post Test	;								
Mean	6.60	6.66	6.73	6.82	Between	0.41	3	0.1353	27.72*
S.D.	0.08	0.08	0.05	0.06	Within	0.27	56	0.0049	27.73*
Adjusted	Post Tes	t							
N	((0	((0	674	<i>C</i> 00	Between	0.33	3	0.1113	40.14±
Mean	6.60	6.68	6.74	6.80	Within	0.12	55	0.0023	49.14*

^{*} Significant at .05 level of confidence.

4.1.1 Results on Speed

Pre - Test: The mean and Standard deviation of the pre-test speed scores of G1, G2, G3 and G4 were 6.81 ± 0.07 , 6.78 ± 0.08 , 6.80 ± 0.05 and 6.83 ± 0.06 respectively. The obtained pre-test F value of 1.28 was lesser than the required table F value of 2.78.

Hence the pre-test mean value of Acceleration Sprinting, Repetition Sprinting, Interval Sprinting and Control group on speed before start of the respective treatments was found to be insignificant at 0.05 level of confidence for the degrees of freedom 3 and

⁽The table values required for significance at .05 level of confidence for 3 and 56 and 3 and 55 are 2.78 and 2.77 respectively).

56. Thus this analysis confirms that the random assignment of subjects into four groups were successful.

Post-test: The mean and Standard deviation of the post- test speed scores of G1, G2, G3 and G4 are 6.60 ± 0.08 , 6.66 ± 0.08 , 6.73 ± 0.05 and 6.82 ± 0.06 respectively. The obtained post test F value of 27.73 was greater than the required table F value of 2.78. Hence the post- test means value of speed is significant at 0.05 level of confidence for the degrees of freedom 3 and 56.

Thus the results obtained proved that the interventions namely Acceleration Sprinting, Repetition Sprinting and Interval Sprinting on speed produced significantly different improvements among the three groups.

Adjusted Post-test: The mean and Standard deviation of the adjusted post-test speed scores of G1, G2, G3 and G4 were 6.60, 6.68, 6.74 and 6.80, respectively. The obtained adjusted post-test F value of 49.14 was greater than the required table F value of 2.77. Hence the adjusted post-test mean value of speed is significant at 0.05 level of confidence for the degrees of freedom 3 and 55.

Since the observed F value on adjusted post test mean among the groups such as on speed produced significantly different improvements among the three groups.

In order to find out which intervention programme used in the present study was the source for the significance of adjusted mean, the Scheffe's post hoc test was employed. The results of the same are presented in the table-6 (a).

TABLE - 6 (a)
SCHEFFE'S POST HOC TEST MEAN DIFFERENCES ON SPEED
OF DIFFERENT GROUPS

G – 1	G – 2	G – 3	G – 4	Mean Differences	Confidence
AS	RS	IS	CG	Wiean Differences	Interval Value
6.60	6.68	-	-	0.08*	0.06
6.60	-	6.74	-	0.14*	0.06
6.60	-	-	6.80	0.20*	0.06
-	6.68	6.74	-	0.06*	0.06
-	6.68	-	6.80	0.12*	0.06
-	-	6.74	6.80	0.06*	0.06

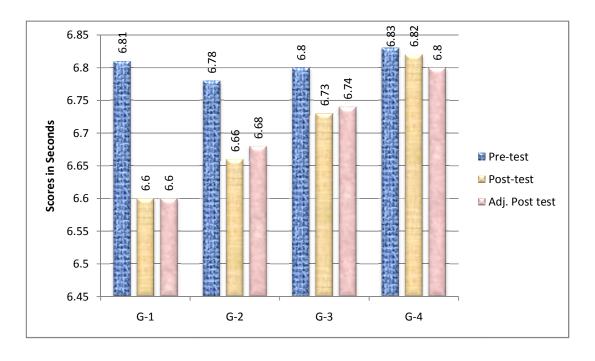
^{*} Significant at .05 level of confidence.

4.1.2 Results of Post-hoc test on Speed:

All the above comparisons show significant improvement on the speed parameter, because they yield mean difference values as 0.08, 0.14, 0.20, 0.06, 0.12 and 0.06 which were higher than the confidential interval value of 0.06. Hence all the above comparisons were significant at 0.05 levels.

