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The Acute Effects of Dynamic and Static Stretching on Tennis Serve Targeting Performance

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Abstract

The study investigates the acute effects of dynamic and static stretching on the tennis serve targeting performance of amateur tennis players. Twenty male athletes who were between the ages of 16-24 years and played tennis for at least 1 year (21.40±2.16 years, 181±0.06 cm, 71.85±7.42 kg, tennis playing time 1.55±0.88 years) voluntarily participated in the study. Prior to the pre-tests and after applying the traditional warm-up protocol, serve targeting test (STT) was applied to all participants. In the post-tests, STT was used after applying three different warm-up methods on three different days (48-hour rest interval). The warm-up stages included No Treatment (NT) (jogging, rally), Static Stretching (SS) and Dynamic Stretching (DS). In the statistical analysis, the homogeneity of the data was investigated using the Shapiro Wilk test. The Wilcoxon test was used to compare the pre-test and post-test results of the non-homogeneous data; Friedman test was used to compare the three different stretching methods with each other; in the paired comparisons of the groups, the paired samples t-test was used for the homogenous data and Wilcoxon test was used for the non-homogeneous data. In conclusion, stretching exercises before serving increased the serve targeting performance and the increase in the dynamic stretching exercises was higher than that in static stretching exercises.

Key words: Tennis, Static Stretching, Dynamic Stretching, Warm-up, Targeting

INTRODUCTION

Trainers apply various innovative training methods by following recent developments in sports sciences and using sub-branches such as training science, sport psychology, etc. to improve the performances of athletes. Using the findings of these studies and tests certain conclusions are reached (2, 5, 23, 35). Studies investigating the factors affecting performance to bring out the best performance of athletes in various sports branches have also been carried out for tennis. In tennis, physical fitness parameters such as coordination skills, aerobic and anaerobic capacity, speed, agility, flexibility and static and dynamic balance, as well as high-intensty short-distance jogging and change of direction are among the most important traits affecting performance (21, 32, 45, 46).

Human body is in great balance and can adapted (1, 11). Technical and tactical skills are among performance-defining elements (39). Recently small differences make athletes winner (38). To give a good performance in tennis, all techniques (ground stroke, volley, serve) should be delivered in top quality. Putting emphasis on the speed and accuracy of the ball is also of importance for a good performance (6). Serve is one of the most important techniques that affect the score of a tennis match (26). The strength and flexibility of the upper extremity and nerve-muscle coordination are required for a high-level power production during serve. A strong upper extremity increases the speeds of the racket and ball during serve and, hence, positively affect the performance (22,34). In addition, choosing the best warm-up protocol before a match is one of the most important issues affecting serve performance (28). Since stretching exercises increase the flexibility of the athlete, they are expected to improve the sportive performance in tennis (24). A good warm-up not only improves the performance but also eliminates the risk of injury. A good warm-up can prevent the injuries caused by

the challenging movements required in practice or during competition period (7, 18, 43). Stretching exercises are divided into two groups as static and dynamic stretching exercises. Static stretching exercises include static stretching, passive stretching, active stretching, proprioceptive neuromuscular facilitation (PNF) and isometric stretching. Dynamic stretching exercises are classified as ballistic stretching, dynamic stretching and isolated active stretching (37, 42). Static stretching exercises have been reported to reduce maximal muscle performance when applied before maximal muscle activities (14, 42). The mechanism as to why static stretching causes loss of strength is not yet understood, but strength loss has been associated with the viscoelastic changes in tendons, neuromuscular factors, decreases in the activation of the motor unit and reflex sensitivity (9). According to Bompa (8), static stretching exercises negatively affect strength due to the decrease in myotatic reflex sensitivity when applied especially over 15 minutes. New combinations of warm-up protocols have been investigated to eliminate the negative effects of static stretching exercises. The post-activation potentiation (PAP) method is one of these methods (12, 15, 40). The precise physiological mechanisms that contribute to PAP are not clear, but the dominant theory argues that phosphorylation occurs at a higher level in the potentiated myosin regulatory light chain, which makes actin and myosin more sensitive to Ca2+ (17) Dynamic stretching has a positive effect on muscle strength development. Although the action mechanisms in strength development are not fully identified, emphasis is put on two possible explanations (7). One of the possible explanations is that the increase in the temperature in muscles positively affects the relationship between strength and speed by increasing the delivery rate and increases glycogenesis, glycolysis and high-energy phosphate degradation. Another possible explanation is that the neuromuscular activities stemming from dynamic stretching exercises contribute to other factors that increase muscle strength (7). In both, sensory discharge occurs after the muscle contraction of PAP (29).

In conclusion, the effects of different stretching exercises differ as well. Thus, the addition of stretching methods that are suitable for a specific activity to exercise programs is a factor affecting the performance (42). The study investigates the effects of different warm-up methods applied before tennis serve targeting performance measurements on acute targeting performance.

MATERIAL AND METHOD

This Twenty amateur male tennis players who were between the ages of 16-24 years and played tennis for at least 1 year were included in the study after filling the "informed consent form". The participants were randomly divided into three groups as No Treatment (NT), Static Stretching (SS) and Dynamic Stretching (DS). The pre-tests were applied to all groups after the warm-up period comprising 5-min jogging and 5-min rally; the post-tests were applied following the application of the 3 different warm-up protocols to the relevant groups after a 2-min rest interval. In all tests, the serve performance measurement section of the ITN was used to determine the serve targeting performance. The post-tests were repeated after applying the 3 different warm-up protocols to the participants in 3 groups on 3 different days with 48-min rest intervals. The stretching protocols before the post-tests were applied in 3 sets for 20 s and with 10-15-s rest intervals. In the static warm-up protocol, a total of 10 stretches comprising 5 upper extremity stretches and 5 lower extremity stretches were performed; in the dynamic warm-up protocol, a total of 10 stretches comprising 5 upper extremity stretches and 5 lower extremity stretches were performed.

Table 1. The Static And Dynamic Stretches In Stretching Exercises

Lower Extremity Static Stretching	Upper Extremity Static Stretching	Lower Extremity Dynamic Stretching	Upper Extremity Dynamic Stretching
Calf Static Stretching	Pectoral Static Stretching	Leg Swing	Arm Swing in the Frontal Axis
Hamstring Static Stretching	Latissimus Dorsi Stretching	Spiderum Hamstring Stretching	Arm Swing in the Frontal and Sagittal Axis
Quadriceps Static Stretching	Trapezius Static Stretching	Dynamic Pigeon Stretching	Diagonal Shoulder Rotation
Static Pigeon Stretching	Subscapular Static Stretching	Lunge	Flexion Extension Dynamic Stretching
Adductor Stretching	Shoulder Rotator Cuff Stretching	Squat Stretching	Internal and External Shoulder Rotation

Serve Test

ITN was developed by the International Tennis Federation. Rather than the athletes' technical skill in tennis strokes, the test measures the elements of stability, depth and power of the serves, groundstrokes and volleys, which are among the five game situations in tennis, and mobility of the players. The serve assessment given in the ITN test was used to determine the tennis targeting performances of the athletes (http://www.iftennis.com/media/113844/113844.pdf)

The test is illustrated below. P shows the position of the player. The player (P) hits 12 serves: 3 serves to the wide area of the first service box; 3 serves to the middle area of the first service box; 3 serves to the middle area of the second service box; 3 serves to the wide area of the second service box. If the ball lands outside the service box or fails to clear the net, the player receives 0 points. If the serve lands inside the service box, the points are awarded based on the first and second bounce. If the first serve lands in the correct service box, no second serve is required. The serve is repeated if the serve is a let.

