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RESEARCH ARTICLE

Which Relationships Predict the optimal dominant energy systems among Algerian Attackers in the lack of Muscle biopsy test

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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 mixed 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 The dominant energy systems used in soccer are anaerobic lactic (50 percent), alactic (40 percent), and aerobic (10 percent). The purpose of this paper therefore was to conduct analysis based on tonic muscle in the lack of biopsy test among our institute based on the background that Muscle tone 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). Our assuming was based on killy test "isometric knee extensor endurance" and Surense-Biering test "isometric endurance of trunk extensor" (Outrequin J. et al, 2011) comparing to values Couper (vo2max) and RAST (anaerobic) tests (Meckel Y, et al., 2009) to determine the types of muscles, "slow" and "fast," developed by Our 12 attackers under 18 years based on their sporting past training where the most important physical capacity for an attacking soccer in our opinion is speed — reaction speed, acceleration, power and quick limb whereas (Jay Martin, 2011) summaries in Speed and anaerobic capacity which they are a necessary physical criteria movements among the attackers. According to the statistical analysis based on Regression as a method we confirm that our Algerian attackers develop more aerobic dominant energy systems due to the concentration of the coach in developing Strength lower body where these practices does not correspond in our opinion with the demands of modern football, which is based on the requirements positions.

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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 mixed 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) thing confirmed statistically by (Bompa, Tudor, Buzzichelli, Carlo, 2015) The dominant energy systems used in soccer are anaerobic lactic (50 percent), alactic (40 percent), and aerobic (10 percent). The purpose of this paper therefore was to conduct a meta-analysis based on effect of the post-game training on the "tonic" muscle system in the lack of laboratory test as biopsy to determine the fiber types that are solicited by training where we used killy test "isometric knee extensor endurance" and Surenson-Biering test "isometric endurance of trunk extensor" (Outrequin J. et al, 2011) and Couper to calculate (vo2max) and RAST to calculate the (anaerobic) tests (Meckel Y, Machnai O, Eliakim A., 2009) to examine the impact of training uniform on the development of physical abilities among Algerian attackers. where (ARNI ARNASON, STEFAN B. SIGURDSSON, ARNI GUDMUNDSSON, INGAR HOLME, LARS ENGBRETTSEN, and ROALD BAHR, 204) confirmed that only minor differences were observed between defenders, midfield players, and attackers which affect the players' ability team performance. Based on the statistical analysis where we chose the Regression as a method we confirm that our attacker's develop endurance aerobic due to quantity red fibers which are characterized by highest oxidative capacity. (Ommo Grupe, Dietrich Kurz, Johannes M. Teipel, 2012)

Methodology:-

Participants and procedure

The participants were 12 attackers' male's players aged 17–18 years (mean 17.6 years, s=2.8). representing the team weeded Mostaganem under 18 years Champion Oran for the year 2014-15.

Our experience comes right at the end of physical preparation the tests sessions were integrated as selections test to motivate players divided into 2 days after warming up for the proper conduct of the experiment we assigned a written undertaking to the players and coach.

Measures:-

Our assessments were based on:-

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 (EASIS) 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)

Results:-

Descriptive analyses:-

Our statistical study it is based on three hypotheses:-

- The uniform training of our coach Promote the development of endurance capacity
- The development of general endurance in favor of specific endurance Promote Fiber turned into red fibers

To tested 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 $\pm$ SD	RAST Test	4,1492 $\pm$,07751			
	Mini-Cooper	1379,1667 $\pm$ 154,94623			
	Killy test	1,3358 $\pm$,20562			
	Biering-Sorensen	2,3408 $\pm$,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). Our results line with finds Reilly and Drust (1997) according to (Warwick Spinks, Thomas Reilly, Aron Murphy , 2002).Where this result we confirm that soccer dominant energy balance between aerobic and anaerobic according to (Patricia A. Deuster, Anita Singh, Pierre A. Pelletier, 2007) whereas (Edward L. Fox, Richard W. Bowers, Merle L. Foss, 1989)and (Paul Gamble, 2013) confirm our question what relationships can we predict among Algerian attackers training? as Training programs are available that develop primarily either the aerobic and anaerobic or all three energy systems?. To test hypotheses, we have selected the Regression as a method

Table2 shows the probability attackers training develop anaerobic dominant energy system.

