



ISSN 2231-3265
(Online and Print)

VOLUME . 2, No.1
QUARTERLY
March 2011 to June 2011

International Journal of Health, Physical Education & Computer Science in Sports

Published by :
Indian Federation of Computer Science in Sports
www.ijhpecss.org
Under the Auspices
International Association of Computer Science in Sports



<p>Publisher: Indian Federation of Computer Science in sports www.ijhpecss.org under the auspices of International Association of Computer Science in sports Email:rajesh2sports@yahoo.co.in</p>	<p>International Journal of Health, Physical Education and Computer Science in sports (ISSN 2231-3265 On-line and Print) Journal published Quarterly for the months of March, June, September and December. IJHPECSS is refereed Journal Published by the Indian Federation of Computer Science in sports</p>
--	---

<p>Editorial Board Editors Prof.Syed Ibrahim, Saudi Arabia Dr.Rajesh Kumar, India Dr.L.B.Laxmikanth Rathod, India</p> <p>Associate Editors: Prof. P.Venkat Reddy, India Dr.Kaukab Azeem, Saudi Arabia Y.Emmanuel S. Kumar, India Dr.Quadri Syed Javeed, India</p> <p>Members: Prof.G.L.Khanna, India Prof. Chenlei, China Lila Sabbaghian Rad, Iran Prof.C.V.Prasad Babu, India Dr.Y.Kishore, India Dr.M.Shyam Babu, India J.Prabhakar Rao, India Dr.K.P. Manilal, India Dr.Y.S.Laxmeesha, India Dr.P.Ravi Shankar, India S.R.Prem Raj, India Bikash Karar, India</p>	<p>International Journal of Health, Physical Education and Computer Science in Sports is multidisciplinary peer reviewed journal, mainly publishes original research articles on Health, Physical Education and Computer Science in Sports, including applied papers on sports sciences and sports engineering, computer and information, health managements, sports medicine etc. The International Journal of Health, Physical Education and Computer Science in sports is an open access and print international journal devoted to the promotion of health, fitness, physical Education and computer sciences involved in sports. It also provides an International forum for the communication and evaluation of data, methods and findings in health, physical education and computer science in sports. The Journal publishes original research papers and all manuscripts are peer review.</p>
---	--

The comparison of body composition of Iranian soccer players in different playing positions during competitions season

Attarzadeh Hosseini SR¹, (Ph.D); Soltani H², (Ph.D.Research Scholar); Farahneia M³, (MS); Hojati Z⁴(Ph.D. Research Scholar).

1. Faculty of Physical Education and Sport Sciences Department, Ferdowsi University of Mashhad, Mashhad, IRAN.
2. Faculty of Physical Education and Sport Sciences Department, Torbat-e Heydariyeh Branch, Islamic Azad University, Torbat-e Heydariyeh, IRAN.
3. Faculty of Physical Education and Sport Sciences, Ferdowsi University of Mashhad, IRAN.
4. Department of Physical Education and Sport Sciences, Torbat-e Heydariyeh Branch, Islamic Azad University, Torbat-e Heydariyeh ,IRAN

Abstract:

Introduction: In many sports, the body composition of the individual athlete plays an important role. Changes in body composition have been used as information regarding the athlete's adaptation to different types of training .Aspect such as body composition is of primary importance in success of soccer team. Thus, the aim of this study was to compare body composition of Iranian soccer players in different playing positions during competitions season.

Methodology: This was a quasi-experimental research with three experimental groups. In this research 24 players of Pasargad soccer team; defenders (N=8), middles (N=8) and attackers (N=8) were selected randomly as statistical sample. With using In-Body system body composition was measured in the beginning of competition season and after the 15Th match during competition season. Finally, using paired sample T Test (t-student) and ANOVA data was analyzed.

Findings: Defender, middle and attacker players showed a significant reduction in BMI during competition season ($p<0.05$). Also, Middle and attacker players showed a significant reduction in body Fat percentage ($p<0.05$).

