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INFLUENCE OF HIGH INTENSITY INTERVAL TRAINING ON SPEED OF INTER COLLEGIATE ATHLETES

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Abstract: The present investigation of the study was to find out the high intensity training influence on speed attribute of inter collegiate athletes (sprinters). For this study aimed to fulfill the purpose twenty (n=20) athletes (sprinter) of male gender were arbitrarily selected as volunteer participants who are all studying under the affiliated colleges of Manonmaniam Sundaranar State University located at Tirunelveli District of Tamilnadu state in India. Their age ranged from 18 to 22 years. The selected participants were randomly divided into two groups such as Group 'I' underwent high intensity interval training (n=10) and Group 'II' acted as control group (n-10). Group-1 underwent high intensity interval training for five days and one session per day and each session lasted for 60 minutes for six week period. The second group-2 did not allowing any other contrast or complex training on bar with experimental first group-1 other than the regular activities. Collected data from all participants prior to the start of the examination and after the completion of post examination which was administering by 50m dash test. All data administrated values were statistically examined by using the dependent-'t' test and Analysis of co-variance (ANCOVA) for each and every selected variable separately. From the results of the study the investigator coming to conclude that the high intensity interval training volunteer participant group better significant improvement on speed attribute, but the other second one fails to shown the improvement on compare with investigated first group.

Index Terms – High Intensity Interval Training, Speed, Athletes, Sprinters

1. INTRODUCTION

A significant performance factor in competitive college sports, speed has a direct impact on success in a variety of sports, such as basketball, football, soccer, and track and field. Sprinting skill is the foundation for the frequent sprints, quick direction changes, and explosive movements that athletes must execute. Therefore, coaches and performance experts that deal with intercollegiate athletes prioritise improving speed (Reilly et al., 2009). A time-efficient technique for enhancing many aspects of physical fitness, high-intensity interval training, or HIIT, has grown in popularity. According to Buchheit and Laursen (2013), HIIT consists of brief bursts of high-intensity activity interspersed with rest or low-intensity recovery intervals. Muscular endurance, anaerobic and aerobic capacity, and total athletic performance have all been shown to be enhanced by this training approach (Gibala et al., 2006). Because it concurrently targets various energy systems, HIIT is a flexible technique for athletes with limited training time, in contrast to typical steady-state endurance training. According to research, HIIT may also help improve sprint performance, especially by enhancing muscle recruitment patterns and neuromuscular efficiency during high-speed efforts (Laursen & Jenkins, 2002). Though HIIT's overall advantages are well known, little empirical research has been done to explicitly examine how it affects intercollegiate players' sprinting speed. This provides a study gap worth examining, since HIIT may offer an effective and efficient answer for speed development in this group.

2. PURPOSE OF THE STUDY

The purpose of the study was to find out the impact of high-intensity interval training (HIIT) on the speed performance of inter- collegiate level men athletes.

3. METHODOLOGY

For this study aimed to fulfill the purpose twenty (n=20) athletes (sprinter) of male gender were arbitrarily selected as volunteer participants who are all studying under the affiliated colleges of Manonmaniam Sundaranar State University located at Tirunelveli District of Tamilnadu state in India. Their age ranged from 18 to 22 years. The selected participants were randomly divided into two groups such as Group 'I' underwent high intensity interval training (n=10) and Group 'II' acted as control group (n-10). Group 'I' underwent high intensity interval training for five days and one session per day and each session lasted for 60 minutes for six week period. The second group-2 did not allowing any other contrast or complex training on bar with experimental first group-1 other than the regular activities. Collected data from all participants prior to the start of the examination and after the completion of post examination which was administering by 50m dash test. All data administrated values were statistically examined by using the dependent-'t' test and Analysis of co-variance (ANCOVA) for each and every selected variable separately..

