

## **INFLUENCE OF THE BODY COMPOSITION ON ATHLETIC OR SPECIFIC AGILITY IN GOALKEEPER ASSOCIATED WITH ITS POST-GAME SPECIFICITY**

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### ABSTRACT

The present study was designed to test specific Agility related to the specific characteristics of the goalkeeping station and its relationship with body composition. From the proofs, the aims of this study are to determine the difference between athletic and specific agility among goalkeeper, as much as their correlation with the ideal body. For this proposal, eight teams from the leagues of Oran, Algeria championship second division accepted to participate in the current study, their goalkeepers were classified according to their body composition. Tested in the present by most used tests (Body composition (BMI & fat BFP) & agility performance (Hexagonal Obstacle Test (Without a ball and with a ball)). Their homogeneity based on ideal fat present, same age group and years of training. According to statistical processing, the research team emphasises on the validity of the protocol used to measure the specific agility related to basic skills goalkeeper. As well as the influence of body composition on the levels of this ability. Record in the benefit of specific Agility test proposed in the present study.

**Key words:** goalkeeper, agility athletics or specific, football players

## **INFLUENCIA DE LA COMPOSICIÓN CORPORAL SOBRE LA AGILIDAD ESPECÍFICA DEL PORTERO, ASOCIADA CON SU ESPECIFICIDAD EN EL JUEGO**

### RESUMEN

El presente estudio fue diseñado para probar los indicadores de agilidad relacionados con las características específicas del puesto de portero y su relación con la composición corporal. A partir de las pruebas, los objetivos de este estudio son determinar la diferencia entre atletismo y agilidad específica del portero, así como su correlación con el cuerpo ideal. En el estudio participaron ocho equipos de las ligas de Argelia campeonato de la segunda división. Los porteros participantes fueron clasificados en función de su composición corporal. Las pruebas realizadas fueron: para medir la composición corporal (BMI y grasa BFP) y prueba de agilidad (prueba de obstáculos hexagonal (sin pelota y con una pelota)). Los grupos fueron homogéneos en cuanto al porcentaje de grasa presente, la edad y años de formación. De acuerdo con el procesamiento estadístico, el equipo de investigación hace hincapié en la validez del protocolo utilizado para medir la agilidad específica relacionada con las habilidades básicas del portero, así como la influencia de la composición corporal en los niveles de esta capacidad.

**Palabras clave:** portero, agilidad atletismo o específicos, futbolistas

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## INTRODUCTION

The goalkeeper is the team's last line of defence and the first line of offence. Gives him the privilege to handle the ball (Joaquin Dosil, 2006). As a particular player to keep the ball from travelling over the goal line using dissimilar skills than a field player such as a separate class (Mat Buckland, 2005) (Rafi Srebro, Vladimir Petcov, 2002), with 80% of team accountability ranking fruitful (Zoran Kacic, 2015) (Simon Smith, 2008). As well as a strategist (Timothy Mulqueen, 2010) during a match sustained by (Michael Hurley, 2011).

Sight these tasks and new responsibilities imposed by FIFA (John MacKay, 2015), which in turn prevent the GK to keep the ball with both hands concomitantly. Thus, these tasks request extra fitness, which depends on several factors such as genetic traits, health, diet, environment, training schedule, moods and body composition (Ramos-Campo, D. J.; Martínez-Sánchez, F.; Esteban-García, P.; Rubio-Arias, J. A.; Bores, C. A.; Clemente-Suarez, V. J. & Jiménez-Díaz, J. F., 2014). Specified in physiological requirements located in the high intensity as physical performance (Zoran Milanovic, Goran Sporis, Nebojsa Trajkovic, 2011). As indicators of athletic body, weight correlated to fat percentage and body composition connected directly to its levels of fitness (Krustrup P, Mohr M, Ellingsgaard H, Ba Ngsbo J, 2005). Reported in similar as an eventual factor affecting the physiological and morphological characteristics of the players. Presume by (Thomas L. Vincent, Joel S. Brown, 2012); as the individual organisms at any level of biological organisation that manifests separate payoffs and separate strategies. Suggested in similar as complicated criteria in selecting the goalkeeper Vs field players (Zoran Kacic, 2007). The case of this study, which backings to adopt the most used agility test protocols with the specific characteristics of the goalie game station as well as to examine the relationship between performance characteristics selected goalkeepers.

Founded on the statistics provided by FIFA, that overweight goalkeeper (Jerry Kindall, John Winkin, 2000) is called to work harder under these conditions (Alex Welsh, 2014). Admit by (Wener W.K. Hoeger, Sharon A. Hoeger, 2015) that overweight people do not have good agility or speed.

