ISO 9001 - 2015

ISSN 2349 - 4891

Monthly

IJRRAS

IF
4.665

Volume 4,Issue 12, December 2017

International Journal of
Recent Research and Applied Studies

SURRAGH PUBLICATIONS

ISSN: 2349 - 4891

International
Journal of Recent Research and Applied Studies
(Multidisciplinary Open Access Refereed e-Journal)

Effects of High Speed Power Training and High Explosive Power Training on Selected Physiological Variables of Inter Collegiate Male Handball Players

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Received 12th November 2017, Accepted 1st December 2017

Abstract

The purpose of the study was to find out the effects of high speed power training and high explosive power training on selected physiological variables of inter collegiate male handball players. To attain the purpose 90 inter collegiate handball players selected from Ayyanadar Janakiammal College, Sivakasi, TN, were selected as a subjects at the age group of 18-25 years. The investigator clearly explained about the training procedure to the selected subjects. The selected 90 subjects were randomly divided in to three equal groups namely Group I (N=30) underwent High Speed Power Training Group II (N=30) underwent High Explosive Power Training Group and finally Group III (N=30) did not participated any specific training. The selected subjects underwent the 12 week of training schedule for 5 days in a week. The vo2 max was measured by queen college step test and pulse rate was measured by heart rate monitor. It was resulted in the present research study state that that the high speed power training significantly improved the physiological variables of vo2 max and resting pulse rate better than high explosive power training and control group of inter collegiate male hand ball players.

Keywords: High Speed Power Training Group, High Explosive Power Training Group, Vo2 max, pulse rate.

Introduction

Many studies have reported that power training in older adults (i.e., resistance training at higher movement speeds) increases peak power production (10,14,15,17), a critical muscle performance variable in the maintenance of function and independence in this population (3,5,9,11,22). Power is the product of force and velocity, thus an improvement in peak power necessitates a change in the force component or velocity component of power (or both) to bring about that change. What has not been adequately addressed in the literature is the contribution of force or velocity to this change in peak power or the change in external resistance at which peak power occurs. The ability to produce power at a lower or higher external resistances (with a concomitant change in the velocity or force component) is critical to different types of functional tasks encountered during everyday tasks. Indeed, becoming more powerful at lower external resistances will increase the velocity component of power, which is critical to tasks related to safety. From a practical standpoint it is more likely an older adult will have to move an object of low external resistance quickly (requiring velocity) than to move an object of high external resistance slowly (requiring force). For example, tasks such as moving the lower limb quickly to stabilize the body after losing balance or from the accelerator to the brake while driving are encountered frequently in this population, but being trapped under a heavy object where maximum strength is required would be encountered rarely. Thus, a training regimen that increases peak power at lower external resistances would be an optimal training result for an older adult interested in practical functioning and maintaining safety with age.

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Statement of the Problem

The purpose of the study was to find out the effects of high speed power training and high explosive power training on selected physiological variables of inter collegiate male handball players

Hypotheses

1. It was hypothesis that the high speed power training would significantly improve the physiological variables of vo2 max and resting pulse rate of inter collegiate male hand ball players
2. It was hypothesis that the high explosive power training would significantly improved the physiological variables of vo2 max and resting pulse rate of inter collegiate male hand ball players.
3. It was hypothesis that the high speed power training

would significantly improved the physiological variables of vo2 max and resting pulse rate better than high explosive power training and control group of inter collegiate male hand ball players

4. It was hypothesis that the high explosive power training would significantly improved the physiological variables of vo2 max and resting pulse rate better than control group of inter collegiate male hand ball players.

Methodology

Selection of the subjects

The purpose of the study was to find out the effects of high speed power training and high explosive power training on selected physiological variables of inter collegiate male handball players. To attain the purpose 90 inter collegiate handball players selected from Ayyanadar Janakiammal College, Sivakasi, TN, were selected as a subjects at the age group of 18-25 years. The investigator clearly explained about the training procedure to the selected subjects. They completed their physical examination and written exam to perform this training procedure.

Experimental Design

The selected 90 subjects were randomly divided in to three equal groups namely Group I (N=30) underwent High Speed Power Training Group II (N=30) underwent high explosive power training and finally Group III (N=30) did not participated any specific training. The selected subjects underwent the 12 week of training schedule for 5 days in a week. The vo2 max was measured by queen college step test and pulse rate was measured by heart rate monitor.

Statistical Technique

The present research study to find the mean difference from pre test to post test dependent 't' ratio was used. To analysis mean difference among the groups analysis of variance was used. To evaluated the accurate improvement among the groups scheffee's Post Hoc Test was applied.