4. RESULT AND FINDINGS

The examining the effect of high intensity interval training on speed attribute were analyzed and presented given below table,

4.1 Speed

Table-I

Computation of 't' - ratio between pre and posttest means of experimental and control groups on speed (in seconds)

Criterion variables	Test	Experimental Group Mean	Control Group Mean
Speed (in seconds)	Pre test	7.76	7.79
	Post test	7.24	7.72
	't'-test	**10.36***	**1.51**

***Significant at 0.05 level. (Table value required for significance at .05 level for 't'-test with df 9 is 2.26)

From the above table-I clearly shows that the mean of pre-test value of experimental and control groups are 7.76 and 7.79 respectively and the mean of posttest values are 7.24 and 7.72 respectively. The after analysis the obtained dependent t-ratio values between the means of pre and post-test of experimental and control groups are 10.36 and 1.51 respectively. The above table value obligatory for significant difference with df 9 at 0.05 level is 2.26. Since, the obtained-'t' ratio value of experimental group was greater than the table value, it was understood that experimental group had significantly better the improvement on speed. However, the other second one fails to shown the improvement on compare with investigated first group.

Table-II
Analysis of covariance on speed of experimental and control groups

Adjusted Post Test Means		Source of variance	Sum of squares	ddf	Mean square	F – ratio
Experimental Group	Control Group	Between	16.58	1	16.58	30.71*
7.21	7.75	Within	9.18	17	0.54	

* Significant at 0.05 level. Table value for df 1, 17 was 4.45

In continuation of the above Table-II specifies that the means values of adjusted posttest scores on speed. The gained f- ratio of 30.71 for mean value of adjusted posttest is greater than the table value 4.45 with df 1 and 17 obligatory for significance at 0.05 level of confidence. The consequences of the present study indicate that there is a significant mean difference exist between the adjusted posttest means of experimental and control groups on speed attribute. The bar diagram shows the mean values of pretest, posttest and adjusted posttest on speed of experimental and control groups.

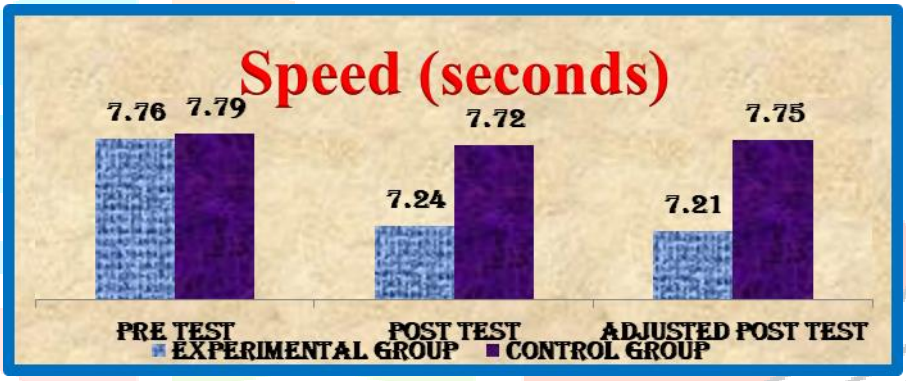

Figure-I: Pre, post and adjusted post-tests mean values of experimental and control groups on speed.

5. DISCUSSION ON FINDINGS

According to the study's findings, athletes in the control group and those doing high-intensity interval training differed significantly in terms of speed. The final results also enormous support to the authors Buchheit and Laursen (2013), who points out that HIIT may result in significant upturns in anaerobic and aerobic capacity. Besides that the sprinting is mostly anaerobic, sustaining high-speed enactment ongoing training and competition requires better-quality aerobic recovery in between repeated sprints (Dupont et al., 2004). Since HIIT escalations addition to both anaerobic power and aerobic recovery, it is especially beneficial for college athletes who play sports that call for regular spurts of speed. The findings confirm those of Edge et al. (2006), who found that short-duration sprint interval training increases the activity of glycolytic enzymes and phosphocreatine recovery. These metabolic changes withstand of directly underwrite to superior sprinting performance by helping athletes to generate and maintain high power outputs more professionally. Even if the results are encouraging, it's vital to take into account some restrictions. The investigated research only looked at short sprint distances; it didn't assess the risks of injury or long-term performance maintenance related to HIIT. Moreover, sport-specific characteristics among athletes (e.g., sprinters vs. team sport athletes) may alter individual reactions to HIIT, emphasising a need for more sport-specific study. Addition to this research backs up the use of HIIT in speed-enhancing sports training programmes. The outcomes showed that a well-designed HIIT program may offer significant gains in sprint performance even in a little amount of time, which makes it a useful conditioning technique for college coaches and players. K Satheesh Kumar, S. Arumugam, (2018); Arumugam, S. (2008); and Onigbinde, A. T., Awotidebe, T., & Awosika, H. (2009) all support the findings of this inquiry.