First Serve:

2 Points – When a ball lands in the correct service box area.

4 Points – When a ball lands in the target area of the correct service box.

Second Serve:

1 Point – When a ball lands in the correct service box area.

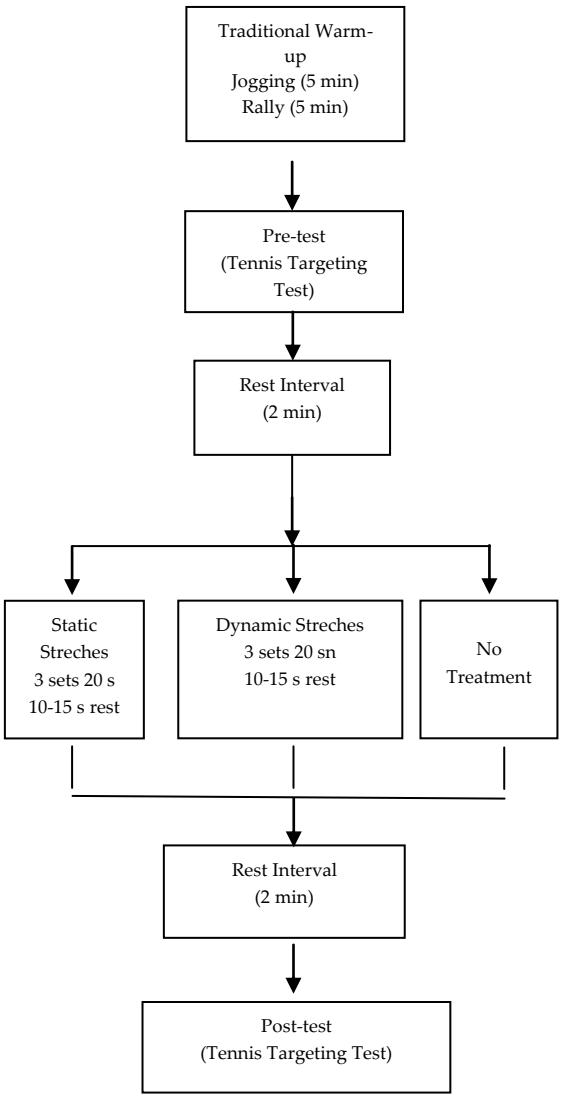
2 Points – When a ball lands in the target area of the correct service box.

Power Points are awarded as follows:

Power Area – 1 Bonus Point – When a ball lands in the correct service box area and the second bounce lands between the baseline and the power line, 1 bonus point is awarded.

Power Area – Double Bonus Points – When a ball lands in the correct service box and the second bounce lands beyond the power line, double points are awarded.

The maximum possible score is 108 (12x4x2+ 12)



INTERPRETATION OF ANALYSIS AND FINDINGS

Table 2. Physical Characteristics of The Athletes

(n=20)	Min.	Max.	Mean	SD
Age (year)	18.00	26.00	21.40	2.16
Sport age (year)	1.00	4.00	1.55	.88
Boy (cm)	173.00	194.00	181.00	.06
Weight (kg)	60.00	82.00	71.85	7.42
BMI (kg/m²)	17.27	26.78	21.93	2.64

Table 3. Shapiro-Wilk Normality Test Results For The Serve Targeting Performance Test

	Warm-up Protocol	Mean	SS	p
Pre-Test (score)	No Treatment	33.80	11.23	.003
	Static Stretching	35.90	11.71	.001
	Dynamic Stretching	35.95	11.73	.002
Post-Test (score)	No Treatment	34.20	10.48	.011
	Static Stretching	38.40	9.91	.119
	Dynamic Stretching	41.90	12.67	.399

The homogeneity analysis showed that the results obtained in pre-tests of all measurements and post-test NT measurements were not distributed homogeneously ($p<0.05$), while the post-test SS and DS measurements distributed homogeneously($p>0.05$).

Table 4. Comparison Between The Pre-Test And Post-Test Measurements In The Serve Targeting Tests

n=20			Mean Rank	Sum of Ranks	z	p
Static Stretching Pre-Test & Static Stretching Post-Test	Negative Ranks	6[a]	7.83	47.00	-2.182	.029*
	Positive Ranks	14[b]	11.64	163.00		
	Ties	0[c]				
	Total	20				
Dynamic Stretching Pre-Test & Dynamic Stretching Post-Test	Negative Ranks	3[d]	7.33	22.00	-3.102	.002*
	Positive Ranks	17[e]	11.06	188.00		
	Ties	0[f]				
	Total	20				
No Treatment Pre-Test & No Treatment Post-Test	Negative Ranks	7[g]	10.00	70.00	-.683	.495
	Positive Ranks	11[h]	9.18	101.00		
	Ties	2[i]				
	Total	20				

p<0.05. a. Static Stretching Post-Test< Static Stretching Pre-Test
b. Static Stretching Post-Test> Static Stretching Pre-Test
c. Static Stretching Post-Test= Static Stretching Pre-Test
d. Dynamic Stretching Post-Test< Dynamic Stretching Pre-Test
e. Dynamic Stretching Post-Test>Dynamic Stretching Pre-Test
f. Dynamic Stretching Post-Test=Dynamic Stretching Pre-Test
g. No Treatment Post-Test< No Treatment Pre-Test
h. No Treatment Post-Test> No Treatment Pre-Test
i. No Treatment Post-Test= No Treatment Pre-Test

The results obtained by comparing the pre-test and post-test results in the STT showed that there was a significant difference between the Static Stretching pre-test ($p=0.029$) and Dynamic Stretching pre-test ($p=0.002$). The comparison between the pre-test and post-test results for the test involving No Treatment revealed that there were no significant differences ($p=0.495$).

Table 5. Comparison Between The Serve Targeting Performance Tests With Respect To The Warm-Up Protocols

Warm-up Protocol	Test	Mean Rank	X^2	p
No Treatment	Post-Test	1.33	18.500	.001*
Static Stretching	Post-Test	2.03		
Dynamic Stretching	Post-Test	2.65		

There were significant differences between the STs after different warm-up protocols (p=0.001).

Table 6. Comparison Between The Post-Test Results Of Serve Targeting After The Dynamic And Static Warm-Up Protocols

	n	Mean	Std. Deviation	t	p
Static Stretching Post-Test	20	38.40	9.91	-2.703	.014*
Dynamic Stretching Post-Test		41.90	12.67		

Table 7. Paired Comparisons Between The Serve Targeting Performance Tests

		n=20	Mean Rank	Sum of Ranks	z	p
No Treatment Post-Test & Static Stretching Post-Test	Negative Ranks	15[a]	9.77	146.50	-2.660	.008*
	Positive Ranks	3[b]	8.17	24.50		
	Ties	2[c]				
	Total	20				
No Treatment Post-Test & Dynamic Stretching Post-Test	Negative Ranks	17[d]	10.56	179.50	-3.404	.001*
	Positive Ranks	2[e]	5.25	10.50		
	Ties	1[f]				
	Total	20				

There were significant differences between the serve targeting performance after static and dynamic warm-up and serve targeting performance after NT (p=0.008; p=0.001).

CONCLUSION AND EVALUATION

Recent studies have shown that preferring dynamic stretching rather than static stretching during stretching exercises before practice or match positively affected various elements of performance (speed, agility, jumping ability, strength).

In their study, Chaouachi et al. (9) investigated the effects of warm-ups involving static and dynamic stretching on the agility, sprinting and jumping performance of trained individuals. The researchers recommended applying branch-specific dynamic exercises for at least 5 minutes before the sporting activity for the athletes who use static stretching. Yamaguchi et al. (44) determined that 15-minute dynamic stretching exercises before isokinetic strength test increased the performance. In their study, Young and Behm (48) divided the athletes into four groups as aerobic stretching group, only static stretching group, general aerobic stretching group and static stretching group. The results showed that the explosive force of the athletes in the static stretching group was relatively lower and the explosive forces of the athletes in other groups were higher. Torres et al. (41) investigated the effects of stretching exercises on upper-body muscular performance and argued that static stretching did not have any effect on upper-body muscle strength. In their study, Turna (42) recommended applying static and dynamic stretching together in light of its advantages, which are absent in static stretching and PNF, and on the grounds that the negative effects of static and PNF stretching before a match or training will thereby be eliminated. Another result obtained with this study was that dynamic stretching exercises positively affected speed and strength performance, while static stretching possibly had a negative effect. On the other hand, the researchers determined that static stretching had a positive effect on flexibility. The results of our study revealed that dynamic stretching improved serve targeting performance to a greater degree than static stretching.

There is also evidence opposing the performance-increasing effects of stretching exercises before an activity. The studies carried out by Cornwell et al. (10), Avela et al (4), Fowles et al. (13), Kokkonen et al. (27) and Nelson et al. (30) Akyuz et al (3), Yıldız et al (47) showed that stretching exercises, in fact, caused acute decreases in strength and jumping performance. Fowles et al. (13) observed that this negative effect lasted about 60 minutes and attributed it to the changes in either reflex sensitivity, muscle stiffness or neuromuscular activation. Knudson et al. (26) reported that, if this effect was in fact valid, a tennis player who performs stretching exercises before a match can only reach their full performance near the end of the second set. Knudson et al. (25) recommends static stretching during warm-up for recreational tennis players. The researchers reported that stretching muscles using static stretching was important in maintaining flexibility at its normal level and physical activities should occur during the cooling period. No studies were found on the effects of different stretching exercises on targeting performance. The results of our study revealed that both static and dynamic stretching improved

targeting performance. Moreover, the serve performance without stretching was lower than that after stretching. The results indicated that stretching exercises positively affected targeting performance in tennis.

