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Muscle Types, Strength Gains, and Energy Systems what relationships in Soccer game

Zerf Mohammed *

Physical Education Institute Laboratory OPAPS, University of Mostaganem, Mostaganem 27000, Algeria.

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Abstract: Soccer is the most popular sport in the world and is played regardless of such factors as sport performance. Whereas there has been much debate as to optimal the dominant energy systems where some authors confirm that soccer is aerobic activities (Wener W.K.et al, 2016) based on the soccer match which is aerobically fueled (Marc Briggs, 2013) while other authors affirm that Soccer is aerobic-anaerobic sport requiring players to display great muscular power with the capacity to produce energy (Jens Bangsbo,et al , 2014)and (T. Reilly,et al, 2013) according to(Bompa, Tudor,et al , 2015) that Dominant energy systems: aerobic, anaerobic lactic, anaerobic alactic. The purpose of this paper therefore was to conduct analysis based on tonic muscle in the lack of lab test whereas the Muscle tone is contractile tension that readiness the muscles to perform movement which requires The measured phasic, a rapid contraction in response to a high degree of stretch; and postural tone, a prolonged (Jo E. et al, 2007). Based on that we used killy test "isometric knee extensor endurance" and Surensen-Biering test "isometric endurance of trunk extensor" (Outrequin J.et al, 2011) comparing to Couper (vo2max) and RAST (anaerobic) tests (Meckel Y, et al., 2009) to determine the types of muscles, “slow” and “fast,” developed by Our 12 footballers under 18 years based on their training. According to the statistical analysis based on Regression as a method we confirm that soccer dominant energy systems is aerobic sport due to the concentration of the coach in developing Strength lower body.

Keywords: soccer, Muscle Types, Strength Gains, Energy Systems, Soccer game.

1 Introduction

Soccer remains the world's most popular form of sport and an integral part of the social and cultural fabric of society in many countries according to (A. Mark Williams, 2013) Similarly, the prediction of performance is more difficult by far in soccer than in individual sports (Thomas Reilly, A. Mark Williams, 2003) A coordinated series of comprehensive, research-based reviews on factors underlying the performance (Neil Armstrong, Alison M. McManus, 2011) dominant energy systems we confirm that there are three major types of exercise, aerobic, anaerobic, and combined (for an explanation of aerobic and anaerobic energy systems (Douglas McKeag, James L. Moeller, 2007)

Whereas there has been much debate as to optimal the dominant energy systems where some authors confirm that soccer is aerobic activities (Wener W.K. Hoeger, Sharon A. Hoeger, 2016) justify on the basis that soccer match is aerobically fueled, as the majority of the activity is concerned with movement off the ball (Marc Briggs, 2013) while other authors affirm that Soccer is an aerobic—anaerobic sport requiring players to display great muscular power, together with the capacity to produce energy according to (Jens Bangsbo, Thomas Reilly, A Mark Williams , 2014)and (T. Reilly, M. Hughes, A. Lees, 2013) confirmed by (Bompa, Tudor, Buzzichelli, Carlo , 2015) that Dominant energy systems: aerobic, anaerobic lactic, anaerobic alactic. The purpose of this paper therefore was to conduct a meta-analysis based on "tonic" muscle system in the lack of laboratory test where we have uses killy test "isometric knee extensor endurance" and Surensen-Biering test "isometric endurance of trunk extensor" (Outrequin J.et al, 2011)comparing to Couper (vo2max) and RAST (anaerobic) tests (Meckel Y, Machnai O, Eliakim A., 2009) Our data analysis comprised 12 footballers under 18 years tested to examine the hypothesis Is soccer an aerobic or anaerobic sport. According to the statistical analysis based on Regression as a method we confirm that soccer dominant energy systems is aerobic sport due to develop of Strength lower body.