6. CONCLUSIONS

1. The impact of high intensity interval training on male athletes resulted in a notable increase in speed.

2. The impact of high intensity interval training on male athletes resulted in a notable difference in speed between the experimental and control groups.
3. Nevertheless, among the chosen athletes, the control group had not shown any appreciable improvement on any of the requirements.

7. REFERENCES

[1] Buchheit, M., & Laursen, P. B. (2013). High-intensity interval training, solutions to the programming puzzle. Sports Medicine, 43(5), 313–338. https://doi.org/10.1007/s40279-013-0029-x

[2] Gibala, M. J., Little, J. P., Van Essen, M., Wilkin, G. P., Burgomaster, K. A., Safdar, A., ... & Tarnopolsky, M. A. (2006). Short-term sprint interval versus traditional endurance training: similar initial adaptations in human skeletal muscle and exercise performance. The Journal of Physiology, 575(3), 901–911. https://doi.org/10.1113/jphysiol.2006.112094

[3] Laursen, P. B., & Jenkins, D. G. (2002). The scientific basis for high-intensity interval training. Sports Medicine, 32(1), 53–73. https://doi.org/10.2165/00007256-200232010-00003

[4] Reilly, T., Morris, T., & Whyte, G. (2009). The specificity of training prescription and physiological assessment: A review. Journal of Sports Sciences, 27(6), 575–589. https://doi.org/10.1080/02640410902729741Gaurav & Sanjiv Kumar, (2016). Effect of wobble board exercise with mirror feedback on balance and gait tra population: An experimental study. MedPulse – International Medical Journal, Volume 3, Issue 11, pp 961-966.

[5] Buchheit, M., & Laursen, P. B. (2013). High-intensity interval training, solutions to the programming puzzle. Sports Medicine, 43(5), 313–338. https://doi.org/10.1007/s40279-013-0029-x

[6] Dupont, G., Blondel, N., & Berthoin, S. (2003). Performance for short intermittent runs: active recovery vs. passive recovery. European Journal of Applied Physiology, 89(6), 548–554. https://doi.org/10.1007/s00421-003-0835-2

[7] Edge, J., Bishop, D., Goodman, C., & Dawson, B. (2006). Effects of high- and moderate-intensity training on metabolism and repeated sprints. Medicine & Science in Sports & Exercise, 37(11), 1975–1982. https://doi.org/10.1249/01.mss.0000179082.66112.19

[8] Laursen, P. B., & Jenkins, D. G. (2002). The scientific basis for high-intensity interval training. Sports Medicine, 32(1), 53–73. https://doi.org/10.2165/00007256-200232010-00003

[9] Singh, A., & Singh, J. (2017). The effects of wobble board and swiss ball training on the variable of balance among school students.

[10] Ricotti, L. (2011). Static and dynamic balance in young athletes. J. Hum. Sport Exerc. 6(4):616- 628.

[11] Ogaya, S., Ikezoe, T., Soda, N., & Ichihashi, N. (2011). Effects of balance training using wobble boards in the elderly. The Journal of Strength & Conditioning Research, 25(9), 2616-2622.

[12] Onigbinde, A. T., Awotidebe, T., & Awosika, H. (2009). Effect of 6 weeks wobble board exercises on static and dynamic balance of stroke survivors. Technology and health care, 17(5-6), 387-392.

[13] K Satheesh Kumar, S Arumugam, (2018). Influence of core board training on selected fitness variables among school boys. Journal of emerging technologies and innovative research, 5(7) Pp: 606-609.

[14] Arumugam, S. (2018). Effect of proprioceptive training on dynamic and speed among soccer athletes. Journal of Emerging Technologies and Innovative Research, 5 (7) Pp: 312-316.