Analysis of the Data and Result of the Study

Table 1

Significance of mean gains / losses between pre and post tests of high Speed Power Training on selected physiological variables of inter collegiate handball players

Variables	Pre test mean ±SD	Post test mean ± SD	M. D	SEM	't'-ratio
Vo2 Max	43.86 ± 3.71	46.66 ± 3.84	2.80000	0.13896	20.149
Resting Pulse Rate	64.90 ± 2.23	62.33 ± 2.38	2.56667	0.17736	14.472

*Significant at 0.05 level(2.04)

Table 1 indicates the results of 't' value of physiological variables of Vo2 (20.14), Resting Pulse Rate (14.47). The obtained tabulated t value was 2.04 statistically significant difference at the 95 % confidential level, The df (1, 29). It was found that statistically showed significant on physiological variables of inter collegiate male handball players.

Table 2

Significance of mean gains / losses between pre and post tests of High Explosive Power Training on selected physiological variables of inter collegiate handball players

Variables	Pre test mean ±SD	Post test mean ± SD	M. D	SEM	't'-ratio
Vo2 Max	43.23 ± 4.71	44.90 ± 4.26	1.66667	0.11073	15.052
Resting Pulse Rate	64.50 ± 2.46	63.10 ± 2.83	1.40000	0.13218	10.592

*Significant at 0.05 level(2.04)

Table 2 indicates the results of 't' value of physiological variables of Vo2 (15.05), Resting Pulse Rate (10.59). The obtained tabulated t value was 2.04 statistically significant difference at the 95 % confidential level, The df (1, 29). It was found that statistically showed significant on physiological variables of inter collegiate male handball players.

Table 3
Significance of mean gains / losses between pre and post tests of Control Group on selected physiological variables of inter collegiate handball players

Variables	Pre test mean ±SD	Post test mean ± SD	M. D	SEM	't'-ratio
Vo2 Max	43.33 ± 4.08	43.43 ± 4.09	0.10000	0.05571	1.795
Resting Pulse Rate	64.80 ± 2.17	64.73 ± 2.24	0.06667	0.04632	1.439

*Significant at 0.05 level(2.04)

Table 3 indicates the results of 't' value of physiological variables of Vo2 (1.79), Resting Pulse Rate (1.43). The obtained tabulated t value was 2.04 statistically significant difference at the 95 % confidential level, The df (1, 29). It was found that statistically showed insignificant. It was formed that the pre and post test did not showed any significant improvement in the physiological variables of inter collegiate male handball players.

Table 4
Analysis on variance on pre test and post test mean of high Speed Power Training, high Explosive Power and control Group on physiological Variables of inter collegiate Handball players

Variables	Source of Variance	Sum of Squares	df	Mean Square	F	Sig.
Vo2 Max Pre -Test	Between Groups	6.956	2	3.478	.218	.805
	Within Groups	1389.5	87	15.971		
Resting Pulse Rate Pre- Test	Between Groups	2.600	2	1.300	.247	.781
	Within Groups	457.00	87	5.253		
Vo2 Max Post -Test	Between Groups	157.26	2	78.633	4.735	.011
	Within Groups	1444.73	87	16.606		
Resting Pulse Rate Post- Test	Between Groups	90.156	2	45.078	7.219	.001
	Within Groups	543.233	87	6.244		

*Significant at 0.05 level(3.10)

Table 4 indicates that the obtained pre test 'F' ratio for the HSPT, HEPT and CG on physiological variables of vo2 max (0.21), resting pulse rate (0.24).The obtained tabulated f value was 3.10 statistically significant differences at the 95 % confidential level and the degrees of freedom (2, 87). It was found that statistically show insignificant. So the treatment was successful. The obtained pre test 'F' ratio for the HSPT, HEPT and CG on physiological variables of vo2 max (4.73), resting pulse rate (7.21).The obtained tabulated f value was 3.10 statistically significant differences at the 95 % confidential level and the degrees of freedom (2, 87). It was found that statistically show significant improvement.

Table 5
Analysis on variance on Adjusted post test mean of high Speed Power Training, high Explosive Power Training and control Group on physiological Variables of inter collegiate Handball players

Variables	Source of Variance	Sum of Squares	df	Mean Square	F	Sig.
Vo2 Max	Between Groups	109.64	2	54.822	156.87	.000
	Within Groups	30.054	86	.349		
Resting Pulse Rate	Between Groups	94.160	2	47.080	93.12	.000
	Within Groups	43.478	86	.506		

*Significant at 0.05 level(3.10)

The obtained adjusted post test 'F' ratio for the HSPT, HEPT and CG on physiological variables of vo2 max (156.87), resting pulse rate (93.12).The obtained tabulated f value was 3.10 statistically significant differences at the 95 % confidential level and the degrees of freedom (2, 87). It was found that statistically show insignificant.