The present study attempts to determine the difference between athletics and specific agility among goalkeeper, as much as their correlation with the ideal body. Based on the protocol proposed, as criteria to predict pros and cons of levels of quality of agility in testing and selecting the main goalkeeper (Jerry Kindall, John Winkin, 2000).

Although our hypotheses sustain the literature review, which acknowledged the usefulness of analysis qualitatively or quantitatively from football demands. Where quantitative values give an overall trend, though qualitative values suggest specific training for occupying positions. Mentioned in the similar studies as guidelines in establishing the individualised training

and evaluation program in the players' career plan (Hakim Hamzaoui, Zerf Mohammed, Lakhdar Messalti, Houar Abdelatif, 2016).

## MATERIAL AND METHODS

### *Search approach*

The researchers used the descriptive approach with two groups of goalkeepers classified into the following groups: total (GK=40), Athletic (BFP =18) and Good (BFP) =22) based on Body fat percentages rating classification.

### *The research sample*

Represents all goalkeepers under 17 years with the best ranking in Oran football league for the 2015-2016. The second division holds in their posts their homogeneity based on ideal fat present, same age group (under 17 yrs) and years of training (more than 7 years of continuous training in this position)

### *Testing Protocol*

*Anthropometry, Body Composition, and body fat percent.* Body height (cm) and body mass (kg) of each player were measured and the body mass index (BMI) was calculated ( $\text{kg}\cdot\text{m}^{-2}$ ), body fat percent based on Adult Body Fat % =  $(1.20 \times \text{BMI}) + (0.23 \times \text{Age}) - (10.8 \times \text{gender}) - 5.4$  using gender male= 1, female= 0. To evaluate the results: we refer to the normative data BMI by World Health Organization according to (Stanley P. Brown, Wayne C. Miller, Jane M. Eason, 2006). Where BFP we agree on the normative data by the Medical Science, according to (Neeraj Goswamy, MD, 2014).

*Agility performance (Hexagonal Obstacle Test (Without a ball and with a ball)).* The objective of the Hexagonal Obstacle test is to monitor the athlete's agility. This test requires the athlete to perform a series of two-footed back and forth jumps over the sides of a hexagon. See the Figure 1.

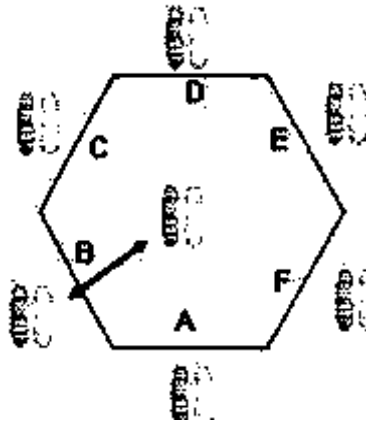


FIGURE 1: Hexagonal Obstacle initial Test.

### Assessment

We follow the national norms, provide by Arnot (1984), which are available for 16 to 19-year-olds.

TABLE 1  
Hexagonal Obstacle Test national norms.  
(Nesta Wiggins-James, Graham Thompson, 2005).

Gender	Excellent	Above Average	Average	Below Average	Poor
Male	<11.2 secs	11.2 - 13.3 secs	13.4 - 15.5 secs	15.6 - 17.8 secs	>17.8 secs
Female	<12.2 secs	12.2 - 15.3 secs	15.4 - 18.5 secs	18.6 - 21.8 secs	>21.8 secs

As new protocol, we have integrated the keep balloon. As an additional task. Different from original test. To test the specifics agility.

### Statistical Analysis

The results were analysed using SPSS software (version 20.0; SPSS, Inc., Chicago, IL). To assess the differences between the both tests, the Student's t-test was performed using each variable. The results are described as mean and SD. The level of significance was established at  $p < 0.05$ . Shapiro-Wilk and Levene's were conducted to calculate the normality and homogeneity. Although the correlation was calculated based on the Paired Samples Statistics. See Table 2.