There are some studies investigating the effects of stretching exercises on performance in tennis. In their study, Kaya and Polat (20) found that applying tennis and stretching exercises together positively affected stroke power but had a negative effect on agility and concluded that tennis training alone positively affected both agility and stroke power. Suna et al. (36) reported that there was a significant difference between stroke accuracy and technical training positively affected the tennis skills of individuals. Gelen et al. (14) investigated the effects of different warm-up methods on serve speed. In the study, the tennis players were divided into four groups and a different warm-up method was applied to each group. Jogging, rally and practice, traditional warm-up and high-intensity upper extremity plyometric activity were performed after 5-min low-intensity aerobic jogging. Jogging, was followed by 5-min moderate-intensity forehand and backhand strokes. Lastly, the participants practiced swings without a ball at a moderate rate. The results indicated that static stretching exercises applied immediately after traditional warm-up did not have an effect on serve speed in tennis. The researchers reported that the use of PAP, which emerges as a result of dynamic and high-intensity upper extremity plyometric exercises, creates a potential field for the enhancement of athletic performance and tennis players should apply dynamic exercises along with high-intensity upper extremity plyometric exercises. The results of the study indicated that dynamic and upper extremity plyometric warm-up exercises were beneficial to enhance the serve performance of young elite tennis players. The results obtained by Gelen et al. (14) agrees with the results obtained in our study, which showed the positive effect of dynamic stretching on serve performance. On the other hand, in their study in which the acute effects of static stretching, dynamic warm-up and high-intensity upper extremity plyometric activities on the speed of tennis ball after jogging, rally and serve targeting were investigated, Haag et al. (16) found that the static stretching exercises for upper extremity did not have an acute effect on ball speed and serve performance. The researchers reported that serve speed was not affected by static stretching. The findings of the study carried out by Knudson et al. (26) showed that a five-min traditional warm-up in tennis was sufficient for maximum serve performance and the stretching exercises to improve performance before match did not have any effect on the improvement of serve performance. According to the researchers, the decrease in maximum muscle performance after stretching exercises, as notable as it was in previous studies, was not observed in tennis serve performance and despite the benefits of stretching exercises before an activity in injury prevention, as shown by the current data, there was little evidence to recommend static stretching exercises for tennis-players. They determined that tennis players didn't need to abandon light stretching exercises in the later stages of a general warm-up routine, since serve performance was not affected by the stretching exercises.

In conclusion, the study investigated the importance and advantages of stretching movements that should be preferred during warm-up in tennis and determined that stretching exercises before serve improved serve targeting performance. The study also found that dynamic stretching had a higher positive effect on serve targeting performance than static stretching. Further studies can be carried out with elite tennis players. When carrying out similar studies, measuring the ball speed during targeting will help elucidate the effects of stretching exercises on performance through strength parameters.

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Comparison of Social Physique Anxiety of Fitness and Pilates Exercise in Women

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Abstract

This study included the participation of sedentary women between the ages of 20 and 30 who were doing fitness and pilates exercises. Social physique anxiety (SPA) status of participants was compared. Twenty-seven sedentary women between 20 and 30 participated in the study voluntarily. The volunteers were divided into two groups: pilates group (PG, n = 15) and fitness group (FG, n = 12). PG and FG performed the exercises three days a week for eight weeks. Body weight (BW), fat ratio (%), body mass index (BMI) were measured before and after eight weeks of exercise program and SPA inventory was completed. Data were analyzed with the SPSS program. There was a significant difference between BW, BMI and SPA values when compared with the pre-end data of FG and PG ($p < 0.05$). In the comparison between groups, there was a significant difference in favor of PG and SPA values ($p < 0.05$). As a result, we can mention the positive effect of the exercise programs we have implemented in favor of PG.**Key words:** Tennis, Static Stretching, Dynamic Stretching, Warm-up, Targeting

Key Words: Pilates, Fitness, Social Physique Anxiety

INTRODUCTION

The concept of social anxiety was the first time used by Janet in 1903. The concept of social anxiety was used to speak out in front of the crowd, and to avoid writing, although she could write. At first, such symptoms were not considered a psychological disorder but accepts a normal condition. The concept of anxiety has been entered into Turkish from Western sources by the translation of the concept of "anxiety". Concern shows with uncertain fear, anxiety, and distress for an unknown cause. The concern arises with the emergence of an idea that something bad will happen and cannot prevent it (1).

Social appearance anxiety; in addition to the features such as weight, height, muscle structure and skin color of people, laughter, nose structure and eye shape, including features such as the physical appearance of people experienced by other people are expressed in the form of tension and anxiety (9). Various personal and situational factors appear to contribute to social anxiety. However, one of the most critical determinants based on the definition of the structure involves the confidence of individuals in the ability to create the impression that others want and to avoid an unwanted

impression (2). From a theoretical perspective, it seems reasonable to assume that SPA and perfectionism relations with disordered eating might be stronger for females than males. For instance, girls are praised more for physical appearance and boys for physical functioning such as athletic skills (17). A number of studies have shown that athletes and exercisers experience SPA in a variety of situations and contexts (6, 10, 16).

Focht and Hausenblas (2004) stated that in order to improve the image of a healthy body, people should exercise regularly to stay fit (19). If

individuals do not exercise regularly, they may result in undesirable lifestyles such as shapeless bodies, health and weight problems (e.g. body weight, BMI, fat ratio), alcohol and substance abuse (13).

It is known that Pilates is applied not only for physical education but also for mental education (11). Physical activity is the most effective way to stay in shape. Studies have shown that pilates and fitness exercises are effective on individuals' body composition (14, 15, 12, 8). Therefore, the social physical anxiety (SPA) status of sedentary women between twenty-thirty years of age who were doing fitness and pilates exercises were compared.

MATERIAL AND METHOD

Twenty seven sedentary women between aged twenty-thirty years participated in the study. The participants were informed about the purpose and content of the study and a voluntary consent form was signed before starting the research procedure. The participants were divided into two groups as pilates group (PG, n = 15) and fitness group (FG, n = 12). PG was given one-hour pilates exercise three days a week for eight weeks. The exercise program consists of 10 minutes of warm-up, 25-40 minutes of exercise on the mat and 10 minutes of cooling. Pilates mat exercises consist of movements in 5 different positions: supine position, side-lying position, prone position and sitting position. Movements; one leg stretch, hundreds, double leg stretch, scissors, shoulder bridge, oblique preparation, criss-cross, hip twist, Clare, sidekick, arm openings, lift lower, leg lifts, side bend, swan dive, one leg kick, swimming, breaststroke preparations, breaststroke, cobra, half roll back, oblique roll up and sidekick in kneeling.

Before starting the 8-week program, the participants in the fitness group were given training on correct grasping with low weights, proper breathing and weight lifting with the right technique for 1 week. To determine the exercise loads to be applied to the participants before the exercise, 1 repetition maximum (RM) loads were estimated using 10 RM method and the loads to be applied to the participants were determined. The studies were conducted following the recommendations of the American College of Sports Medicine for health and fitness (1) for 8 weeks, 3 days a week. During the exercise program, participants worked under the supervision of sports instructors. Participants in FG (3 sets, 12 repetitions in 60% of the estimated 1 RM) working at the specified loads during the first 4 weeks of the resistance training program were re-measured to determine the new loads to be applied by the 4th week of the program. Each participant's new estimated 1 RM level was determined (3 sets in 70 %, 12 repetitions) and new loads were calculated and recorded on the training cards. The participants performed the exercise program in 11 stations in approximately 50-60 minutes. These stations; chest press, seated row, shoulder press, knee flexion, knee extension, biceps curl, triceps press, crunch, hyperextension. All strength measurements were performed after a complete rest with a break of 48 hours. Exercises were performed in the sports center between 08:30 and 10:30. During the resistance training program, 10 minutes of warm-up, 5 minutes of stretching and 5 minutes of active cooling were performed before and after the exercises.

The 12-item Social Physical Anxiety Scale (SPAS) was developed by Hart et al. (1989) to determine the social physical anxiety levels of individuals. The validity and reliability study for the Turkish population was conducted by Ballı and Aşçı (2006) (4). Participants were evaluated with a Likert-type scale consisting of 5 points ranging from "totally wrong" [1] to "completely right" [5] in each item. The lowest score that can be obtained from the inventory is 12 and the highest score is 60. The higher the participant scores from SPAS, the higher the level of anxiety from his appearance. Items 1, 2, 5, 8 and 11 are graded in reverse. The test-retest correlation coefficient calculated for the whole scale was found to be 0,88. The reliability coefficient of the social physical anxiety scale was found to be 0,886.