Table 6
The scheffe's post hoc test for the differences between adjusted post test means of high speed power training, high explosive power training and control group on vo2 max

HSPTG	HEPTG	CG	Mean Differences	Confidence Interval Value
46.27	45.14	---	**1.13**	**0.43**
46.27	---	43.57	**2.70**	**0.43**
---	45.14	43.57	**1.57**	**0.43**

*0.05 level of significance

Table 6 shows the post hoc analysis obtained on adjusted post test means. The mean difference required for the confidential interval to be significant was 0.43. It was observed that the high speed power training significantly improved the vo2 max better than the high explosive power training and control group. The high explosive power training significantly improved the vo2 max better than the control group.

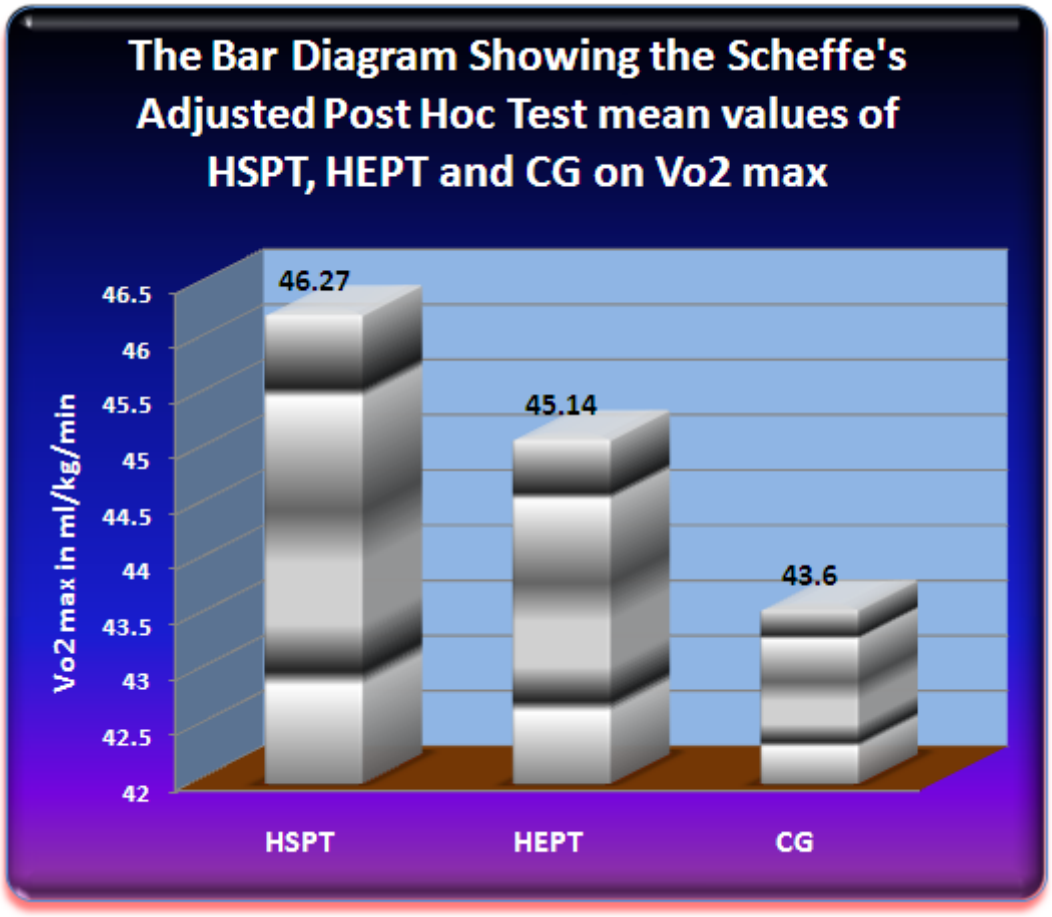


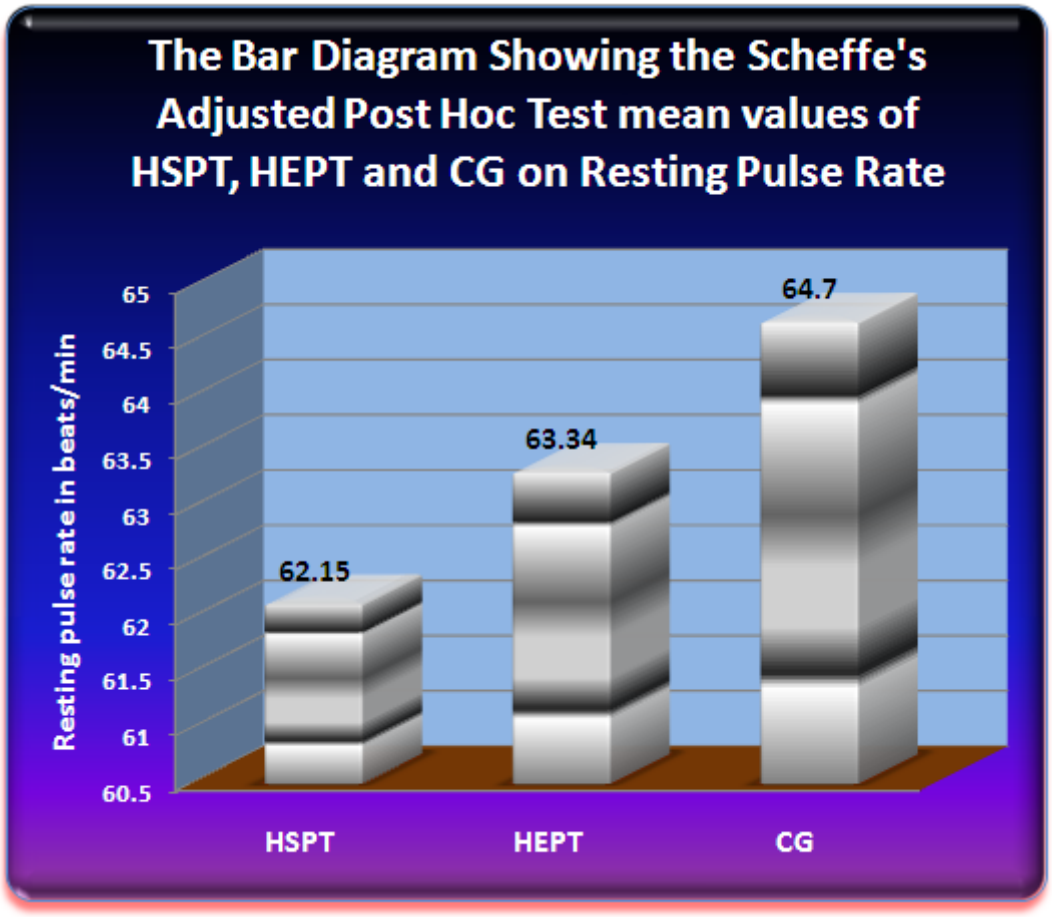
Table 7

The scheffe's post hoc test for the differences between adjusted post test means of high speed power training, high explosive power training and control group on resting pulse rate

HSPTG	HEPTG	CG	Mean Differences	Confidence Interval Value
62.15	63.34	---	**1.19**	**0.51**
62.15	---	64.66	**2.15**	**0.51**
---	63.34	64.66	**1.32**	**0.51**

*0.05 level of significance.

Table 7 shows the post hoc analysis obtained on adjusted post test means. The mean difference required for the confidential interval to be significant was 0.51. It was observed that the high speed power training significantly improved the resting pulse rate better than the high explosive power training and control group. The high explosive power training significantly improved the resting pulse rate better than the control group.



Result

1. It resulted in the present research study state that the high speed power training significantly improved the physiological variables of vo2 max and resting pulse rate of inter collegiate male hand ball players. In the previous study state that effects of an 8-week speed training program on the acceleration ability and maximum speed improved vo2 max.
2. It resulted in the present research study state that that the high explosive power training significantly improved the physiological variables of vo2 max and resting pulse rate of inter collegiate male hand ball players. In the previous study state that effects of an 8-week speed training program on the acceleration ability and maximum speed improved resting pulse rate.
3. It resulted in the present research study state that that the high speed power training significantly improved the physiological variables of vo2 max and resting pulse rate better than high explosive power training and control group of inter collegiate male hand ball players .
4. It resulted in the present research study state that that the high explosive power training significantly improved the physiological variables of vo2 max and resting pulse rate better than control group of inter collegiate male hand ball players.

Conclusion

5. It was concluded that the high speed power training significantly improved the physiological variables of vo2 max and resting pulse rate of inter collegiate male hand ball players
6. It was concluded that the high explosive power training significantly improved the physiological variables of vo2 max and resting pulse rate of inter collegiate male hand ball players.
7. It was concluded that the high speed power training significantly improved the physiological variables of vo2 max and resting pulse rate better than high explosive power training and control group of inter collegiate male hand ball players
8. It was concluded that the high explosive power training significantly improved the physiological variables of vo2 max and resting pulse rate better than control group of inter collegiate male hand ball players.

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