2 Methodology

* Corresponding author E-mail: biomeca.zerf@outlook.com

2.1 Participants and procedure

The participants were 12 soccer male's players aged 17–18 years (mean 17.6 years, s=2.8). representing the team widade Mostaganem under 18 years Champion Oran for the year 2014-15.
Our experience comes right at the end of physical preparation testing sessions were integrated as selections test to motivate players divided into 2 days after warming up for the proper conduct of the experiment to the players and coach a written undertaking.

Measures

RAST Test

The RAST Test by Draper and Whyte (1997) (MARCOS, R. Q. et al, 2013) developed the Running-based Anaerobic Sprint Test (RAST) to test a runner's anaerobic performance. Where said ((Cissik, John, Dawes, Jay, 2015)is a field test for assessing anaerobic capacity reproducing the basic effort/movement pattern of most intermittent sports confirmed by (Dardouri W, Gharbi Z, Selmi MA, SassiRH, Moalla W, Chamari K, Souissi N, 2014) and (Castagna C, Manzi V, D'Ottavio S, Annino G, Padua E, Bishop D., 2007). The subjects had to undertake six 35 meter sprints with 10 seconds recovery between each sprint. the analysis would indicate an improvement in the athlete's anaerobic capacity (Dardouri W et al, 2014).

Mini-Cooper VO2 max Test

The Cooper Test is used to monitor the development of the athlete's aerobic endurance and to obtain an estimate of their VO2 max (Mikael Krogerus, Roman Tschäppeler, 2014) and (Winnick, Joseph P.,Short, Francis, 214).

Biering-Sorensen: isometric endurance of trunk extensor

In the prone position, the legs are fixed subject to the anterior superior iliac spines (EAIS) by straps at the ankles and hips, upper body with no support. The arms are crossed on his chest and the hands rest on his shoulders. The test measures the hold time of the sternum of the subject above a virtual horizontal line extending. (Outrequin J.et al, 2011)

killy test "isometric knee extensor endurance"

The subject pressed his back against the wall. Hips, knees and ankles are flexed to 90 °. The arms are crossed on his chest, hands resting on the shoulders. The test measures the length of maintained sitting without a chair leaning control wall. (Outrequin J.et al, 2011).

3 Results

Descriptive analyses

Our statistical study it is based on three hypotheses:
Which dominate Energy Systems practice our coach and on what basis we can predict in the lack of laboratory tests.
To test our problematic, we have tested the relation of training with the tendency of the muscular tonic base on the regression as means statistics to predict our two probabilities:

Table 1 shows the Descriptive Statistics and them Correlations

Variables		RAST Test	Mini-Cooper	Killy test	Biering-Sorensen
Pearson Correlation	RAST Test	1	,734**	,833**	,825**
	Mini-Cooper	,734**	1	,924**	,890**
	Killy test	,833**	,924**	1	,971**
	Biering-Sorensen	,825**	,890**	,971**	1
Mean ± SD	RAST Test	4,1492± ,07751			
	Mini-Cooper	1379,1667±154,94623			
	Killy test	1,3358±,20562			
	Biering-Sorensen	2,3408±,17333			

From the table 1 were the Correlation analyses used initially to examine the relationship between field test used in this study our person correlation is strong positive significant at the 0.01 level (2-tailed). where those relationships were confirmed by Reilly and Drust (1997) in small samples of elite and recreational (both n = 8) female soccer players according to (Warwick Spinks, Thomas Reilly, Aron Murphy , 2002).Which we Reflect the balance between aerobic and anaerobic energy according to (Patricia A. Deuster, Anita Singh, Pierre A. Pelletier, 2007) where the Training programs are available that develop primarily either the aerobic and anaerobic or all three energy systems according to (Edward L. Fox, Richard W. Bowers, Merle L. Foss, 1989)and (Paul Gamble, 2013) .