Discussion and conclusion: Based on the results of performed research, body composition profiles in soccer players changed during competitions season.

key Words: Body composition, Iranian Soccer Players.

Introduction

Body composition of the individual athlete plays an important role in many sports. Changes in body composition have been used as information regarding the athlete's adaptation to different types of training (1). Body composition is one of the success factors in soccer (7). In modern football that match season continues for seven or eight months, the main objective is to maintain fitness throughout the match season. A players' ideal body composition depends on the requirements of their position on the field. For example, midfield players need to have good endurance as they run very long distances each match (often between 12-20km). Defenders need to be strong and powerful with their position generally requiring shorter bursts of sprinting.

Methodology

The method of this research was quasi-experimental with three experimental groups and pretest and post test. In this study 24 players (8 defenders with age mean of 25.25 years and playing past record of 9.5 years, 8 middle players with age mean of 26 years and playing post record of 9 years and 8 attackers with age mean of 25.38 years and playing post record of 8.6 years) from passargad soccer team attending in Iran football league were selected by use of accessible sampling. According to the health questionnaire all the subjects were healthy and did not have any cardiovascular, pulmonary and skeletal and physical deformities.

At first standing height was measured in CMs by use of height meter (fault less then 0.5 CMs). By use of In- body set¹ (fault less then 0.1 kgs) weight and fat percentage were measured. Dividing body weight by the height squared profile of body mass index(BMI) was measured in terms of KG/M^2 . Finally data was analyzed using SPSS. After making sure about natural distribution of data by use of kolmogrov –Smirnov, for comparison of within and between groups changes, paired sample T-test and one way ANOVA and post hoc ISD test were applied respectively and hypotheses were tested at significant level $P<0.05$.

Results

The results of kolmogrov- smirnov and one way ANOVA indicated respectively that data have a normal distribution and the three groups have been homogeneous with regard to age, standing height, weight, BMI profile and playing background.

Table 1. statistical description and within group changes of body composition of players in different posts

Variable(s)	Groups	Pre test	Post test	Within group change	
		Mean \pm S.D	Mean \pm S.D	t	P- Value
Body Mass Index (Kg/m²)	Defenders	21.26 \pm 1.03	20.51 \pm 1.04	7.638	0.001*
	Middles	22.08 \pm 0.79	21.23 \pm 0.77	10.057	0.001*
	Attackers	21.13 \pm 1.08	20.96 \pm 0.99	3.564	0.0009*
Percent of Body Fat (%)	Defenders	13.62 \pm 3.10	13.63 \pm 2.84	0.684	0.516
	Middles	14.97 \pm 2.94	13.98 \pm 2.78	7.21	0.001*
	Attackers	13.17 \pm 1.92	12.08 \pm 1.41	3.190	0.015*

*Significant at 0.05 level

Table 1 shows that mean of BMI profile for defenders, middle players and attackers had a significant decrease during match season ($P < 0.05$) and also mean of body fat mass of middle players and attackers had a significant decrease.

Table 2. statistical description and between group changes of body composition of players in different posts

Variable(s)	Groups	Pre test	Post test	Between group change	
		Mean \pm S.D	Mean \pm S.D	F-Value	P- Value
Body Mass Index (Kg/m²)	Defenders	21.26 \pm 1.03	20.51 \pm 1.04	20.739	0.001*
	Middles	22.08 \pm 0.79	21.23 \pm 0.77		
	Attackers	21.13 \pm 1.08	20.96 \pm 0.99		
Percent of Body Fat (%)	Defenders	13.62 \pm 3.10	13.63 \pm 2.84	3.474	0.049*
	Middles	14.97 \pm 2.94	13.98 \pm 2.78		
	Attackers	13.17 \pm 1.92	12.08 \pm 1.41		

*Significant at 0.05 level

Table 3. results of post hoc test for fat percentage of subjects during match season

