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A New Test for the Assessment of Agility and Dribbling Skill of Soccer Players Aged 14-15 Years Old

Michalis MITROTASIOS[1], Athanasios SOUGLIS[1], Aristotelis GIOLDASIS[1], Nikolaos KESARIS[1], Triantafillos KAMPOURIS[1]
[1]Department of Physical Education and Sport Science, National and Kapodistrian University of Athens, GREECE
Email: giold_telis@yahoo.gr

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Abstract

The aim of the study was the development of a new agility and dribbling skill test for young footballers. Twenty-one amateur soccer players aged 14.48 ± 0.11 years old participated in the study. Their overall mean height, weight and playing experience were 166.76 ± 2.06 cm, 58.03 ± 2.73 kg, 6.05 ± 0.51 years respectively. The anthropometric characteristics were examined by a portable Seca stadiometer, a calibrated Seca weight scale and a certified Harpenden skinfold caliper. Timing gates (Photocells; Microgate, RACETIME 2) were used for the assessment of sprint time, agility and dribbling skill. Descriptive statistics, t-test for dependent groups and Pearson correlation were executed by SPSS package (v. 17) in a statistical significance level of $p < .10$. The results showed that MM test with and without ball is a reliable and valid test for the assessment of dribbling skill and agility of young players. Furthermore, 10m speed, 20m speed, 30m speed and agility (Little and MM test) present a statistical significant correlation. However, 10m speed revealed higher correlation with 20m and 30m than MM and Little test without ball.

Keywords: Soccer, Speed, Agility, Skill, Little test

Introduction

Soccer is a physical game that demands high levels of strength, speed, balance, stability, flexibility, endurance, and agility (Bloomfield, Polman, O'Donoghue, & McNaughton., 2007; Gorostiaga et al., 2004; Helgerud, Engen, Wisloff & Hoff, 2001; Jovanovic, Sporis, Omrcen & Fiorentini, 2011; Krustrup, Mohr, Ellingsgaard & Bangsbo, 2005). However, development and maintenance of high physical condition of players during the whole season is considered a multidimensional process. It has been found that several high speed activities affect individual and team performance (Little & Williams, 2006; Luhtanen, 1994). Although the high-speed movements contribute to the total covered distance only for 11%, they are the most crucial activities during the game as they influence scoring and passing to the teammates (Reilly, Bangsbo & Franks, 2000). Specifically, 80% of scored goals in soccer games are preceded after a sprint (Faude, Koch & Meyer, 2012). Although most of the goals are achieved after sprinting only 1.2 to 2.4% of the running distance in match play is covered with the ball (Di Salvo et al., 2007). Haugen and colleagues (2014) suggested that sprinting skill appearing during match games are categorized in straight line sprinting, repeated sprint ability, and agility (Haugen, Tønnessen, Hisdal & Seiler, 2014). Little and Williams (2005) also concluded that high speed movements during the game require acceleration, maximal speed and agility. Mero and colleagues (1992) further categorized straight line sprinting as acceleration, maximal running velocity and deceleration phase (Mero, Komi, & Gregor, 1992). The total straight line sprinting bouts players execute during a game, with or without a ball are between 20 to 60 sprints with a total sprinting distance of 700-1000m. Specifically, more than 90% of all sprints are shorter than 20m while 80-90% of maximal sprint velocity is achieved after 2-3sec (Chelly & Denis, 2001; Graubner & Nixdorf, 2011; Vigne, Gaudino, Rogowski, Alloatti, & Hautier, 2010). Specifically, acceleration is defined as the pace of speed change that allows to a player to reach the maximal speed on the minimum time. Maximal speed is defined as the maximum amount of the speed at which the player can execute sprints. During the game players cover 1.5-105m distances that require a developed acceleration and maximal speed capacity (Bangsbo, 1994). Although the mean sprint distance covered by the players is short (17m), the sprints they execute reach maximal speed because they have already a starting speed (Young & McDowell, 2001). However, sprinting is used not only on straight line but also to overpass an opponent or to receive a pass by changing direction continuously. Thus, agility is considered as an important parameter of soccer performance (Lloyd et al., 2015). Recently, Sheppard and Young (2006) defined agility as a rapid whole body change of direction and velocity in response to a stimulus. Several studies added the rapid stops and starts as a main characteristic of agility (BLOOMFIELD, ACKLAND, & ELLIOTT, 1994; Gambetta, 1996; Parsons & Jones, 1998; Quinn, 1990). Therefore, agility improvement consist a crucial factor for the execution of strength and coordination movements. In fact, some suggest that agility is what discriminates between higher and lower skilled young (15–16 years) players better than any other physical characteristic (Reilly, Williams, Nevill & Franks, 2000). Although the significance of agility for game performance (Fox & Methews, 1974; Harman, Rosenstein, Frykman & Rosenstein, 1990; Hoolahan, 1990; Semenick, 1984), Sporis and colleagues (2010) suggested that there is limited research concerning its characteristics (Sporis, Jukic, Milanovic & Vucetic, 2010). Withers and colleagues (1982), showed that players execute a mean of 50 direction changes during the game (Withers, Maricic, Wasilewski, & Kelly, 1982). Similar morphological and biochemical determinants of agility, acceleration and maximal speed contribute to the hypothesis that the already mentioned qualitative characteristics are highly correlated. Little and Williams (2005) concluded that acceleration, maximal speed and agility present low correlation level (Little &

Williams, 2005). Haugen and colleagues (2014) reported that although soccer player Christiano Ronaldo raced 0.3sec slower the 25m straight line sprint than Spanish track and field champion David Rodriguez, he passed him for 0.5sec when running the same distance in zig zag course. Furthermore, agility patterns may vary among soccer players as a function of playing role (Sporis et al., 2010). However, the literature is equivocal regarding agility performance across playing positions (Boone, Vaeyens, Steyaert, Bossche, & Bourgois, 2012; Sporis et al., 2010; Taskin, 2008). Literature review showed that there is a gap of research concerning specific agility (Semenick, 1984) as well as skill tests. According to Kollath and Quade (1993), footballers perform higher performance on agility and sprinting tests compared to the general population. Thus it is of great importance for sport scientists and coaching staff the use of specific tests and intervention methods for the improvement of physical parameters. The aim of the current study was to evaluate a new agility and skill test for soccer players aged 14-15 years old.

Materials and methods

Participants

Twenty one soccer players aged 14.48 ± 0.11 years old participated in the study. The overall mean values for height, weight and playing experience of players were 166.76 ± 2.06 cm, 58.03 ± 2.73 kg, 6.05 ± 0.51 years respectively. Players and their parents were informed about the aims, the ethics, the benefits and the risks of the study. Then they signed a written informed consent prior the first measurement. The researchers examined 10m sprint, 20m sprint, 30m sprint, as well as MM and Little test with and without ball.

Procedures

The five tests were administered outdoors on a soccer playing field and lasted for two days. Specifically the first day of the experiment the researchers evaluated the anthropometric characteristics (height/weight), as well as the 10m, 20m and 30m sprint. The second day of the experiment the researchers examined agility with and without ball with Little (figure 1) and MM test (figure 2). Before testing the players warmed-up for 12-15 minutes in the usual manner they use before a practice session (dynamic stretching/jogging with and without ball), and also actively recovered for 1 minute between each trial and 3 minutes between tests. The researchers recorded the better of the two trials for each player. The same testing procedures were applied a week later for the assessment of the validity and reliability of the tests.

Measurements

Anthropometric characteristics were evaluated with a portable Seca stadiometer, a calibrated Seca weight scale (Seca 880 Weight Scale, Leicester Height Measure, Seca Ltd, Vogel and Halke, Hamburg; Germany) and a certified Harpenden skinfold caliper (Harpenden, HSB-BI, faces 6 × 15 mm, constant pressure of 10 g/mm^2; UK). Sprint time was assessed with timing gates placed on the beginning line, as well as on the 10m, 20m and 30m distances (Photocells; Microgate, RACETIME 2). The participants started their sprint 40cm behind the first timing gate. Similarly, agility with and without ball was assessed by timing gates placed on the beginning and finish line of the distance. Specifically, during Little test participants started by standing position with their front leg placed 40cm distance behind the beginning line. The participants ran the 20m distance by changing 100^o direction every 5m by passing from the outside part of the cone (figure 1).

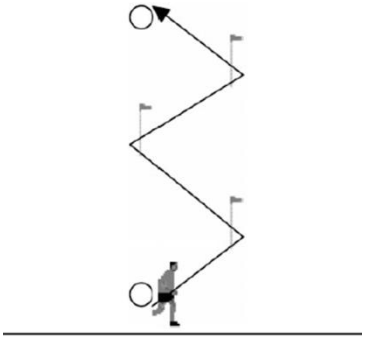

Figure 1. Little test with and without ball (Little & Williams, 2005, p. 77)

Respectively, for MM agility test participants started from area A by standing position with their front leg 40cm distance behind the beginning line. They had to change direction by passing from the outside part of the cones B, C, D, E, F, G, H and finish when they pass the last timing gates of area I. The total run distance was 30m (A-B= 5m, B-C= 2.5m, C-D= 2.5m, D-E= 5m, E-F= 2.5m, F-G= 2.5m, G-H= 5m, H-I= 5m) in which the participants had to perform 6 direction changes of 90^{o} (figure 2).

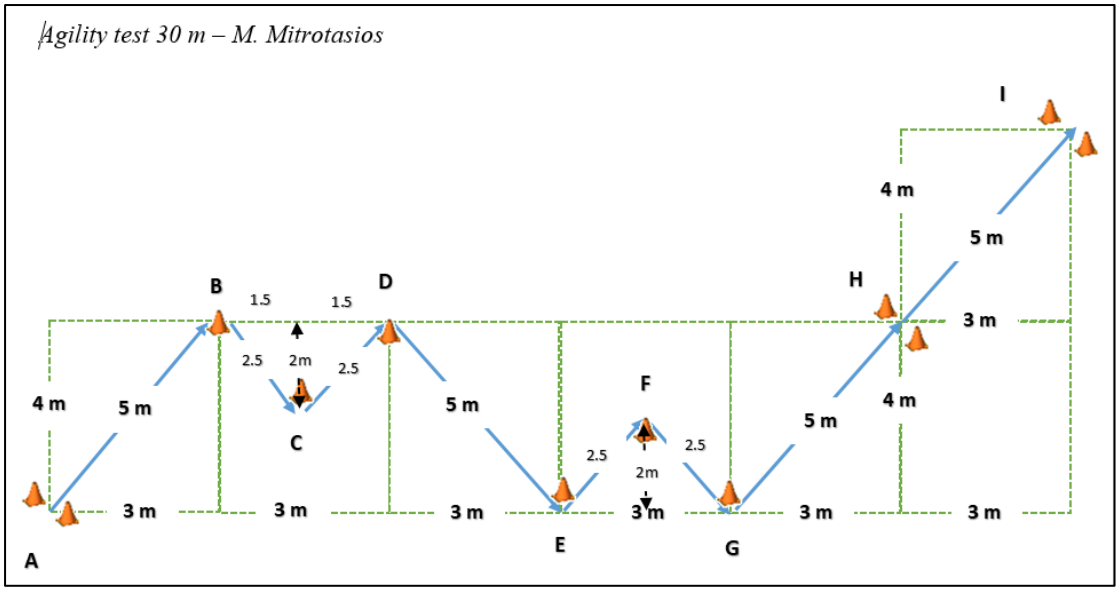

Figure 2. MM test with and without ball

Statistics

The SPSS package (v. 23) was used for data analysis. Specifically, descriptive statistics and t-test for dependent groups were used to compare the differences between the trials. Furthermore the researchers used Pearson correlation to evaluate the correlation between the variables. The statistical significance level was accepted at $p < .10$.

Findings / Results

The following table presents the descriptive statistics of anthropometrical characteristics: Age, height, weight, and playing experience (table I).

Table 1. Descriptive statistics of anthropometrical characteristics

Anthropometrical characteristics	N	Descriptive statistics				
		M	**SD**	**St. Error**	**Min**	**Max**
Age	21	14.48	0.51	0.11	15	14
Playing experience		6.05	2.36	0.51	10	1
Height		166.76	9.43	2.06	181	148
Weight		58.03	12.51	2.73	81.7	38.3

The following table shows descriptive statistics of the examined variables as well as their differences between first and second measurements (Table II). Specifically, it was found that the difference between two measurements was not significant for 10m speed (1.88± 0.11sec and 1.89± 0.13sec respectively), 20m speed (3.35± 0.2sec and 3.35± 0.22sec respectively), and MM test with ball (13.73± 1.15sec and 14.26± 1.21sec respectively). On the other hand, the difference between the two measurements was statistically significant for 30m speed (4.7± 0.33sec and 4.88± 0.38sec respectively; p< .01), MM test without ball (10.5± 0.47sec and 10.69± 0.47sec respectively; p< .10), Little test without ball (5.69± 0.3sec and 5.73± 0.27sec, respectively; p< .10), and Little test with ball (7.00± 0.56sec and 7.17± 0.56sec respectively; p< .10).

Table 2. Descriptive statistics of the variables and differences between measurements

Tests	Descriptive statistics				T-test
	1st measurement		2nd measurement		
	M	**SD**	**M**	**SD**	
10m speed	1.88	0.11	1.89	0.13	-1.183
20m speed	3.35	0.2	3.35	0.22	-0.975
30m speed	4.77	0.33	4.88	0.38	-5.058***
MM without ball	10.5	0.47	10.69	0.47	-1.692*
MM with ball	13.73	1.15	14.26	1.21	-1.269
Little without ball	5.69	0.3	5.73	0.27	-1.861*
Little with ball	7.00	0.56	7.17	0.56	-2.007*

*** $p<.01$; ** $p<.05$; * $p<.10$

The following table shows the correlations among the tested variables (table III). Specifically, it was found that 10m speed presented a significant strong correlation with 20m speed (r= .957; p< .001), 30m speed (r= .953; p< .001), MM test without ball (r= .589; p< .001), MM test with ball (r= .741; p< .001), Little test without ball (r= .793; p< .001), and Little test with ball (r= .833; p< .001). Concerning 20m speed it was found a significant strong correlation with 30m speed (r= .966; p< .001), MM test without ball (r= .504; p< .05), MM test with ball (r= .632; p< .01), Little test without ball (r= .707; p< .001), Little test with ball (r= .746; p< .001). Furthermore, 30m speed presented a significant strong correlation with MM test without ball (r= .508; p< .05), MM test with ball (r= .614; p< .01), Little test without ball (r= .725; p< .001), and Little test with ball (r= .785; p< .001). Regarding agility tests, it was found that MM test without ball significantly strong correlated with MM test with ball (r= .477; p< .05), Little test without ball (r= .682; p< .001). However, it was moderately correlated with Little test with ball (r= .391; p< .10). Moreover, MM test with ball significantly strong correlated with Little test without ball (r= .501; p< .05), and Little test with ball (r= .592; p< .01). Finally, Little test without ball was significantly strong correlated with Little test with ball (r= .778; p< .001).

Table 3. Pearson *r* correlations among variables

Variables (N= 21)	10m speed	20m speed	30m speed	MM without ball	MM with ball	Little without ball	Little with ball
10m speed	-	-	-	-	-	-	-
20m speed	r= .957 p= .000	-	-	-	-	-	-
30m speed	r= .953 p= .000	r= .966 p= .000	-	-	-	-	-
MM test without ball	r= .589 p= .005	r= .504 p= .020	r= .508 p= .019	-	-	-	-
MM test with ball	r= .741 p= .000	r= .632 p= .002	r= .614 p= .003	r= .477 p= .029	-	-	-
Little test without ball	r= .793 p= .000	r= .707 p= .000	r= .725 p= .000	r= .682 p= 001	r= .501 p= .021	-	-
Little with ball	r= .833 p= .000	r= .746 p= .000	r= .785 p= .000	r= .391 p= .080	r= .592 p= .005	r= .778 p= .000	-

Discussions and Conclusions

The current study showed that 10m speed, 20m speed, 30m speed and agility (Little and MM test) present strong correlation, finding that is confirmed by Little and Williams (2003, 2005). Furthermore, it was found that MM test without ball significantly correlated with Little test without ball. Thus, MM test is a reliable method to evaluate agility of young players. Similarly, MM test with ball significantly correlated with Little test with ball which could be used for skills assessment. Furthermore, 10m speed revealed higher correlation with 20m and

30m than MM and Little test without ball. This finding confirms that straight line sprinting and agility require different physiological and biomechanical characteristics which contribute to successful performance in each speed discipline (Little & Williams, 2003). Although agility is considered as a sprinting skill its locomotor characteristics are different than straight line sprinting (Little & Williams, 2005; Vescovi & McGuigan, 2008).

In conclusion, the study showed that MM test with and without ball is a reliable and valid test for the assessment of dribbling skill and agility of young players. Dribbling skill and agility which consist specific abilities affecting performance of high intensity activities, may be trained with MM tests with or without ball. In addition, MM tests probably improve players' strength of lower limbs as it contains continuous accelerations, decelerations and direction changes which affect their muscular system (Lockie, Schultz, Callaghan, Jeffries, & Simon, 2013). The findings of the current study suggest that dribbling skill and agility training through MM test with and without ball could be part of training session for the multidimensional improvement of young players' performance in high intensity activities. Furthermore, when training staff use agility and dribbling skill assessment could design more effectively their training sessions. The researchers also suggest that MM test for different age ranges and playing positions merits consideration in future research.

Corresponding Author

Aristotelis GIOLDASIS

Department of Physical Education and Sport Science, National and Kapodistrian University of Athens, GREECE
Email: giold_telis@yahoo.gr

Conflict of Interest

The authors have not declared any conflicts of interest.

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Examination of Constant Anxiety Statuses of Prisoners Who Attend Recreational Activities[1]

Hüseyin ÖZTÜRK[1], Serkan HACICAFEROĞLU[2], Zeynep YILMAZ ÖZTÜRK[3]
[1]Gaziantep University, School of Physical Education and Sports, Gaziantep, TURKEY
[2]RecepTayyipErdoğan University, School ofPhysical Education and Sports, 53100, Rize, TURKEY
[3]Gaziantep University, Faculty of Education, Gaziantep, TURKEY
Email: hozturk@gantep.edu.tr, serkanhacicaferoglu@gmail.com, z.y.gantep@gmail.com

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Abstract

This study was carried out to determine the constant anxiety levels of prisoners who attend recreational activities with regards to certain variables. The study was carried out using the general survey model, and the sample comprised 256 volunteer prisoners selected by simple randomization method, who were subject to supervised release in the province of Gaziantep. The trait anxiety inventory was used in the study. When analyzing the data, Kolmogorov-Smirnov test was used for data compatibility, followed by Mann-Whitney U Test and Kruskal-Wallis H test, and for paired comparison of the groups with a significant difference, Bonferroni correction tests were used. As a result of the study, it was observed that the anxiety statuses of the prisoners in the sample demonstrated differences throughout the period of attendance at recreational activities in terms of the mean rank scores by independent variables. The anxiety status of the prisoners who are single, non-smokers, aged 39 or above, with an earning higher than the minimum wage, and a sentence duration of 3-4 years during their attendance at the activities was observed to be higher than those of the prisoners in the other groups. Additionally, it was determined that there were no statistically significant difference the prisoners' marital status, education and sentence duration variables in terms of constant anxiety status, whereas there was a significant difference in smoking status, age and wage level variables.

Keywords: Anxiety, Leisure Time, Constant Anxiety, Competition, Prisoner, Recreation.

[1] *This article's short summary was presented the 6th International Science Culture and Sports Conference.*

Introduction

Feelings such as anger, worry, fear, pleasure and love are basic feelings that are accepted by the entire society (Goleman, 2011). One of these basic feelings, fear, has an aspect that cannot be attached to a certain cause, which is anxiety (Özel, 2012).

In a broader sense, anxiety is a reactionary emotion existing in human nature against environmental and psychological events. More specifically, it can be defined as a mental state felt consciously although its cause and the onset are not intentional, accompanied by physiological changes such as sweating and paleness. Anxiety is the state of worry and stress about the future. Waiting for an unknown and incomprehensible danger may create anxiety in somebody, in the form of restlessness and stress (Yavuz, 2002).

Anxiety, a normal feeling experienced by almost everyone in daily life, is a state of mind with varying levels from mild worry to panic, and may cause psychological disorders when it deviates from its normal course (Atkinson, 1995).

In this context, anxiety, which is a process of internal and external events that occur unexpectedly and uncontrollably, is classified into two types; situational and constant anxiety. Situational anxiety is the individual's fear in distressed situations that they are experiencing, and is the indicator of the individual's feelings such as stress and restlessness. A constant state of anxiety is the addiction of the individual to anxiety experience (Aral, 1997). It refers to a state of anxiety which does not emerge in a certain situation or time, but which is relatively constant. Individuals with this type of anxiety can be anxious at any time and situation (Terzioğlu, et al., 2013).

The feelings of anxiety may vary between individuals. However, there are some generally accepted approaches. A significant cause of anxiety is the fear of being unsuccessful. The feeling of anxiety may be experienced differently by successful and unsuccessful athletes. It is said that post-competition anxiety is higher in unsuccessful athletes (Budak, 2000). Anxiety can adversely affect the decision-making capabilities of athletes. As the anxiety level increases, an athlete may have difficulty in making the right decisions and demonstrating their skills. Extreme anxiety felt during the times of competition may make the athletes forget some moves they are quite familiar with, and have practiced many times, and may also confuse them, causing them to make the wrong moves (Gümüş, 2002). High levels of anxiety adversely affect athletes' performance (Gould and Krane, 1992). In that regard, it is stated that athletes may have to perform in the state of anxiety they have been experiencing at the beginning of the competition (Akarçeşme, 2004).

Prisons are places where persons arrested or sentenced are confined throughout the duration of their sentence. Prisoners in prisons have to live with strangers like them who committed crime, with varying education levels, socio-economic statuses and cultural values, isolated from society (Özkaya and Ali, 2002). The feeling of social restriction and supervision, exaggerated interpretation of the emotional feedback associated with stress or shame, and increased worry about what people would think and the fear of being judged (Gümüş, 2010) are the well-known social concerns at prisons (Özel, 2012). In this context, it is important to know the causes and levels of anxiety for athlete prisoners who are interested in recreational sports events to cope with anxiety (Başaran etr al., 2009). Many top performing athletes owe their capabilities not only to their physical and physiological capacities, but also to their psychological characteristics, and athletes who use their psychological properties have been

observed to have the skills of preparing themselves for competitions psychologically, getting motivated, managing their anxiety and setting goals (Koç, 2004).