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

Through table 2 where The two independent variables (Killy test - Biering-Sorensen) were entered in the sequential regression analysis to predict the Dependent Variable: Dominant energy system 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 at level $P \leq .001$. 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 on the plan training we confirm that dominate energy systems is aerobic based on the confirmation of (Hoffman, Jay, 2014) that 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 aerobic endurance as objective thing confirmed by (Nick Draper, Christopher Hodgson, 2008). on the plant physiology we agreed (Thomas E. Hyde, Marianne S. Gengenbach , 2007) that Classification of fiber types is based on their color, isolated twitch speed, and major mode of metabolism. Whereas integrated RAST Test to assassin anaerobic capacity as a variable Dependent we confirm

training of our forwards develop the red fibers according to (Terry J. Housh, Dona J. Housh, Herbert A. DeVries, 2006) that the red fibers are considered better suited to long-term, slow contractions, as required of postural whereas (Gloria Averbuch, Nancy Clark, 2015) confirm that Slow-twitch fibers expand best on the endurance exercise.

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

Model	Variables Entered	Variables Removed	Method	R Square Change	F Change	Sig. Change	F T	Sig.
1	Killy test	.	Stepwise (Criteria: Probability-of-F-to-enter $\leq$,050, Probability-of-F-to-remove $\geq$,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: Dominant energy system 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 the recommendation that soccer sport, involve both aerobic endurance and anaerobic sprinting according to (Frank F Schmidt , 2000) where our coach soccer favors the aerobic energy system as endurance capacity where our results line with the confirmation that the improve performance is the results that we train our soccer 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^s 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 more 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).

References:-

1. A. Mark Williams. (2013). Science and Soccer: Developing Elite Performers. US: Routledge.
2. A. Mark Williams. (2013). Science and Soccer: Developing Elite Performers. US: Routledge.
3. ARNI ARNASON, STEFAN B. SIGURDSSON, ARNI GUDMUNDSSON, INGAR HOLME, LARS ENGBRETSEN, and ROALD BAHR. (204). Physical Fitness, Injuries, and Team Performance in Soccer. MEDICINE & SCIENCE IN SPORTS & EXERCISE, 278-285. doi:10.1249/01.MSS.0000113478.92945.CA
4. Barbara Young, Phillip Woodford, Geraldine O'Dowd. (2013). Wheater's Functional Histology. UK: Elsevier Health Sciences.
5. Bompá, Tudor, Buzzichelli, Carlo . (2015). Periodization Training for Sports, 3E. US: Human Kinetics.
6. Castagna C, Manzi V, D'Ottavio S, Annino G, Padua E, Bishop D. (2007). Relationbetween maximal aerobic power and theability to repeat sprints in youngbasketball players. J Strength Cond Res, 21(4), 1172-1176.
7. Cissik, John, Dawes, Jay. (2015). Maximum Interval Training. USA: Human Kinetics.
8. Competition Science Vision. (2004). Competition Science Vision. USA: Competition Science Vision Vol. 7, n° 82 - Magazine.
9. Dardouri W et al. (2014). Reliability and validity of a new maximal anaerobic shuttle running test. Int J Sports Med., 35(4), 310-5.
10. Dardouri W, Gharbi Z, Selmi MA, SassiRH, Moalla W, Chamari K, Souissi N. (2014). Reliability and validity of a new maximalanaerobic shuttle running test. Int JSports Med, 35(4), 310-315.
11. Donald T. Kirkendall. (2011). The Complete Guide to Soccer Fitness and Injury. US: University of north carolain press.
12. Douglas McKeag, James L. Moeller. (2007). ACSM's Primary Care Sports Medicine. US: Wolters Kluwer Health.
13. Edward L. Fox, Richard W. Bowers, Merle L. Foss. (1989). The physiological basis of physical education and athletics. US: Wm. C. Brown.
14. Frank F Schmidt . (2000). CliffsQuickReview Biochemistry II. US: IDG BOOKS.
15. G. Lee Powell. (2010). Speed for Soccer. UK: Lulu.com.
16. Gloria Averbuch, Nancy Clark. (2015). Food Guide for Women's Soccer: Tips & Recipes from the Pros. UK: Meyer & Meyer Verlag.
17. Greg Gatz. (2009). Complete Conditioning for Soccer. EUR: Human Kinetics.
18. Hermann O. Mayr, Stefano Zaffagnini. (2015). Prevention of Injuries and Overuse in Sports: Directory for Physicians. UK: Springer Shop.
19. Hoffman, Jay. (2014). Physiological Aspects of Sport Training and Performance. US: Human Kinetics.
20. Jay Martin. (2011). The Best of Soccer Journal: An NSCAA Guide to Soccer Coaching Excellence. UK: Meyer & Meyer Verlag.
21. Jens Bangsbo, Thomas Reilly, A Mark Williams . (2014). Science and Football III . US: Routledge.
22. Jo E. Cowden, Carol C. Torrey. (2007). Jo E. Cowden, Carol C. Torrey - 2007. US: Charles C Thomas Publisher.
23. John Honeybourne, Michael Hill, Helen Moors. (2000). Advanced Physical Education and Sport for AS-level. USA: Nelson Thornes.
24. Marc Briggs. (2013). Training for Soccer Players. UK: Marc Briggs.
25. MARCOS, R. Q. et al. (2013). Validity of the RAST for evaluating anaerobic power performance as compared to Wingate test in cycling athletes. Journal of Physical Education, 19 (4), 696-702.
26. Marcus Jacobson. (2013). Developmental Neurobiology. UK: Springer Shop.
27. Meckel Y, Machnai O, Eliakim A. (2009). Relationship among repeated sprint tests, aerobic fitness, and anaerobic fitness in elite adolescent soccer players. J Strength Cond Res, 23(1), 163-9. doi:10.1519/JSC.0b013e31818b9651
28. Mikael Krogerus, Roman Tschäppeler. (2014). The Test Book: 64 Tools to Lead You to Success. UK: Profile Books Ltd.
29. Neil Armstrong, Alison M. McManus. (2011). The Elite Young Athlete. Swithzerland: Karger Publishers.
30. Nick Draper, Christopher Hodgson. (2008). Adventure Sport Physiology. US: Wiley.com.
31. Nick Draper, Helen Marshall. (2014). Exercise Physiology: For Health and Sports Performance. USA: Routledge.
32. Ommo Grupe, Dietrich Kurz, Johannes M. Teipel. (2012). Sport in the Modern Worl Chances and Problems. UK: Springer Shop.

