INFLUENCE OF AEROBIC TRAINING ON MUSCULAR STRENGTH ENDURANCE OF FOOTBALL PLAYERS

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Abstract

The purpose of this study was to examine the effect of twelve weeks of aerobic training on muscular strength endurance of football players. To achieve the purpose of the study thirty football players were selected as subjects and their age ranged from 17to 20 years. The subjects were conveniently selected. The training regimen lasted for twelve weeks. The selected dependent variables were assessed using standard tests and procedures, before and after the training regimen. Analysis of covariance was used to determine the significant difference existing between pretest and posttest on selected dependent variables. The results suggested that aerobic training is significantly improved the muscular strength endurance of football players.

Keywords: Aerobic training, muscle strength, football players.

Introduction

Muscle strength is one of the most important skills of fitness. Those skills should be available to soccer players; they have to be strong in most large muscle samples in the body(Suchomel, Nimphius & Stone 2016), to overcome a number of factors imposed by the nature of the game on which the movement and the physical performance depends on ,in soccer practice (Halson 2014). The results of some researches and studies (Akubat, Patel, Barrett & Abt 2012; Ali 2011; Garganta 2009; Janelle & Hillman 2003), showed that muscle strength is a fundamental factor which (Carroll, 1993) develops the motor performance of soccer players, because of their association and impact to other physical abilities related to performance such as speed, endurance, agility and flexibility(Franks & Goodman 1986).

Heavy weight training has been for a long time a subject of controversy among specialists in the preparation and training of the development of muscle strength in soccer players(Zatsiorsky & Kraemer 2006). Some of them (Garganta 2009)opposed that training with heavy weights reduces their motor speed , the range of motor joints as well and causes the degree of stiffness in the muscles. As an objective means of developing the different types of muscle strength that any player needs and which helps in developing physical abilities and

improving performance. Most of the results indicated that heavy weight training has become an effective and necessary tool for development of different types of muscle strength (McBride, TriplettMcBride, Davie & Newton 2002). It has direct and essential impact on the degree of development and improvement of all elements of overall fitness which is considered to be the fundamental pillar of motor capacity and speed (Serrano, Shahidian, Sampaio & Leite 2013). Heavy weight training does not only affect the musculoskeletal system, but extends to the physiological positive effect on functional efficiency such as the heart and the circulatory and ventricular organs (Nystoriak & Bhatnagar 2018; Vigorito & Giallauria 2014). Regarding the process of heavy weight training, in the basis is a physiological process aimed at improvement of the functional efficiency of the body(Mayer et al. 2011). so its physiological effect leads to an increase of muscle inflation, which helps stimulate blood circulation and increasing blood flow and muscle retention(Kang, Lin, Kuppermann, Melero-Martin & Bischoff 2017; Loos, Opdenakker, Van Damme & Proost 2009),the wideness of capillaries, improvement of oxygen uptake (O2) and aerobic and anaerobic energy production as well (Bassett & Howley 2000; Bogdanis 2012). 35 Muscle strength is one of the most important physical qualities, and is considered to be an important physical characteristic, physiological ability and a dynamic element among the other physical characteristics of the soccer player (Akenhead 2014). The development of muscle strength in heavy weights in soccer is a technique based on exercises that require a rapid muscle strength in the sense of reaching maximum strength in a short period of time during implementation(Silva, Nassis & Rebelo 2015) ; but physiologically is the muscle efficiency to produce the anaerobic energy used by the player to perform strong and fast movements for few seconds(Zemková & Hamar 2018). Many studies confirm that heavy weight training aims at improving the functional efficiency of the body and increase the size of the rib cage and the efficiency of the breathing muscles (Ali 2011; Mayer et al. 2011; Russo, Santarelli & O'Rourke 2017; Serrano et al. 2013; Silva et al. 2015). Muscle training also helps the heart to increase its activity by stimulating the blood circulation in increasing blood flow and improving oxygen utilization(Delp et al. 2001; Joyner & Casey 2015) and to improve aerobic energy production (Yousuf Lazem Kemash - Saleh Bashir Saad 2006). In fact, the Algerian soccer sport lacks of well-planned and carefully prepared heavy weight training programs such as supplementary exercises or integration into physical preparation stages. We can confirm that at least 90 % of the sports teams did not undergo any weight training programs throughout the training seasons, focused on muscle strength development , and researchers were able to determine the extent of knowledge of these trainers(Belkadi et al. 2015) about

the nature of weight training. The problem is not in heavy weight training in general, but in the chosen and appropriate exercises, which are focused on suitable muscle work of a soccer player. The lack of knowledge of these changes and adaptation that occurs in the functional body systems as a result of these exercises because the scientific researches and previous studies confirm the correlation between the functions of the heart, lungs and blood circulation and the muscular system in the degree of consumption of oxygen and in the production of energy

Materials and Methods

For the purpose of this study, thirty football players were recruited as subjects with the consent from their parents and their age ranged from 8 to 12 years. The selected dependent variable muscular strength endurance was assessed by sits and reach test, before and after the training regimen. Before starting the training programme, first few weeks were given priority for improving the general fitness qualities of the participants. The duration of the study was restricted to 12 weeks and the number of sessions per week was confined as six. The intensity of the training was fixed according to the consideration of the heart rate of the individuals. The participants were continued their practice for forty minutes duration and they were gone for walking in between the rest period for relaxation. The intensities and the load of the training were increased, according to the adaptation conditions of the subjects. After each three weeks the intensity of the experimental groups were increased.

The general warming up was given to the training groups in a similar way. The stretching exercise and the dynamic movements were involved in the warming up activities. The ultimate aims of these skills were increased the core temperature of the body and prepare the subjects for further activities as well as lead to reduce the chance of injuries. All the participants were strictly involved in cooling down process and it was extended up to ten to fifteen minutes duration. The post-test design used for the study. The data collected from the groups prior to and after experimentation on muscular strength endurance was statistically examined with the help of SPSS package.

Results and Discussion

The data were collected before beginning the training as well as after the completion of the training for the subjects and it is clear from the results that the pre-test was 32.60, and the post test score was 35.60, which is higher than the table value of 3.18 for the df 2 and 57. Hence the result of the study highlights that there was a significant difference on

muscular strength endurance among the groups before and after the training. It was concluding from the result of the study that the aerobic with resistance training are significantly improved the muscular strength endurance of football players. Scheffe's test was applied as a statistical tool for post hoc test.

Previous studies have reported the beneficial effects of aerobic with resistance training on strength endurance. The results of the present study are also in line with the observation by Mazzzetti et al., (2000) that the changes in maximal strength, power and muscular endurance after 12 weeks of periodized resistance training and found greater strength gain. Other studies demonstrate an enhancement of motor performance associated with plyometric training combined with weight training or the superiority of plyometrics, compared to other methods of training (Adams et al., 1992) [1]. A wide variety of training studies shows that plyometric can improve muscular strength. It appears also that a relatively small amount of plyometric training is required to improve performance in these tasks. Just one or two types of plyometric exercise completed 1-3 times a week for 6-12 weeks can significantly improve motor performance (Blackey, Gehri, et al., 1998; Matavulj, et al., 2001) [6, 7]. Plyometric exercises can be used to develop power in any sport that involves sprinting, jumping, quick changes of direction and kicking etc. They are most effective when completed in conjunction with a suitable strength and aerobic raining program.

Conclusion

The result of this study demonstrated that, the aerobic training has significant impact on muscular strength endurance of football players. Hence, it is suggested that physical fitness components are very important or higher performance in football game, depending upon the demand of the game each factor of physical fitness should be optimally developed.

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