In light of this information, the main question for this study is to try to determine whether there is a statistically significant difference in constant anxiety levels of prisoners attending recreational sports activities in terms of the independent variables of marital status, smoking status age level of income and sentence duration.

Materials and Methods

The study population consisted of prisoners under supervised release in the province of Gaziantep (SODES, 2017), and the sample was composed of 256 volunteer prisoners selected by simple randomization method from this population. According to Arli and Nazik (2001), in descriptive studies, the number that should be reached in small populations needs to be 20%. Therefore, the sample size can be said to be representing the population.

'General Survey Model', one of the descriptive survey methods, was used in the study. The Trait section of the State-Trait Anxiety Inventory developed by Spielberger et al. (1970) and adapted to Turkish by Öner and LeCompte (1983) was used to collect the data necessary for the study. Alpha reliability coefficient of the inventory was calculated as 0.94. Alpha reliability coefficient was specified as 0.71 for this study. The fact that Cronbach's Alpha coefficient is above 0.70 shows that the inventory is reliable (Arseven, 2001). Compatibility of the data collected with the normal distribution was determined by using Kolmogorov-Smirnov test. The result obtained showed that the variables are not distributed normally, and non-parametric Mann-Whitney U Test and Kruskal-Wallis H Test were used in our study. In the paired comparison of the groups detected to have a significant difference as a result of the Krusukal-Wallis H test, Bonferroni correction, a multiple comparison test, was used. The statistical significance level was accepted as Alpha (α), and the margin of error was accepted as $p<.05$.

Results

This section contains the data obtained from prisoners who participated in the study, and the statistical findings related to these data.

Table 1. The Constant Anxiety Statuses of Prisoners with Regards to the Marital Status Variable

Marital Status	N	%	Mean Rank	U	Z	P
Married	168	65.6	125.58	6,902,000	-.872	.383
Single	80	34.4	134.07			
Total	256	100				

It was determined that there is not a significant difference in the perception of constant anxiety of married and single prisoners ($p>0.05$). Given the mean rank scores of the participants, it is plausible to say that single prisoners feel more constant anxiety in recreational activities as compared to married prisoners.

Table 2. Constant Anxiety Statuses of Prisoners with Regards to the Smoking Status Variable

Smoking	N	%	Mean Rank	U	Z	P
Yes	214	83.6	124.42	3,621,500	-1.991	.046
No	42	16.4	149.27			
Total	256	100				

As a result of the non-parametric Mann Whitney-U test carried out to determine whether the trait anxiety inventory scores of prisoners differ significantly with respect to the smoking variable, a statistically significant difference at the level of $p<0.05$ was detected in favor of the non-smoker prisoners.

Table 3. Constant Anxiety Statuses of Prisoners with Regards to the Age Variable

Age	N	%	Mean Rank	X^2	sd	P
a) 18-24	40	15.6	134.8	8.387	3	.039
b) 25-31	85	33.2	133.58			*Bonferroni*
c) 32-38	91	35.5	111.91			d-c
d) 39 and above	40	15.6	149.14			
Total	256	100				

As a result of the Kruskal Wallis-H test carried out to determine whether the mean ranks of constant anxiety differ significantly with respect to age variable, the difference between the age groups of prisoners was found to be statistically significant (x^2=8.387; sd=3; .05). After the Bonferroni correction test used in paired comparison of the dimension with significantly difference, the difference was found to be between the age group 32-38, and the age group 39 and above, in favor of the age group 39 and above (U=1271.500; z=-2.745; .008).

Table 4. Constant Anxiety Statuses of Prisoners with Regards to the Level of Income

Level of Income	N	%	Mean Rank	X^2	sd	P
a) Unemployed	148	57.8	118.45	23.060	2	.000
b) Minimum wage	69	27	120.49			*Bonferroni*
c) Over minimum wage	39	15.2	180.81			c-a/c-b
Total	256	100				

As a result of the Kruskal Wallis-H test carried out to determine whether mean ranks of constant anxiety differ significantly with respect to level of income variable, the difference between the income groups of prisoners was found to be statistically significant (x2=23.060; sd=2; .05). After the Bonferroni correction, which is used in the paired comparison of groups with significant difference, the difference was found to be between the income group over the minimum wage level and the income group at the minimum wage level (U=1531.000; z=-4.511; .01), and the unemployed group (U=660.500; z=-4.388; .01), in favor of the income group over the minimum wage level.

Table 5. The Constant Anxiety Statuses of Prisoners with Regards to the Sentence Duration Variable

Sentence Duration	N	%	Mean Rank	X^2	sd	P
1-2 years	150	58.6	129.55	1.755	2	.416
3-4 years	54	21.6	136.15			
5 years and above	52	20.3	117.52			
Total	256	100				

It was determined that there was not a significant difference in the perception of constant anxiety of prisoners with respect to sentence duration variable ($p>0.05$). Given the mean rank scores of participants, it is plausible to say that prisoners sentenced to 3 to 4 years feel more constant anxiety in recreational activities as compared to other prisoners.

Discussion and Conclusion

Although the anxiety statuses of prisoners who attend recreational sports activities during their attendance demonstrate differences in terms of mean ranks by independent variables, the fact that such negative perception was formed among the participants was determined based on mean statistical rank scores. Therefore, it can be said that the participants have concerns of failing in these activities, and as a result, not being accepted by the community. Additionally, another reason for the situational and constant anxiety values of the participants being high could be attributable to the fact that during the activity period, participants are under a high level of stress (Baştuğ, 2009). It has been said that the social support gained by recreational sports activities have a significant effect on physical health, and physical health has a significant effect on anxiety that may occur (Paukert et al., 2010). The literature contains studies that demonstrate that anxiety increases before and during competitions (Gould and Krane, 1992; Jones and Cale, 1991).

It was determined that there is not a significant difference in the perception of constant anxiety of married and single prisoners. Given the mean rank scores of the participants, it is plausible to say that single prisoners feel more constant anxiety in recreational activities as compared to married prisoners. Literature reviews show study results which indicate both that single prisoners feel more state of anxiety than others (Demir, 1998), and that married prisoners feel more constant anxiety than the single ones (Özel, 2012). There are also study results indicating both that there is not a statistically significant difference in the constant anxiety statuses with respect to marital status (Demir, 1998), and that there is a significant difference (Özel, 2012).

In the study, a statistically significant difference was detected in constant anxiety with respect to prisoners' smoking or non-smoking status. It was seen in the mean rank scores that, non-smoking prisoners felt the stress during the competition more, and smoking prisoners said that they could overcome the negative pressure easily.

In the study, a statistically significant difference was found in the mean ranks of prisoners with respect to age group variable. This finding can be interpreted as such that older prisoners feel more anxiety during recreational sports activities than the younger ones. Because achieving something, being successful, being appraised by friends and even being accepted by society can be important for the prisoners of this age group. In their related study, Başaran et al. (2009) state that anxiety scores of participants with a lower sports age are higher than the ones with a higher sports age. In his/her study carried out on football players, Koç (2004)

stated that as the age of the participants increases, they are affected by the factors increasing their anxiety levels less, and they are more in control of their feelings. Additionally, some studies carried out on different participant groups indicate that there is not a significant difference in the anxiety levels of athletes with respect to age group before or during the competition (Bingöl et al., 2012; Erbaş, 2005; Yücel, 2003, Erenler, 2007). However, there are also results which state that there is a significant difference in the anxiety level with respect to age (Coşkun, 1998, Fidanoğlu, 2006).

In the study, a statistically significant difference was found in the mean ranks of prisoners with respect to the income group variable. The significant difference was found to be between the income group with an income level higher than minimum wage, and the income groups at the level of minimum wage, and unemployed prisoners, and it was determined that the constant anxiety level was higher in favor of the income group with an income level higher than minimum wage. The studies in the literature contain results indicating that the anxiety felt increases as the economic level decreases (Canbaz, 2001; Kaya and Kübra, 2004), whereas the anxiety level decreases as the economic level increases (Coşkun, 1998; Yıldız, 2007). There are also studies suggesting that anxiety level increases as the economic level increases (Özel, 2012). Similarly, some studies state that there is not a statistically significant difference between the income level and the level of constant anxiety (Çakmak and Murat, 2005; Özel, 2012).

It was determined that there is not a significant difference in the perception of constant anxiety of prisoners in the sample with respect to the sentence duration variable. Given the mean rank scores of participants in the sample, it is plausible to say that prisoners sentenced to 3 to 4 years feel more constant anxiety in recreational sports activities as compared to other prisoners. On the other hand, in their study, Durak and Faruk (2010) observed that the stress and anxiety associated with prison is higher in prisoners who have recently been imprisoned as compared to prisoners who have been in prison for longer periods. In another study conducted on the athletes of team sports found out that there was no significant difference between anxiety levels of the athletes in terms of gender variable (Turkmen et al., 2013). As the present study didn't include gender as a variable, future studies should also be conducted using gender as a research variable.

In conclusion, it has been determined that the anxiety status of the prisoners exhibited differences by the mean rank scores with respect to independent variables. The data obtained show that prisoners who are single, who do not smoke, who are at the age of 39 or above, who are primary school graduates, whose income is higher than the minimum wage, and who have a sentence duration of 3-4 years feel more constant anxiety when attending to recreational sports activities.

Recommendations

Prisoners attending recreational sports activities might feel a great deal of stress accompanied by anxiety during an event. In this context, authorities organizing these events should convey messages to prisoners stating that both winning and losing are normal outcomes, and instead of creating result-oriented expectations, they should design programs to keep the prisoners away from negative moods. The concerned persons should design programs to help the prisoners develop their psychological skills, and to acquire these skills.

Corresponding Author

Serkan HACICAFEROĞLU

Recep Tayyip Erdoğan University, School of Physical Education and Sports, 53100, Rize, TURKEY
Email: serkanhacicaferoglu@gmail.com

Conflict of Interest

The authors have not declared any conflicts of interest.

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Students' Gendered Body Dispositions toward (Non) Participation in Physical Education at an Urban Male High School in Makkah, Saudi Arabia

Majed Eid ALHARBI
PhDc in School of Human Kinetics, Faculty of Health Sciences, University of Ottawa, CANADA
Email: majjodym@hotmail.com

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Abstract

Drawing on Bourdieu's relational theory of (gendered) body habitus, the purpose of this qualitative case study is to develop a better understanding of the embodied, gendered dispositions that influence Saudi male students' experiences in physical education (PE). The paper reports data generated by semi-structured interviews with male students (n=27) between the ages of 15 and 20, all of whom attended a public secondary school in Makkah during the autumn of 2012. The study found that the concept of hygienic dispositions is an issue that concerns some students in ways that prevent them from participating in PE. With limited PE facilities (i.e. changing and showering rooms), masculine values (expressed both physically and verbally) impact attitudes towards participation in PE. Surprisingly, the Saudi adult masculine identity, so closely associated with traditional clothing (the *thawb*), is also a condition that influences PE students' participation. As part of this study's results, meanings attached to the thawb are analyzed, revealing social representations of masculinity and its cultural/social value (i.e. prestige, respect).

Keywords: Physical education; Saudi male high school; masculinity; gendered body habitus

Introduction

This study seeks to reveal both the enabling and constraining socio-cultural factors that influence students' experiences in PE at school in order to understand why certain students participate and others do not. The research explores the influence of students' gendered body dispositions on their participation in PE by providing insights into the experiences, beliefs, behaviors and routines that shape their bodies and perceptions towards PE. Bourdieu's (1984) theoretical framework is applied to the adolescents' social world and the interplay of social and cultural dimensions that influence their participation in PE.

At the time of this research, PE was taught in Saudi public schools only to boys (PE programs for girls are to begin in 2018). Primary school-aged male students have two PE classes per week for a total of 90 minutes, while intermediate and secondary school Saudi students have just one PE class per week lasting 45 minutes. In Saudi, soccer is typically the preferred activity in PE classes; it is the sport in which boys feel most highly skilled (Al-Liheibi, 2008). In the school studied here, as in many other schools, other sports, such as volleyball, basketball and handball were unavailable. Because PE is under-resourced in Saudi in general, and opportunities to participate in different activities are limited, PE is mostly focused on soccer, and that there is little or no variety in PE in boys' schools in Saudi (Al-Aifan 2000; Al-Wetshi, 2001; Alghamdi, 2005; Samargandy, 2007; Al-Liheibi, 2008).

A further indication of the low status of PE is reflected in the fact that no student is ever failed in PE, during this research, although the PE grade is included in the overall grade point average. A distinctive factor in the Saudi context is that all male students and teachers from elementary to high school must wear *thawbs*, except while teaching or undertaking PE.

The *thawb* is a loose length of wool or cotton material covering the body to the ankles. The students interviewed for this study follow the Saudi cultural practice of wearing the *thawb* all day, but during PE and school sports, students should normally wear athletic clothing consisting of athletic trousers and a t-shirt; wearing the *thawb* during PE is frowned upon. However, sometimes boys wear a mixture of traditional and sports clothing, which is acceptable. Some boys wished they could wear the *thawb* even during PE class, as some did during informal play outside school.

Through a Bourdieusian lens, this qualitative case study also reviews relevant literature, including existing studies on participation in PE at secondary high schools, in Saudi, and Western literature. There is a description of the methodology used, details of participants, the research process and data analysis procedures. The results provide a detailed analysis incorporating the research participants' own words.

Theoretical Framework

For Bourdieu (1984), the habitus has an effect on every aspect of human embodiment. The way people experience physical activity (PA) in general reveals the innermost dispositions of the habitus. Habitus is a set of embodied dispositions that generate practice in relation to the structural principles of the social world (Bourdieu 1977). Therefore, practice is 'the product of a habitus that is itself the product of the embodiment of the immanent regularities and tendencies of the world' (Bourdieu & Wacquant, 1992, p.138).

Bourdieu (1984) defined habitus as schemes of structured and structuring dispositions that lead to certain practices, tendencies and actions. Habitus influences the development of the

body, shaping levels of participation in exercise as well as ordinary movement, including gait and even posture. One of the implications of this process is that the body materializes class tastes in terms of how the body is treated and taken care of; fed and maintained. For Shilling (2003), bodies are shaped through the development of taste. The development of taste is 'embodied and has an effect on people's orientation to their bodies' and thus their orientations to particular forms of physical activity (Shilling, 2003, p.113). For Bourdieu, the body is a site of social memory, and the concept of habitus defines the process by which the social is written into the corporeal (Gorely, Holroyd, & Kirk, 2003).

In studying the boys' involvement in PE, this research highlights the problems surrounding hygiene, not least because of a lack of facilities – Saudi schools do not tend to have showers or changing rooms). The role of gender in habitus is investigated in this sporting and hygiene context as it is also central to the practice of PE.

Gendered Body Habitus: Masculinity

The notion of habitus highlights the ways in which gendered values and expectations are ingrained in our bodies; however, some individuals resist gender norms, or have little room for change, according to Bourdieu (Thorpe, 2010). Masculinity 'as an unconscious strategy forms part of the habitus of men that is both transposable and malleable to given situations to form practical dispositions and actions to everyday situations' (Coles, 2009, p.39). For Coles, men perform and act upon the masculine behaviors arising from their position in a particular social field (sports, family, and school, for example). Habitus has the ability to facilitate 'insights into how men use masculinity (e.g., posture, gait, gestures, speech, etc.) as a 'resourceful strategy,' to negotiate space, and access to capital, within particular fields' (Coles, 2009, p.38).

Lee (2008) has defined masculinity as: traditional belief, attitude, value, and behavior associated with what it means to be male in society. Masculinity is based on biological, physical, psychological and social-cultural characteristics. It is also defined as arising from traditional beliefs, attitudes, or behaviors regarding the meaning of maleness, which is historically, socially and culturally constructed (2008, p.16). This definition represents the features and attributes that reinforce dominant forms of masculinity. In *Masculine Domination*, Bourdieu (2001) argued that the gendered habitus is characterized by generating gendered body dispositions, and thus the gendered habitus sees the individual internalizing gender-appropriate behavior and external values in the course of socialization processes over time.

Two perspectives outlined by Dumas and Bournival (2011) examine the body in social sciences in the context of men's health. First, the body is understood as a system of cultural importance – the 'body-as-representation' (Dumas & Bournival, 2011, p.36). This reflects the values and norms that form social representations of masculinity. The authors argue that masculinity is socially constructed, so this perspective is intended for understanding social representations of masculinity in a given society. The second perspective sees the body as the bastion of experience and action; special attention must be paid to the 'lived body' as well as to the shapes of 'embodied experiences of masculinity' in daily life (Dumas & Bournival, 2011). The authors describe the importance of feelings, emotions, social practices and 'the transformative power of social structure onto the material aspects of the body' (Dumas & Bournival, 2011, p.36). Both perspectives enhance the understanding of the social mechanisms, including the role of gender, that influence bodily action. In relation to gender, 'masculinity participates in fashioning both a vision of the world and a relationship to the

body that is inscribed in power relations through ways of treating the body, caring for it, feeding it, and otherwise maintaining it' (Dumas & Bournival, 2011, p.39).

This study presents Bourdieu's understanding of masculinity through his relational concept of (a gendered) body habitus, alongside the important role played by cultural obstacles or 'hidden entry requirements' (Bourdieu, 1978, p.838) such as clothing, traditions, skills, knowledge, practices and techniques of sociability; these open certain activities, and their privileges, to some people and close them to others, as this study illustrates in a sporting context. Bourdieu's ideas are useful for understanding how the male students enacted their body dispositions in PE; they also illuminate and contextualize the social practices that emerge through acts of practical and symbolic masculinity.

Gendered Body Habitus and PE

According to Brown and Evans (2004), schools are powerful masculine institutions which formulate structures of masculine domination in the world; this is particularly the case in the areas of male PE and school sports, which have been identified as 'bastions for the construction and expression of dominant masculinities' (p.54). PE sports practices are associated with toughness, competition and bodily skills, which subordinates or marginalizes some boys (those with low levels of toughness, confidence and skill) (Jachyra, 2014; Alharbi, 2014; Garrett and Wrench, 2011; Azzarito, 2004). In schools, there are rigorous codes of competition in team sports, mainly those that value symbolic violence and aggression; these play a role in the formation of hierarchies amongst boys (Kirk, 2010a). Sports is presented to young men as 'character building and as promoting courage, chivalry, moral strength, and military patriotism' (Lee et al., 2009, p.61). But among Australian high school students, while boys as a group are advantaged by the association of sports and masculinity, individual boys experience PE negatively to a greater degree than had been realized (Martino, 1999).

A Canadian study of masculinity and sports (Laberge and Albert, 2000) confirmed a connection between the construction of masculinities and social class. They found that upper- and middle-class boys valued intelligence and sociability as characteristics of masculinity, while those from working-class backgrounds valued 'male chauvinism and masculine showing-off' (p.201). These distinctions were ascribed to discrepancies in living conditions and family/socio-cultural backgrounds. Upper- and middle-classes boys socialized with the aspiration of leadership positions in their future employment, meaning that they were unlikely to aim for occupations requiring physical strength, thus decreasing the importance of physical toughness in the evaluation of maleness. In contrast, working class boys were more likely to (eventually) do occupations requiring physical strength that would not require the social/leadership skills the upper/middle class boys were trying to acquire. This illustrates the 'embodiments and verbalizations of masculinity to convey power over others within a context of perceived powerlessness' (Laberge & Albert, 2000, p.202).

Davison (2000) interviewed 11 Canadian males aged 18 to 58 regarding how they experienced masculinity in school. He found that those who could not achieve the masculine model required in PE classes experienced embarrassment. The physical sense of maleness is embodied in a certain size, shape, posture and movement, including physical/sporting skills; these elements of maleness are significant within the school environment (Davison, 2000). In school-based PE, lower skilled students were more likely to avoid participating when they felt judged or criticized by peers, an alienating experience (Portman, 1995). Some participants in the present study described experiencing this.

Azzarito (2004) found that US high school PE students place themselves on 'a continuum between the center and the margins within physical education practices by choosing to engage in or resist physical activity practices' (p.9). Those who display sporting prowess in male-dominated PE activities and school sports are accorded a high status of masculinity and thus popularity among their peers.

Playing soccer, a sport replete with masculine meanings and practices that sustain male gender norms, was the most valued practice in the Saudi school. Full participation in the shared values of the group required immersion into soccer. This is reflected in the wider popularity of soccer among Saudi boys and men. Masculinity in Saudi differs from Westernized masculine norms in terms of culture and socialization. Thus, what it is 'to be a man' in Saudi is not the same as it is in the West. Nevertheless, there is a shared repertoire constructing masculine dispositions including one's physical appearance, and physical strength and prowess acquired through playing games. This will be shown in the results and discussions later in the paper.

The body and its relationship to sports and exercise have become increasingly prominent as markers of gendered identity during the past two to three decades (Gorely et al., 2003). Much Western literature on this topic studies and compares male and female participation in PE, scrutinizing their perspectives on the barriers and experiences associated with PE. As males and females are educated separately, such comparisons have not been made in Saudi Arabia. Furthermore, the relationship between body dispositions and PE participation in Saudi male high schools remains under-studied. However, there is a consensus on the peripheral status of PE, insufficient time allocation, a lack of adequate equipment, facilities, and resources to deliver high-quality, diversified PE programs (Al-Aifan 2000; Al-Ghamdi 2005; Al-Liheibi, 2008).

But Saudi male students' perceptions of PE have not been examined through a qualitative case study approach or from a sociological perspective, applying Bourdieu's theory of body habitus, physical capital and masculinity, and taking into account the various socio-cultural factors that influence PE participation. This study does so, identifying the influences that shape students' gendered, embodied experiences in relation to their participation in PE.

Methodology

Qualitative Case Study

A case study methodology was chosen because it allows replication and extension of individual cases (Bonoma, 1985). An individual case such as the urban high school selected here can independently corroborate propositions that reveal patterns of behavior or circumstances, allowing the researcher to draw a more complete theoretical picture. The case study approach also allows for thorough, contextual and comprehensive description of an inquiry (Yin, 2009). The present study examines, through observation and interviews, how and why Saudi students describe and make sense of their particular experiences related to PE participation. For Bourdieu (1999), interviews are useful in order to reconcile the social, historical, and demographic elements that contextualize how the participant's social position influences their perspectives.

