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Different proportion of moderate high and high intensity interval training on dribbling performance among college level soccer players

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Abstract

Soccer is really beautiful game because of the high level Physical work and fluidity. The aim of the study was to find out the effect of twelve weeks high and moderate high intensity endurance training on dribbling performance among college level soccer players. To achieve the purpose forty five (N=45, age 20-25) men soccer players were selected from YMCA college of Physical Education and divided in to three equal groups. Group I [n=15, Underwent high intensity interval training (HIIT), 60 min/day/3 days / week/ 12 weeks], Group II [n=15, underwent moderate high intensity interval training (MHIIT) 60 min/day/3 days / week/ 12 weeks], Group III acted as control. 2% rule was implemented to increase the training intensity every two weeks starts from 75% for (MHIIT), 85% for (HIIT). The data were collected before and after the intervention on dribbling performance which was assessed by Mor- Christian general soccer ability test. Collected data were statistically analyzed by using one way ANOVA, 0.05 level of confidence was fixed to test the significance. When the obtained 'F' ratio was significant, Scheffe's post hoc test was used to find out the paired mean difference. The Results of the study Reveals that, there was a significant difference between pre and post test mean of two experimental groups due the high and moderate high intensity Interval training. However high intensity training ($t=9.72^*$) shows better improvement than moderate high intensity training ($t=8.44^*$). And there was a significant difference between groups on Dribbling performance ($f=7.19^*$). The Scheff's post hoc result reveals that, there was significant mean difference between High intensity training and control group, and Moderate High intensity training and control groups. Hence it was concluded that, high intensity interval training is the best way to manage the game pressure in respect to dribbling, running and tackling in modern soccer game.

Keywords: Aerobic, high intensity, moderate high intensity, resting heart rate

Introduction

Football is a universal game which increases popularity through the tempo and fluidity¹. Football match and training stresses to the physical and physiological systems, which can vary depending on the intensity and duration of the work. This is Important that players are capable of exercising at high intensities for prolonged periods of time. Aerobic is the dominant energy system in soccer and international players' covers approximately 12 km, however the high intensity running and sprinting 3-6 sec dominates the game.

A challenge in sport physiology is how to improve athletic performance. In recent years, short duration exercise (10–30 s) maximal/near maximal bursts, also termed speed endurance training, has emerged as an innovative and time efficient strategy to induce rapid physiological remodeling and enhance work capacity^[2]. Soccer is played on a tremendous outdoor area and over a longer duration, which requires running greater distances with involves high intensity sprint activities for a huge quantity of the game and energy release¹. First step for studying such processes would be to select anaerobic training programme in different work/rest profiles and then determine how the different proportion of intensity based training affects performance.

Endurance refers to the capacity of retaining performance quality in particular duration. The performance of endurance attributes to the central nervous system function, maximum oxygen uptake and the body's energy reserves and utilization.

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In several ballgames, skills, Physiological and physical performance of an individual player are the most important factors that contribute to the competitive success of a whole team. Physiological and physical changes are take place according to the energy based training. In respect to the physical performance the endurance requirements of contact games seems to be rather similar (Hakkinen, 1989, Viitasalo *et al.*, 1987).

During the soccer game aerobic energy system works majority of the time, but the increased tempo and the pressure tolerate by anaerobic energy system. In soccer game player who sprint, run jump faster with smaller recovery period often dominate the game. So the players need to prepare according to the nature and energy system of the game. To succeed in tactical game plan players need to improve fitness. Therefore the traditional training for aerobic and anaerobic energy system with intensity controlled based may lead to good physical preparation. Achieving the fitness goals through practicing traditional Aerobic training may solely develop the main objective of the training.

However, the changes in high-intensity exercise described in populations not accustomed to intermittent or multiple-sprint activities are not very elucidative for understanding how team sport athletes, such as football players, do respond to anaerobic training. Also, whilst it is well established that specifically designed speed or repeated sprint drills exert positive effects on performance-related fitness variables, in particular repeated sprint ability (RSA) [3], less evident are the advantages of speed endurance training on soccer-specific physical qualities.

High intensity training

HIIT is the concept where one performs a short burst of high-intensity (or max-intensity) exercise followed by a brief low-intensity activity, repeatedly, until too exhausted to continue. Though there is no universal HIIT session duration, these intense workouts typically last under 30 minutes, with times varying based on a participant's current fitness level, at an intensity level well above aerobic threshold and the intensity at 90-95 percentage and ending 100% MHR..HIIT workouts provide improved athletic capacity and as well as improved glucose metabolism. (Wikipedia 2018, Benson, R., and Connolly, D.2011).

Moderate high intensity training

MHIT For moderate-intensity physical activity, a person's THR should be 75 to 85 per cent of their maximum heart rate. The maximum rate is based on a person's age. An estimate of a person's maximum heart rate can be calculated as 220 beats per minute (bpm) minus your age.