The results indicate that for speed performance Acceleration Sprinting dominated than the Repetition and Interval Sprinting. Further the Repetition Sprinting was found to better than the Interval Sprinting. The least improvement was observed in the Interval Sprinting.

FIGURE – 1 COMPARATIVE BAR CHART OF PRE-TEST, POST-TEST AND ADJUSTED POST TEST OF DIFFERENT GROUPS ON SPEED



- G-1 Acceleration Sprinting
- G-2 Repetition Sprinting
- G-3 Interval Sprinting
- G-4 Control Group

TABLE – 7

ANALYSIS OF COVARIANCE ON SPEED ENDURANCE
OF DIFFERENT GROUPS

Togt	G - 1	G – 2	G-3	G – 4	CV	CC	De	MS	'F'	
Test	AS	RS	IS	CG	SV	SS	Df		Ratio	
Pre-test										
Mean	17.93	17.95	17.92	17.97	Between	0.02	3	0.01	0.17	
S.D.	0.19	0.18	0.22	0.15	Within	1.97	56	0.04	0.17	
Post Tes	Post Test									
Mean	17.79	17.84	17.63	17.95	Between	0.80	3	0.27	0 00*	
S.D.	0.17	0.15	0.21	0.16	Within	1.68	56	0.03	8.82*	
Adjusted	l Post Tes	st								
Maan	17.70	17.04	17.65	17.02	Between	0.60	3	0.20	02 47*	
Mean	17.79	17.84	17.65	17.93	Within	0.12	55	0.00	92.47*	

^{*} Significant at .05 level of confidence (The table values required for significance at .05 level of confidence for 3 and 56 and 3 and 55 are 2.78 and 2.77 respectively).

4.1.3 Results on Speed Endurance

Pre - Test: The mean and Standard deviation of the pre-test speed endurance scores of G1, G2, G3 and G4 were 17.93 ± 0.19 , 17.95 ± 0.18 , 17.92 ± 0.22 and 17.97 ± 0.15 respectively. The obtained pre-test F value of 0.17 was lesser than the required table F value of 2.78.

Hence the pre-test mean values of Acceleration Sprinting, Repetition Sprinting, Interval Sprinting and Control group on speed endurance before start of the respective treatments were found to be insignificant at 0.05 level of confidence for the degrees of

freedom 3 and 56. Thus this analysis confirms that the random assignment of subjects into four groups were successful.

Post-test: The mean and Standard deviation of the post- test speed endurance scores of G1, G2, G3 and G4 are 17.79 ± 0.17 , 17.84 ± 0.15 , 17.63 ± 0.21 and 17.95 ± 0.16 respectively. The obtained post test F value of 8.82 was greater than the required table F value of 2.78.

Hence the post- test means value of speed endurance show significant at 0.05 level of confidence for the degrees of freedom 3 and 56. Thus the results obtained proved that the interventions namely Acceleration Sprinting, Repetition Sprinting and Interval Sprinting on speed endurance produced significantly different improvements among the three groups.

Adjusted Post-test: The mean and Standard deviation of the adjusted post-test speed endurance scores of G1, G2, G3 and G4 are 17.79, 17.84, 17.65 and 17.93 respectively. The obtained adjusted post-test F value of 92.47 was greater than the required Table F value of 2.77.

Hence the adjusted post-test mean value of speed show significant at 0.05 level of confidence for the degrees of freedom 3 and 55. Since the observed F value on adjusted post test mean among the groups such as on speed endurance produced significantly different improvements among the three groups.

In order to find out which intervention programme used in the present study was the source for the significance of adjusted mean was tested by Scheffe's post hoc test. The results of the same are presented in the table- 7 (a)

TABLE – 7 (a)
SCHEFFE'S POST HOC TEST MEAN DIFFERENCES ON SPEED ENDURANCE AMONG DIFFERENT GROUPS

G - 1	G – 2	G – 3	G – 4	Mean Differences	Confidence
AS	RS	IS	CG	Mean Differences	Interval Value
17.79	17.84	-	-	0.04	0.06
17.79	-	17.65	-	0.14*	0.06
17.79	-	-	17.93	0.14*	0.06
-	17.84	17.65	-	0.18*	0.06
-	17.84	-	17.93	0.10*	0.06
-	-	17.65	17.93	0.28*	0.06

^{*} Significant at .05 level of confidence.