Socio-demographic information was collected in the interview in order to contextualize the participants' life and personal history. This included the participants' age, parental occupation and educational attainment. Formulating the questions based on Bourdieu's work was helpful

for understanding boys' participation in PE as it related to social structures (i.e. neighborhood, peers, family, PE environment, etc.). Further information included: (a) characteristics of participants' socio-economic milieu (b) students' likes and dislikes; and (c) perceptions of and attitudes toward resources available (e.g. barriers to PE).

Interview questions helped uncover boys' lifestyles in relation to their body habitus and the ways their backgrounds and experiences shaped their participation in PE. This study can be described as an intrinsic case study (Stake, 2005). The results are specific to this school and are meant to improve participation in PE there.

Research Sample

Data was collected between November 2012 and January 2013 in a male secondary public school in Makkah, Saudi Arabia. The school draws students from different neighborhoods and there is some variation in social class. Participants in the study represent a cross-section of the urban middle- and lower-middle classes in Saudi Arabia as defined by Al-Sultan (1988).

The social class of the students is reflected in the professions of their fathers. Students have fathers who are employed in the military, police, or public administration, and university graduates are typical of the middle to low-middle echelon in the government sector (Students 3, 4, 5, 7, 11, 12, 13, 16, 18, 19, 21, 23, 24, 25, 27). Their fathers hold mostly high school diploma and few with baccalaureate. Students whose parents are retired received two sources of income: a) the retirement wage, and b) the social guarantee wage (Students 1, 6, 9, 14, 22, 26). Fathers/family who were retired from one job continued to run a business, one as a real estate broker (Students 2, and15), one as a contractor (student 10) and another as a shopkeeper (Student 8). Students' single parenting family are (Students 10, 17, and 20). All students relied on family financially, and for transport, and recreational activities. Generally, came from families whose fathers are the sole earners.

The locations where students live are primarily inhabited by families who have been living together in neighborhoods for a long period of time. In terms of a group of actors who share the same interests, social experiences and traditions, that students lived in the same neighborhood, for example, students (8, 9, and 20) and (14, 19, and 22) were very close relatives; their fathers were retired soldiers and their mothers stayed home and were illiterate. Most students live in neighborhoods that lack parks, soccer fields, playgrounds, sidewalks, and community centers in which a variety of social and sports activities are not organized.

Research Process

Data was collected during an observation period of three weeks, following which

individual interviews were conducted. These were audio-recorded and took place in the resource center at the beginning of each PE class, during the school recess, or during school hours in the student's spare time. During the observation period, the researcher assumed an outsider role by sitting in a corner of the soccer field and observed but did not interrupt the classes. With the PE teacher's help, students were categorized as participants or non-participants. The selection of students for interviews used a sampling approach, so that less-skilled students were interviewed as well as medium- and top-performing students. The rationale was to 'intentionally select individuals and sites to understand the central phenomenon' (Creswell, 2013, p.204).

The parents of each participant signed a letter of consent informing them of the purpose of the study and the type of questions that would be asked. To ensure confidentiality, the interviews took place in a private room in the school. To protect anonymity, codes were allocated to each student. For the purpose of this paper, I use some quotes that belong to the students who participated in the PE class (Students 1, 3, 4, 11, 12, 13, 16, and 27) and students who rarely participated or took no part at all in PE (Students 2, 5, 6, 7, 8, 9, 10, 14, 15, 17,18, 19, 20, 21, 22, 23, 24, 25, and 26).

Data Analysis Procedures

Using a thematic analysis approach (Braun & Clarke, 2006), transcribed interviews were read and re-read to achieve familiarity with the data. Data was highlighted in terms of initial codes regarding the enabling and constraining conditions identified in the literature review, as well as new codes and ideas emerging from the interviews. Second, the initial ideas and codes were attached to the text in order to identify sub-themes in the data. Third, codes and sub-themes were organized into major themes, which were reviewed to ensure that the concepts and codes were coherent with the text as well as the identified themes. Fourth, each theme based on the sub-themes in the texts was given a specific name. Finally, the data were organized and regrouped according to themes in relation to the research questions were essential components of the analysis and coding.

Results and Discussions

As PE class commenced, students walked out to the field, a few students sprinting ahead, eager to play the game. Those who wanted to participate took off the top layer of their clothes, their *thawb*, revealing sports clothes underneath. The *thawbs* were left hanging on the goal or on chairs behind the goals. The non-participating students talked among themselves and slowly made their way to the pitch. They sat in the corners or behind the line of the pitch. The teacher was not effective in motivating the students to achieve the goals of the PE lessons; some students in previous studies complained that teachers did not properly teach or structure PE activities (Al-Aifan, 2000; Al-Liheibi, 2008). Overall, the teaching style appeared to contribute to a disinclination to participate (i.e. soccer skills were not taught, and students were not encouraged). This limited the potential of PE class and appeared to negatively influence students' engagement. Other, more socio-cultural conditions influencing students' participation in PE are explained below.

Hygienic Body Dispositions of Masculinity

Some non-participants worried about becoming sweaty after participating in PE; when it took place in the morning, this would result in unpleasant body odor for the rest of the day. The lack of private changing facilities meant they would not be able to change out of their exercise clothes.

'I don't love ball. It is in the fourth period and sunny weather. Also, without shower rooms, I will be sweaty when I enter the classroom; it is disgusting.' (Student 19)

'I will be sweaty and smelly sitting in the classroom without taking a shower, which is not appropriate.' (Student 23)

'The deficiency of facilities such as showering rooms and a lack of rest time are a problem for PE participation. I want to have time to wash and relax to be ready for the next class.' (Student 6)

'PE class is a short period. Without sufficient time to dress up, wash and relax I cannot continue playing soccer.' (Student 21)

'As I remembered my first participation in PE in this school, I just quickly threw water on my face and hair and washed my hands and then I put on the *thawb*. There is too little time to have all this done. I was worried of being late for the next class or enter the classroom without dressing in my *thawb*.' (Student 5)

Clearly, the lack of privacy, time and facilities for changing and showering was a serious and constraining concern for non-participants.

However, those who did take part thought that those who did not participate because of not wanting to be sweaty were simply being 'soft'; or that there was no reason to be afraid of sweating. They argued that men should not fear such 'small things'. For them, students should not only be eager to play in PE, but also be relaxed about showing their maleness, as they felt that sweating did not degrade one's masculinity (Alharbi, 2014). These students were not concerned about the lack of changing and shower facilities in the school; they knew to bring sports clothes and change in the washrooms or wear their sports clothes underneath their *thawbs*. They developed coping strategies:

'When PE class is over, I go to the washroom carrying my bag, take my sporting clothes off, put them in the bag, and put on traditional clothes, so I feel like a normal student with no sweaty clothes.' (Student 11)

'I am familiar with wearing sporting clothes underneath the *thawb* from intermediate school to save time and play soccer more. When I finish, I just wash my face and hands and then put the *thawb* on over the sporting clothes.' (Student 12)

"I like to wear sporting clothes underneath the *thawb* to save time. It is okay for me to appear with this sort of clothes in school or even out of school." (Student 16)

These students positively experience PE with its clothing/hygiene implications; their 'hygienic' body dispositions and perceptions of PE are quite different from those of non-participants. For participants, the clothing/hygiene constraints do not constitute an insurmountable barrier to PE. For them, lack of proper hygiene (being sweaty) is a concept that can be firmly associated with masculinity. Participants' view of this aspect of practice involved certain actions – changing clothes, washing one's hands – which were, for them, sufficient to the dispositions of hygiene. What is produced is 'a generative principle, a disposition towards one's experience within the fields of practice that the actor must address' (Bourdieu, 1990, pp.52–53). It embraces culture, imagery and a historically predisposed means of understanding the world, as well as patterns of action and conduct. For Bourdieu (1997), a social agent's habitus is the product of history and becomes 'inscribed in their bodies by past experiences' (p.138). The lack of privacy and hygiene seem to be not conditional barriers for participants, but these things were shameful to non-participants. It is notable that only a minority of students participated; by far the majority did not.

Saudi Manhood and Clothing in PE

In terms of PE participation, Saudi males' preferences and practices varied markedly according to the way their bodies are oriented to their resources within their social world; this revealed how students negotiated their social representation of masculinity in terms of how they dressed at school. For most students, the *thawb* reflected their social values and cultural traditions, which contributed to shaping their identities in terms of the 'body as representation' (Dumas & Bournival, 2011). Those who did not participate in PE worried about being judged by the way they looked when wearing sports clothes, even if the clothes were worn underneath the *thawb* (apparently, they would still be visible). They felt uncomfortable with sports clothes not only at school, but in the neighborhood beyond.

An integral component in the construction of masculinity in this sample is boys' cultural values as they relate to clothes. Some students felt that wearing the *thawb* gave them status; wearing it, they felt sophisticated, whereas changing into sports clothes lowered their status:

'When I wear the *thawb*, I look genteel and prestigious. However, when I change to sporting clothes, I look disorderly, unorganized. I am a man and have to follow the traditions.' (Student 7)

'When I first came to this school and participated in PE, I had weird feelings when I changed my clothes from the *thawb* to exercise clothes. I felt like a non-Saudi.' (Student 15)

'Sporting clothes are not cool and if I wear them I feel as if I look disordered and being sweaty. The *thawb* is my favorite clothing to give me prestige.' (Student 20)

For these boys, the *thawb* symbolizes manhood and specifically, what it is to be a Saudi man; they felt disdain for sporting clothes and felt others would also see them disdainfully. A failure to change into sporting clothes and negotiate their ideas of masculinity in terms of their public appearance in school or the community is one of the cultural influences associated with non-participation in PE. Bourdieu (1990) stated that the politics of gender are reflected and negotiated through enduring dispositions – a way of standing, speaking, feeling and thinking. Students' negotiations regarding their social representation of masculinity in terms of sports clothing concerned an interpretation of a male identity that proved to be significant for how men express habitual gender (Davison, 2000).

Gendered Dispositions of Clothing, Performance and Masculinity

Clothing was perceived to highlight a symbolic form of masculinity in terms of the style of dress and the style of the performance of school sport. Statements from both participants and non-participants demonstrate how boys' body performance of gender connects with clothing. The boys viewed themselves as fit bodies with clothes which can be seen as representing/symbolizing a suitable form of masculinity. One student participant described his sporting clothes in PE and outside school when playing soccer:

'When I play in PE I wear shorts [that end at the knee] (…) the same as I play in the neighborhood team. I am comfortable wearing them to play well.' (Student 11)

Outside school, Student 11 plays with a local football club. He practices soccer four times a week and wants to become a professional player. His embodied experience of playing soccer includes wearing sporting clothes comfortably; this began in his neighborhood team. His participation in community sport during his formative years may have contributed to his physical and social ease with PE at school.

In contrast, non-participants believed they should not have to change from *thawb* to sporting clothes in PE. Some boys played soccer wearing the *thawb* outside of school (in informal neighborhood settings): this was their way of resisting a given set of gender norms (Thorpe, 2010). Students' inclinations on this point were arguably in line with the subconscious nature of the habitus, though they also consciously expressed these ideas (Bourdieu, 1977):

'I see participating by wearing *thawb* in PE you can be good at soccer performing high skills. So, students should have the opportunity to participate without changing and be able to play wearing *thawbs*.' (Student 14)

'I like to play wearing a *thawb* if I have a chance to play soccer with other students who wear *thawbs* too.' (Student 22)

For these students, being able to participate in sport wearing the *thawb* in their community led them to want to do the same at school, reflecting the continuity of their own values as manifested by this item of clothing and the culture it represents to them. This reflects Bourdieu's (1984) concept of bodily *hexis* (embodiment of habitus); the way people 'carry themselves' and live in and through their bodies is predominantly social and cultural. The situation for Saudi boys is complicated due to confusion over what constitutes appropriate attire for students in PE. Rather than sporting attire being simply a matter for suitability for PE participation, it carries cultural weight, including disdain for sporting clothing, which, for some Saudis, lowers the social value of maleness.

Peer Influence

Although the experiences and perceptions of boys can vary between environments, masculinity is always socially and culturally constructed in relation to a dominant image of gender and status differences and ultimately defines it (Dumas & Bournival, 2011; Lee, 2008). Brooks and Magnusson (2006) suggested that negative experiences in PE, such as those cited below, influence a student's physical identity and his level of PE participation. Some non-participants described the embarrassment they felt changing their clothes without privacy:

'After PE class, students have to go upstairs wearing their exercise clothes, walking among all the students. It is difficult. There are supposed to be changing and washing rooms near the soccer field, so that students feel comfortable [changing out of their sports clothes].' (Student 14)

'There are some bad words when you change clothes before and after the PE class, come from those strong players. Sometimes, they make jokes about you and you are embarrassed' (Student 20).

'In the 10st grade, I participated in PE class. My classmates called me 'butcher' because I played with no skills and just ran behind the ball and hit players, so it somewhat affected me and stopped my participation.' (Student 8)

Negative comments from peers, experienced by the boys as offensive and condescending, contributed to body dispositions toward non-participation and even disdain for PE. Aggressive attributes have been cited as markers of male-appropriate sports in high school, and participation in PE can be affected by verbal expressions (insults) during PE class (Kirk, 2010a; Brown & Evans, 2004). These factors hinder students' participation, as boys experience discomfort and shame regarding their physical appearance when changing their clothes; there is a sense that they are seen to present weak body performance (Jachyra, 2014;

Alharbi, 2014). This becomes a source of inequality in PE class participation. Deciding not to participate is the logical outcome of a pattern of thought, behavior and action which actively constructs, directs and organizes social realities for non-dominant boys who perform weakly (Bourdieu, 1971).

Interviews with non-participants showed that students who controlled the game were in a position to marginalize those who lacked sporting skills.

'I would like to participate in the PE class, but it is tough because my classmates are skillful, and they want students like them.' (Student 21)

'I don't like to play because all the students watch me, and they want to see a good and competitive student, but I am not… I feel panic. Some players here won't let me join them.' (Student 9)

In this school, non-participants were discouraged from participating in PE because of their lack of competence in the sold activity offered (soccer), and by an over-emphasis on competition. For students like these, a lack of physical/sporting skills can lead to marginalization and lower levels of social participation (Portman, 1995; Azzarito, 2004).

Ultimately, this lack of physical capital could expand the gap between a student and his classmates, decreasing his social networking capacity. Struggling to participate in PE was painful for the students I studied. Feeling unfit playing soccer during the class fostered a feeling that they could not keep up with others physically; they felt their bodies could not perform as well other boys did. This indicates how student involvement in sport is fashioned by capital that is the result of a combination of socio-economic status, schooling routines and available resources (Lee et al., 2009).

Social Class and PE in this Saudi High School

To understand the sociological concepts underlying the students' body dispositions, this study examines the socio-demographic characteristics related to the students' parental occupational and educational background. The findings suggest that Saudi boys' participation and their relation to their own body habitus are fashioned by the conditions of existence of a given milieu. According to Dagkas and Stathi (2007), one's social, economic, and cultural background is considered to be aligned with a person's habits, identity, and dispositions toward PE and leisure; these are, in turn, characteristics of an individual's social class.

Some middle-class students whose parents had high educational achievement participated in PE and played soccer outside school (Students 3, 4, 11, 12, 16 and 27). These boys, whose fathers also practiced sport, preferred a body that was trained through regular participation in PE, dressing in the proper soccer uniform at school, and additionally, playing soccer in the community supported by their fathers and neighborhood friends. They had more economic and cultural capital, which assisted and maintained their body dispositions and enabled their participation in PE. In addition, this group of social agents valued the physically competitive nature of and skills inherent in playing soccer, as well as the display of masculine traits in the game.

In contrast, some lower-middle class boys whose parents had low educational attainment showed no interest in sport/PA; they preferred talking or doing homework during PE class, playing soccer irregularly, and dressing in *thawbs* when they did play soccer (Students 2, 5, 6, 7, 8, 9, 10, 14, 15, 17, 19, 20, 22, and 26). In fact, wearing the *thawb* inhibits boys because it restricts their running, speed and kicking, but these boys accepted these restrictions. Drawing

on Bourdieu (1984), some groups of actors share the same interests, social experiences and traditions; in the present study, eight students (5, 6, 8, 9, 14, 19, 20, 22) lived in the same neighborhood, were close relatives, had lower middle-class backgrounds with fathers who were low-waged, or retired soldiers, while their mothers stayed at home and were illiterate. None of these boys participated in PE. It's clear that parental encouragement is vital, and that family incomes that allow for private club memberships may help, but it could indicate that the social class impact on these boys is to be a less influence on their levels of PE and PAs.

Conclusion

Value in the high school PE context is linked with skillful sporting bodies (Shilling, 2003), and emphasizes the enduring importance of corporeal performance. Boys therefore need to possess specific bodily dispositions with a taste for sporting culture and the capacity to develop and display physical skills. However, as this study showed, some boys may lack these dispositions for reasons beyond their control. These boys are left at a disadvantage, with implications for their wellbeing.

Students described the impact of the masculine school environment and their struggle in this environment in terms of the judgement of other boys, and potential for embarrassment. With limited resources, the PE environment habituated students in such a way that some curtailed their capacity and willingness to participate in the sole activity (soccer) available in PE, with its values and influence over what are seen by the group to be legitimate bodily practices (Bourdieu, 1993). The lack of PE facilities, time and privacy for changing and showering, and concerns about being unhygienic throughout the rest of the day, were all barriers to participation. Some boys were uncomfortable changing in front of others, suggesting that changing rooms and shower facilities that offered privacy would be helpful. Some boys actively engaged in acting out their sense of masculinity through speech and bodily actions. These boys did not mind becoming sweaty, or changing in public, and some of them behaved towards non-participants in ways that further discouraged this group from joining in.

Some students seemed to dominate the PE class in terms of their expression of maleness. Participants and non-participants made different choices and displayed different preferences for style of dress (*thawb* or sporting clothes) and had distinct interactions with peers in PE and on the soccer field (or indeed, off the field if they were not participating). Aggressive behavior was observed among boys who took part enthusiastically. But instead of fostering sporting skill among all boys, the school's PE environment seems to have enabled a kind of cultural permission regarding expressions of masculine identity associated with PE participation, and this could be damaging. PE in this setting became a masculine activity favored by dominant, higher status students who typically wanted to take part, while those of lower social status felt challenged and discouraged when faced with this more dominant masculinity. This reduced the latter group's opportunities to experience and benefit from PE classes. In Saudi, the experience of high school PE students is influenced by social and cultural conditions. Students of the same social class share similar living conditions and backgrounds, so they internalize ideas and behavioral rules and routines that result in similar dispositions over time. This influences their willingness to participate in PE.

This study has given voice to adolescent males in a school setting, and aims to contribute to the literature on embodied experiences of masculinity by addressing the lack of participation in PE in Saudi Arabia. The school itself is concerned to improve on this point. Understanding

the students' perspectives should guide schools in addressing the deficiencies identified here to increase PE participation and make its environment more welcoming and worthwhile.

Corresponding Author

Majed Eid ALHARBI
PhDc in School of Human Kinetics, Faculty of Health Sciences, University of Ottawa, CANADA
Email: majjodym@hotmail.com, Twitter: @majedpe

Conflict of Interest

The author has not declared any conflicts of interest.

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Team Identity and Indirect Sport Consumption of Soccer Fans

Behnam NAGHI-POUR GIVI[1], Ehsan MOHAMADI TURKMANI[2], Abbas NAZARIYAN MADAVANI[3], Amir HOSSEIN MONAZZAMI[4]
[1] PhD of Sport Management, Faculty of Sport Sciences, Allameh Tabataba'i University, IRAN
[2] PhD of Sport Management, Faculty of Management and Accounting, College of Farabi, University of Tehran, IRAN
[3] Assist. Prof., Department of Sport Management, Faculty of Sport Sciences, Shahid Rajaee University, IRAN
[4] Assist. Prof., Department of Sport Management, Faculty of Sport Sciences, Shahid Rajaee University, IRAN
Email: behnam.naghipour@gmail.com, Mohamadi.t1985@gmail.com, Abbasnazarian@gmail.com, Amirhosein.monazami@gmail.com

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Abstract

Team identity can be perceived as a form of a group or a social identity. This identity can direct fans behavior. The aim of this study was to investigate the relationship between team identity and indirect sport consumption among the most popular football teams' spectators in Iran. The statistical population of this study consisted of the fans of Esteghlal and Persepolis teams, 374 of which voluntarily took part. The research instruments were Heere and James (2007) team identity questionnaire and Summers and Morgan (2006) sport consumption questionnaire. After confirming the validity of the questionnaires by experts, the reliability of them was tested in a pilot study by Cronbach's alpha. The results of the study revealed that there was no significant difference between Esteghlal and Persepolis fans in team identity and its components ($P>0.05$). While there was a significant difference between the two groups in indirect sport consumption and its components ($P<0.05$). At the same time, the correlation between team identity and indirect sport consumption in the Persepolis fans was stronger than Esteghlal fans. According to the results, it seems that managers of popular clubs like Esteghlal and Persepolis, to make stronger the relation between team Identity and indirect sport consumption of fans should have the necessary attention to factors that create team identity.