## RESULTS

The aims of this study were attempts to determine the difference between athletics and specific agility among goalkeeper, as much as their correlation with the ideal body. Based on the protocol proposed, as criteria to predict pros

and cons of levels of quality of agility in testing and selecting the main goalkeeper (Jerry Kindall, John Winkin, 2000). Depending on BFP norms, our results accept the normality and the homogeneity in all variables studied according to Shapiro-Wilk and Levene's. Present in Table 2. While via Table 3. The independent T-test is significant differences between the two groups in the opposite of the other variables. Explain in the actual as a difference relative to the specific tasks related to the movements performed conjunction with the post-game specific skills. Interpret by in anticipation and efficient decision making in accordance with sport-specific stimuli via those tasks in the opposite of athletic agility which request the ability to sprint and to change direction while sprinting. The most often used in field sports performance according to (Mehmet Kutlu, Hakan Yapıcı, Oğuzhan Yoncalık, Serkan Çelik, 2012). Approved by (A Chaalali, M Rouissi, M Chtara, A Owen, NL Bragazzi, W Moalla, A Chaouachi, M Amri, K Chamari, 2016) in agility as composed of perceptual and decision-making factors, connected to the change in direction components. Estimated in the present study agreeing to Pearson correlations that are strongly positive between the two groups in the opposite of anthropometrics parameters, which are inverted significant correlation with the both test, owing to upper BMI or BFP related to agility athletic or specific. Invoked by similar in a strong relationship between agility and body mass ( $p < 0.01$ ). Where the increase in body mass is detrimental to agility performance in competition, especially in soccer (Zerf Mohammed, Atouti Nouredine, Ben Farouk Abdullah, 2017). See Table 4.

TABLE 2  
Shows the normality and homogeneity of the total sample.

		N	Mean±SD	Shapiro-Wilk	p≤0.05	Levene's	p≤0.05
weight	Athletic	18	68.55±4.05	0.95	0.55	0.36	0.56
	Good	22	68.33±4.36	0.84	0.09		
	Total	40	67.88±4.22	0.94	0.48		
height	Athletic	18	177.44±4.45	0.95	0.58	1.21	0.55
	Good	22	176.09±4.40	0.91	0.17		
	Total	40	176.57±4.34	0.92	0.15		
BFP	Athletic	18	9.55±1.02	0.94	0.46	0.97	0.45
	Good	22	11.14±1.56	0.95	0.48		
	Total	40	10.16±1.86	0.89	0.09		
BMI	Athletic	18	20.86±1.55	0.88	0.09	2.27	0.15
	Good	22	22.61±1.48	0.87	0.08		
	Total	40	21.82±1.44	0.95	0.57		
Agility original test	Athletic	18	11.08±1.80	0.89	0.09	0.52	0.49
	Good	22	11.96±1.47	0.94	0.47		
	Total	40	11.42±1.53	0.95	0.58		
Agility proposed test	Athletic	18	12.26±0.66	0.92	0.18	0.61	0.57
	Good	22	14.11±0.19	0.94	0.16		
	Total	40	13.48±0.65	0.94	0.48		

Ratings for % Body Fat Levels acceptable athletes 7 - 15%

Body Mass Index (BMI) Normal ≥18

Agility original test or Agility proposed test are above average 11.2 - 13.3 secs.

TABLE 3  
Shows the comparison and the relationship between the two groups.

	N	T	p≤0.05
BFP	Athletic	18	0.25 0.87
	Good	22	
BMI	Athletic	18	0.94 0.39
	Good	22	
Agility original test	Athletic	18	-1.03 0.38
	Good	22	
Agility proposed test	Athletic	18	-2.87 0.00
	Good	22	

TABLE 4  
Shows the relationship between the variables used in this study.

N=40	BMI	BFP	Agility original test
Agility original test	-0.83**	-0.78**	0.95**
Agility proposed test	-0.87**	0.85**	