33. Outrequin J.et al. (2011). Amélioration de la performance musculaire par Pression Continue Profondeen utilisant le dispositif MyoDavKor® chez des hockeyeurs de haut niveau. Draft – Confidentiel, AP HP, Unité de Recherche Clinique Lariboisière - Saint Louis, Hôpital Fernand Vidal, Paris, 1-7.
34. Owen Anderson. (2013). Running Science. USA: Human Kinetics.
35. Paavo V. Komi . (2011). The Encyclopaedia of Sports Medicine. US: Wiley.com.
36. Patricia A. Deuster, Anita Singh, Pierre A. Pelletier. (2007). U.S. Navy SEAL Guide to Fitness and Nutrition. US: Skyhorse Publishing.
37. Paul Gamble. (2013). Strength and Conditioning for Team Sports. US: Routledge.
38. T. Reilly, M. Hughes, A. Lees. (2013). Science and Racket Sports I. UK: Taylor & Francis.
39. Terry J. Housh, Dona J. Housh, Herbert A. DeVries. (2006). Applied Exercise and Sport Physiology. US: Holcomb Hathaway.
40. Thomas E. Hyde, Marianne S. Gengenbach . (2007). Conservative Management of Sports Injuries. Canada: Jones & Bartlett Learning.
41. Thomas Reilly, A. Mark Williams. (2003). Science and Soccer. US: Routledge.
42. Warwick Spinks , Thomas Reilly, Aron Murphy . (2002). Science and Football IV . US: Psychology Press.
43. Wener W.K. Hoeger, Sharon A. Hoeger. (2016). Principles and Labs for Fitness and Wellness. US: CengageBrain.com.
44. Winnick, Joseph P.,Short, Francis. (214). Brockport Physical Fitness Test Manual. US: Human Kinetics.