Keywords: Media Consumption, Merchandise Consumption, Soccer Fans, Team Identity

Introduction

One of the aspects of identity related to the current social humans is team identity or the identity of national or social team, related to the country in which one resides. Team identity is a mental and emotional link that describes the fans of a team with a sense of belonging to a bigger social structure (Wann and Branscombe, 1990). Team identity is an emotional link between a team and its fans, that is, the degree to which a fan feels the sense of a team belonging to him/her (Reding, 2009). Team identity can be perceived as a form of a group or a social identity. Team identity is acknowledged to be related to a team as a concept or thing, which contains emotional attachment and the fans are acknowledged to be the users. Being known with a group enhances one's self-confidence and gives meaning and credit to relations and connections among people (Sutton and et al, 1997). In recent years, some researchers have analyzed team identity in relation to cognitive, emotional, and behavioral consequences fields (Boyle and Magnusson, 2007; Kwon and et al, 2005; Wann and Grieve, 2005). Some other researches have also analyzed the effect of team identity on the national identity of the fans (Bogdanov, 2011). On the other hand, some researches have analyzed team identity in relation to indirect consumption related to teams (Carlson and et al, 2009; Fink and et al, 2009; Reding, 2009; Rowe and Gilmour, 2010). In the analysis of the incentives of the fans, five factors have been taken into account: team identity, consumption incentives (related to entertainment, self-scrutiny, and the potential of increasing association), media, consumption of services, and consumption of goods (Gau and et al, 2009). Through analyzing the indirect sport consumption between American and Asian students, Rowe and Gilmour (2010) reported a meaningful difference. Decrop and Derbaix (2010) analyzed the consumption of fans' sports goods and its relation with the sense of honor and pride; they suggested that fans quickly feel connected to the brand of the related club and consider it as an honor to consume the goods of that club. Nowadays, consumption is studied with regard to cultural and social trends. "Consumption" is not merely a financial activity seeking profits but a sign of culture and identity of citizens of a society; however, it should be noted that this does not lower the value of financial factors. For instance, Bourdieu suggest that "consumption" is not merely satisfying biological needs but it resembles signs, symbols, ideas, and values. According to him, consumption, in new era, is a process that tries to create and maintain an identity in purchased goods (Bourdieu, 1998). In other words, people create their identity, or who they are, through the goods they consume. Thus, it can be said that consumption, nowadays, is identity-creating. Furthermore, Veblen (1981), in his theory of the well-off class, analyzes the consumption features of this class and suggests that the well-off class has "conspicuous consumption" (Veblen, 2005). Furthermore, it is possible to analyze the living style of people through determining their consumption behavior.

Some of domestic researches conducted on sport and identity have determined the relation of identity and its sorts to fans' sports. For instance Shaji and et al, (2011) have determined various levels of identity of players of Iran national handball team and its relation to sports identity, age, and championship background; his results reveled that family identity, sports identity, educational identity, and religious identity constitute four levels of important sports identity, respectively. Moreover, there is a meaningful reverse connection between sports function identity of players and their sports identity. Goudarzi and et al, (2011) analyzed the religious and national identity of young wrestlers and football players in Tehran and suggested that the level of religious identity in wrestlers and football players is below the expected level. The idea that athletes and national teams are representatives of national identity is named "Imagined Communities" in the theories of Anderson (1983) and it was

emphasized in other research, these studies reveal that there is a connection between sport and team identity (Armstrong and Hognestad, 2003; Bairner, 2008). Previous researches have each analyzed identity and sport through different aspects. Recently, some researchers have studied team identity in terms of cognitive, emotional, and behavioral results (Boyle and Magnusson, 2007; Kwon and et al, 2005; Wann and Grieve, 2005). On the other hand, lifestyle and consumption behavior of people are highly affected by their constituents of living, and one of these constituents is sport teams; the identity-creating connection of these teams makes people connected to them. The abovementioned researches have all confirmed team identity and its effect on the behavior of fans as parts of society; these researches, however, have analyzed team identity through a different aspect. In the globalized atmosphere of today's world, the meaning of identity has dramatically been increasing and numerous studies have been dedicated to this meaning. Sports teams as identity-creating constituents are playing important roles. Considering the effect of team identity and being known as a fan of a team, can this relation affect the fan using media and good purchasing? Those fans that are known with a team are prone to spend some of their budgets on purchasing items related to their favorite teams. Furthermore, fans are also prone to spend some of their time to pursue the issues relate to their favorite teams through media. People who are on a high level of team identity are even prone to spend more time and money on their favorite teams (Gau and et al, 2009). According to studies conducted previously, the researchers of the present study have tried to further analyze this issue among the fans of the most popular teams in Tehran, Esteghlal and Persepolis. Is there a connection between the team identity of these fans and their use of media and good purchasing? This was the central question of the present study. Furthermore, another purpose of this study was to identify the level of team identity and evaluate the indirect consumption of the fans (media and good purchasing) among the fans of Esteghlal and Persepolis teams.

Materials and Methods

The focus of this research is a survey study and the statistical population consists of the fans of Esteghlal and Persepolis teams. The volume of the sample was calculated 190 people for each team through Cochran formula. In total, 420 questionnaires were distributed among fans (210 questionnaires each team). The questionnaires were distributed in 2 games of the teams in question. The return rate of the questionnaires among fans of Esteghlal team was 194 questionnaires (92.3 %); the return rate of the questionnaires among fans of Persepolis team was 180 (85.7 %) and the total return rate of the questionnaires among all fans was 374 (89.04 %). The research team sat beside the fans before the start of the game and made sure that they are interested in taking part in the research; if they were, the team gave those questionnaires. The scale items were taken from Heere and James (2007) for team identity and Summers and Morgan (2006) for indirect sport consumption to measure relationship between team identity and indirect sport consumption of Iranian Soccer Fans. In order to make the questionnaire practical and applicable, the steps below were taken: at the first step, the questionnaire was translated to Persian by experts and to evaluate the equivalence of the translation, the same questionnaire was translated to English by an expert translator. At the second step, in order to measure the accuracy of the translation, one of the fans filled in the Persian form while an expert filled in the English form to detect any possible inequalities. At the third step, after analyzing both versions of the form, both experts came to this conclusion that Persian and English forms are both equivalent in terms of content. Finally, the preliminary questionnaire was given to 7 experts in the field of sports management, and after gathering their comments,

the questionnaire was finalized which included three parts; at the first part, factors such as age, marital status, educational level, and occupation were questioned. The second part included constituents of team identity such as public evaluation, personal evaluation, belonging and unity, sense of interdependence, cooperation, and awareness. The third part was designed to measure the indirect consumption of the fans which contained two sections itself media consumption (press, internet, television, weblogs, and new media) and team related goods consumption (The scarf, T-shirt, The flag of a team). The stability of team identity questionnaire and indirect sport consumption questionnaire was considered 0.88 and 0.84 respectively. For the analysis of the data, the questionnaire was used as the data collection method; SPSS 23.0 was used in the analysis of the data. Frequency, percentage, standard deviation and mean values were used to describe whole data. In order to evaluate and transform the data set in terms of meaningful factors, factor analysis (Confirmatory factor analysis) was applied in Amos 23.0 Also, Pearson Correlation Coefficient and independent samples T test were used.

Result

Demographically, most of the participants (52.06 %) in Esteghlal team and (57.78 %) in Persepolis team was younger than 26 years. Most of fans (41.75 %) in Esteghlal team and (41.11 %) in Persepolis team was School Student. Educational Status of 52.06 % in Esteghlal team and 50.56 % in Persepolis team was High School level. Also, in Esteghlal team 63.40 % and in Persepolis team 62.22 % of fans participants 1 to 4 times in a regular season. So, we can say that demographically, the fans of the two teams are similar.

For verification and confirmation of the factor structure, we performed a CFA using Amos 23 in the all samples. In the first step, we evaluated the model of each variable separately (team identity and indirect sport consumption). Then the measurement model was evaluated simultaneously. The fit indices for team identity measurement model were studied and the chi-square value was found to be significant ($p = 0.00$, $x^2/df = 1.87$). The values of the fit indices were as follows: RMSEA = 0.072, NFI = 0.85, CFI = 0.94, and AGFI = 0.91. Also, the fit indices for indirect sport consumption measurement model were studied and the chi-square value was found to be significant ($p = 0.00$, $x^2/df = 2.13$). The values of the fit indices were as follows: RMSEA = 0.062, NFI = 0.87, CFI = 0.91, and AGFI = 0.89. Finally, the fit indices of whole model were evaluated. After conducting CFA to establish the measurement model, it can be said that all constructs had higher composite reliability (CR) value than recommended level of 0.70 (Hair and et al, 2009). Besides, average variance extracted (AVE) value helps to determine convergent validity as CR value and recommended level for AVE is 0.50 (Fornell and Larcker, 1981).

All constructs in this study had greater AVE value then recommended. Briefly, it can be said all variables are supporting the 3-dimensional construct (see Table 1).

Table 1. CFA of team identity and indirect sport consumption of Soccer Fans

Variables		Items	Factor Loadings	CR	AVE
Team Identity		Public assessment	0.523	0.873	0.581
		Personal assessment	0.668		
		Belonging and unity	0.741		
		Sense of interdependence	0.643		
		Cooperation	0.694		
		Awareness	0.667		
Indirect Sport Consumption	Media use	The press	0.617	0.723	0.532
		Internet	0.705		
		Television	0.802		
		New weblogs and media	0.793		
		Radio	0.649		
	Purchasing of goods	The scarf of the team	0.701	0.901	0.612
		The T-shirt of the team	0.873		
		The flag of the team	0.789		
Fit Indices: X^2/df: 1.974, AGFI: 0.892, NFI: 0.913, CFI: 0.931, RMSEA: 0.070					

According to t-test, there was no significant difference between Esteghlal and Persepolis fans in team identity and its components (P**>**0.05). While there was a significant difference between the two groups in indirect sport consumption and its components include television, radio, and the scarf of the tea, the T-shirt of the team and the flag of the team (P**<**0.05). According to the Pierson correlation test, there was a significant positive correlation between team identity and indirect sport consumption in Esteghlal fans (r=0.366, p<0.001) and Persepolis fans (r=0.712, p<0.001). Finally, the components of team identity and indirect sport consumption in two group ranked by friedman test (see Table 2).

Table 2. Friedman test of Team Identity and Indirect Sport Consumption components in two group

Team Identity		**Indirect Sport Consumption**	
Esteghlal fans	**Persepolis fans**	**Esteghlal fans**	**Persepolis fans**
Personal assessment	Public assessment	Television	Television
Belonging and unity	Belonging and unity	The press	Internet
Public assessment	Personal assessment	Internet	The press
Awareness	Awareness	The T-shirt of the team	The T-shirt of the team
Cooperation	Cooperation	New weblogs and media	The flag of the team
Sense of interdependence	Sense of interdependence	The scarf of the team	New weblogs and media
		The flag of the team	Radio
		Radio	The scarf of the team

Discussions

The purpose of this study was to analyze the relation between the team identity of soccer fans and their indirect sport consumption. Team identity includes constituents such as public assessment, personal assessment, belonging and unity, the sense of interdependence, cooperation, and awareness. Indirect sport consumption also includes constituents related to media and goods use. According to the result, the number of fans with higher education is low at the stadium; the reason behind this may be traced back to the fact that football matches are not interesting enough for such people, or the fact that maybe they are busy with their academic and occupational issues. Furthermore, the findings of this study revealed that a large number of spectators consist of students and unemployed individuals. This matter, why other groups and classes of society are not fond of football matches, needs in-depth analysis. As it was mentioned in findings, the correlation between team identity and indirect sport consumption among Esteghlal fans was r=0.36, which is an indicator of a low and direct relation between these two variables; that is, the more the level of team identity rises, the more the indirect sport consumption of Esteghlal fans will rise. The correlation between team identity and indirect sport consumption among Persepolis's fans was r=0.71, which is an indicator of a high correlation between these two variables; that is, the more the level of team identity rises, the more the indirect sport consumption of Persepolis's fans will rise. The high correlation of team identity and indirect sport consumption among Persepolis spectators and its low rate among Esteghlal spectators may be traced back to factors such as their rationale behind attending the game (being with friends, escaping stress, escaping every-day routine, supporting a team etc.) or social class (belonging to well-off or poor groups of society, high or low education etc.). This matter is in total accordance with the findings of Carlson and et al, (2009); in the findings of their research, they suggested that consumption incentives related to entertainment (communication, making oneself known etc.) are the most important ones; moreover, they suggested that those fans who possess a high level of team identity are prone

to be frequent users of media and goods related to their favorite teams. Nevertheless, one needs an accurate insight and careful observation to further analyze this very issue. The usage level of television and the press was respectively at the first and second ranks among the fans of both teams. It seems that on the one hand, excitement of football and on the other hand, the peculiar ability of television to present unique scenes makes it the most popular means to pursue football. This fact is in complete accordance with the findings of Carlson and et al, (2009) and Melnick and Wann (2011). It should also be noted that the fans of both teams rarely used radio, and it was the last means on the list. The reason behind this issue may stem from the fact that the recent advancements in technology provide the fans with more interesting and visual effects which, in turn, entertain fans more than radio does. In all of the researches, the meaningful relation between team identity and indirect sport consumption has been positively proved. It is worth mentioning that the use of television and press among the spectators of domestic and foreign teams was meaningfully equal (Bogdanov, 2011; Carlson and et al, 2009; Fink and et al, 2009).

Finally, considering the significant relationship between team identity and indirect sport consumption in both of teams, it was determined that one of the main factor in indirect sport consumption is team identity. So team managers of soccer clubs should pay attention on team identity especially in Esteghlal team.

Conclusion

Nowadays, human identity resources have become very diverse and one of most popular human identity resources is sport. The popular sports teams especially soccer teams have a unique identity, but the power of this identity is varies among teams. Team identity is an element that can guide the behavior of fans. In this research, it has been shown that fans with strong team identity have more tendencies to Indirect Sport Consumption. Indeed, when fans feel strong team identity, they display certain behaviors. These behaviors are symbols that the fans are sympathetic to their teams.

Applicable Remarks

- This study helps researchers better understand the relation between team identity and indirect sport consumption and, of course, the priorities of the spectators in using media.
- Sport managers can attract sponsors by strengthen team identity of fans because as sponsors generally support teams that have prominent fans.
- Using the concept of team identity and its impact on indirect sport consumption by Tehran Esteghlal and Persepolis Clubs creates economic value and there by enhances profitability and revenue, increasing their share of the sales market and reducing their dependence on government budget.

Corresponding Author

Behnam NAGHI-POUR GIVI

PhD of Sport Management, Faculty of Sport Sciences, Allameh Tabataba'i University, IRAN

Email: behnam.naghipour@gmail.com

Conflict of Interest

The authors have not declared any conflicts of interest.

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Time of Day Effect on Repeated Sprint Ability, Aerobic Capacity and Physiological Responses in Team-Sport Athletes

Özcan SAYGIN, Halil İbrahim CEYLAN, Ahmet Rahmi GÜNAY
Mugla Sitki Kocman University, Facult of Sport Sciences, Mugla, TURKEY
Email: osaygi@mu.edu.tr, halil.ibrahimceylan60@gmail.com, ahmetrahmigunay@gmail.com

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Abstract

The aim of this study was to examine the time of day effect on aerobic capacity, repeated sprint ability and physiological responses in team-sport athletes. Ten male athletes (age: 21.60 ± 1.42, height: 185.10 ± 7.30cm, body weight: 82.15 ± 4.88, % body fat: 12.98 ± 2.39) who regularly exercise and engage in team sports, participated in this study voluntarily. Athletes were subjected to Repeated Anaerobic Sprint Test and 20m Shuttle Run Test at three different times of the day in the morning (09.00-10.00), afternoon (12.00-13.00) and evening (16.00-17.00) at two-day intervals. As a result of Repeated Measures ANOVA, statistically significant differences were observed when comparing body temperature ($F(2,18)=10.042$, $p=.001$), vertical jump height ($F(2,18)=9.216$, $p=.005$), maximal power ($F(2,18)=9.059$, $p=.002$), mean power ($F(2,18)=8.617$, $p=.002$), minimum power ($F(2,18)=7.120$, $p=.002$), aerobic capacity ($F(2,18)=6.967$, $p=.006$), maximal heart rate $F(2,18)=6.859$, $p=.006$), and blood lactate levels after exercise tests ($F(2,18)=6.041$, $p=.010$) measured at morning, afternoon and evening time periods. According to Bonferroni test results; body temperature, vertical jump height, maximal power, aerobic capacity values were found to be statistically higher in the evening hours than the morning hours ($p<0.05$). Blood lactate level and maximal heart rate were increased significantly after tests in the evening ($p<0.05$). In this study, factors such as having a good sleep quality, body temperature and circadian type can be shown as reasons for the performance of the athletes to be good in the evening compared to the morning hours. In conclusion, while planning the athletic training programs, it is thought that it is important to perform training which include aerobic and anaerobic capacity, explosive power and jumping exercises in the evening hours because of the significant increases in performance of the athletes

Keywords: Team Sport, Aerobic Capacity, Anaerobic Capacity, Blood Lactate, Different Time of Day

Introduction

Many biological functions vary cyclically over a 24-hour period depending on the darkness and temperature. These cycles are defined as circadian rhythms (Reilly, 1990; Punduk et al., 2005). The human circadian rhythm is governed by a circadian clock consisting of two separate components: central (main) and biological clocks (Hower et al., 2018). The main clock in the brain coordinates all the biological clocks in one day and ensures that the clocks are synchronized. Suprachiasmatic Nucleus (SCN), called the main clock, consists of approximately 20,000 neurons. SCN is located in a part of the brain called hypothalamus and receives direct input from the eyes. Biological clocks are an organism's innate timing device. It takes place in almost all tissues and organ systems in the body. They consist of certain molecules (proteins) that interact with cells in the body. Circadian rhythm is closely related to biological clocks. Biological clocks produce circadian rhythms and regulate their timing. Impaired or abnormal circadian rhythms may cause biological clocks to run slowly or rapidly (Hower, 2018; NIH, 2017; Winter et al., 2007). Oscillations in physiological processes responsible for both internal and external stimuli affect the circadian rhythm (Touitou and Haus, 1992; Atkinson and Reilly, 1996). Circadian rhythm synchronized to a 24-hour light /dark cycle is affected by various physiological and behavioural processes such as core body temperature, body hormone secretion, melatonin, autonomic nervous system, sleep /wake state and cognitive functions (Mizuno, 2014). Environmental factors such as physical activity and light types also affect circadian rhythm (Hower et al., 2018). Youngstedt et al., (2016) suggested that bright light was a stronger zeitgeber than exercise on circadian rhythm. Although the relevant mechanisms are not fully understood, there is growing evidence that exercise has significant effects on sleep/wake cycles and circadian clock modulation in human (Morgan et al., 2015).

A large number of team games require participants to repeatedly produce maximal or near maximal sprints of short duration with brief recovery periods (Wadley and Le Rossignol, 1998). The ability to produce the best possible average sprint performance during a series of sprints separated by short rest periods is called Repeated Sprint Ability (RSA). One of the best way to train RSA is to perform Repeated Sprint Test (Bishop et al., 2004; Bishop et al. 2011). Wadley and Lee Rossignol (1998) indicated that phosphagen system was the main energy contributor for Repeated Sprint Rest (Wadley and Le Rossignol, 1998). The depletion of phospho-creatinine (PCr) reserves and the ability to buffer H^+ has often been mentioned as a limiting factor for the performance of repeated sprinting (Bishop et al., 2004). Aerobic power which is the ability to produce aerobic energy at a high rate is characterised by VO_2max and aerobic capacity refers the ability to sustain for prolonged period (Bangsbo and Michalsik, 2002). High aerobic fitness or aerobic capacity level is a prerequisite for superior anaerobic performance during continuous intermittent activities (Aziz et al., 2000). Da Silva et el., (2010), Jones et al., (2013) demonstrated that Repeated Sprint Ability was more strongly correlated with aerobic power or aerobic capacity. Having a good aerobic capacity increases yield in short-term high-intensity activities over a prolonged period of time (Jones et al., 2013).

The different physiological and psychological features which were mentioned above, associated with superior athletic performance in team and individual sports vary according to the time of day. These features show ups or downs at maximum or minimum levels at particular times of the day (Cappaert, 2009). It was seen that the most important components of athletic performance reached peak values in the evening hours depending on the body's increasing temperature (Atkinson ve Reilly, 1996; Vitosevic, 2017). In the literature, there are different results in the studies examining the effect of circadian rhythm on the important

physiological properties. The studies in literature showed that Repeated Sprint Ability (Chtourou et al., 2018; Lopez-Silva et al., 2018; Pullinger et al., 2018; Racinais et al., 2005), anaerobic (Kin-Isler, 2006; Souissi et al., 2007; Gholamhasan et al., 2013; Souissi et al., 2010) and aerobic capacity performance (Chin et al., 2015; Chtourou and Souissi, 2012; Hammouda et al., 2013; Zghibi et al., 2018), vertical jump height (Chtourou et al., 2013; Chtourou et al., 2018; Heishman et al. 2017), blood lactate level (Kin-Isler, 2006; Chin et al., 2015), body temperature (Chin et al., 2015), agility, speed and explosive force (Rai and Tiwari, 2015) were higher in the evening hours compared to morning hours. In some studies, different time period of the day had no effect on aerobic power (Bessot et al., 2006; Movaseghi et al., 2016), vertical jump height (Brown et al., 2008; Grant and Glen, 2018), blood lactate level (Dalton et al., 1997; Kin Isler, 2006). It is important to determine the most suitable time zones of the athletes in order to achieve the highest level of athletic performance, to obtain better yields from the training and to better prepare for competitions. The aim of this study was to investigate whether different time periods of the day cause changes in Repeated Sprint Ability, Aerobic Capacity, and Physiological Responses of the in team-sport athletes.

Methods

Participants

Ten male athletes who study Faculty of Sport Sciences in Mugla Sitki Kocman University, regularly exercise 3 days a week and engage in team sports (volleyball and basketball), participated in this study voluntarily. Prior to the study, the permission was obtained from the M.S.K.U Human Research Ethics Committee (Decision no: 25, Protocol no: 25). Athletes were informed by pre-interview about content and methodical model of the study in detail. Then, they signed an Informed Consent Form. The measurements of the study were completed in 4 sessions with a minimum interval of 2 days between each session (Zagotta et al., 2009). For the first session, the height, body weight and skinfold thickness of the athletes were measured in the Physiology Laboratory of the Faculty of Sport Sciences. In addition, the participants completed the Epworth Sleepiness Scale and Morningness-Eveningness Questionnaire. For the second, third and fourth session, The Repeated Anaerobic Sprint Test and 20m. Shuttle Run Test were applied to the participants in the evening (16.00-17.00), afternoon (12.00-13.00) and morning (09.00-10.00), respectively (Chin et al., 2015). Heart rate and blood lactate values were recorded before and after the tests.

Collection of the Data

Firstly, the permission for the measurements of the study was obtained from the M.S.K.U Health, Culture and Sports Department. The measurements were performed in Sports Hall in May. During the test measurements, the subjects were informed that they should maintain their normal eating habits and avoid excessive fatty food intake. Before the 24 hours of each test session (second, third and fourth), athletes were warned that they should sleep for at least 8 hours, not to use any caffeine or stimulants, and not to perform high-intensity activity. They were also informed that they should receive light food before each test session.