In body composition measurements, body weight, body mass index (BMI), fat content (%) were performed by body composition analysis (Tanita BC 418, USA) based on bioelectrical impedance method.

Statistical Analysis

Data were analyzed by SPSS 20.00 program. The suitability of the data for normal distribution was evaluated by the Shapiro-Wilk test. All data were expressed as mean and standard deviation. In the non-normal distribution data, Wilcoxon signed-rank test was used to comparing pre-posttest values and the Mann Whitney U test was used to compare groups. The significance value was accepted as $p < 0.05$.

RESULTS

Table 1. Descriptive parameters of participants

Parameters	PG (n=15)		FG (n=12)	
	Min-Max	Mean±SD	Min-Max	Mean±SD
Age (years)	20-30	24.64±2.24	20-30	25.22±5.64
Height (cm)	165-179	172.13±15.24	158-175	167.1±16.35
Fat ratio (%)	16.2-29.11	21.12±12.5	18.45-28.5	23.12±7.65
Body weight (kg)	55.18-76.25	64.65±21.56	57.5-80.14	67.47±14.2
BMI (kg/m²)	18.15-25.14	23.12±3.45	19.1-26.5	24.1±11.4
SPA	25-36	31.16±1.4	26-33	30.4±7.6

According to Table 2, when the pre-end data of pilates and fitness groups were compared, a significant difference was found in body weight, BMI and SPA values ($p < 0.05$). There was a significant difference between body weight and SPA values in favor of PG ($p < 0.05$).

Table 2. Comparison of ıntergroup and pre-post test values of participants

Parametes	n	Pre test	Post test	Pre-post p-value	PG vs. FG p-value
Body weight (kg)					
PG	15	64.65±21.56	60.21±15.24	.034*	.038*
FG	12	67.47±14.2	64.35±65.41	.038*	.124
Fat ratio (%)					
PG	15	21.12±12.5	20.4±15.55	.062	.098
FG	12	23.12±7.65	22.5±5.5	.069	.085
BMI (kg/m²)					
PG	15	23.12±3.45	22.16±1.15	.045*	.084
FG	12	24.1±11.4	23.54±54.6	.049*	.078
SPA					
PG	15	31.16±1.4	23.67±65.4	.005*	.042*
FG	12	30.4±7.6	25.4±84	.008*	.032*

CONCLUSION AND EVALUATION

It is expected that those who do exercise and those who have better physical performance have lower social physical anxiety. Current sources have findings in this direction.

Fenicchia et al. (2004), sedentary type 2 diabetes; for 6 weeks, 3 days a week, they gave about 50 minutes of exercise (8 exercises, 80% of 3 RM, 3 sets, 12 repetitions and 1.5 minutes of rest). With the exercise program they applied, they observed significant decreases in body weight, body fat ratio, fat weight, lean body weight, and BMI (7).

Williams and Cash (2001), examined the effects of circular weight exercises on body appearance and physical self-efficacy in college students and reported that the experimental group had a more positive physical appearance assessment and higher physical self-efficacy values than the control group at the end of six-week exercises (20).

Balli et al. (2005) examined the difference between the levels of social physical anxiety and satisfaction with body image of women athletes and non-athletes. The results of multivariate analysis of variance showed that there is a difference between these athletic and psychological concepts between athletes and non-athletes. This study showed that non-athletes had more negative emotions than athletes when physical characteristics were evaluated by other individuals (5).

Tekin et al. (2015) examined the effect of regular aerobic exercise program on the psychosocial parameters of obese female university students. The students who were evaluated as obese by body mass index were randomly assigned to exercise (EG) and control (CG) groups. Participants participated in a Tae Bo aerobic exercise program lasting 60 minutes for 3 days a week for 3 months. As a result, it was reported that there were significant differences in favor of the exercise group in terms of physical competence, appearance, self-confidence, body outlook, and social physics anxiety as a result of a comparison of control and exercise group psychological first-last measurements (18). As a result, it is possible to talk about the positive effects of pilates and fitness exercises on social physical anxiety states.

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Investigation of the Satisfaction Levels of University Students from Social and Sports Activities Provided in the University Environment

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Abstract

Research was carried out for the purpose of determination of satisfaction of university students from social and sportive activities provided by their universities.

Research is a survey screening type of research. Universe of the research is central campus of Mehmet Akif Ersoy University of Burdur and its population is 800 students who were selected randomly and who study at different units located in this campus.

In this study, data were acquired by survey method. A purpose-oriented survey was developed. Understandability, validness of the scope and reliability of the survey were established. Cronbach's Alpha Reliability Coefficient of the survey was found to be 0,89.

Survey was applied to sample group by making one on one interviews with random sampling method. Survey was answered by 800 students in total, being 424 women and 376 men. Frequency (%), Crosstabs and Chi Square ($\chi 2$) tests were made as statistical procedure. 0,05 was accepted as confidence interval in determination of differences between variables.

As a result of obtained data; we can suggest that participants were mainly satisfied from social and sportive activities provided in the university environment within the scope of the research, however, women were more satisfied in social activities compared to men and men were more satisfied in sportive activities compared to women.

Key words: Student, Social, Sportive, Activity, Satisfaction

INTRODUCTION

The university is the institution where individuals from different socio-cultural backgrounds and different regions and districts of the country receive education and training. These students abruptly find themselves in a different place and environment. This environment differs from the students' normal lives. The adaptation of the students to a different sociocultural environment takes time (19).

Humans are inherently social creatures and have known physical, sociological, psychological, mental, cognitive, etc. dimensions. It is necessary to deal with these dimensions at least when giving education and training to individuals. A complete holistic training can be ensured if it is provided by considering all these dimensions.

Social development is the entirety of a person's development from birth to adulthood their relationship with other people, and the social characteristics they develop, such as their interest, emotion, attitude and behavior. In other words, socialization is the process of developing a behavior that conforms to norms and value judgments that apply to individual's environment (8). Hence, social activities other than education in universities where

vocational education is provided play an important role in making students coherent with the society. Social activities aiming individuals are important for individual and social development (11).

Nowadays, when we consider the extracurricular activity areas that enable students to socialize and develop their personality structure other than their vocational education, it is seen in general that there are areas such as hall sports, libraries, cinemas, theater areas, swimming pools, techno-parks and entertainment areas in universities. These areas are also areas that provide contribution to the education and development of young people in various aspects (16). Social and sporting activities in schools are a means of resting and easing for students who spend most of their day in classrooms, laboratories or their desks, and reduce stress on the students (6) and ensure maximum use of educational activities. these activities also improve social skills (5). In case students participate in social activities during their education, they are developed as individuals with social responsibility. In this way, they learn to be in harmony with society and to establish the right relations with their environment. They become successful individuals in social relations (11). Social activities positively affect individuals' self-esteem and are also important in shaping personality. With participation in sport activities, cognitive functions increase and academic success increases. Self-confidence of individuals increases with academic success and this affects individual's personality positively (20). Thanks to this context that affects the personality positively, individuals become highly motivated persons. Thanks to the motivation that allows them to enjoy more at the school, students have a positive attitude towards the school and find the school satisfactory (1).

With leisure activities that we call "Social activities", social development, social status gaining, and inter-cultural interaction of the students are also ensured (2). Social activities increase communication and interaction between students and play an important role in the achieving of educational objectives. Thanks to social activities, the need to be with others, the need to belong to somewhere, the need to work in cooperation, the need to share responsibility and the need to feel important are satisfied (23).

Individuals have physical and physiological dimensions besides sociological dimensions. Physical and physiological training of the students who come to receive a vocational training should be done besides the vocational training. In this way, professionally competent, socialized, physically and physiologically healthy individuals can be raised.

For this purpose, sportive activities and activities should be organized for the students in university environments and student engagement should be ensured.

To improve the physiological and psychological structure of individuals who are the main factors of athletic, economic, social and cultural development, to ensure the formation of personality, the development of character traits, to facilitate the harmonization to society by acquiring knowledge, skills and abilities; individuals, societies and international solidarity, according to the rules of competition within the measure of struggle, excitement, competition and competition are defined as the activities of superiority (22).

From a sociological point of view, sport is a socializing, integrating with the society, developing individual in mental and physical aspect, competitive, solidarist and cultural phenomenon that develops the skills acquired by the individual in transforming the natural environment into a humane environment, that an individual does under certain rules, with or without tools, individually or collectively within the scope of leisure activity or as professional occupation (11).