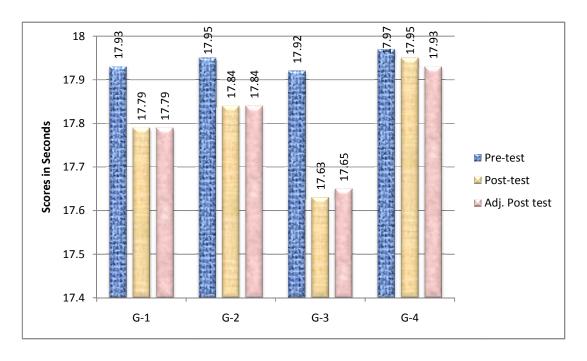
4.1.4 Results of Post-Hoc Test on Speed Endurance:

The comparison of group 1 and 2 show insignificant improvement on speed endurance, because the obtained mean difference value on 0.04 was lesser than the confidential value of 0.06.

All the remaining comparisons show significant improvement on the speed endurance parameter, as the obtained mean difference values of the comparisons were 0.14, 0.14, 0.18, 0.10 and 0.28 which were higher than the confidential interval value. Hence all the above comparisons were significant at 0.05 levels.

The results indicate that the Interval Sprinting produced better improvement on the performance of Speed Endurance, than the Acceleration and Repetition Sprinting. Further the Acceleration Sprinting produced better performance than the Repetition Sprinting.

FIGURE – 2
COMPARATIVE BAR CHART OF PRE-TEST, POST-TEST AND
ADJUSTED POST TEST OF DIFFERENT GROUPS
ON SPEED ENDURANCE



- G-1 Acceleration Sprinting
- G-2 Repetition Sprinting
- G-3 Interval Sprinting
- G-4 Control Group

TABLE – 8

ANALYSIS OF COVARIANCE ON EXPLOSIVE POWER

OF DIFFERENT GROUPS

(Scores in Centimetres)

Test	G - 1	G – 2	G-3	G – 4	SV	SS	Df	MS	'F'
Test	AS	RS	IS	CG	3 V	33	ы	MS	Ratio
Pre-tes	st								
Mean	33.13	32.60	32.20	33.27	Between	10.93	3	3.64	1.52
S.D.	1.46	1.06	1.42	2.09	Within	134.67	56	2.40	
Post Test									
Mean	35.13	33.93	33.27	29.00	Between	320.73	3	106.91	71.62*
S.D.	1.46	0.80	1.22	1.31	Within	83.60	56	1.49	71.02
Adjusted Post Test									
Mean	34.91	34.07	33.67	28.69	Between	349.43	3	116.48	266.11*
wican	JT./1	J T. U/	33.07	20.07	Within	24.07	55	0.44	200.11

^{*} Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence for 3 and 56 and 3 and 55 are 2.78 and 2.77 respectively).

4.1.5 Results on Explosive Power

Pre - Test: The mean and Standard deviation of the pretest explosive power scores of G1, G2, G3 and G4 were 33.13 ± 1.46 , 32.6 ± 1.06 , 32.20 ± 1.42 and 33.27 ± 2.09 respectively. The obtained pre-test F value of 1.52 was lesser than the required table F value of 2.78.

Hence the pre-test mean value of Acceleration Sprinting, Repetition Sprinting, Interval Sprinting and Control group on explosive power before start of the respective treatments were found to be insignificant at 0.05 level of confidence

for the freedom 3 and 56. Thus this analysis confirms that the random assignment of subjects into four groups were successful.

Post-test: The mean and Standard deviation of the post- test explosive power scores of G1, G2, G3 and G4 are 35.13 ± 1.46 , 33.93 ± 0.80 , 33.27 ± 1.22 and 29 ± 1.31 respectively. The obtained post test F value of 71.62 was greater than the required table F value of 2.78.

Hence the post-test mean values of explosive power show significant at 0.05 level of confidence for the degrees of freedom 3 and 56. Thus the results obtained proved that the interventions namely Acceleration Sprinting, Repetition Sprinting and Interval Sprinting on explosive power produced significantly different improvements among the three groups.