During the second, third and fourth test session, below sequence was followed in data collection;

The athletes came to the sport hall fifteen minutes before each the test session. Firstly, RS400 brand polar watch was attached to athletes in order to determine resting heart rate, then body temperature and resting blood lactate levels were measured. The athletes are warmed with the trainer for 15 minutes. After warming up, the vertical jump height was determined. After completing the vertical jump test, athletes had a rest for 2 or 3 minutes and then Repeated Anaerobic Sprint test was applied to the athletes in the form of 5 athletes. Athletes had 8 minutes of rest between Repeated Anaerobic Sprint Test and 20m. Shuttle Run Test. (https://www.safa.net/wp-content/uploads/2017/06/FIFA-Fitness-Tests-English.pdf). After resting, they participated in 20m Shuttle Run Test. Fingertip blood lactate samples were collected within 5 minutes after the participant finished the 20m Shuttle Run Test (Chin et al., 2015) (Figure 1).

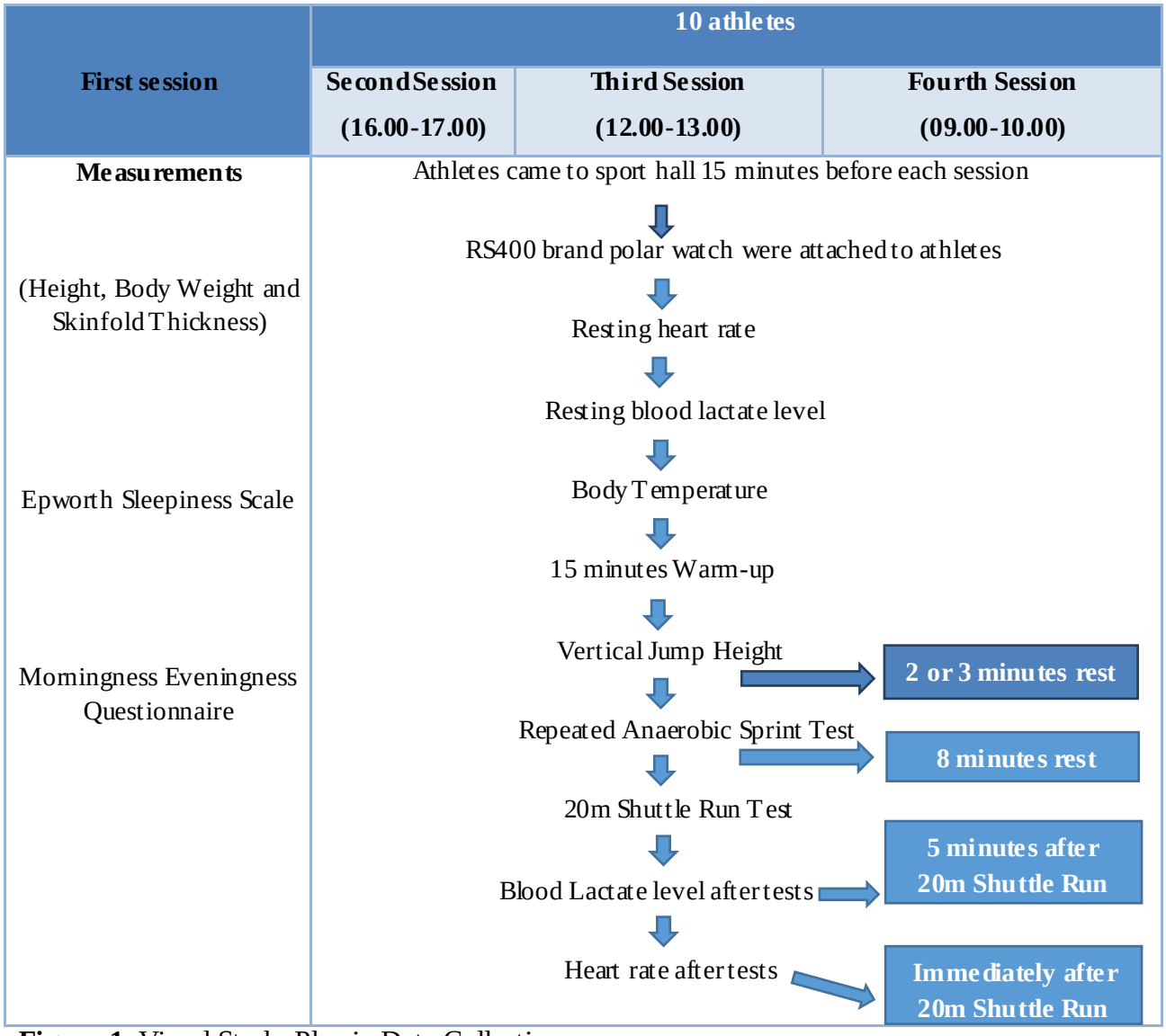

Figure 1. Visual Study Plan in Data Collection

Data Collection Tools

Body Weight and Height: The body weight and height were measured by Seca brand measurement tool (0.01 kg and 0.01 cm sensitivity) The data were written on the information form as centimetres and kilogram (Gunay et al., 2010).

Skinfold Thickness: Holtain brand skinfold calliper which applies a pressure of 10 g/sq mm at each angle, was used to detect the percentage of body fat. The measurements were taken from the right side of the participants while they were standing upright (Zorba and Saygin, 2013). In this study, the values obtained from 4 regions (biceps, suprailiac, subscapular, triceps) were calculated based on the Durnin-Womersley (1974) formula (http://www.linear-software.com/online.html).

Heart Rate: The heart rate values of the athletes during rest condition and after the tests were determined by Polar RS400, Finland.

Body Temperature: Body temperature of the athletes was measured by IR900 Gun Type Forehead Fever Meter Device.

Blood Lactate Analysis: The lactate accumulates in the muscles during the exercise. There is a time lag for the diffusion from active muscles and re-distribution within the body. To determine peak lactate concentration in the blood, samples should be taken at intervals during the first 5 to 10 min. of the recovery period (Astrand and Rohdahl, 1986). Nova Biomedical Lactate Plus (40828 brands) was used to evaluate the blood lactate concentration. In this study, fingertip blood lactate samples were collected during rest condition and within 5 minutes after the participant finished the 20m Shuttle Run Test (Chin et al., 2015).

Sargent Vertical Jump Test: The athlete stood side on to a wall and reached up with the hand closest to the wall. He kept the feet flat on the ground, the point of the fingertips was marked and recorded. The athlete then stood away from the wall and jumped vertically as high as possible using both arms and legs. He touched the wall at the highest point of the jump. The difference in distance between the standing reach height and the jump height was determined "score". This test was performed three times and the best score was recorded (Gunay et al., 2010)

Repeated Anaerobic Sprint Test: The anaerobic power and capacities of the athletes were determined by Repeated Anaerobic Sprint Test using photocell system. The Run-Based Anaerobic Sprint Test (RAST), developed by Draper and Whyte (1997) at the University of Wolverhampton in the UK in 1997, is a test protocol designed to measure anaerobic power and capacity (Zagatto et al., 2009). The test includes six sprints on a distance of 35 meters with a 10-second rest interval between each sprint. By measuring body mass and sprint times, it is possible to calculate the power in each sprint (Power=body mass x distance^2/time^3). It is widely used by exercise specialists to monitor the performances of athletes. For each athlete, the maximum power, mean power, minimum power, and fatigue index were calculated by entering the 6 sprints value of the calculation tool at https://www.brianmac.co.uk/rast.htm.

20 Meter Shuttle Run Test: 20m Shuttle Run test which is a field test, was used for the determination of MaxVO_2 or aerobic capacity. It is a 23-level test that starts with 8.5 km.s^{-1} (9 sec) and increases the running speed by 0.5 km.s^{-1} every 1 minute. The participant runs a round-trip of 20m. The running speed is controlled by a cassette player that emits a beep at regular intervals. The subjects were run in the determined lines on a 20-meter track and continued to test until they made two errors (Leger et al., 1988; Gunay et al., 2010). The

method developed by Ramsbottom et al. (1988) was used to convert the shuttle levels to $MaxVO_2$.

Morningness-Eveningness Questionnaire: The questionnaire, is a Likert scale type consisting of 19 questions, which determine the circadian type of the athletes, possible answers are given as 4 options. Each response option is clearly schematized. The timetable is used in the answer to the questions 1, 2 and 10. This ruler is divided into a 7-hour timeframe and is expressed in 15-minute sub-slices. The answer options of the other questions are in the form of boxes. For each question, the participants who scored different points according to the answer they were marked (between 1 and 4 score for the questions 3, 4, 5, 6, 7, 8, 9, 13, 14, 15 and 16; between 1 and 5 score for the questions 1, 2, 10, 17 and 18; between 0 and 6 score for the questions 11 and 19; between 0 and 5 score for the question 12). Five different circadian type classification is made according to the total scores obtained for 19 questions; "absolutely morning type" in the range of 70- 86 points, "close to the morning type" in the range of 59-69 points, "intermediate type" in the range of 42-58 points, "close to the evening type" in the range of 31-41, "absolutely the evening type" in the range of 16-30. The validity of the original questionnaire and the classification of the circadian type were tested with changes in body temperature (Punduk et al., 2005).

The Epworth Sleepiness Scale (ESS): The scale includes 8-item based on simple and self-report. The scale questions the general sleepiness level of the individual. It aims to evaluate the sleepiness level of individuals in eight different daily life situation (while reading a book, watching television, sitting quietly in a public place, traveling in a car, lying in the afternoon, talking to someone else, sitting quietly after lunch without alcohol, in a car that stopped in the traffic for a few minutes). The probability of individuals' falling asleep is graded between zero and three. According to this rating system: 0. Never happens 1. Occasionally happens 2. Medium frequency happens 3. It happens very often. The sum of the answers given to the 8 questions by individuals gives the sleep quality (Izci et al., 2008)

Data Analysis: All data obtained in the study were recorded in SPSS (version 18.0) program. The Shapiro-Wilk test was used to reveal the normality of the data. Once the assumption of normality was confirmed, Repeated Measures ANOVA was used to determine the differences of the parameters among three different time periods. Sphericity was determined by Mauchly's test. If any differences were detected, pairwise comparisons with Bonferroni Correction were used. The significance level was accepted as $p<0.05$.

Table 1. The mean and standard deviation values of the age, height, body weight, skinfold thickness and body fat percentage of athletes

Variables	N	M.±S.D.
Age (years)	10	21.60±1.42
Height (cm)	10	185.10±7.30
Body Weight (kg)	10	82.15±4.88
Biceps (mm)	10	3.62±1.09
Triceps (mm)	10	7.76±3.01
Subscapula (mm)	10	10.91±2.14
Suprailiac (mm)	10	8.88±2.48
Body Fat (%)	10	12.98±2.39
Lean Body Mass (kg)	10	71.47±4.40

Table 1 shows that the mean and standard deviation values of age, height, body weight, biceps, triceps, subscapular, suprailiac, body fat (%), and lean body mass of athletes were 21.60±1.42 years, 185.10±7.30 cm, 82.15±4.88 kg, 3.62±1.09 mm, 7.76±3.01 mm, 10.91±2.14 mm, 8.88±2.48 mm, 12.98±2.39, 71.47±4.40 kg, respectively.

Table 2. Total scores of the questionnaire and scale answered by the ten participants

	Score	Classification		Score	Classification
Morningness-Eveningness Questionnaire Results	59	Close to the morning type	The Epworth Sleepiness Scale Results	2	Good
	54	Intermediate type		2	
	44	Intermediate type		2	
	60	Close to the morning type		4	
	39	Close to the evening type		5	
	39	Close to the evening type		4	
	37	Close to the evening type		8	
	51	Intermediate type		8	
	54	Intermediate type		9	
	35	Close to the evening type		2	

In Table 2, the results of the total score of the Epworth Sleepiness Scale and the Morningness-Eveningness Questionnaire of 10 athletes who participated in the study were given. According to the results of Morningness-Eveningness Questionnaire, it was observed that 4 athletes were close to evening circadian type, 2 athletes were intermediate circadian type, 2 athletes were close to morning circadian type. Athletes had a good sleep quality according to results of the Epworth Sleepiness Scale.

Table 3. Comparison of body temperature, resting heart rate, resting blood lactate level and vertical jump height measured in different time periods of the day

Variables	Time of Day			F	p	Bonferroni
	09.00-10.00 (1)	12.00-13.00 (2)	16.00-17.00 (3)			
Body Temperature (^{0}C)	35.75±.22	35.95±.19	36.20±.35	10.042	**.001***	1-3
Resting Heart Rate (beat/min.)	75.20±8.59	77.20±9.62	78.60±7.94	2.263	.133	N.S.
Resting blood lactate (mmol)	2.44±.81	2.45±.64	2.34±.44	.093	.911	N.S.
Vertical Jump Height (cm)	55.10±5.40	55.70±7.64	59.60±5.89	9.216	**.002***	1-3, 2-3

**p<0.05, N.S.: Not significant*

As shown in Table 3, according to the Mauchly's test results, the assumption of sphericity was p = .629 for body temperature, p = .461 for resting heart rate, p = .399 for resting blood lactate level, and p = .377 for vertical jump height. Therefore, Sphericity Assumed values

were taken into account. According to the results of Repeated Measures ANOVA; it was observed that different time periods of the day had a statistically significant effect on body temperature ($F_{(2,18)}$=10.042, p=.001) and vertical jump height ($F_{(2,18)}$=9.216, p=.002). The body temperature measured in the evening time period (16.00-17.00) was significantly found to be 1.25% higher than in the morning time period (09.00-10.00). The vertical jump height measured in the evening hours (16:00-17.00) was significantly 8.16% higher than in the morning and 7% higher than in the afternoon.

Table 4. Comparison of the maximum, average and minimum power, fatigue index, aerobic capacity, Heart $Rate_{post\text{-}tests}$ and Blood Lactate $Concentration_{post\text{-}tests}$, measured in different time periods of the day

Variables	Time of Day			F	p	Bonferroni
	09.00-10.00 (1)	12.00-13.00 (2)	16.00-17.00 (3)			
Maximum Power (W)	871.20±93.44	834.50±124.56	1012.30±75.59	9.059	**.002***	1-2, 2-3
Average Power (W)	773.80±122.49	698.70±122.42	894.90±99.54	8.617	**.002***	2-3
Minumum Power (W)	673.70±133.89	576.40±111.05	765.50±141.46	7.120	**.005***	2-3
Fatigue Index (W/sec)	6.43±2.18	8.01±3.93	8.36±3.72	1.040	.374	N.S.
Aerobic Capacity (ml/kg/min.)	38.46±7.49	39.53±6.02	46.20±3.69	6.967	**.006***	1-3, 2-3
Heart $Rate_{post\text{-}tests}$ (beat/min)	167.20±8.33	172.20±8.24	178.20±8.96	6.859	**.006***	1-3
Blood $Lactate_{post\text{-}tests}$ (mmol)	8.99±1.71	11.85±3.60	13.02±2.72	6.041	**.010***	1-3

**p<0.05, N.S.: Not significant*

As shown in Table 4, according to the Mauchly's test, the assumption of sphericity was p = .361 for maximum power, p = .529 for average power, p = .789 for minimum power, p = .202 for fatigue index, p = .202 for aerobic capacity. .875, p = .696 for heart rate after the tests and p = .746 for blood lactate level after the tests. A statistically significant differences were observed when comparing maximal power (F(2,18)=9.059, p=.002), average power (F(2,18)=8.617, p=.002), minimum power (F(2,18)=7.120, p=.002), aerobic capacity (F(2,18)=6.967, p=.006), maximal heart rate after the tests F(2,18)=6.859, p=.006), and blood lactate levels after the tests (F(2,18)=6.041, p=.010) measured at morning (09.00-10.00), afternoon (12.00-13.00), and evening time periods (16.00-17.00). At the end of the Repeated Anaerobic Sprint Test, the maximum power values of the athletes in the evening hours were found to be 16.19% and 21.30% higher than in the morning and afternoon hours, respectively. It was observed that the average power value of athletes in the evening hours was 28.08% higher than in the afternoon hours. In the evening hours, the minimum power value of athletes increased by 32.80% as compared with the afternoon hours. The aerobic capacity of the athletes determined according to the 20m Shuttle Run Test result increased by 20.12% compared to the morning hours and by 16.87% compared to the afternoon hours. As compared with the morning hours, heart rate after the tests was 6.57% and blood lactate levels after tests were 44.82% higher in the evening hours.

Discussion

The aim of this study was to examine the time of day effect on Repeated Sprint Ability, Aerobic Capacity, and Physiological Responses in Team-sport athletes.

Body Temperature

The most important determinants of circadian rhythm are body temperature (Shephard, 1984). Body temperature in humans is regulated within narrow limits around 37 ° C (Waterhouse et al., 2005). It was observed that the body's core temperature is the lowest level at 04:30 in the morning, gradually increasing during the day and peaking at 18:00 in the afternoon (Vitosevic, 2017). The internal core temperature is regulated by nerve cells in the hypothalamus. The origin of the circadian rhythm of core temperature is mainly due to circadian changes in the rate of loss of heat through the extremities, mediated by vasodilation of the cutaneous vasculature (Waterhouse et al., 2005). According to the results of this study, it was observed that different time periods of the day had a statistically significant effect on body temperature ($F_{(2,18)}$=10.042, p=.001). The body temperature measured in the evening time period (16.00-17.00) was significantly found to be 1.25% higher than in the morning time period (09.00-10.00) (Table 3).

In the literature, it was observed that body temperature was higher in the evening than in other hours of the day (Hammouda et al., 2012; Jaraya et al., 2014; Konishi et al., 2016; Ozcelik and Guvenc, 2016; Boussetta et al., 2017). Reilly and Garrett (1998) reported that rectal temperature was 0.68^0C lower in the morning than in the evening hours. Pullinger et al., (2018) and Racianis et al., (2005) stated that muscle and rectal temperature was found to be higher in the evening hours than in the morning hours. Zghibi et al., (2018) found a statistically significant difference between body temperature (36.9 ± 0.2) measured at 17.00 hours and body temperature (36.3 ± 0.4) at 08.00 hours. It was observed that the body temperature was higher in the evening hours. Ferchichi et al., (2015) found that the oral temperature was higher in the evening (17.00-19.00) than in the morning (07.00-09.00am). The oral temperature was 36.1 ± 0.2 °C in the morning and 36.8 ± 0.2 °C in the evening. The results of the above studies are in line with the findings of this research. Starkie et al., (1999) reported that elevated intra-muscular temperature increased muscle glycogen use and didn't cause any change in phosphogenous system. They stated that increase in carbohydrate utilization occurred as a direct effect of an elevated muscle temperature. Manfredini et al., (1998) stated that the circadian rhythm of body temperature may be originated by fluctuations in the heat loss mechanism rather than heat production due to noradrenergic increase. There is a positive relationship between body temperature and athletic performance A high body temperature can increase metabolic reactions, increase the extensibility of connective tissue, decrease muscle viscosity, and increase the transmission speed of action potentials (Shaward, 1984, quoted in Hammouda et al., 2012). Thun et al., (2015) examined 113 articles in their review and showed that athletic performance was the best around when core body temperature was typically the highest.

Vertical Jump Height

A statistically significant difference was detected when comparing the vertical jump height measured in different time periods of the day (F (2,18) = 9.216, p =.002). The vertical jump height measured in the evening hours was 8.16% higher than in the morning hours and 7% higher than in the afternoon hours (Table 3). The studies examining the effect of different time periods on vertical jump in different sports branches are available in the literature. There

are conflicts results in these studies. Pallares et al., (2014) found that the elite young swimmers had a statistically significant 4.3% higher vertical jump height in the morning (10.00am) than in the evening (18.00pm). Another study conducted by Lopez-Samanes et al., (2016) on elite tennis players, they found a 4.5 ± 5.1% higher vertical jump height in the evening (16.30) hours than in the morning (09.00). Heishman et al., (2017) ascertained that basketball players had a lower vertical jump performance in the morning hours (07.00-09.00am) as compared with afternoon hours (13.45-16.00). They reported that vertical jump score in the morning and in the afternoon hours were 58.8±1.3cm and 61.9±1.6cm, respectively. Similar vertical jump score was found in this study. In a study conducted Boussetta et al., (2017) on 11 football players with a mean age of 21.8, the results revealed that diurnal variation was found in short-term maximal tests (vertical jumping test). The vertical jump height was reported to be significantly better in the evening hours. Chtourou et al., (2013) indicated that circadian rhythm affects squat-jump (SJ) and countermovement-jump performance. The jump performances of soccer players were better at 17:00 hours in the evening than at 07:00 hours in the morning. They observed more increase in squat-jump and countermovement-jump performances due to the increase of oral temperature in the morning after dynamic warming as compared with evening hours. Brown et al., (2008) investigated the time of day effect on vertical jump performance of 8 men and 8 women rowers. They reported that there was no statistically significant difference in high jump performance between morning hours (05.00-07.00 am) and evening hours (16.30-18.00pm). They also stated that the chronotype did not have an impact on the high jump performance. Grant and Glen (2018) stated in their study on 12 swimmers that there was no statistically significant difference in the vertical jump performances measured between 05:30 - 6:30 in the morning and 17:30-18:30 in the evening. Chtourou et al., (2018) ascertained that the vertical jump height of the elite judoists measured in the evening hours (17.00) was not different from the vertical jump height measured in the morning (07.00).