Sports are directly related to human health, character formation, increasing morale efficiency and the presence of a person with high national and common feelings and behaviors. At the same time, sports play an important role in the harmony of people's mental and intellectual development along with their physical development and in making people healthier, balanced, productive and happier in their communities (15). In addition, sport is a multidimensional, socially structured phenomenon, however, it is an indispensable element of human life (9).

Extracurricular social and sporting activities held in universities include plenty of activities such as student clubs and communities, student newspapers, music, arts and drama (3). These activities contribute to the intellectual, social and personal development of students. Activities are conducted within certain rules and discipline. Students are obliged to perform their duties

correctly in the activities such as football, basketball, dance or baseball etc. activities. If the student performs these activities correctly, his/her behavioral problems will decrease. They will be rewarded and be proud for their correct behavior. Through this pride, their self-esteem and self-confidence will develop (17).

It is very important for them to be satisfied with the environment and education provided in the social and sportive activities, which are important in the physical, sociological, psychological and cognitive development of the individuals in the university environment and in the education and training of the students who come to receive education and training.

Satisfaction is ensured when an individual's desires, needs and expectations are fully met (7). Customer satisfaction is a summary of the cognitive and affective reaction to a service event (or sometimes a long-term service relationship). Satisfaction (or dissatisfaction) arises from satisfying a service need and its comparison with expectations of the individual (18).

Nowadays, the increase in the number of universities and the quality of the education offered by the universities, social and sporting opportunities affect the students' choice of university. The high expectations and satisfaction of the students who come to receive education and training from their universities will increase their motivation. The highly motivated student will be more willing and more productive and will be successful.

This study was conducted to investigate the satisfaction levels of university students with social and sporting activities which are important for the physical, social and psychological development of individuals in university education.

MATERIAL AND METHOD

The research was carried out to determine the satisfaction level of university students from social and sporting activities provided in university environment.

The research is a survey screening model research. The population of the study consists of selected faculties of Sport Sciences, Economic and Administrative Sciences, Health Sciences and Education located in the central campus of Burdur Mehmet Akif Ersoy University. The sample group consist of 400 students studying at these units by selected random sampling method.

The data were obtained by survey method in the study. A purpose-oriented questionnaire was developed. In the process of preparing the questionnaire, expert opinions were obtained, and understandability and scope validity was ensured. The Cronbach's Alpha reliability coefficient of the questionnaire was found to be 0.89. The answers to the questionnaire are of gradual 6 likert-type answers. These are, 1.I am not satisfied at all 2. I'm not satisfied 3. I am moderately satisfied 4. I am satisfied 5. I'm very satisfied 6.I have no idea. The questionnaires were applied to the sample group by random one-to-one interviews. A total of 400 students, 212 female and 188 male, responded to the questionnaire. The obtained questionnaires were transferred to computer by a statistical software suitable for statistical process. Frequency (%) and Chi-square (X 2) calculations were performed as statistical process. In the determination of difference between the variables, confidence interval was accepted as 0.05

Findings

Table 1. Demographic characteristics of participants

Variables		N(Distributio)	%(Distributio)
Gender	Female	212	53.0
	Male	188	47.0
	Total	400	100.0
Faculty	Faculty of Sports Sciences	100	25.0
	Faculty of Economics and Administrative Sciences	100	25.0
	Faculty of Health Sciences	100	25.0
	Faculty of Education	100	25.0
	Total	400	100.0
Class	Class 1	84	21.0
	Class 2	62	15.5
	Class 3	144	36.0
	Class 4	110	27.5
	Total	400	100.0

In Table 1 the demographic status of the participants are questioned. According to this query, 53% of the participants were female, 47% were male, 25% were from Sports Sciences, 25% were Economics and Administrative Sciences, 25% were Health Sciences and 25% were In the Faculty of

Education, it is seen that 21% of them are 1st class, 15.5% are 2nd class, 36% are 3rd class and 27.5% are 4 class.

Table 2. Satisfaction Distribution of Participants from Social Activities

Variables			I am not satisfied at all	I am not satisfied	I am moderately satisfied	I am satisfied	I am very satisfied	I have no idea	Total	X²/P
1. Conference,. Panel and seminar		Female	32	24	72	46	23	15	212	11.422 0.044*
			15.1%	11.3%	34.0%	21.7%	10.8%	7.1%	100.0%	
		Male	17	40	54	41	17	19	188	
			9.0%	21.3%	28.7%	21.8%	9.0%	10.1%	100.0%	
	Total		49	64	126	87	40	34	400	
			12.3%	16.0%	31.5%	21.8%	10.0%	8.5%	100.0%	
2. Outdoor Audition		Female	48	32	62	28	26	16	212	8.010 0.156
			22.6%	15.1%	29.2%	13.2%	12.3%	7.5%	100.0%	
		Male	37	40	38	35	26	12	188	
			19.7%	21.3%	20.2%	18.6%	13.8%	6.4%	100.0%	
	Total		85	72	100	63	52	28	400	
			21.3%	18.0%	25.0%	15.8%	13.0%	7.0%	100.0%	
3. Faculty event		Female	45	36	61	35	16	19	212	6.871 0.230
			21.2%	17.0%	28.8%	16.5%	7.5%	9.0%	100.0%	
		Male	42	34	44	39	21	8	188	
			22.3%	18.1%	23.4%	20.7%	11.2%	4.3%	100.0%	
	Total		87	70	105	74	37	27	400	
			21.8%	17.5%	26.3%	18.5%	9.3%	6.8%	100.0%	
4. University's Social life		Female	41	36	68	36	18	13	212	4.204 0.521
			19.3%	17.0%	32.1%	17.0%	8.5%	6.1%	100.0%	
		Male	38	46	49	30	15	10	188	
			20.2%	24.5%	26.1%	16.0%	8.0%	5.3%	100.0%	
	Total		79	82	117	66	33	23	400	
			19.8%	20.5%	29.3%	16.5%	8.3%	5.8%	100.0%	

P<0,05*

In Table 2, the level of satisfaction of the participants from social activities is questioned. Among these queries;

2.1 When we consider the answers given by the participants for the "conference, panel and seminar" activities, answers are as follows; 12.3% are not satisfied at all, 16% are not satisfied, 31.5% are moderately satisfied, 21.8% are satisfied, 10% I am very satisfied and 8.5% I have no idea. When we consider the given answers by gender variable, it was found in the comparative statistical analysis (X 2 = 11.422, p = 0.044). This value is statistically significant at the significance level of 0.05 (p <0.05). That means there was a divergence between genders.

2.2 When we consider the answers given by the participants about the "outdoor concert" activities, 25% were moderately satisfied, 21% were not satisfied at all, 18% were not satisfied, 15.8% were satisfied, 13% were very satisfied and 7% I have no idea. When we consider the given answers by gender variable, it was found that (X2=8.010. p=0,156) This value was not statistically significant (p> 0.05). That means there was a divergence between genders.

2.3 When we examine the answers given by the participants regarding the question Social activities of the faculties,, 26.3% of the answers given in the

total are I am moderately satisfied, 21.8% are not I am not satisfied at all, 18.5% are I am satisfied, 17.5% are I am not satisfied, 9.3% I am very satisfied and 6.8% I have no idea. When we consider the given answers by gender variable, it was found in the comparative statistical analysis (X2=6.871, p=0.230). This value was not statistically significant (p> 0.05) as well.

2.4. When we consider the total answers given by the participants regarding the "university's social life" question, 29.3% are I am moderately satisfied, 20.5% are I am not satisfied, 19.8% are I am not satisfied at all, 16.5% are I am satisfied, 8.3% are I am very satisfied and 5.8% are I have no idea. When we consider the given answers by gender variable, it was found in the comparative statistical analysis (X2=4.204 p=0.521) This value was not statistically significant (p> 0.05) as well.