Adjusted Post-test: The mean and Standard deviation of the adjusted post-test explosive power scores of G1, G2, G3 and G4 are 34.91, 34.07, 33.67 and 28.69 respectively. The obtained adjusted post-test F value of 266.11 was greater than the required Table F value of 2.77.

Hence the adjusted post-test mean values of explosive power show significant at 0.05 level of confidence for the degrees of freedom 3 and 55. Since the observed F value on adjusted post test mean among the groups such as on explosive power produced significantly different improvements among the three groups.

In order to find out which intervention programme used in the present study was the source for the significance of adjusted mean was tested by Scheffe's post hoc test. The results of the same are presented in the table-8 (a)

TABLE - 8 (a)
SCHEFFE'S POST HOC TEST MEAN DIFFERENCES ON
EXPLOSIVE POWER AMONG DIFFERENT GROUPS

(Scores in Centimetres)

G - 1	G – 2	G – 3	G – 4	Mean Differences	Confidence
AS	RS	IS	CG	Mean Differences	Interval Value
34.91	34.07	-	-	0.85*	0.85
34.91	-	33.67	-	1.25*	0.85
34.91	-	-	28.69	6.22*	0.85
-	34.07	33.67	-	0.40	0.85
-	34.07	-	28.69	5.38*	0.85
-	-	33.67	28.69	4.98*	0.85

^{*} Significant at .05 level of confidence.

4.1.6 Results of Post-Hoc Test on Explosive Power:

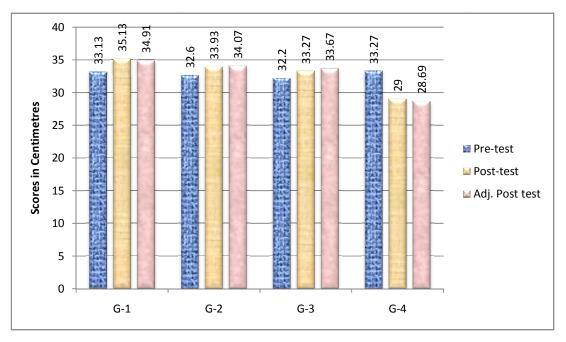
The comparison of group 2 and 3 show insignificant improvement on explosive power, because the obtained mean difference value on 0.40 was lesser than the confidential value of 0.85.

All the remaining comparisons show significant improvement on the explosive power parameter, because the obtained mean difference values of the comparisons were 0.85, 1.25, 6.22, 5.38 and 4.98 which were higher than the confidential interval value. Hence all the above comparisons were significant at 0.05 levels.

The results indicate that for explosive power the Acceleration Sprinting dominated than the Repetition and Interval Sprinting. Further the Repetition Sprinting was found to be better than the Interval Sprinting. The least improvement was observed in the Interval Sprinting.

FIGURE – 3
COMPARATIVE BAR CHART OF PRE-TEST, POST-TEST AND
ADJUSTED POST TEST OF DIFFERENT GROUPS
ON EXPLOSIVE POWER

(Scores in Centimetres)



- G-1 Acceleration Sprinting
- G-2 Repetition Sprinting
- G-3 Interval Sprinting
- G-4 Control Group

TABLE – 9
ANALYSIS OF COVARIANCE ON ELASTIC POWER
OF DIFFERENT GROUPS

(Scores in Meters)

Test	G - 1 AS	G-2 RS	G-3 IS	G – 4 CG	SV	SS	Df	MS	'F' Ratio
Pre-test									
Mean	10.51	10.53	10.52	10.54	Between	0.01	3.00	0.0019	0.08
S.D.	0.15	0.19	0.12	0.18	Within	1.45	56.00	0.0258	
Post Test									
Mean	11.10	10.83	10.74	10.55	Between	2.35	3.00	0.7843	20.62*
S.D.	0.22	0.24	0.13	0.18	Within	2.13	56.00	0.0380	20.02
Adjusted Post Test									
Mean	11.11	10.83	10.74	10.54	Between Within	2.501.32	3.00 55.00	0.8345 0.0240	34.74*

^{*} Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence for 3 and 56 and 3 and 55 are 2.78 and 2.77 respectively).