Repeated Anaerobic Sprint Test

The different time periods of the day had a statistically significant effect on maximum power $F(2,18)=9,059$, $p<.002$), average power ($F(2,18)=8,617$,$p<.002$), and minimum power ($F(2,18)=7,120$, $p<.002$). At the end of the Repeated Anaerobic Sprint Test, the maximum power values of the athletes were found to be 16.19% and 21.30% significantly higher than in the morning and afternoon hours, respectively. The average power value measured in the evening hours was 28.08% higher than afternoon hours. In the evening time period, the minimum power value increased by 32.80% compared to afternoon hours (Table 4). There were different results in the literature about the time of day effect on the anaerobic power or capacity in different sports branches. According to the literature, peak power performance, anaerobic power and anaerobic capacity were found to be higher in the exercises or tests performed in the evening than in the morning (Heishman et al., 2017; Ozcelik and Guven, 2016). Pullinger et al., (2018) observed that 10 × 3s, 30-sec rest Repeated Sprint Performance (distance covered, average power, and average velocity) of male athletes at performing different intensities on the treadmill was higher in the evening hours (17.30pm) than in the morning hours (07.30am). They also found that increasing the morning rectal temperature (passive warm-up) to the evening rest values or optimal values (38.5^0C) did not lead to a positive change in Repeated Sprint Test performance. It was indicated that increasing the rectal temperature in the evening by a passive warm-up to the optimal value (38.5^0C) caused a decrease in the total distance. Chtourou et al., (2013) found that the peak power, average power, and fatigue index values of 10 soccer players were higher in the evening hours (17.00)

than in the morning hours (07.00). Racinais et al., (2005) evaluated the repeated sprint test performance (5x6sec, 24-sec rest interval) of 9 active physical education and sports students in the morning hours (07.00-09.00) and in the evening hours (17.00-19.00). They expressed that peak power for the first sprint was higher in the evening hours (958 ± 112W) than in the morning hours (915±133W). Higher power decrement was occurred in the evening during the 5x6sn sprint test. They pointed out that a higher power decrement across the Repeated Sprint test which could be linked with the significant increase in blood lactate concentration from morning to evening. Souissi et al., (2013) found out that muscle strength, muscle power, average power, and peak power of the judoists were higher in the evening hours (16.00) than morning hours (09.00). They also stated that these diurnal changes were impaired in case of insomnia. Zarrouk et al., (2012) investigated the effect of time of day on the 4-thigh muscle's electromyographic activity level and muscle power during the Repeated Sprint Test (5X6sec, 30sec rest interval) on the bicycle ergometer. As a result; total work and peak power decrement were higher in the evening (18.00) than in the morning (06.00). They showed that peak power during the first 3 sprints was greater in the evening hours than morning hours. Although muscle power and fatigue showed diurnal fluctuations during the Repeated Sprint Test, It was reported that the EMG activity of thigh muscles was not dependent on the time of day. They asserted that diurnal improvement in muscle power and fatigue is not due to a change in neural drive but rather due to an improvement of the muscle contractile properties in the evening. Racinais et al., (2010) applied to a repeated sprint test (10X6sec, 30sec rest interval) on a bicycle ergometer for 8 participants in the evening (17.00-19.00) and morning hours (08.00-10.00). The peak power output in the first 3 sprints was higher in the evening and higher power decrement was detected for 10 sprints. High power decrement in the evening hours was indicated as a result of high power output in the first three sprints. Chtourou et al. (2018) examined the time of day effect on elite judoists. They stated that Repeated Sprint Test performance (total sprint time, sprint fatigue index) of the athletes was not sufficiently dependent on the time period of the day. Grant and Glen (2018) showed that the different time period of the day did not have a statistically significant effect on 800 m swimming performance. The study was conducted by Pallares et al. (2014) on elite young swimmers, they determined no statistically significant difference between the peak power values measured after Wingate test in the morning (10.00) and evening (18.00) hours. The peak power increased by 3.2% in the evening hours compared to morning hours.

Aerobic Capacity

It was observed that time of day had a statistically significant effect on aerobic capacity. The aerobic capacity of the athletes determined according to the 20m shuttle run test result increased by 20.12% compared to the morning hours and by 16.87% compared to the afternoon hours (Table 4). Cappaert (1999) stated that maximal oxygen consumption (aerobic capacity) peaked between 15.00-20.00 hours. Zghibi et al. (2018) applied to the Yo-Yo Intermittent-1 test at 17.00 and 08.00 hours on different days. They denoted that the young subjects had significantly higher maximal aerobic velocities and offensive capacities during the test in the evening hours (17.00pm). Seo et al. (2013) suggested that diurnal and hormonal changes created a difference in physical performance depending on the time of day. The study was executed by Movaseghi et al. (2016), they subjected active women to an increased exercise protocol on the bicycle ergometer at three different times of the day. (09.00, 14.00, 18.00), they emphasized that the time period of the day did not cause any statistically significant effect on the maximal oxygen utilization capacity. It was also found that lung function was better in the evening. Ferchichi et al. (2015) emitted that maximal swimming

performances of swimmers were better in the evening than in the morning. Swimming speed, stroke rate, stroke length and motor organization parameters were found better in the evening hours. This positively affected the swimming performance. Boussetta et al. (2017) and Hammouda et al. (2012) stated that Yo-Yo Intermittent-1 test soccer players (mean age: 21.8) were found to be better in evening hours than in the morning hours

Heart Rate and Blood Lactate Level after tests

Statistically significant differences were observed when comparing heart rate F(2,18)=6,859, p<.006), and blood lactate levels after the tests (F(2,18)=6,041, p<.01) measured at morning (09.00-10.00), afternoon (12.00-13.00) and evening time periods (16.00-17.00). The heart rate and blood lactate levels of athletes after tests were found to be 6.57% and 44.82% significantly higher in the evening hours, respectively (Table 4). The heart rate varies between 5% and 15% within a 24-hour period an acrophase of around I5.00 hours (Atkinson and Reilly, 1996). The results of this study were in parallel with the result of Cruz et al. (2014) and Reilly and Garret (1998). They also reported that heart rate reached to higher values during the evening exercises. Ozcelik and Guvenc (2016) reported that the heart rate recorded during the Wingate Anaerobic Test was lower in the morning than in the evening hours. Chin et al. (2015) indicated that blood lactate values of male athletes in the morning, afternoon, and evening hours after 20m shuttle run test were found to be 12.27 ± 2.9mmol, 13.33 ± 2.9mmol, 12.28 ± 4.2mmol, respectively. They reported that circadian rhythm had no effect on blood lactate values. Racinais et at. (2005) applied to the Repeated Sprint Test on 9 active physical education and sports students in the evening hours (17.00-19.00) and morning hours (07.00-09.00). They defined that heart rate and blood lactate level of participants during the Repeated Sprint Test were higher in the evening hours. The blood lactate level of participants in the evening and morning hours was found to be 13 ± 3mmol /L and 11 ± 3mmol /L, respectively. The heart rate of participants in the evening and morning hours was found to be around 170 beat/min. and 155 beats/min., respectively. In a study conducted by. According to Astrand and Rohdahl (1986), the circadian rhythm of the blood lactate concentration can be partly explained by the increased body temperature. Higher body temperature during exercise results in faster progression of metabolic processes in cells. For each degree of temperature augment the metabolic rate of the cell increases by about 13%. This augments in body temperature also increases the activity levels of glycolytic enzymes such as lactate dehydrogenase and phosphofructokinase. The augment of these enzymes in relation to body temperature increases lactate production and clearance and this allows the athletes to work at higher lactate tolerance and higher exercise intensity (Dalton et al., 1998; Forsyth and Reilly, 2004). In this study, the athletes reached higher blood lactate levels after the tests and also showed better performance in the tests in the evening hours as compared with the morning hours. This can be explained by Astrand and Rohdahl (1986). Ozcelik and Guvenc (2016) suggested that evening hours might be more appropriate in terms of physical performance tests and competitions that should be at the highest level of performance.

Conclusion and Recommendation

In conclusion, the body temperature, vertical jump height, anaerobic capacity, and aerobic capacity of the athletes were found to be higher in the evening than morning and afternoon hours. In addition, the athletes reached higher heart rate and blood lactate levels in the evening tests. Based on these findings, it was observed that the athletes forced themselves more in the tests performed in the evening hours and reached the point of exhaustion later. In

this study, factors such as having a good sleep quality, high body temperature and chronotype type can be shown as reasons why athletes' performances are better in the evening than in the morning hours. There were some limitations to this study. Food consumption records of athletes were not recorded before and during test sessions. In this study, athletes firstly were subjected to Repeated Anaerobic Sprint Test and then 20m Shuttle Run Test at each exercise sessions. Blood lactate measurements were not performed after Repeated Anaerobic Sprint Test. Blood lactate measurements of the athletes were collected during rest and after 20m Shuttle Run Test. It can be shown as other of the limitation of this study. In future studies, these tests can be performed on different days. While planning the athletic training programs, it is thought that it is important to perform training which include aerobic and anaerobic capacity, explosive power and jumping exercises in the evening hours because of the significant increases in performance of the athletes. In further studies, by increasing the number of samples, the athletes should be classified according to chronotype, the evening and morning performances of the morning types and the evening and morning performance of the evening types should be determined and compared.

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Corresponding Author

Halil İbrahim CEYLAN

Address: Faculty of Sport Sciences, Mugla Sitki Kocman University, Phone: +902522111987; Email: halil.ibrahimceylan60@gmail.com

Conflict of Interest

The authors have not declared any conflicts of interest.

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An Assessment of the Effects of Yoga Practicing on Sleep Quality of Older Adults

Hung Manh NGUYEN
Faculty of Sport and Physical Education, Vinh University, 182 Le Duan, Vinh City, VIETNAM
Email: hungtdtt@gmail.com; hungnm@vinhuni.edu.vn

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Abstract

This study aims to examine the effectiveness of Yoga practicing on sleep quality of older adults. In this study, eighty subjects were recruited at age 55 to 65 (60.5 ± 4.2). Subjects were divided into two groups, Yoga and Control. Participants in Yoga groups practiced 60 minutes/day and 3 sessions/weeks. Participants in Control group maintained daily activities and not doing any exercise program. Sleep quality is measured by The Pittsburgh Sleep Quality Index (PSQI). After 6 months of Yoga practicing, the participants in Yoga group showed significantly better performances in comparison with those of Control group in the sleep patterns with p value ≤ .05.

Keywords: Yoga, Quality of Sleep, Older Adults.

Introduction

Practicing physical activities contributes to reducing the risk of chronic diseases in the elderly. Regular physical activity practice brings many health benefits, and among the elderly, promotes healthy ageing, decreasing the medicalization, the risk for chronic diseases and institutionalization and enhancing sleep quality (Reid, et al., 2010). Sleep is an important aspect of maintaining the body's circadian rhythm. Insomnia or poor sleep may cause depression (Nutt, Wilson, & Paterson, 2008), falls (Stone, Ensrud, & Ancoli-Israel, 2008), impaired cognition (Fortier-Brochu & Morin, 2014), and poor quality of life (Ishak, et al., 2012).

Yoga is originated from India, which is beneficial for enhancing physical and mental health of people (Iyengar, 1976). There have been documented in some previous findings about the benefits of yoga on improving physical fitness (Nguyen, 2017), reducing blood pressure (Nguyen & Hoang, 2018), enhancing mood (Innes & Selfe, 2012), and the other aspects of quality of life (Mawar, et al., 2015). Several previous studies have also proved the impact of yoga on specific health conditions including diabetes (Upadhyay, Balkrishna, & Upadhyay, 2008), balance and mobility in older community-dwelling people (Tiedemann, O'Rourke, Sesto, & Sherrington, 2013), and subjective sleep quality in patients with chronic insomnia (Khalsa, 2004). In present study, we attempted to evaluate whether a simple yoga practicing could improve sleep quality of older adults living in Vinh city, Vietnam.

Materials and Methods

- Participants: Eighty participants were recruited at age 55 to 65 (60.5 ± 4.2) Vinh city of Vietnam. Inclusion criteria of both groups included the subjects being able to finish Mini Mental State Examination (Folstein, Folstei, & McHugh, 1975) with a score greater than 25 and have no experiences in Yoga. Exclusion criteria included subjects with serious diseases such as symptomatic coronary insufficiency, orthostatic hypotension, and dementia.

- Intervention: Subjects were divided into two groups – yoga and control. The subjects were expected to consent and volunteer. Participants in yoga group were assigned six-month yoga practicing. Participants in control group were instructed to maintain their routine daily activities. Statistics analysis was based on previous finding (Hoang & Nguyen, 2015; Nguyen, 2016, 2017; Nguyen & Hoang, 2018).

- Design

This is a pre-post comparison. Intervention group practiced 60 minutes/day and 3 sessions/weeks including warm-up: 5 minutes; meditation: 25 minutes; breathing exercise: 20 minutes, and relaxation: 10 minutes.

- Measurement of sleep quality

Sleep quality is measured by The Pittsburgh Sleep Quality Index (PSQI). The Pittsburgh Sleep Quality Index is an effective instrument use to measure the quality and patterns of sleep of the older adults. It differentiates "poor" from "good" sleep by measuring seven areas: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction over the last month. The PSQI's simplicity and its ability to identify different groups of patients suggest several clinical and research applications in psychiatry and general medical settings. Most fundamentally, it may be used as a simple screening measure to identify cases and controls, or

'good" and "poor" sleepers. (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989). The Vietnamese translated version was taken from (Vien Suc Khoe Tam Than Quoc Gia).

- Statistical analysis

All analyses were conducted using SPSS version 19.0. Descriptive statistics and variable correlations were computed to examine the relationships among all study variables. Pre and post comparison was used to assess the differences among phases of study. $P < .05$ is considered to be statistically significant changes.

Results

- Sleep quality of subjects of both groups at baseline

There are no significant differences between both research groups in sleep quality at baseline. Statistical results of ANOVA showed subscales of sleep quality with $p > .05$ included sleep duration, sleep disturbance, Q2 and Q5 new, sleep latency, sleep dysfunction, sleep efficiency, overall sleep quality, sleep medicine, and PSQI-Buysse in total as indicated in Table 1.

Table 1. Analysis of variance for sleep quality between both groups at the baseline

Sleep patterns	Yoga (n=40)	Control (n=40)	Sig.*
	Mean ± SD	Mean ± SD	
Sleep duration	.24 ± .65	.25 ± .67	.163
Sleep disturbance	1.17 ± .63	1.23 ± .60	.625
Q2 and Q5a#	2.65 ± 1.33	2.56 ± 1.47	.775
Sleep latency	1.67 ± .75	1.60 ± .81	.698
Sleep dysfunction	1.66 ± 1.06	1.56 ± 1.05	.771
Sleep efficiency	1.95 ± .76	1.77 ± .71	.175
Overall sleep quality	1.61 ± 1.04	1.55 ± 1.01	.924
Sleep medicine	.67 ± .62	.73 ± .64	.873
PSQI-Buysse (total)	9.39 ± 4.97	8.04 ± 4.05	.164

- *Determined by ANOVA;*
- *Q2 and Q5a refer to time to get into asleep and cannot get to sleep in 30 minutes.*

- Sleep quality of subjects of both groups at the Midpoint (third month)

There are significant differences between the Yoga and the Control groups in sleep quality at the third month of yoga practicing except Q2 and Q5a with sig = .275, $p > .05$. Participants in the Yoga group report better improvement in the rest patterns of sleep quality with $p < .05$ that indicated in Table 2.

Table 2. Analysis of variance for sleep quality between both groups at midpoint (third month)

Sleep patterns	Yoga (n=40)	Control (n=40)	Sig.*
	Mean ± SD	Mean ± SD	
Sleep duration	.09 ± .23	.23 ± .53	.000
Sleep disturbance	.82 ± .43	2.76 ± 1.59	.000
Q2 and Q5a#	1.45 ± .85	1.64 ± .81	.271
Sleep latency	1.01 ± .43	1.57 ± 1.07	.002
Sleep dysfunction	1.06 ± .79	1.51 ± .54	.003
Sleep efficiency	1.01 ± .76	1.53 ± 1.05	.004
Overall sleep quality	1.07 ± .83	.14 ± .36	.000
Sleep medicine	.27 ± .55	7.64 ± 3.84	.000
PSQI-Buysse (total)	5.45 ± 2.18	7.63 ± 3.84	.004

- *Determined by ANOVA;*
- *Q2 and Q5a refer to time to get into asleep and cannot get to sleep in 30 minutes*

- Sleep quality of subjects of both groups at the Endpoint (sixth month)

Table 3. Analysis of variance for sleep quality between both group at endpoint (sixth month)

Sleep patterns	Yoga (n=37)	Control (n=35)	Sig.*
	Mean ± SD	Mean ± SD	
Sleep duration	.05 ± 2.25	.43 ± 5.61	.000
Sleep disturbance	.75 ± 4.44	.99 ± 4.95	.024
Q2 and Q5a#	.92 ± 4.53	2.86 ± 1.52	.000
Sleep latency	.85 ± 3.37	1.73 ± 7.96	.000
Sleep dysfunction	.47 ± 5.06	1.66 ± 1.04	.000
Sleep efficiency	.95 ± 7.35	1.57 ± 6.17	.000
Overall sleep quality	.44 ± 5.01	1.62 ± 9.73	.000
Sleep medicine	.04 ± 1.63	.25 ± 4.38	.007
PSQI_Buysse (total)	3.57 ± 1.59	7.93 ± 3.48	.000

- *Determined by ANOVA*
- *Q2 and Q5a refer to time to get into asleep and cannot get to sleep in 30 minutes*

There are significant differences between the Yoga and the Control groups in sleep quality at the endpoint (Table 3). Participants in the Yoga group keep reporting a greater improvement in sleep quality than participants in the Control group with $p < .05$. There were three subjects in Yoga group withdrew from the intervention because of travelling and busy working. There were five subjects in Control group were absent at the endpoint test due to private reasons and travelling.

Discussion and Condusion

Insomnia is a prevalent problem in late life of people. It is the most common sleep disorder that is subjective report of insufficient or sleep despite adequate opportunity to sleep (Woodward, 1999). The results of this study showed that practicing yoga is beneficial for improving sleep quality of older adults.

Findings of previous studies showed that yoga exercises may be beneficial for improving sleep quality and quality of life for older adults (Halpern, et al., 2014). This research indicated that practicing yoga for at least 25 minutes per day for 12 weeks can improve subjective sleep status and psychological and emotional well-being. In addition, in another comparison of the effect between yoga and aerobic exercises for the sleep quality, Ebrahimi suggested that yoga exercise is more effective in improving the sleep quality in women suffering from diabetes type 2 (Ebrahimi, Guilan-Nejad, & Pordanjani, 2017).

The results of this study with respect to the effect of yoga exercise on sleep quality are in accordance with those by (Cohen, Warneke, Fouladi, Rodriguez, & Chaoul-Reich, 2004; Halpern, et al., 2014; Taibi & Vitiello, 2011). This finding is also consistent with results of some previous findings that yoga could improve healthy, community-dwelling older adults (Chen, et al., 2009), insomnia (Sobana, PaRthaSaRathy, DuRaiSamy, JaiganeSh, & Vadivel, 2013). However, in addition, further study might be focused on effectiveness of yoga exercise on broadening areas of health and some chronic diseases of the elderly.

The results of this study indicated effectiveness of yoga on sleep quality of older adults. After 6 months of yoga practicing, most of sleep patterns of the older adults have been remarkably improved. However, the application of yoga program should be further examined in other older population such as people with chronic diseases of frail elders.

Conflict of Interest

The author has not declared any conflicts of interest.

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Gender Roles of Turkish College Level Futsal Players[1]

Ökkeş Alpaslan GENÇAY[1], Selçuk GENÇAY[1], Seda AVNİOĞLU[2], Yunus GÜR[3], Ertuğrul GENÇAY[1]

[1]Sutcu Imam University School of Physical Education and Sports, Kahramanmaraş, TURKEY
[2]Alaaddin Keykubat University, Faculty of Medicine, Department of Anatomy, Antalya, TURKEY
[3]Sutcu Imam University, Health Sciences Institute, Department of Sports Sciences, Kahramanmaraş, TURKEY
Email: agencay@gmail.com, sgencay@ksu.edu.tr, seda.avnioglu@alanya.edu.tr, yunusgur123@gmail.com, senemoglu_ertugrul@hotmail.com

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Abstract

The purpose of the present study was to compare the gender role among college level male and female futsal players. Therefore, 77 college level futsal players (37 females and 40 males) were selected randomly from a Nationally University Tournament teams in Turkey on March 2016. It was used to determine sex roles using the Bem Sex Role Inventory. The data were analyzed by Mann Whitney U test and the significance level of p was set as <.05. The results indicated no significant differences in male and female players' masculinity scores (p>.05). Conversely, the feminine sex role was significantly higher female players than males (p <.05). Thus, it seems that the high femininity is an important factor for college-level female futsal players in Turkey.

Keywords: Bem sex role inventory, femininity, masculinity

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Introduction

The term of gender role has been used to refer to attributes, preferences, characteristics, stereotypes, expectations, and behaviors. An individual's gender role was defined as a function of the aspect of masculine and feminine characteristics rather than biological sex (Bem, 1981).

Therefore, characteristics were called "masculine" if they were evaluated to be more appropriate for men than women in society. Similarly, "feminine" characteristics were those that were assessed to be more appropriate for women than men. Androgynous people are those who score same as high on the masculine and feminine scales (Bem, 1974).

Sport is one of those life areas which are clearly divided in the men's and women's worlds (Salminen, 1990). Previous studies suggest that gender identity is related to sport participation: female participants are largely androgynous and masculine (Clément-Guillotin and Fontayne, 2011), and these females participate more in masculine sports (Chalabaev, Sarrazin, Fontayne, Boich, and Clément-Guillotin, 2013). Sex-typed individuals were also found to correlate with more masculine traits to individuals engaging in masculine sports branches, and more feminine traits to those engaging in feminine sports branches, than non sex-typed individuals (Matteo, 1988).

With regard to gender stereotype research has indicated that works relating with gender-role and aggression have shown that highly masculine men are more apparently aggressive than men scoring low in masculinity on implicit aggression and that femininity estimated lower hostility (Steenbarger and Greenberg, 1990; Weisbuch, Beal, and O'Neal, 1999). The purpose of the present study was to investigate the gender differences in gender role orientation among college-level futsal players in Turkey. Based on previous research and theory, it was hypothesized that it would be significant differences in gender roles tendency between female and male futsal players, also it would be female futsal players more high femininity scores from their masculinity scores.

Methodology

Participants

Participants were 77 (37 females, 40 male) college level futsal players in the age range of 18-26 (20.92±1.71) years, and their futsal experience 2 to 11 years (M=5.24, SD=*2.77*) who the teams participated in the TUSF (Turkish University Sport Federation) tournament for selection to Futsal First League between universities in Turkey at March 2016. Prior that applying of survey, it was taken permissions from their administrations. The players volunteered participated in this study at sport complex. It was made a verbal explanation relating purpose of study and the time of filling out the questionnaire.