Table 3. Satisfaction Distribution of Participants from Social Activities

Variables		I am not satisfied at all	I am not satisfied	I am moderately satisfied	I am satisfied	I am very satisfied	I have no idea	Total	X^2/P
1.Sport activities	Female	36	42	49	35	18	32	212	1.986 0.851
		17.0%	19.8%	23.1%	16.5%	8.5%	15.1%	100.0%	
	Male	37	42	38	32	17	22	188	
		19.7%	22.3%	20.2%	17.0%	9.0%	11.7%	100.0%	
	Total	73	84	87	67	35	54	400	
		18.3%	21.0%	21.8%	16.8%	8.8%	13.5%	100.0%	
2.Sport facilities operation and facilities	Female	29	33	37	34	20	59	212	28.982 0.000*
		13.7%	15.6%	17.5%	16.0%	9.4%	27.8%	100.0%	
	Male	41	26	43	28	33	17	188	
		21.8%	13.8%	22.9%	14.9%	17.6%	9.0%	100.0%	
	Total	70	59	80	62	53	76	400	
		17.5%	14.8%	20.0%	15.5%	13.3%	19.0%	100.0%	
3.Sports matches held	Female	28	32	36	27	12	77	212	39.168 0.000*
		13.2%	15.1%	17.0%	12.7%	5.7%	36.3%	100.0%	
	Male	50	28	41	22	24	23	188	
		26.6%	14.9%	21.8%	11.7%	12.8%	12.2%	100.0%	
	Total	78	60	77	49	36	100	400	
		19.5%	15.0%	19.3%	12.3%	9.0%	25.0%	100.0%	

P<0,05*

In Table 3, the satisfaction status of the participants from sporting events is questioned. Among these queries;

3.1. When we examine the participants' answers to the question related to "sporting activities" in total, 21.8% are I am moderately satisfied, 21% are I am not satisfied, 18.3% are I am not satisfied at all, 16.8% are I am satisfied, 13.5% are I have no idea and 8.8% are I am very satisfied When we examine the given answers by gender variable, it was found in the comparative statistical analysis (X^2=1.986, p=0.851). This value was not statistically significant (p> 0.05).

3.2. The functioning and availability of sports facilities are questioned. When we examine the answers of the participants given to this question, 20% of them are I am moderately satisfied, 19% are I have no idea, 17.5% are I am not satisfied at all, 15.5% are I am satisfied, 14.8% are I am not satisfied, 13.3% are I am very satisfied . When we consider the given answers by gender variable, it was found that

(X^2=28.982, p=0.000). This value is statistically significant at the significance level of 0.05 (p <0.05). That means there was a divergence between genders.

3.3. Sports competitions held were questioned. When we examine the answers given by the participants to this question in total, 25% of them are I have no idea, 19.5% are I am not satisfied at all, 19.3% are I am moderately satisfied, 15% are I am not satisfied, 12.3% are I am satisfied and 9% are I am very satisfied. When we examine the given answers by gender variable, it was found that (X^2=39.168, p=0.000) in conducted comparative statistical analysis. There is a statistically significant difference in this value (p <0.05).

DISCUSSION AND CONCLUSION

A total of 400 students participated in this study to determine the level of satisfaction of university students from social and sporting activities provided in the university environment. It was established that 53% of these students are female and 47% are male, and the faculties they study were 25% Sports Sciences, 25% were Economics and Administrative Sciences, 25% were Health Sciences and 25% were Faculty of Education. It is seen that 21% of them from 1st class, 15.5% from 2nd class, 36% from 3rd class, 27.5% from 4th class (Table 1).

When examine the satisfaction level of the participants from the social activities in the universities, we can say that there are no statistically significant divergence between the variables in social activities, outdoor activities, activities in faculties and university environment social life satisfaction, and majority of participants were moderately satisfied followed by those dissatisfied individuals (Table 2). For satisfaction from "conference, panel and seminar" social activities were found to be moderately satisfactory in total responses, but a statistically significant divergence was observed in gender variable (p <0.05). When we examine the answers given in detail, we can say that the satisfaction level of male participants was lower than female participants (Table.2.1) and that the participants are mostly "moderately" satisfied with the social activities provided in the university environment. However, the participation of students in social activities and being satisfied with the activities will increase their socialization, quality of life and consequently increase their academic success. Ertek (13) suggests that social activities provided in the university environment improved motivation of the students, adaptation to the social environment Yağmur and İçigen, (21) and Erçevik and Önal, (10) suggest that these activities ensured harmonization of views and traditions of students from different regions and provided an enriched cultural unity. Durakan, Can and Gök, (10) suggest that we can contribute to the students to utilize their leisure time by providing many activities in the social activity areas that contribute to the easing, resting and socialization of the students.

When we consider the participants' satisfaction with the sports activities and sports provided in the university environment, it is seen that they were mostly satisfied at the "moderate satisfaction" level. Although there is no statistically significant difference in the answers given by gender, we can suggest that male students are more satisfied than female students with respect to frequency distribution (Table 3.1). It was seen that the participants were mostly moderately satisfied from "operation and availability of sports facilities" and "satisfied" from sports competitions held. A statistically significant difference was not observed in the answers given in the gender variable (p <0.05). In other words, there is not any divergence in the answers given between the genders. When the table is examined in detail, we can suggest that the satisfaction level of male students was lower compared to female students. According to these data, besides the cognitive and mental education of individuals coming from different parts of the country, sporting activities are very important for their physical, physiological, social and psychological development. Aracı (4) sees sport as an intense effort to improve the physical and mental health of the individual, to struggle within competitive measures according to certain rules, to get excited, to compete and to prevail and to increase the power of success and to maximize it personally . Güçlü (14) suggests that sports activities made individuals experience feel of pleasure and happiness in psychological sense, were the most important instrument for coping with stress which is called "disease of our age", individuals could eliminate the monotonous life style and understanding experienced in their daily li,es through sports, and made individuals relaxed and calmed as well as ensured them to feel happy and have feel of achieve something. Erkal et al. (12), on the other hand, considers sport as one of the important factors in reducing the unrest and deviating behaviors and harmonizing them with

norms, as well as adapting and conflict models within the social structure of the society and directing tensions to the benefit of the society.

In line with the data and opinions obtained within the scope of the research, we can suggest that although there were significant differences in some propositions about the presentation of social and sport activities which are an integral and complementary part of education in the university environment, the participants are mostly satisfied at the moderate level.

Suggestions;

- A university must organize social and sporting activities in order for the young students from different places and cultures to come together and get to know each other.
- The opinions and suggestions of the students should be taken before the social and sporting activities are organized
- The places and areas where students can do various activities individually or collectively in their free time should be provided.
- Students should be encouraged to engage in social and sporting activities
- This and similar studies should be conducted in a larger population and sample.

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Assessment of Visual Skills Impact on Motor Performance of Soccer Players in Ethiopian Youth Sport Academy

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Abstract

The purpose of the study was to assess the impact of visual skills on motor performance of soccer players in Ethiopian youth sport academy. Cross-sectional study design was employed and 62 subjects (28 male and 34 female) were participated using purposive and availability sampling methods. The primary sources of data such as demographic characteristics, the visual skill tests and motor performance were measured. The results presented as mean ± SD, and Frequency proportions were used to show the visual skill status. A Multivariate Roy's Largest Root Tests was used to examine the impacts of visual skills on motor performance and one way ANOVA was used to show the difference of visual skills and motor performance in playing positions. Whereas, Pearson product moment correlation coefficient was used to test the relationship between visual skills and motor performances. SPSS version 20 software was used to analyze the data and the significance values set at p-value 0.05 levels to all statistical analysis. The result indicates that 26(42%) of players had no color blindness, 32(52%) had some degree of color blindness and 4(6%) of them had weak color blindness status. There was significant differences of eye foot coordination test between playing position in score of $F = 3.669$, $P < 0.05$ (0.017). Color blindness has a positive significant correlation with motor performance in reaction time ($r = 0.343$, $r^2 = 0.1176$, $P < 0.01$). Based on the result the researcher concluded that there was significant difference in eye foot coordination between playing positions. Color blindness significantly and positively correlated with motor performance to reaction time. And also visual acuity significantly and positively correlated with motor performance to eye hand coordination.

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Key words: Motor, Performance, Soccer, Visual skills

INTRODUCTION

Vision involves two basic categories of function: visual motor and visual perceptual skill. Visual motor skill is probably the easiest category to relate to sport-specific performance. If athletes cannot move their eyes quickly and effectively, they cannot perform sport-specific tasks optimally. In any position of any sport, vision provides the athlete with information regarding where, when and what to do the ability to quickly and correctly process visual information; regardless of physical strength, speed, and technical skill of an individual. It is estimated that 85–90% of sensory information regarding the external environment is obtained visually (1).

The vast majority of studies reported that developed visual skills (or sports vision) would play a positive role in sports performance (2,3,4,5). Improvements in the athlete's visual skills can lead to quicker decision making and faster motor response. [6] Thus, an advanced visual skills set is likely to have a positive effect on athletes' performance in many different sports (5).

