



EFFECT OF MODERATE INTENSITY ENDURANCE AND HIGH INTENSITY INTERMITTENT TRAINING ON SELECTED EXPLOSIVE POWER OF MEN HANDBALL PLAYERS

G.RAMESH

Assistant Professor, Department of Physical Education & Sports Sciences Annamalai University Annamalai Nagar

ABSTRACT

The purpose of the study forty five men handball players were selected as subjects at random from Annamalai University, Chidambaram, Tamilnadu, India. The age of the subjects ranged from 18 to 28 years. The number of groups divided in to three; they were named as experimental group-I (moderate intensity endurance training group), experimental group-II (high intensity intermittent training group) and group-III acted as control. The number of subjects in each group was confined to fifteen only. The study was restricted to endurance training with two variations in intensity. The duration of the training period was restricted to twelve weeks and the number of sessions per week was confined to three, the selected criterion variable is explosive power measured with vertical jump. The collected data pre and post test treated with ANCOVA. If obtained 'F' ratio was significant scheffe's post hoc test used. Level of significant was fixed at 0.05. There was a significance difference among the moderate intensity endurance training group, high intensity intermittent training group and control group on explosive power. The moderate intensity endurance training group and high intensity intermittent training group has significantly improved the explosive power when compared with the control group. It was also concluded that the high intensity intermittent training group has significantly improved explosive power than the moderate intensity endurance training group.

Key words: High Intensity Intermittent Training, Moderate Intensity Endurance Training, Explosive Power and ANCOVA

INTRODUCTION

Sport is all forms of physical activity which, through casual or organized participation, aim to use, maintain or improve physical fitness and provide entertainment to participants. Sports are most often played just for fun or for the simple fact that people need exercise to stay in good physical condition. sports' training is a basic preparation of the sportsmen for better performance through physical Exercise. It is based on scientific principles of aiming at education and performance enchantment. Sports activities consist of motor movement and action and their success depends to a great extent on how correctly they are performed. Techniques of training and improvement of tactical efficiency plays a vital role in training process (Edge et al., 2005).

Endurance training also strengthens the immune system, reduces injuries, increases energy, increases efficiency and develops mental focus. All of these directly correspond to the reasons. Training anaerobically, while important, may only be

effectively undertaken once an athlete establishes a strong aerobic base. It typically takes a person 8-12 weeks, training aerobically 4-6 times per week for approximately 40 minutes each session (some longer sessions are recommended), to develop a strong aerobic base. (Wibom et al., 2004).

Endurance training challenges the mind and the body. Only a conditioned body and a focused mind can create a consistent, steady heart rate, a flowing form and a quiet mind for an extended period of time. Over the course of an endurance training session, a rider's perceived exertion will rise because of their emotional state, focus, form deterioration, and/or the accumulation of metabolic waste products. Therefore, the key to endurance training is to develop an even application of physical energy and mental strength over an extended period of time. Therefore, the key to endurance training is to develop an even application of physical energy and mental strength over an extended period of time (Acevedo & Goldfarb, 1989).

METHODOLOGY

The purpose of the study forty five men handball players were selected as subjects at random from Annamalai University, Chidambaram, Tamilnadu, India. The age of the subjects ranged from 18 to 28 years. The number of groups divided in to three; they were named as experimental group-I (moderate intensity endurance training group), experimental group-II (high intensity intermittent training group) and group-III acted as control. The number of subjects in each group was confined to fifteen only. The study was restricted to endurance training with two variations in intensity. The duration of the training period was

restricted to twelve weeks and the number of sessions per week was confined to three, the selected criterion variable is explosive power measured with vertical jump. The collected data pre and post test treated with ANCOVA. If obtained 'F' ratio was significant scheffe's post hoc test used. Level of significant was fixed at 0.05.

TRAINING PROGRAM

In moderate intensity endurance training, the initial intensity was fixed at 65% and it was increased once in two weeks by 5% and in high intensity intermittent training the initial intensity was fixed at 80% and it was increased once in two weeks by 5%.

RESULTS

TABLE-1 Analysis of Covariance on Explosive Power of Moderate Intensity Endurance Training Group High Intensity Intermittent Training Group and Control Group

Test	Moderate Intensity Endurance Training Group	High Intensity Intermittent Training Group	Control Group	Source of Variances	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test Mean	48.33	48.33	48.80	Between	2.178	2	1.089	0.08
SD	3.44	2.97	4.59	Within	583.067	42	13.883	
Post Test Mean	50.07	53.13	48.40	Between	172.933	2	86.467	4.70*
SD	3.79	4.21	4.81	Within	772.267	42	18.387	
Adjusted Post Test Mean	50.23	53.29	48.08	Between	205.17	2	102.59	25.54*
				Within	164.68	41	4.02	

* Significant at 0.05 level of confidence.