Instrument

The Bem Sex-Role Inventory (BSRI) is an extensively used instrument in studies relating gender role. In BSRI, gender-typed characteristics of males and females were improved according to their social attractiveness in society. The gender-role type of a person is defined as a function of the difference between masculine and feminine characteristics rather than sex (Bem, 1981). However, traits were called masculine if they were judged to be more appropriate for males than females in society and feminine if they were more agreeable for females than males. A person who showed both masculine and feminine traits was called androgynous (Bem, 1974). The data in this study were gathered via a personal information

form and the Bem Sex Role Inventory, which was developed by Bem (1974, 1981) and adapted, to Turkish by (Dökmen, 1999). The BSRI was developed to measure masculine, feminine, and androgynous personality styles among men and women. The original BSRI includes 60 items (20 masculine, 20 feminine, and 20 neutral). The scale reliability coefficients reported in the BSRI manual range from 0.75 to 0.90. In the present study, gender stereotypes were measured with the short-form of the BSRI. Participants assessed how well each of the 40 (20 masculine, 20 feminine) personality characteristics describes themselves by using a 7-point scale (1 = almost never true, 7 = almost always true). The short-form of Turkish BSRI showed acceptable level reliability values Cronbach's α (Cronbach, 1951) for femininity items .74, masculinity items .79.

Data Analysis

Normality Tests for Bem Sex Role Inventory were conducted. Cronbach's alpha for reliability of the instrument was also calculated (Cronbach and Meehl, 1955). Mann–Whitney U tests were performed to compare the genders. The statistical analysis was conducted by SPSS 18 statistical package software for Windows.

Skewness, Kurtosis, and Normality Tests for Bem Sex Role Inventory

It was accounted skewness and kurtosis are two main ways in which a distribution can deviate from normal. We divide the skewness (kurtosis) statistic by its standard error is greater than *z* +3.29 ($p<.001$, two-tailed test) (Tabachnick and Fidell, 2007)**.**

It was found that acceptable limits of agreement the masculinity standard skewness score of 2.78 <±3.29, as well as the standard kurtosis score, was acceptable (.003 <±3.29). Also, acceptable limits of agreement the femininity standard skewness score of 1.68<±3.29, as well as the standard kurtosis score, was acceptable (.12<±3.29).

A Kolmogorov-Smirnov test was used further analyses to test for normality on the main dependent variable for masculinity. The distribution of masculinity scores for the samples, D (77) = 0.128, $p<.05$, for femininity, D (77) = 0.07, $p>.05$. The result indicating that the masculinity score data wasn't normally distributed in our samples.

Findings

Table 1. Mann Whitney U test results the Turkish college level futsal players

Sex role	Gender	N	Mean Rank	Sum of Ranks	*U*	Z	*p*
Femininity	*Female*	37	48.03	1777	406	-3.409	.001*
	Male	40	30.65	1226			
Masculinity	*Female*	37	35.8	1324.5	621.5	-1.209	.227
	Male	40	41.96	1678.5			

***P value of <.05 is statistically significant*

Because the variance of the dependent variable was unequal, Mann–Whitney *U* tests were performed to compare the genders (see Table 1). The female futsal players have significantly higher mean ranks (48.03) than the males (30.65) on the femininity, $U = 406$, $p = .001$, $r = -.39$, which, according to Cohen (1988), is a small to medium effect size. However, there was

no significant difference in the mean ranks of male futsal players (41.96) and females (35.8) on masculinity, $U = 621.5$, $p = .227$, $r = -.11$, which is considered a lower effect size.

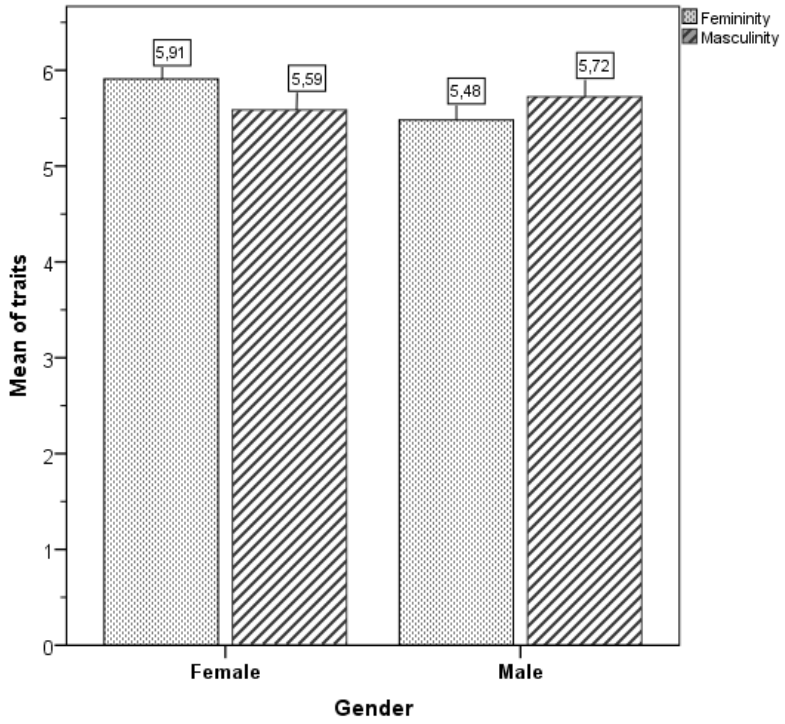

Figure 1. Femininity and masculinity traits male and female college level futsal players

If we look at the Figure 1, males and females differed from each other according to femininity and masculinity score. Females have significantly higher femininity score from masculinity score while males have high masculinity score from femininity score.

Conclusion

The purpose of the present study was to investigate the gender differences in gender role orientation among college-level futsal players in Turkey. The findings of this study indicate that there are significant gender role differences between males and females as expected. Based on our hypothesis that there were significantly differences in gender role orientation between female and male futsal players, especially with regard to the feminine. (Lantz and Schroeder, 1999) found that high athletic identifiers (both male and female) reported significantly higher masculine gender role orientations. (Harrison and Lynch, 2005) found that the athletes influenced by the public's perceptions of gender role orientations.

In sports, (Koivula, 1995) showed that sex-typed individuals perceive masculine activities as more masculine than other individuals and feminine activities as more feminine. (Andre and Holland, 1995) reported higher masculinity scores for male athletes compared with male non-athletes. In addition, female athletes had higher masculinity scores than non-athlete women.

The gymnasts represented a more masculine, less feminine, less androgynous, and more undifferentiated group by comparison with either the normative sample or the track-and-field sample (Edwards, Gordin, and Henschen, 1984). Female athletes often have to prove themselves on the court to overcome barriers, stereotypes, and notions about their physical

appearance and athleticism (Rayburn, Chen, and Phillips, 2015). Both men and women scored higher on femininity than on masculinity (Özkan and Lajunen, 2005). Iranian female and male futsal players had greater masculinity than femininity, and there was no significant difference between sex role of two sexes (Khayat, Shojai, and Daneshfar, 2013).

Team sport females were found to be as masculine and androgynous as their male counterparts, presumably due to the fact that the team sports examined in this study (basketball, volleyball) emphasize traditionally masculine characteristics that are important to successful performance (Wrisberg, Draper, and Everett, 1988). Conversely current literature, our test results showed that the female futsal players had more feminine characteristics than males did, whereas males hadn't significantly masculine characteristics than females did. By way of contrast, individual sport females were found to be more feminine and less masculine than individual sport males (Wrisberg et al., 1988). In previous studies applied to Turkish university students before 25 years ago, it was shown that men scored higher on the BSRI masculinity scale than women (Dökmen, 1999).

However, the masculinity and femininity scores of Turkish university students were compared both within and between men and women (Özkan and Lajunen, 2005) found that women scored higher on femininity than men scored, whereas no differences between the sexes were found on masculinity. In another research, Kızılaslan and Diktaş (2011) found that Turkish student teachers, especially males, still have a traditional perspective on gender roles and also it was found that university education does not have a role in changing existing value judgments in relation to gender. However, in another recent study conducted on university students by Turkmen (2018) pointed out that religiosity as a cultural value doesn't have any negative effects on the female participation in sport.

Current literature findings compared with our results relating with sex roles of Turkish university students that female college level futsal players have adopted a more feminine gender role within the last ten years.

Several limitations were inherent in this study that should be accounted for in future research. This research does not represent all universities in Turkey. First, the samples in the present study were limited to college students in ten universities. Furthermore, not all of the players in the scenarios were depicted equally. Additionally, only perceptions of female and male futsal players were examined. Adding gender role perceptions of other sports to future studies might improve understanding the relationships in our research. In the future, it can be more research needed understanding gender roles of athletes.

The gender role perceptions of male players participating in futsal might be quite different from female. The gender role in sport and society is continuing to develop and more research is needed to show how this perception affects the attitudes and behaviors of athletes. As a specific recommendation, researchers should consider the perception of both male and female players on gender stereotypes.

Corresponding Author

Yunus GÜR
Sutcu Imam University, Health Sciences Institute, Department of Sports Sciences, Kahramanmaraş, TURKEY
Email: yunusgur123@gmail.com

Conflict of Interest

The authors have not declared any conflicts of interest.

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Examination of Corporate Identity Formation; Corporate Identity of Besiktas Gymnastics Club

Tekmil Sezen GÖKSU[1], Oktay AKYÜZ[2]
[1]Istanbul Gelişim University, School of Physical Education and Sport, İstanbul, TURKEY
[2]Marmara University, Faculty of Sport Sciences, İstanbul, TURKEY
Email: tsgoksu@gelisim.edu.tr

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Abstract

Football clubs around the world need to increase their brand awareness and create their identity while building their institutional structures. This study is conduct on Turkey's first club, Besiktas Gymnastics Club and to assess its corporate identity formation, trademark, logo, colors, history, vision and mission. Considering the changes from past to present, the institutional structure of the current club is studied. While conducting corporate identity studies, it has been observed that the culture of the neighborhood and the inhabitants where the club was established, the unity and solidarity among the supporters, the sense of belonging have affected the logo, the colors, the characters and the brand value of the club. Exploratory information analysis method was used as research method. Academic articles, newspaper archives, books and websites were used.

As a result, sports clubs competing in the national and international arena need to take appropriate steps in order to survive in the environment with these technological advances and creation of nw markets. Besiktas Gymnastics Club, which established a corporate identity that supports the establishment purpose and future plans of the club, is considered to have a good representation of itself and its fans, especially with the characteristics that constitute its brand value. One of the most important forms of self-expression of a brand is to create the corporate identity structure in an accurate way. Recognition, sympathy and confidence strengthen the behavior of the enterprise and support the behavior of the target audience. On the other hand, the corporate identity provides the following elements. Besiktas Gymnastics Club has completely rearranged its corporate identity guide and turned it into a form to express the club in the best possible way.

Keywords: Corporate Identity, Corporate Culture, Besiktas Gymnastics Club

History of Besiktas Gymnastics Club

In 1902, 22 young individuals met at certain times to do gymnastic exercises n in the garden of Osman Pasha, who was in the position of Medina Guard of the period. Osman Pasha's son Huseyin Bereket and Mehmet Samil were among the members of this group, and the other members such as Sevket Bey, Mehmet Ali Fetgeri, Ahmet Fetgeri, Cemil Feti and Nazim Nazif were living in the same neighborhood (Serencebey). These names are referred to as the founders of the Besiktas Club (Kodal, 2009: 398).

On 13.01.1910, with the support and guidance of Beyoglu Governor Muhittin Bey, Besiktas Ottoman Gymnastics Club was registered and a Turkish sports club was registered for the first time. (Beşiktaş JK, 2017).

Beşiktaş Gymnastics Club has been one of the cornerstones of sports and football in our country since its foundation in 1903. In addition to be the first registered sports club, Besiktas Gymnastics Club also has an important place with its unique structure, colors and supporters, along with many championship and success stories in Turkish sports history (Dikici 2008).

KULÜP KİMLİĞİ

Kulüp Kimliği	Beşiktaş Jimnastik Kulübü
Kuruluş Tarihi	1903
Renkler	Siyah - Beyaz
Kuruluş İsmi	Beşiktaş Bereket Jimnastik Kulübü
İlk Başkanı	Mehmet Şamil Bey
İlk Şampiyonluk	Jimnastik 1911
Futbol Şubesi Kuruluş Tarihi	Ağustos 1911
Futbolda İlk Şampiyonluk	1919 Türk İdman Birliği Ligi
Futbol Liglerine İlk Katılış	1919

http://www.bjk.com.tr/tr/cms/hakkinda/1/ Date of Access: 19.06.2018

The corporate identity of Besiktas Gymnastics Club: Its name as of the establishment date of 1903 was Besiktas Bereket Gymnastics Club, the colors are black and white, the first chairman was Mehmet Samil Bey, in 1911 Gymnastics branch and in 1911 Football Branch were founded, and in 1919 the first championship in football at Turkish League of Practice.

Corporate Identity Structure

Since the institution is in constant communication with consumers, corporate identity is an area where change is applied frequently. The visual identity of the institution is in constant development and change. The competitive circumstances conditions, changing consumer demands and cultural characteristics compel the organization to change the corporate identity (Er, 2016).

Corporate identity can be named as the personality and image of an institution, its visual and physical features, identity generated by corporate culture. The corporate identity consists of

all activities of the organization and the joint management. According to Wally Olins, the corporate identity reflects four points of an institution:

- Who the institution is
- What the institution does
- How institution does it
- For whom the institution does it

Based on the vision and mission of Besiktas Gymnastics Club, together with its values, supporters and target audience; Club should first take place in the market with its corporate identity in order to provide training in sports branches, to train athletes, and to create a corporate structure in order to successfully represent them in national and international platform.

According to Melewar, a strong corporate identity has many benefits. These are:

- Corporate identity motivates the employees. Employees clearly understand the purpose, direction and characteristics of the organization and become more loyal to the organization.
- The corporate identity ensures that employees adapt to existing culture and harmonization with the new culture becomes less confusing if mergers or acquisitions occur.
- Through the corporate identity, consumers can be informed about the product quality, which provides support to the organization's product and brand. (Cited By Dölek, Melewar, 2011: 30).

Institutionalization and Culture

The corporate culture generated by the contribution of the social culture causes the behavioral change of the individual after joining a new group. At this point, the individual affected by the institutional culture reflects this interaction in all social processes he is involved. Cultural elements that enable the establishment of corporate culture are used in many points within our corporate communication practices. In corporate identity studies, visual elements that belong to society are used. At this point, the fact that should be considered by institutions is the use of aspects which are commonly accepted by the society as a value. In this way, it can be ensured that the institution can address a wider audience during the process of image building. (Er,2016).

The corporate identity of Besiktas Gymnastics Club is affected by Besiktas district and the culture of people living in that neighborhood. It is the only sports club with crescent and star in the logos, considering the images used in identity studies. It has affected the feelings of society such as sharing a common goal, unity and integration. When we look at the club's vision and mission, fan groups, colors, marches and slogans, we see a sense of belonging, love, courage, determination and success.

Logo

Mehmet Samil Bey, who was one of the founders of the club, has said that Besiktas Ottoman Gymnastics Club should have a logo as the number of athletes increased day by day. This idea was discussed in a meeting and colors and shape were decided and in 1906 the first badge with the logo was made. One of the most common discourses about the logo of

Besiktas is that the team colors were actually red-white. Some studies have revealed that the red in the club's colors were turned into black because of the losses and defeats in Balkan Wars and that the lost lands were said to remain black until they were recovered. The first white line in the black-and-white rectangular logo symbolizes the number "one". The following 3 black lines are the symbols of the number "three". The remaining second white line also represents the number "one". The logo is composed of 9 pieces and the date of 1319 can be calculated as a result, which is 1903 in the Gregorian Calendar.

https://bjk.org/besiktasin-logosu-nereden-geliyor/ Access Date: 19.06.2018

First Logo of Besiktas Gymnastics Club

The date on the first badge of Besiktas was inspired by the badges of the French school and "1906" was written. ”Besiktas“ was written with the Arabic letters on the top, letter “J” was on the right and ”K“ was on the left. On the back of the badge, it was written that it was made in "Constantinople" and the seal of the artisan who made the badge was at the inside.

http://www.bjk.com.tr/tr/cms/tarihce/2/74/ Access Date: 19.06.2018

Logo of Besiktas Gymnastics Club

The coat of arms of the club (badge) consists of a Turkish Flag with crescent and star faced upwards, BJK on the top written in white on black ground and written in black on white ground, and three black and two white vertical lines below the flag with 1903.

The club also uses the registered trademark of the form of an eagle with its wings open on the badge as stated in the above paragraph as a second emblem (badge) (Besiktas Gymnastics Club Regulation, Article 4).

Besiktas Gymnastics Club logo on the coat of arms is divided into black and white colors and created with a correlation between negative and positive. BJK abbreviation on the logo has an international use.

The Turkish flag in the logo was used in accordance with the coat of arms form of logo. Since BJK is the first registered club, it is the only Club that has the right to bear the Crescent and Star in its coat of arms. BJK Corporate Identity Guide, p. 15

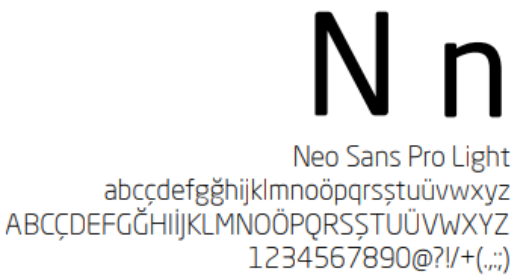
When the logos of the Besiktas Club throughout the time are examined, we see that the Arabic letters were converted to Latin letters, black and white colors were used, and rounded fonts were used as typology.

Typography

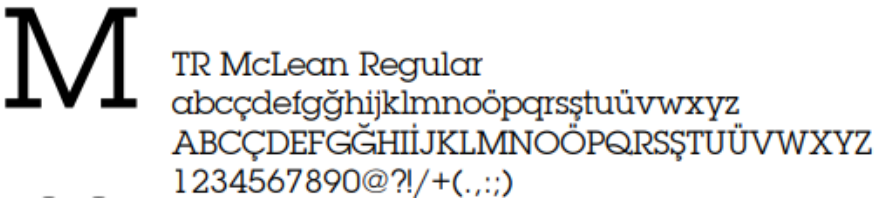
The font used by the institution is put "within quotation" as different from the current one. However, in order to meet the requirements of the current era, the brand has started to use the corporate sharp font in a more tempered way. With this change, it is aimed to generate a more sincere feeling among the fans and to break down the existing bleakness in football community.

In BJK's corporate identity, two separate fonts are used; TR McLean and Neo Sans Pro families form the basis of typography. TR McLean Regular / Bold is used in titles and Neo Sans Pro Light is used in texts. BJK Corporate Identity Guide, p. 29

Main font



Auxiliary font



Considering its rooted history and achievements and behavior, gestures, mimics, tones, shouts of its fans and the type of communication among each other, opponent team players and fans; we seen that Besiktas Gymnastics Club has selected a typography that will reflect the feeling of unity. Angled font model is selected as font.

Color

A designer analyzes its design by using the colors while considering the message to be provided, the feelings to be generated and the subliminal emotions. Therefore, color is one of the most important factors in the design for a designer. The symbol generated by color in Turkey may vary according to the cultural structures of other countries. (Akegin, Arslan and Yayçalı, 2017).

The use of color strengthens brand identity. Due to its consistency, the color palette distinguishes BJK since the Black-White-Red color relationship is a highly dominant combination, and the auxiliary color is not recommended in the corporate identity guide. Side colors required for periodic communication and the use of a limited number of colors in accordance with the three main colors were considered as suitable for BJK. BJK Corporate Identity Guide, p. 25

Colors of Besiktas Gymnastics Club are the colors adopted and accepted by fans. It is also claimed that the first colors of Besiktas were red and white and that they were converted to black and white after the losses in the Balkan War. http://www.bjk.com.tr/tr/cms/tarihce/2/74/ Access Date: 20.06.2018.

Color of black is obtained from the mixture of all colors and it represents power, courage, authority, formality, confidentiality and simplicity. It is the color of mourning in the Western world and also in Turkish culture. Black is preferred by many brands as it increases the concentration. "Black symbolizes despair, rebellion, unknown, death and mourning. White is the color of light, calmness, freedom, surrender, tolerance, bonding, cleanliness, purity, freshness and innocence". (Çallı, 2007)

Although the Besiktas Club was established by the prominent people in that period, it was always a part of neighborhood culture and it never became an elitist club. The club has undertaken a role where the elites of the country have protected the weak, frail youth of the country who needed sports discipline and a good nutrition.

Characteristics such as being a strong district club, the fact that athletes of the club are also fans, and unification around the idea of realizing an ideal as the children of same neighborhood are important factors to achieve that. This mission has never included arrogance and supremacy, and the position of club as a father like figure was always constant. The athletes, fans and members of the club are the reflection of the mosaic of the neighborhood. Since its foundation, Besiktas Gymnastics Club has been called as the "people's team" and this is the main reason behind it (Bora, 2006).

When we look at the messages expressed by black and white colors, we see that they have been identified with the neighborhood culture in Besiktas and the connections with fans. We san say that the logos and colors that symbolize the teams is the art of representation where the visuality of indicators are emphasized and where physical and cultural connections are established at (Dikici 2008).

Products and Equipment with Corporate Logo

Besiktas Gymnastics Club (BJK), had been a pioneer in many areas within Turkey for other clubs. While the clubs desire to be successful in sports, they also aim to generate a number of resources that will generate economic income in order to invest in the club (Orçun, 2015).

When we look at the types of services provided to the supporters of Besiktas Gymnastics Club, we see activities such as credit cards, licensed product stores, magazines, mobile

communication, mass communication channels, social media channels. The club should use public relations and advertising activities in accordance with current technological developments in order to inform and support the fans about these applications (Göksu 2017).

Services Provided By Besiktas Gymnastics Club (http://www.bjk.com.tr/tr/taraftar/, Access Date:26.06.2018):

- Garanti BJK Bonus
- Denizbank BJK Bonus
- Vakıf bank BJK Bonus
- Lukoil BJK
- BJK Combined Card
- Passolig
- Licensed Products
- BJK TV
- BJK Magazine
- Kartal Magazine
- Official Website
- BJK Mobile: KartalCell
- BJK Museum
- Besiktas Sport Schools
- BJKShop.com
- Yavru Kartal Magazine
- Card 1903 (Loyalty Program)
- Social Media Accounts: Instagram, Facebook, Twitter, LinkedIn, Google Plus, Mobile Application
- Fan Group: Çarşı

Corporate Value

It is seen that the history, vision and mission, achievements, fan loyalty and fan type have influenced the brand value studies of Besiktas Gymnastics Club. http://www.bjk.com.tr/tr/cms/degerler/31/ Access Date: 20.06.2018.