Coordination is the ability to repeatedly execute a sequence of movements smoothly and accurately. This may involve the senses, muscular contractions and joint movements. Everything that we participate in requires the ability to coordinate our limbs to achieve a successful outcome from walking to the more complex movements of athletic events like the pole vault. All sports require the coordination of eyes, hands and or feet and may be an implement and a ball. Racket sports (e.g. tennis and squash) require the coordination of hand, eyes and

racket to connect the rackets with the incoming ball as well as position our body in an appropriate position to return the ball in an efficient and effective manner. Hockey requires the coordination of hands, eyes and hockey sticks to connect with the ball. Football primarily requires the coordination of feet, eyes and ball and Rugby the coordination of hands, eyes and ball (7).

Few studies conducted about visual skills done in soccer refer to goalkeepers, (8,9,10) and other study conducted the visual skill of outfield players focused on childes rather than elite players (11) Those studies were deal with perceptual skills, eye-foot coordination or reaction time instead of visual skills (12,13,14,15). Some other studies conducted on elite soccer players, investigated visual search (eye movement) instead of visual skills (16,17) But, study was not conducted regarding visual skills impact on motor performance of youth soccer players, and not computed with playing position, furthermore, study had not been conducted so far on the subject in Ethiopia. Therefore, the purpose of the study was to assess the impact of visual skills on motor performance of soccer players in Ethiopian youth sport academy. Furthermore, this study was also aimed to compare impact of visual skills on motor performance in different sex, age groups and playing positions.

MATERIALS AND METHODOLOGY

The study was takes place on Ethiopian youth sport academy, which is found in the capital of Ethiopia (Addis Ababa). Cross-sectional study design had been involved to assess the visual skills impact on motor performance of soccer players in Ethiopian youth sport academy; using a range of participants with different backgrounds, age group, sex and playing position.

Purposive and availability sampling techniques were employed. Based on the nature the game which need to identify the teammate and needs the coordinative ability football game was selected using purposive sampling technique and based on the availability sampling method 62 junior soccer players were participated in the current study.

The primary source of data was used because of the nature of the problem. The primary data such as demographic characteristics (age group, sex, and playing position), the visual skill tests (visual acuity and color vision) and motor performance (eye hand coordination, eye foot coordination and reaction time) of the players were measured.

Quantitative data was collected through the appropriate demography test (age group, sex, and playing position) to know the demographic characteristics of the study participant.

The visual skill tests (visual acuity, and color vision) were used to assess the visual skill of the players. Visual acuity was assessed using Snellen VA chart at a test distance of six (6) meters obtained by Buys and Ferreira[18] for athletes. The color vision test was assessed with the pseudo-isochromatic Ishihara plates, which are most useful for detection of red–green congenital anomalies. Subjects were asked to seat in a room with sufficient light and read the chart keeping it 33cm away from the eyes. Then the types of color blindness will be differentiated and categorized. For absolute judgment only about 30 colours can be identified reliably (19).

The motor performance of the players (eye hand coordination, eye foot coordination and reaction time) was measured to examine the impacts of visual skill on motor performance of the players. Eye hand coordination test objective is to monitor the ability of the athlete's vision system to coordinate the information received through the eyes to control, guide, and direct the hands in the accomplishment of catching a ball (hand-eye coordination and eye foot coordination). Reaction Time assessed using the Yardstick test is an established test for measuring reaction time.[20] To ensure the data quality, only standardized tests was used and to minimize the mistake replication method was used by the researcher.

Descriptive statistics was produced for each of the parameters. The results were presented as mean ± SD, and Frequency proportions. Multivariate Roy's Largest Root Tests was used to examine the impacts of visual skills on motor performance and ANOVA was used to see the difference of visual skills and motor performance in playing positions. Whereas, Pearson product moment correlation coefficient was used to test the relationship between visual skills and motor performance. The significance level was set at 0.05 levels for each of the statistical tests. SPSS 20 software was used for the statistical analysis.

Results

Demographic Characteristic of the respondents: The sex distribution of the study participants shown that 28(45%) were male and 34(55%) were female. To this effects, it was been female subjects have larger number than male subjects. The players age group/team distribution on this study was shown that 28(45%) were U15 and 34(55%) were U17. The out puts of player playing position demonstrates that 5(8%), 21(34%), 28(4%), and 8(13%) were goalkeepers, defense, midfield and striker respectively.

Visual Skill and Motor performance of the Players

Players color blindness status: The result can show that 26(42%) of players had no color blindness, 32(52%) had some degree of color blindness and 4(6%) of them had weak color blindness status. The largest number of players found under the status of some degree of color blindness. While, few were under the weak degree of identifying the red green colors.

Players visual acuity status: The result can shows that the players right eye visual acuity results 4 (6.50%) players were scored 6/18, 2 (3.20%) players were scored 6/12, 10 (16.10%) players were scored 6/9 and 46(74.20%) players were scored 6/6. The left eye visual acuity result indicated that 3 (4.80%) players were scored 6/18, 8(12.90%) players were scored 6/12, 5(8.10%) players were scored 6/9 and 46(74.20%) players were scored 6/6. And also both eye visual acuity result 3(4.80%) players were scored 6/12, 8(12.90%) players were scored 6/9 and 51(82.30%) players were scored 6/6. This can show that the majority players had normal visual acuity status in right, left and both eyes.

Players eye hands coordination status: The result can shows that 2(3%) of the players were scored above average, 2(3%) were scored average, 17(28%) of the players were scored below average and 41(66%) of the players were score low score. From the result we can understand that more than half of the players had low performance in eye hands coordination.

Players eye foot coordination status: The result can shows that 1(1.5%) was scored above average, 55(89%) of the players were scored average, 5(8%) of the players were scored below average and 1(1.5%) was scored low. From the result we can understand that more than half of the players perform average in eye foot coordination.

Players reaction time status: The result can shows that 12(20%) of the players were scored excellent, 33(53%) of the players were scored above average, 12(19%) of the players were scored average, and 5(8%) of the players were scored below average. From the result we understand that half of the players perform above average in reaction time.

Table: 1. Effect of visual skills on motor performance status

Multivariate Roy's Largest Root Tests [a]					
Effect	Value	F	Hypothesis df	Error df	Sig.
Correct Model	16.807	296.917[b]	3.000	53.000	0.000
Color Blindness	0.078	1.400[c]	3.000	54.000	0.253
Visual Acuity	0.117	2.100[c]	3.000	54.000	0.111
Color Blindness * Visual Acuity	0.049	.881[c]	3.000	54.000	0.457
a. Design: Intercept + Color Blindness + Visual Acuity + Color Blindness * Visual Acuity					
b. Exact statistic					
c. The statistic is an upper bound on F that yields a lower bound on the significance level.					
Multivariate Roy's Largest Root Tests					

The multivariate Roy's Largest Root test summery table for the split effect visual skill on motor performance is shown in table 1. The color blindness status of the players were insignificantly different from the correct model P > 0.253, similarly the visual acuity was insignificantly different from the correct model P > 0.111, and also insignificant difference were observed between both color blindness and visual acuity on motor performance at p > 0.457.

The result indicated that, disagreement both color blindness and visual acuity, exercising independently and in group couldn't bring significant change on players motor performance.

Table: 2. Visual skills and motor performance differences

ANOVA in Playing Position						
		Sum of Squares	df	Mean Square	F	Sig.
Color Blindness Test	Between Groups	0.529	3	0.176	0.472	0.703
	Within Groups	21.664	58	0.374		
	Total	22.194	61			
Visual Acuity Test	Between Groups	0.478	3	0.159	0.565	0.640
	Within Groups	16.361	58	0.282		
	Total	16.839	61			
Eye Hands Coordination	Between Groups	2.367	3	0.789	1.585	0.203
	Within Groups	28.875	58	0.498		
	Total	31.242	61			
Eye Foot Coordination	Between Groups	1031.331	3	343.777	3.669	0.017
	Within Groups	5434.218	58	93.693		
	Total	6465.548	61			
Reaction Time	Between Groups	0.742	3	0.247	0.344	0.793
	Within Groups	41.645	58	0.718		
	Total	42.387	61			

As illustrated in table 2, the ANOVA revealed that there was no significant differences of color blindness test between playing position in score of $F = 0.472$, $P > 0.05$, visual acuity test between playing position in score of $F = 0.640$, $P > 0.05$, eye hands coordination test between playing position in score of $F = 1.585$, $P > 0.05$ and reaction time test between playing position in score of $F = 0.344$, $P > 0.05$ whereas, there was significant differences of eye foot coordination test between playing position in score of $F = 3.669$, $P < 0.05$ (0.017).