Objective of the study

Physiological reference states that, soccer is aerobic nature of game which the player covers 12 km per game. But soccer match may tolerate by the high intensity running and sprinting performance. Dribbling is one of the main skills to transfer the ball. In soccer dribbling in a under pressure situation and within the many defenders is the key to succeed in game situation. And heart rate and blood pressure are closely related to VO₂ max which mainly influences in aerobic respiration. So the present study intent to assess the effect of high and moderate intensity traditional interval training on Dribbling performance among college level soccer players.

Methodology

To achieve the purpose forty five (N=45, age 20-25) men soccer players were selected from YMCA college of Physical Education and divided in to three equal groups. Group I [n=15, Underwent moderate high intensity interval training (MHIIT), 60 min/day/3 days / week/ 12 weeks], Group II [n=15, underwent high intensity interval training (HIIT) 60 min/day/3 days / week/ 12 weeks], Group III acted as control. 2% rule was implemented to increase the training intensity every two weeks starts from 75% for (MHIIT), 85% for (HIIT). The data were collected before and after the intervention on dribbling performance which was assessed by Mor- Christian general soccer ability test. Collected data were statistically analyzed by using one way ANOVA, 0.05 level of confidence was fixed to test the significance. When the obtained 'F' ratio was significant, Scheffe's post hoc test was used to find out the paired mean difference.

Results

Table 1: comparison of pre and post test on dribbling performance of high and moderate high intensity interval training and control groups

Group		Mean	SD	SE	't'
Group I (HIIT)	Pre	15.46	1.65	0.43	9.72*
	Post	13.97	1.82	0.47	
Group II (MHIIT)	Pre	15.61	1.65	0.42	8.44*
	Post	14.54	1.91	0.49	
Control	Pre	16.28	1.31	0.34	1.29
	Post	16.19	1.36	0.35	

*Significant at .05 level of confidence. With df (1, 14) is 1.76

Table 2: analysis of variance on dribbling performance of high and moderate high intensity training and control groups

	HIIT	MHIIT	Control Group	SOV	Sum of Squares	df	Mean squares	'F' ratio
Post test	13.97	14.54	16.24	B	41.93	2	20.96	7.19*
Mean SD	1.82	1.91	1.93	W	122.49	42	2.92	

*table value at 0.05 level of confidence with (2, 42) is 3.21

Table 3: scheffe's post hog test on dribbling performance among high and moderate high intensity training and control groups

HIIT	MHIIT	Control	MD	CI
13.97	14.54		0.57	1.57
13.97		16.24	2.27*	
	14.54	16.24	1.7*	

*at 0.05 level

Table 1 shows that there was a significant difference between pre and post test mean of two experimental groups due the high and moderate high intensity Interval training. However high intensity training (t= 9.72*) shows better improvement than moderate high intensity training (t=8.44*). The table 2 shows there was a significant difference between groups on Dribbling performance (f=7.19*). Hence the Scheffe's post hoc result reveals that, there was significant mean difference between High intensity training and control group, and Moderate High intensity training and control groups.

Discussion

Football is a most precious game in the world and the physiological demands of soccer are complex. The need to include a number of components of fitness into the training

programmes of soccer players would indicate that the exercise prescription should be multi-dimensional. This complexity is partly a consequence of the nature of the exercise pattern. The requirement for frequent changes in both the speed of movement (e.g., walking, jogging, high intensity running, and (sprinting) and direction, makes the activity profile intermittent^[4]. The result of the present study reveals that the high intensity interval training highly influences the dribbling performance. Dribbling in and under pressure and in fatigue state can be affect the quality of the soccer game. The rising advances in biosciences have also provided additional knowledge on the High intensity interval training towards muscle fiber recruitment and increase the explosive movements which signaling mechanisms underpinning exercise-induced skeletal muscle adaptation. Particularly, it was revealed how different training interventions promote the transcription of selected genes relevant for enhancing the physiological systems that limit specific athletic performances^[2, 3]. Thus, genetic and molecular responses to exercise, training adaptations and thereafter performance improvements appear to be highly specific to the stimulus applied (i.e. exercise mode, intensity, volume and frequency)^[2, 3].

Performance enhancement is highly depends on the science based training and nutrition. Hence the present intervention reveals that, all two types of training influence the dribbling performance however high intensity training better than the moderate intensity training. This may influence of performance enhancement on speed endurance which improve the quality of dribbling and handling under pressure situation. Technical/tactical sessions are frequently the priority in the training plan and will therefore often take priority over all other training activities. However, it remains unclear which peculiar features of a training stimulus are required to induce optimal adaptations in targeted areas. A potential key element for determining the adaptive response is the duration of the recovery intervals, or the exercise recovery ratio^[5, 6].

Conclusion

Hence it was concluded that, high intensity interval training is the best way to manage the game pressure than moderate high intensity interval training in respect to dribbling, running and tackling in modern soccer game.

Recommendation

Designing the intensity based session within the frequent technical/and tactical session can be positively influence on Dribbling performance and able to handle the high game pressure.

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