We Play With Honor

- We keep moral elements and human virtues such as honesty and justice above all.
- It is very important for us to maintain the prestige of our club that comes from its glorious history.
- We know that we must be worthy of the values represented by the Crescent and Star and our colors.

The concepts that represent the club and target audience in accordance with its deep rooted history, its establishment, and purposes of colors and logos are honesty and honor.

We Win With Our Effort

- We give importance to hard working, courage and belief and struggling as a team without giving up.
- We show full commitment to fair game rules.
- We show full respect to our competitors.
- We are gentleman. We support the party that wins with effort.

Regardless of their age, place of birth, education level, occupation and income, all Besiktas fans share the same values. These values make them Besiktas fans. Therefore, regardless of the age, education and income levels between them, all of the Besiktas fans are brothers and sisters of each other (Özkol, 1991: 148-149).

One of the most important characteristics that affect the management and fans' attitude in Besiktas Gymnastics Club is to act together as a community. This club, with millions of fans, aims to act in accordance with the right principles while achieving success. With the understanding of fair play, the club has an understanding of meeting the competitor teams and fans and support the winner.

We Are the Team of Public

- We are always humble.
- We do not discriminate between people, race, language, religion, color, position, gender and we have tolerance for everyone.
- We know the value of hard work.
- We are sensitive to social problems and we stand against unjust.

Besiktas fans come from all segments within the public; they are students, technicians, civil servants, self-employed, barbers, restaurant owners, workers, drivers, filmmakers, lawyers, tailors, grocery store owners, soldiers, teachers. In other words, Besiktas is not the club of a

certain class, but it is the team and club of public. Besiktas is a "public team" (Özkol, 1991: 148-149).

Besiktas Gymnastics Club is characterized by Besiktas neighborhood and it has adopted the life style, traditions and perspectives of neighborhood.

Turkey's first sports club, Besiktas Gymnastics Club, is established in this neighborhood and we can see the reflections of this neighborhood in the name of club, in its pioneering mission for sports and among the fans. The club has achieved a mission that embraces and unites all young, poor, educated and uneducated people.

We Are Empowered by Our Essence

- We give special importance to young people and we try to improve them with patience and discipline.
- We always respect the history and those who have served for our club. We never forget the neighborhood culture in our roots.

There are many reasons to become a Besiktas fan; its founders, personal characteristics of football players, colors and symbols, people of the neighborhood and philosophy. Being a Besiktas fan means to have loyalty and unrequited love. It is a tradition that says: "Besiktas, you are my heritage from my father and my debt to my son" (Dikici, 2008). It is possible to say that Besiktas is the best club that always paid its respect to its founders, players, management and fans. Süleyman Seba facilities, Hakki Yeten facilities or Baba Hakki Tribune are some examples of that.

We Are Bound With Passion

- We are bound to our club and its values with passion, loyalty and love.
- We are always self-devoted to support our club.

The values that make a Besiktas fan are bravery, honesty, fair play, conscious and voluntary discipline, sportsmanship, brotherhood, humbleness, and above all, trust in young people. Since these characteristics are also those of Besiktas club, all Besiktas fans are fans forever (Özkol, 1991: 148-149).

Based on the corporate value characteristics of Besiktas Gymnastics Club, it has succeeded to reconcile its colors, logo, vision and mission with an institutional structure by creating a sense of belonging among its fans where they live their adherence by songs and marches and acting together.

Corporate identity is the external window of an institution and company. The institution should be able to design its corporate identity in a way to reflect its own characteristics and identity. To create an identity that can reflect the corporate values and to carry these values is very important for sports clubs. Carrying the characteristics that constitute the bonding among the fans and ensure the long-term setting of values help the strengthening of corporate identity elements and improvement of confidence to the club.

Mission, Vision and Strategic Goals

The vision of the Club is announced to public as follows: 'The company's vision is to direct and coordinate the activities in order to provide the necessary resources for success in sports and services that will provide the unconditional happiness of all members of the BJK community; and internationally, to promote our community and principles with success and to represent it as rightful pride in the framework of professional approaches in order to maximize economic success as well as sporting success with emphasizing a rooted history that covers the period between 1903-2009. Annual targets are determined in the Company and the annual program and budget prepared in this direction are submitted for the approval of the Board of Directors.

The mission of the company is to train athletes and sportsmen who are smart, agile and who have moral values; and contribute to the achievements of the national team and to build sports facilities in order to reach this goal.

The vision and mission of the club include all of the forward-looking values in which professional steps are taken to promote corporate identities and to announce their future goals, national and international success and to increase brand value.

Conclusion

Today, sport clubs are competing in various fields. One of the most significant areas of competition is the ability of institutions to express their identities in the best way possible. For this purpose, drawing a path from by putting the vision and mission of institution that represent the objectives along with a large budget, professional and creative designers and a strong institution is needed.

Sport Clubs are engaged in generating a corporate identity within the sector by following a corporate strategy. The aim of this project is to provide coordination between the design elements of branding and corporate identity design; and to explain the ways to create a positive and catchy impression about the institution. New developments increase the need to renew confidence of the targeted audience in corporate identity. With the help of the corporate identity, clubs can have a strong transparency among the fans. With this method, clubs can have more support from the fans regarding the identity reflected by the club, to maintain the identity and to establish bonds.

In general terms, studies have indicated that clubs struggle to focus on their competitors, fans and stakeholders, to conduct their works in a suitable way, not to lose their target audience and to reach a wider audience. It is seen that regarding the formation of a corporate identity, Besiktas Gymnastics Club was inspired by the Besiktas district culture, life style, history, colors and fans and that they have chosen a path to reflect the goals of the club. It was observed that the club did not prefer any radical changes in corporate identity and brand value creation. Its colors, logo, typology, vision and mission match with the characteristics that determine the corporate value.

The services provided for the fans of the club transfer the corporate values. Licensed products, fan cards, fan groups of Besiktas Gymnastics Club also transfer the corporate structure and spirit.

Corresponding Author

Tekmil Sezen GÖKSU
Istanbul Gelişim University, School of Physical Education and Sport, İstanbul, TURKEY

Email: tsgoksu@gelisim.edu.tr

Conflict of Interest

The authors have not declared any conflicts of interest.

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Renewal of Psychophysical Qualities of Professional Sportsman

Igor PETRUK
International University of Economics and Humanities, UKRAINE
Email: igordoc.ua@gmail.com

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Abstract

Purpose: To proof scientifically the necessity of using massage and functional music for athletes of various sport as the means of restoration of psychophysical qualities during the preparation time.

Methods: Analysis of scientific literature, questionnaires (Eysenck-Q, SAM-Q), assessment of recovery rate after a special work and statistical analysis.

Sample: A total of 12 subjects were recruited for the trial. All study participants were within the age range of 18 to 30 years old. They were professional athletes of shooting and cycling who had more than 10 years of experience in sports.

Results: The combination of sports massage and well-designed music enhances the recovery of sportsmen according to SAM-Q (shooting: group +28%; cycling: group +23%). Also, according to a special work on training (with a recovery rate of shooters: group +28%; the recovery rate in riders: group +26%).

Conclusions: The combination of sports massage and efficient music does make the process of renewal of sportsmen`s psychophysical qualities more effective. During the research, we observed that the shooters had better results in recovery of psychophysical qualities than the sportsman of cycling.

Implications: Understanding the processes of restoring the psychophysical qualities of athletes can help to increase their sports endurance and improve their performance in sports.

Keywords: training, postworkout recovery, psychophysical qualities, fatigue, shooters, cycling

Introduction

At the present stage, one of the manifestations of the development of the sports industry is the increase in the intensity and volume of sports loads. In the context of increasing requirements for maintaining the athletes' ability to work at the required level, the relevance of the scientific substantiation of the specifics of the use of restoration measures in a specific sport is outlined. As a result of the analysis of scientific and methodological literature and interviews with coaches and athletes, some uncertainty has emerged regarding the use of recovery tools. In addition, on the basis of practical experience of operating the means of restoration in various sports, the importance of the principle of an integrated approach to the use of highly effective and accessible psychological and medical-biological means of recovery in the process of exercises, as well as the need for systematic compliance with the implementation of reducing agents in all parts of the training process (Scherbtiy, 2006).

In order to ensure the growth of efficiency, productive activities play an important role in individual psychological peculiarities of the nervous system. Of great importance are the laws of the formation of psycho-physiological functions, the connection of the nervous processes with mental, vegetative reactions and their relationship with the formation of recovery means.

Efficiency of use in the nearest recovery period after training sessions with high load of complexes of restorative means directly depends on the specificity of the latest features of fatigue athletes. In the case of the correspondence of the direction of the influence of restorative complexes on the nature of fatigue, there is an acceleration of the restoration of functional systems that are most depressed through the implementation of a program of appropriate occupations with a high load. The use of restorative remedies should be directed at both the restoration of general physical capacity and the restoration of psychophysical qualities such as balance, static balance, coordination, activity, state of health, pulse characteristics. The leading factor is the level of functional state.

The analysis all of the mentioned literature and author’s observations showed an insufficiency of attention to the application of recuperative means during the preparation of athletes for training and competitions (Vanderbilt, 2001; Petruk, 2007).

Scientific publications differ and do not show many attempts for research of a complex recovery means for a different kind of sports and stages of annual training cycle (Rodionov, 1983; Zotov, 1987; Birukov, 2003). According to the most of the researches, the application of sportsman restorative means is necessary because of that great amount of psychological and physical work which makes special capacities to decrease during the training and competition (Kellmann, 2002; Kentt, 2002). The application of recovery means showed how important the restorative methods during the training process (Volkov, 1997). Also, the effectiveness of complex means of recovery after an intensive training depends on the personal features of the endurance in sportsman.

Methods

During the research, the following methods were used: analysis of scientific literature, questionnaires (Eysenck, SAM-Q), assessment of recovery rate after a particular work and statistical analysis.

Subject of recruitment and Research Design.

A total of 12 subjects were recruited for this trial. All study participants were within the age range of 18 to 30 years old. These were athletes of the national team of Ukraine for shooting

and athletes from the Saudi national team from cycling. The research was conducted during my practical work with these teams (2014-2017 years). The specificity of working with national teams does not allow to divide its participants into two groups - experimental and control as all athletes need post-workout recovery and leave the control group without restoration of psychophysical qualities would be wrong for pedagogical and ethical reasons. All of them were the professional sportsman with more than 10 years of experience in sports. The recovery means were realized during the recovery cycles twice a week. These were a massage and well-designed music. The music was performed at a slow pace such as largo, adagio, andante. The recovery means were realized in the both group. It was a group of professional cyclist athletes and a group of professional athletes of shooting.

All subjects were given a written consent and asked to fill out the Self-sense, Activity, Mood Questionnaire (SAM-Q) before and after using of recovery means. All subjects were a written consent and asked according to two-factor model of personality of Eysenck with questionnaire too.

The SAM-Q along with was served as self-administered questionnaire of a different self-assessment of fatigue. These were long-standard methods which were invented on the subjective approach and aimed to monitor emotional and functional conditions at the beginning and end of the research (Doskin et al., 1973).

Assessment of recovery rate after a special work.

These were estimates of pulse recovery after a special training session (shooting: training for strength and endurance of the dynamic and static regimen duration 2.5 hours; cycling: training for endurance duration 2.5 hours).

Statistical analysis

Descriptive statistics: method, range, length of recovery in minutes, Eysenck-Q, SAM-Q, the total score in percentage.

Results and Descriptions

Our hypothesis is an implication of how to improve the performance and recovery of psychophysical qualities by combining massage and well-selected music. And, our next task is to include this restorative program as an indication of recovery.

The performance of massage has its own specifics. It is very important if it is performed professionally (Birukov, 2003). The massage itself is not just the series of a learned technique movement, it is much more than that. The effectiveness of massage involves neurological and emotional moments. In fact, the benefits of massage are more psychological than physiological (Grant, 2000; Hemmings et al., 2000; Hemmings, 2001). The speed of recovery after massage also depends on the psychological state of sportsman and his or her self-motivation (Petruk, 2007).

Music has a psycho-physiological effect. There was a scientific inquiry that revealed a psycho-physiological influence of music on the process of recovery by regulation of the arousal mechanism and acquisition of motor skills (Yanushevski, 1997; Bacon et al., 2008; Karageorghis et al., 2008).

We examined the interactive effects of massage and music on the process of recovery of shooters and athletes of cycling by doing the questionnaires and estimating the pulse speed before and after the special functional trials (strength-endurance in the dynamic and static

regimen).

Athletes of cycling and shooters were examined at the level-phase recovery during the recovery micro cycle in 2014-2016th. The age of participants was from 18 to 30 years old. The estimation of athlete's psychological type was made according to two-factor model of personality of Eysenck with questionnaire. Also, a diagnosis of psycho-functional status was performed according to the self-test of fatigue SAM for athletes. There was a psycho-functional diagnosis of a self-test of fatigue SAM, defined by neuro-psychological stress (pulse) and recovery standard loads (stress endurance in dynamic and static modes, speed-power endurance) before and after the processes of recovery (Doskin et al, 1973).

The estimate according to two-factor model of personality of Eysenck questionnaire: for shooters introverts' 99% and 1% in extraverts (Chart 1); for the athletes of cycling 55% in introverts and 45% in extraverts (Chart 2).

Restorative massage also was combined with well-selected music. Two times during one recovery micro cycle. We were using calming music, lyrical compositions and instrumental performances in largo, adagio and andante tempos. The effectiveness of the supposed recovery was determined by analyzing the results of participants on the basis of 6 persons of cycling and 6 persons of shooting.

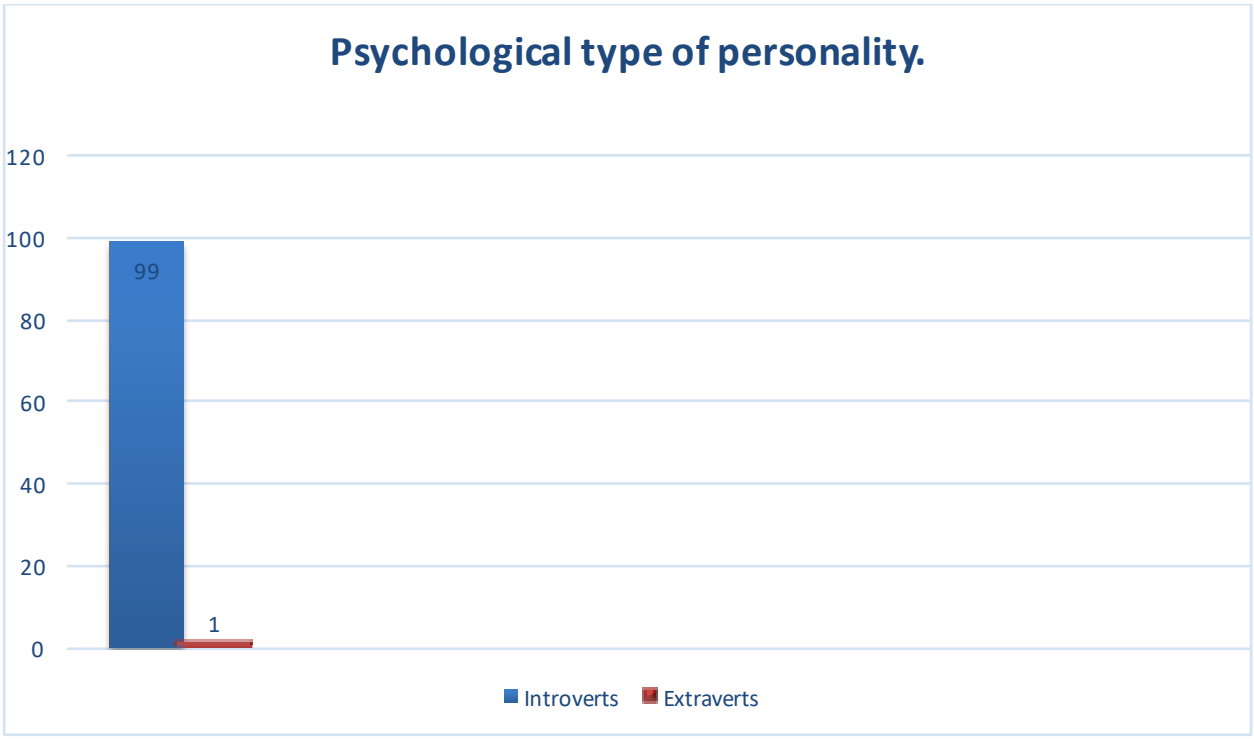

Chart 1. Psychological type of personality (%) Shooting

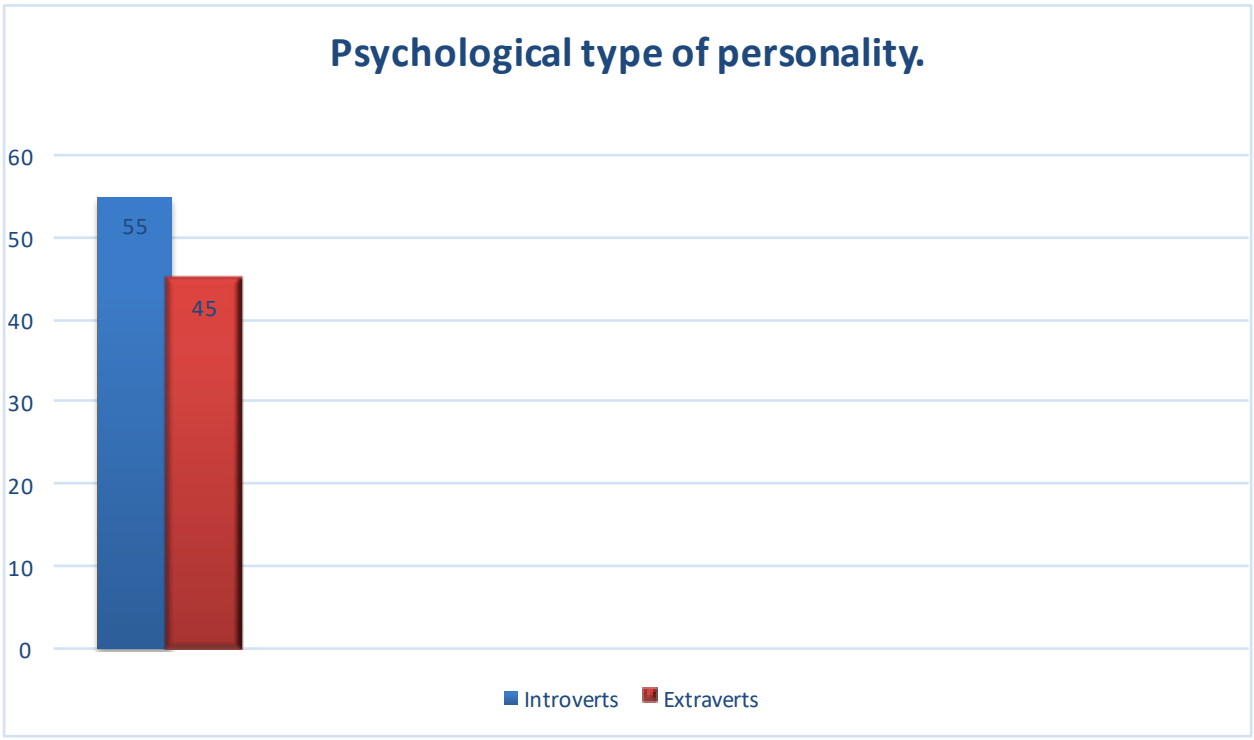

Chart 2. Psychological type of personality (%) Cycling.

According to the results of the research, the athletes of cycling after combining the massage and well-designed music the integral evaluation SAM got higher up to +26% (4.90points). Meanwhile, the shooters showed different results. Which were +31% (5.08 points), (Table 1).

The recovery of pulse rate after a special functional trial in athletes of shooting showed better results +22% (2.2 minutes). The recovery of pulse rate after a special functional trial in athletes of cycling was higher up to +17% (2 minutes), (Table 2).

Also, before using the recovery processes in both groups we found the lower indexes of self-sense (S) and activity (A) compared with mood (M); after the research, the indexes mostly of S and A in compare with M showed much better results (test SAM).

Table 1. An integral estimation of the subjective state during the recovering micro cycle of athletes from shooting and cycling (SAM-Q, points,%)

Groups before and after restoration		**An integral estimation of the subjective state (SAM-Q)**
group of shooting n=10	Before	3.88p.
	After	5.08p.
Efficiency		+31%
group of cycling n=10	Before	3.89p.
	After	4.90p.
Efficiency		+26%

Table 2. Indexed of pulse recovering after special training session during the recovering micro cycle of athletes from shooting and cycling (minutes,%)

Groups before and after restoration		**Indexed of pulse recovering**
group of shooting n=10	Before	2.8m.
	After	2.2m.
Efficiency		+22%
group of cycling n=10	Before	3m.
	After	2.49m.
Efficiency		+17%

Conclusions

The analysis of scientific literature shows an insufficiency of publications about a complex of recovery used during the different stages of annual cycles of sportsman's preparation.

The combination of sports massage and well-designed music makes the process of the recovery for sportsman more effective.

During the research, we observed that the shooters had better results in recovery than the sportsman of cycling. Obviously, the reason for this was individual psychological peculiarities and other personal features such as emotional stability, introversion and adaptation to relaxation music of shooters.

The results of the study showed that for the effective use of means of restoration of professional athletes it is necessary to use specially developed complexes taking into account the structure of the training microcycle, the dynamics of fatigue and recovery processes, and the individual characteristics of athletes.

The study demonstrated that for effective training of athletes is important to use in the form of specially designed facilities such means restoring mental and physical qualities of an athlete as mental and physical relaxation in the form of combined use of massage and functional music with the general and specific psychological characteristics of athletes.

Author's Address

Igor PETRUK

Senior lecturer in International University of Economics and Humanities named after academic Stepan Demianchuk 4 S. Demianchuk St., Building 1, Rivne 33000, Ukraine.

Email: igordoc.ua@gmail.com

Conflict of Interest

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