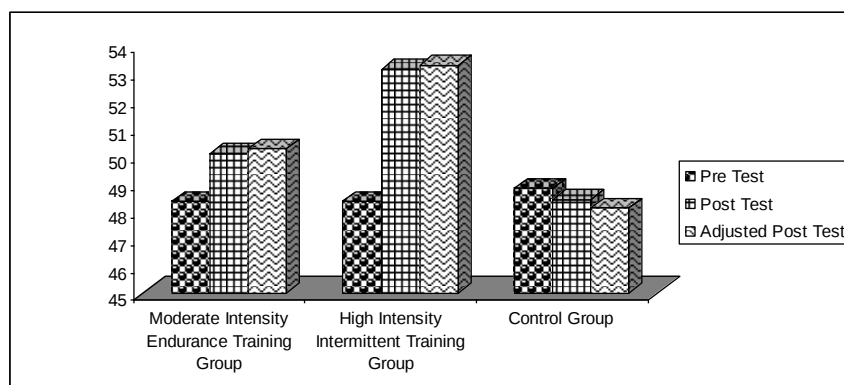
(The table value required for significance at 0.05 level of confidence with df 2 and 42 and 2 and 41 were 3.22 and 3.23 respectively).

TABLE - 2 Scheffe's Post Hoc Test for the Difference Between the Adjusted Post-Test Mean of Explosive Power

S. No.	Adjusted Post-test Means			Mean Difference	Confidence Interval
	Moderate Intensity Endurance Training Group	High Intensity Intermittent Training Group	Control Group		
1.	50.23	53.29	-	3.06*	1.86
2.	50.23	-	48.08	2.15*	1.86
3.	-	53.29	48.08	5.21*	1.86

*Significant at 0.05 level of confidence.

FIGURE-1 Mean Values of Pre, Post and Adjusted Post Tests of Moderate Intensity Endurance Training Group, High Intensity Intermittent Training Group and Control Group on Explosive power.



DISCUSSIONS ON FINDINGS

Our study results supporting previous studies also. The high-intensity interval training (HIT) is a potent time-efficient strategy to induce numerous metabolic adaptations usually associated with traditional endurance training. HIT can increase skeletal muscle oxidative capacity and endurance performance and alter metabolic control during aerobic-based exercise (Laursen et al., 2002). The study showed that the interval training improves the performance rapidly that of continuous running. More over the interval training group showed as significant improvement in developing cardio respiratory endurance and muscular endurance (Chidambara Raja 1992). The study showed that the moderate-intensity aerobic training that improves the maximal aerobic power does not change anaerobic capacity and that adequate high-intensity intermittent training may improve both anaerobic and aerobic energy supplying systems significantly, probably through imposing intensive stimuli on both systems (Tabata et al., 1996). study determined that the conventional circuit-training programme made significant improvement in power, endurance and strength. However, the high-intensity programme of circuit training produced significantly greater improvement than did the conventional programme (Glen Engene Fincher 1990). Study informed that the performance in speed, flexibility and explosive power improved significantly for both progressive and alternate high and low intensity training when compared to the control group, and no significant existed between the training groups (Sebastian 1998).

CONCLUSIONS

It may be concluded from the results of the study that moderate intensity endurance training group and high intensity intermittent training group has significantly improved the explosive power when compared with the control group. Moreover, the high intensity intermittent training group has improved explosive power than the moderate intensity endurance training group.

REFERENCES

- [1] Acevedo, E. O. and Goldfarb, A. H. (1989). "Increased Training Intensity Effects on Plasma Lactate, Ventilatory Threshold and Endurance", *Medicine and Science in Sports and Exercise*, 21, 563-568.
- [2] Chidambara Raja S. (1992). "Comparative Analysis of the Effects of Continuous and Interval Running on Selected Physical Fitness Variables", *Unpublished M.Phil., Dissertation*, Annamalai University.
- [3] Edge, Johann; Bishop, David; Goodman, Carmel; and Dawson, Brian (November 2005). "Effects of High and Moderate-Intensity Training on Metabolism and Repeated Sprints", *Medicine and Science in Sports and Exercise*, 37(11),1975-1982.
- [4] Wibom, R., Hultman, M. Johansen, K. Matherei, D. Constantin-Teodosiu, and Schamtz, P. G. (1992). "Adaptation of Mitochondrial ATP Production in Human Skeletal Muscle to Endurance Training and Detraining", *Journal of Applied Physiology*, 73(5), 2004-2010.
- [5] Laursen P.B., and Jenkins D.G. (2002). "The Scientific Basis for High-Intensity Interval Training: Optimising Training Programmes and Maximising Performance in Highly Trained Endurance Athletes", *Sports Medicine*, 32(1), 53-73.
- [6] Glen Engene Fincher, (September 1990). "The Effect of High Intensity Strength Training on Anaerobic Power and Endurance", *Dissertation Abstracts International*, 54(3), 88-93.
- [7] Sanil Sebastian, (1998). "Relative Analysis of Progressive Training and Alternate High and Low Intensity Training on Speed, Flexibility and Explosive Power of Boys", *Unpublished Doctoral Thesis*, Annamalai University.
- [8] Tabata, I., Atomi, Y., Kanehisa, H., and Miyashita, M. (1990). "Effect of High-Intensity Endurance Training on Isokinetic Muscle Power", *European Journal of Applied Physiology and Occupational Physiology*, 60(4), 254-8