Through table 2 where The two independent variables (Killy test - Biering-Sorensen) were entered in the sequential regression analysis to predict the Dependent Variable: RAST Test or anaerobic power we note that the regression method,

which is, used in a manner model 1 is the Stepwise where the program has shown that the Killy test as endurance test is Predictors variables in the equation of multiple linear regression were all compare by F, T and R are significant. from these results we line with the confirmation of (A. Mark Williams, 2013) that Relationships is liner between repeated sprint testing, speed and endurance in soccer players. In our case we confirm that dominate energy systems is aerobic from that we agreed the confirmation of (Hoffman, Jay, 2014) the physiological adaptations during prolonged training relate to an improved ability to generate more energy in the case of our coach the Adaptation chosen have tend to training aerobic endurance thing confirmed by (Nick Draper, Christopher Hodgson, 2008).

Table 2 shows the probability soccer game is anaerobic dominant energy system

Model	Variables Entered	Variables Removed	Method	R Square Change	F Change	Sig. F Change	T	Sig.
1	Killy test	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).	,693[a]	22,580	,001	4,752	,001
a. Dependent Variable: RAST Test								
a. Predictors: (Constant), Killy test								

Table 3 shows the probability soccer game is aerobic dominant energy system

Model	Variables Entered	Variables Removed	Method	R Square Change	F Change	Sig. F Change	T	Sig.
1	Killy test	.	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).	,854[a]	58,45	,000	7,646	,000
a. Dependent Variable : Mini-Cooper								
a. Predictors: (Constant), Killy test								

Through table 3 where The two independent variables (Killy test - Biering-Sorensen) were entered in the sequential regression analysis to predict the Dependent Variable: Mini-Cooper Test or aerobic power we note that the regression method, which is, used in a manner model 1 is the Stepwise where the program has shown that the Killy test is Predictors variables in the equation of multiple linear regression were all compare by F, T and R are significant. Where our results line with the confirmation of (A. Mark Williams, 2013) that Relationships between repeated sprint testing, speed and endurance is liner in soccer players.in our case we referred to Relationship between Training Duration and Improvement in Endurance (Donald T. Kirkendall, 2011).

from the approved we agreed that our coach soccer favors the requires the lower body base on the aerobic energy system, and endurance where our results line with the confirmation that this method will improve the relationship with method that we train our soccer performance according to (Greg Gatz, 2009).

Discussion

Our results confirm that our coach improve the endurance for them soccer player whereas (G. Lee Powell, 2010) confirms this method affecting the muscle fiber properties. where the two major types of skeletal muscle fibre, slow or fast (Marcus Jacobson, 2013) which allow the body to move and maintain posture (Competition Science Vision, 2004). Where the medium fibers muscles turned to fibers slow muscles (Paavo V. Komi , 2011) due to the training which promotes the increase who we confirm that our sample is more aerobic character than anaerobic dominant energy system from the approved we line with the confirmation of (Nick Draper, Helen Marshall, 2014)that Adaptations of skeletal muscle fibres size and type are based on The suited aerobic work which develop more mitochondria, myoglobin and more blood (John Honeybourne, Michael Hill, Helen Moors, 2000)

Whereas These conditions as modality of training used by our coach develop the type I than fibres type II. (Barbara Young, Phillip Woodford, Geraldine O'Dowd, 2013)

Future research

The generalizability of the current findings is somewhat limited by the small number of sample and the laboratory tests. Although an important of this study was to detect dominant energy system which reflects ideology of practical choice by our coaches. From that We suggest:

A comparative study neuromuscular, a comparative study neuromuscular biochip, a comparative study with laboratory tests ٭Confirmation of the results by expanding the search area.

Practical implications and conclusion

Taken as a whole, this study supports the use of detect dominant energy system, our findings suggest that our coach develop the type I than fibres type II. (Barbara Young, Philip Woodford, Geraldine O'Dowd, 2013). Where the Effects of high and Iowa intensity exercise training can decrease the anaerobic capacity (Owen Anderson, 2013) from that we recommend our coach to develop the anaerobic capacity because the elite athletes, in mixed sports competitions, like football, have high aerobic requirements throughout a game and extensive anaerobic demands to optimal them performance according to (Hermann O. Mayr, Stefano Zaffagnini, 2015).

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