Dependent Variable(s)	Paired groups		Mean difference	SD of Error	P- Value
Body Mass Index (Kg/m²)	Defenders	Middles	0.1	0.113	0.001*
	Defenders	Attackers	-0.575	0.113	0.001*
	Middles	Attackers	-0.675	0.113	0.386
Percent of Body Fat (%)	Defenders	Middles	0.8	0.374	0.044*
	Defenders	Attackers	0.9	0.374	0.025*
	Middles	Attackers	0.1	0.374	0.791

* Significant at 0.05 level

Table 2 and 3 indicate that between group mean difference of BMI during the matches was significant $P < 0.05$. The origin of these changes was due to significant difference between BMI mean of defenders and middle players and attackers according to post hoc test. Also the results indicate that between group changes of body fat mass was significant during matches $P < 0.05$. According to post hoc test the origin of these changes was the significant difference between fat mass percentage of defenders and mean of middle players and attackers.

Discussion and Conclusion

Soccer players need a high level of fitness in order to use their own technical skills. Therefore observation of players' fitness changes in different posts during match season is of high importance. In this research fat mass of middle players and attackers decreased during match season however only decrease of defenders fat mass wasn't significant. Since extra fat tissue acts as dead weight in weight bearing activities, increment of fat during playing makes it difficult to move and jump for reaching the ball. The average amount of soccer players' fat have been reported 8-28 percent in numerous researches. The measured percentage of fat in this research for defenders (13,63%) middle players (13.98%) and attackers (12.08%) in match season was similar to that of former researches (8). Ostwich (2003) found that players have the least amount of fat percentage. At the end of match season in the same research the most decrease in fat percentage was related to training period (5). While the same researcher (Ostwich) in 2002 and also Zeovanich (2001) found that soccer players lose more fat percentage during the season in comparison to the training period. This may be concerned to heavy match program (9). Casajus (2001) reported a significant decrease in fat percentage of Spain league players during the beginning to middle of season. On the contrary Metex and et.al (2006) did not find significant change in fat percentage of defenders, middle players and attackers during match season. Briefly considering the fact that middle players cover a longer distance as compared with that of players in other posts during the match and also the pressure of work done by attackers increase in direct approach of playing (2) and as there is a direct relation between amount of work (covered distance), energy cost and Vo_{2max} (2,6), so significant decrease of fat percentage of middle players and attackers in this research probably has been due to more work pressure during match.

References

1. Andreoli A, Melchiorri G, Brozzi M, Di Marco A, Volpe SL, Garofano P, Di Daniele N, De Lorenzo A. Effect of different sports on body cell mass in highly trained athletes. *Acta Diabetol.* 2003;**40**:S122–125. doi: 10.1007/s00592-003-0043-9. [[PubMed](#)] [[Cross Ref](#)]
2. Bloomfield J, Polman R, Butterly R, O'Donoghue P. Analysis of age, stature, body mass, BMI and quality of elite soccer players from 4 European Leagues. *J Sports Med Phys Fitness* 2005; 45(1):58-67.
3. Ekblom B . Applied physiology of soccer. *Sports Med* 1986; 3:50-60.
4. Fiona Sutherland, Sports Dietitian(2008). Australian Rules Football:AFL
5. Heller J, Prochaskal L, Bunc V, dlouha R, Novothy J. Functional capacity in top league football players during competitive period. *J Sports Sci* 1992; 10, 150.
6. Johnson GO, Nebelsick-Gullett LJ, Thorland WG, Housh TJ .The effect of a competitive season on the body composition of university female athletes. *J Sports Med Phys Fitness* 1989; 29 (4):314-20.
7. Mehmet Kutlu, Nuri Sofi and Taner Bozkus (2007). Changes in body compositions of elite level amateur and professional soccer players during the competitive season. *Journal of Sports Science and Medicine Suppl.* 10. <http://www.jssm.org>
8. Miller TA and et al. Seasonal changes in $V O_{2max}$ among division I A collegiate women soccer players. *J Strength Cond Res* 2007; 21(1):48–51.
9. Ostojic SM. Changes in body fat content of top-level soccer players. *Journal of Sports Science and Medicine* 2002; 1: 54-55