\* p < 0.05, \*\* p < 0.01

## DISCUSSION

Depending on the data collected in comparison with the normative data used in this study. Where the Independent T-test between the two groups is insignificant in all the compares practised in the opposite of the proposed test. As well as the Pearson correlations which are strongly positive between the two groups in the opposite of anthropometrics parameters. Our results line in one hand with anthropometric studies, which suggested that certain physical factors, including body fat, body mass, muscle mass, and physique significantly influence athletic performance (Cherif Moncef, MD, Mohamed Said, PhD, Najlaoui Olfa, PhD, Gomri Dagbaji, PhD, 2012). Recorded in the case of our goalkeepers in their classification fitness, which is in the normal category, according to BMI standards (Zerf Mohammed, Atouti Nouredine, Ben Farouk Abdullah, 2017). Accommodated in similar as a factor in which its upper influence the athletic performance. Report by FIFA football players in the World Cup soccer as more favourable weight gain, among top goalkeeper. Established by previous research in its upper as risk factors injury related to the increase in body mass index (BMI), conducting the athlete to a multitude of other risk factors, which requires an examination of the association between overweight and sports damage (A Ezzat, A Schneeberg, M Koehoorn, 2014). Assumed by William J. Kraemer, et al in their upper levels as consequences on physical performance (William J. Kraemer, Steven J. Fleck, Michael R. Deschenes, 2012). Affirmed by (Stanley P. Brown, Wayne C. Miller, Jane M. Eason, 2006) in the relation between body composition and advantage athletic performance to maintain a high level of fitness correlate to optimal athletic body competition. From the proof, which agree that body composition analysis is part of the physical fitness assessment to esteem the gain of fat correlate to levels of lean muscle (Philipp Halfmann, 2012) to expects the targets weight loss program (Sandy Fritz, 2013), including the reduction of body fat to achieve desired body composition (John C Griffin, 2015). Our results the case of agility athletics or specifics endorse from our fitness coach to control and record the changes in body fat levels, appreciated by its influence on physiological and performance due to the desire weight loss as an assessment program (William J. Kraemer, Steven J. Fleck, Michael R. Deschenes, 2012) to control the boy gain relative to the both agility tests. Revealed by (Carlos Lago-Peñas, Ezequiel Rey, Luis Casáis, and Maite Gómez-López, 2014), that training programs among the soccer need to be modified considering its consequences on skill activities and athletic events; include agility, balance, coordination, power, reaction time and speed. Since these qualities are closely related with levels physical acquired. Well, their small quantity leads to larger increases in physical fitness (Eleanor Main, Linda Denehy, 2015). Identified as the primary goal soccer training process in stimulating the physiological, biomechanical, and psychological

demands (Bill Foran, 2000) (Hadjar Kh. M., Koutchouk S. M., Mime M., Zerf M., Zereg Fateh, 2016). From the above, we highlight our goalkeeper in the plan physical qualities to develop them agility based on speed, and flexibility. As well as their specific agility correlate to them post-game based on anticipation and efficient decision making in accordance with sport-specific stimuli (Sheppard JM, Sheppard JM, Young WB, 2006) as much as a psychological procedure (Don Zimmerman, Peter England, 2013). Moreover, to select the future potential goalkeeper then less powerful, we highlight our coaches' to look for desirable physical characteristics related to anthropometric (Alan Hargreaves, 1990) (Pantelis Theodoros Nikolaidis, 2012). The case of our intervention which shows that athletic agility tests are indicators of performance in sprint and to change direction while sprinting are determinants of performance the opposite of specific agility as motor qualities requiring not only the rapid whole-body movement with change of velocity or direction in response to a "stimulus" (Sheppard JM, Sheppard JM, Young WB, 2006) but also, the decision making factors, as much as a change of direction components (Young WB, Dawson B, Henry GJ, 2015) (A Chaalali, M Rouissi, M Chtara, A Owen, NL Bragazzi, W Moalla, A Chaouachi, M Amri, K Chamari, 2016). From these proofs, we suggested that That overweight Goalkeeper (Eddison Cantor, Jeff G. Konin, 2006), is asked to work harder under these conditions (Alex Welsh, 2014) (Muhammed Mustafa Atakan, Evrim Unver, Necip Demirci, Alpan Cinemre, Suleyman Bulut, Huseyin Husrev Turnagol, 2017). Reports in the present study the case of Agility athletic or specific that the goalkeepers must train to perform the specific physical correlate to their positions (gerd Thissen, Klaus Röllgen, 2000). To sum up, we recommended our coach to establish a conditioning programme (training and evaluation) for their GK based on different aspects of physical abilities relate position requirement (Donald T Kirkendall, 2007) as well as the new football laws.

#### CONCLUSIONS

Though the criteria and the methods to select the benefit goalkeeper, we acclaim the judgment of (Reilly T, Williams AM, Nevill A, Franks A, 2000) that anthropometric and physical characteristics are essential to discriminate talented from non-talented via the football players (Buchheit M, Simpson MB, Al Haddad H, Bourdon PC, Mendez-Villanueva A, 2012). While to test agility and its importance for the goalkeeper. We emphasizes our coaches to record, their values base on the athletics, which request the change of the direction as a result of a combination of strength, speed, balance and coordination often used in evaluating the basic skills without a ball. While the inclusion of the ball requires the anticipation and effective decision-making in line with sport-



specific (Zerf Mohammed, Houar Abelatif, Mime Mokhtar, Bengoua Ali, 673 - 678) (Mohammed, Z, 2016) (Z Mohammed, K Kohl, 2016) (Z Mohammed, 2016).

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