4.1.7 Results on Elastic Power

Pre - Test: The mean and Standard deviation of the pretest elastic power scores of G1, G2, G3 and G4 were 10.51 ± 0.15 , 10.53 ± 0.19 , 10.52 ± 0.12 and 10.54 ± 0.18 respectively. The obtained pre-test F value of 0.08 was lesser than the required table F value of 2.78.

Hence the pre-test mean value of Acceleration Sprinting, Repetition Sprinting, Interval Sprinting and Control group on elastic power before start of the respective treatments were found to be insignificant at 0.05 level of confidence for the degrees of freedom 3 and 36. Thus this analysis confirms that the random assignment of subjects into three groups were successful.

Post-test: The mean and Standard deviation of the post- test elastic power scores of G1, G2, G3 and G4 are, 11.10 ± 0.22 , 10.83 ± 0.24 , 10.74 ± 0.13 and 10.55 ± 0.18 respectively. The obtained post test F value of 20.62 was greater than the required table F value of 2.78.

Hence the post-test mean values of elastic power show significant at 0.05 level of confidence for the degrees of freedom 3 and 36. Thus the results obtained proved that the interventions namely Acceleration Sprinting, Repetition Sprinting and Interval Sprinting on elastic power produced significantly different improvements among the four groups.

Adjusted Post-test: The mean and Standard deviation of the adjusted post-test elastic power scores of G1, G2, G3 and G4 are 11.11, 10.83, 10.74 and 10.54 respectively. The obtained adjusted post-test F value of 34.74 was greater than the required table F value of 2.77.

Hence the adjusted post-test mean values of elastic power show significant at 0.05 level of confidence for the degrees of freedom 3 and 35. Since the observed F value on adjusted post test mean among the groups such as on elastic power produced significantly different improvements among the three groups.

In order to find out which intervention programme used in the present study was the source for the significance of adjusted mean was tested by Scheffe's post hoc test. The results of the same are presented in the table-9 (a)

TABLE - 9 (a)
SCHEFFE'S POST HOC TEST MEAN DIFFERENCES ON
ELASTIC POWER AMONG DIFFERENT GROUPS

(Scores in Meters)

G – 1	G – 2	G – 3	G – 4	Mean Differences	Confidence	
AS	RS	IS	CG	Mean Differences	Interval Value	
11.11	10.83			0.36*	0.20	
11.11		10.74		0.28*	0.20	
11.11			10.54	0.57*	0.20	
	10.83	10.74		0.08	0.20	
	10.83		10.54	0.21*	0.20	
		10.74	10.54	0.29*	0.20	

^{*} Significant at .05 level of confidence.

4.1.8 Results of Post-Hoc Test on Elastic Power:

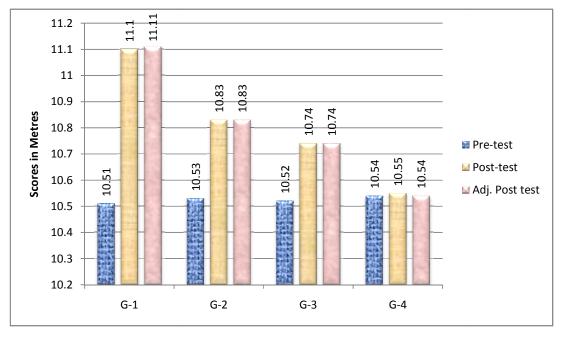
The comparison of group 2 and 3 show insignificant improvement on elastic power, because the obtained mean difference value on 0.08 was lesser than the confidential value of 0.20

All the remaining comparisons show significant improvement on the elastic power parameter, because the obtained mean difference values of the comparisons were 0.36, 0.28, 0.57, 0.21 and 0.29 which were higher than the confidential interval value. Hence all the above comparisons were significant at 0.05 levels.

The results indicate that for elastic power the Acceleration Sprinting dominated than the Repetition and Interval Sprinting. Further the Repetition Sprinting was found to be better than the Interval Sprinting. The least improvement was observed in the Interval Sprinting.

FIGURE – 4
COMPARATIVE BAR CHART OF PRE-TEST, POST-TEST AND
ADJUSTED POST TEST OF DIFFERENT GROUPS
ON ELASTIC POWER

(Scores in Metres)



- G-1 Acceleration Sprinting
- G-2 Repetition Sprinting
- G-3 Interval Sprinting
- G-4 Control Group