From the aforementioned result we can easily understand that there was no difference between the playing positions in color blindness, visual acuity, eye hand coordination and reaction time tests, while there was significant difference between the playing positions in eye foot coordination tests.

Table: 3. Relationship between Visual skills and motor performance status

Pearson product moment correlation coefficient matrix between Visual Skill and Motor Performance Tests		
Subscale	Color Blindness	Visual Acuity
Eye Hands Coordination	-0.108	0.317*
Eye Foot Coordination	-0.027	-0.021
Reaction Time	0.343**	-0.050
*.0.05 level (2-tailed) and **. 0.01 level (2-tailed)		

Table 3 can shows that color blindness has a positive significant correlation with motor performance in reaction time ($r = 0.343$, $r^2 = 0.1176$, $P < 0.01$), whereas, insignificant negative correlation has shown with motor performance in eye hands coordination ($r = -0.108$, $r^2 = 0.0116$, $P > 0.05$). Visual acuity has shown that a positive significant correlation with motor performance in eye hands coordination ($r = 0.317$, $r^2 = 0.1004$, $P < 0.05$), whereas, insignificantly correlated negatively with motor performance in reaction time ($r = -0.050$, $r^2 = 0.0025$, $P > 0.05$), in contrast with this both color blindness and visual acuity insignificantly correlated negatively with motor performance to eye foot coordination ($r = -0.027$, $r^2 = 0.00072$ and $r = -0.021$, $r^2 = 0.00044$ respectively at $P > 0.05$).

For the above analysis we can understand that color blindness significantly and positively correlated with motor performance to reaction time. This could mean that color blindness can decrease the motor performance specially reaction time. And also visual acuity significantly and positively correlated with motor performance to eye hand coordination. This could mean that visual acuity can decrease the motor performance specially eye hand coordination.

DISCUSSION

The multivariate Roy's Largest Root test summery table for the split effect visual skill on motor performance is shown that disagreement with independently exercising and in group couldn't bring significant change on players motor performance. In contrast with these result children who are having visual problem they are lacking in motor activities such as eye hand coordination, eye foot coordination and reaction time (/).

The result of the current study can shows that there was no difference between the playing positions of the player in color blindness, visual acuity, eye hand coordination and reaction time tests, while there was significant difference between the playing positions of the player in eye foot coordination tests. In contrast with the current study, the previous research indicated that, a significant difference in performance with regard to visualization (p=0.006), tracking (p=0.048), reflexes (p=0.0001) and sequencing (p=0.046).[23]

From the results of this study one can be understand that color blindness significantly and positively correlated with motor performance to reaction time. So that color blindness may decrease the motor performance specially reaction time. And also visual acuity significantly and positively correlated with motor performance to eye hand coordination. Thus, visual acuity may decrease the motor performance specially eye hand coordination. In contrast with the current study some research studies show no benefits in sport performance from enhanced visual skills (21, 22) while, the vast majority of studies reported that developed visual skills (or sports vision) would play a

positive role in sports performance (2,3,5,24,25).

CONCLUSIONS

The purpose of the present research was to assess the impact of visual skills on motor performance of soccer players in Ethiopian youth sport academy. To this effect, the investigator draws, the below conclusions.

The majority of the players had some complication of color blindness. Half of the players had shown low performance in eye hand coordination while average and above average performance in eye foot coordination and reaction time respectively. Visual skills of the players independently and in group couldn't bring significant change on players' motor performance. There was no difference in visual skills and motor performance (eye hand coordination and reaction time) in playing positions, while there was difference in eye foot coordination between playing positions. Color blindness significantly and positively correlated with motor performance to reaction time. This could mean that color blindness can decrease the motor performance specially reaction time. And also visual acuity significantly and positively correlated with motor performance to eye hand coordination. This could mean that visual acuity can decrease the motor performance specially eye hand coordination.

RECOMMENDATIONS

From the results and conclusion of the study the following points have been listed as recommendations: The players should re-check and start color blindness treatment. The coaches should help the players to give care in color blindness and visual acuity. To develop the players' motor performance additional motor training should be delivered. Finally, the Ethiopian youth sport academy should give emphasis visual skill as well as their motor performance during recruitment of the players.

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Examination Of Sport Managers' Self-Efficacy Status And Time Management

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Abstract

The aim of this study is to determine the self-efficacy perceptions and time management belief levels of the public and sports club managers working in Turkey and to examine the relationship between them by examining them according to some demographic variables. In this research, a method for descriptive and relational screening was used to reveal the current situation. The sample group of the public and sports club managers working in Turkey consists of public sports managers (n = 55) and sports club managers (n = 99) who volunteered to participate in the study. Personal Information Form, Sport Managers Self-Efficacy Scale and Time Management Scale were used as data collection tools. In the analysis of data, since the data and groups are not distributed homogeneously and the data is skewed to the left, non-parametric Mann Whitney U and Kruskal Wallis test techniques were used to determine the differences between the groups in the sub-dimensions of self-efficacy and time management, and Spearman Correlation Analysis technique was used in the relationship between Sport Managers' Self-Efficacy Scale and Time Management Scale. At the end of the study, there were no significant differences between Sport Managers Self-Efficacy and Time Management beliefs and Personal variables (age, gender, marital status, education level, year of service, management year and sports history), while a significant difference was determined between the time attitude sub-dimension of time management and the sector variable in favor of sports club managers. In addition, a weak positive and significant ($p < 0.05$) relationship was found between general time management and sports managers' self-efficacy (decision-making, personal characteristics, Knowledge and Interpersonal Roles).

Key words: Sports Managers, Self-Efficacy, Time Management.

INTRODUCTION

Self-sufficiency, which is one of the important concepts of Social Learning Theory, is a frequently encountered concept in different disciplines as a research topic in recent years (26,53,84,86). Perceived self-efficacy is expressed by social learning theorists as task-oriented feeling of trust (39). According to Bandura (11), self-efficacy belief is defined as the belief of the person in the ability to perform the job in the best way by organizing the activities required to perform a targeted job. In other words, it refers to the skills and beliefs necessary to organize the person's behaviors and situations that person can encounter. Therefore, self-efficacy involves the motivation that occurs as a result of the planning of the work, awareness of the skills, and reliance on individual resources. These elements essentially identify self-efficacy with the contribution of one's talent and trust in one's own resources (43,87). It is seen that an individual can learn a lot about time management by knowing his/her own resources, knowing himself/herself and evaluating himself/herself (2). In the studies, it was seen that the perception of self-efficacy affects one's choice of organization, attitude towards problems and obstacles, level of struggle and performance. Individuals with high self-efficacy perception do not

give up easily against negative situations, enter a superior effort to achieve a job and insist on the result (8). These personal efforts bring with it a number of necessary and unnecessary tactics in the current social and working environment, which is one of the factors affecting the efficient use of time (21).

In the light of the above, it can be said that self-efficacy perception has a very important place in the professional life of individuals. From this point of view, it is seen that self-efficacy, which is thought to be important in the education, employment and professional life of the sport managers who direct sports, is an important subject of study.

When sports literature related to self-efficacy is examined in general, studies for physical education and sports teacher candidates draw attention mainly (6,29,43,70,,), whereas there are studies on physical education teachers (12,52), coaches (30,50,51,57) and referees (41,42). However, in the field of sports management, only Çiftçi (22) examined the self-efficacy status of sports managers and Çolak, Başaran, Çolak and Aksu (23) examined the self-efficacy beliefs of sports club managers.

In today's management, the necessity of performance at the highest level of competition conditions has left the organizations and managers under the pressure of using time effectively and increased their desire to control time. The fact that time is a resource that cannot be saved, reversed, replaced and slowed down reveals the complexity and importance of managing it. According to Akatay (2), time management emerged from the needs of management and managers for time. On the basis of effective time management, the self-management of the person, the mastery of the events encountered and the efficient planning in a certain period of time can be considered as the process of managing the events as a result of the self-direction (35).In general terms, time management is an important factor that improves the quality of life and work in the environment in which individuals achieve success by reducing stress, maintaining balance, increasing productivity and achieving their goals. Individuals who do not have good time management experience difficulties not only in their professional work life, but also in the management of all stages of their lives (5). In short, time management is the management of business and activities within a specified time frame.

Time management is an issue that concerns people from every profession, and it has separate importance for organizations and executives (49). In the field of sport management, this issue has been a topic that has been discussed and taken place in different platforms, and the attitudes and behaviors of managers in time and management have been started to be evaluated and investigated in sports institutions and organizations. Whereas there are studies for students of higher education institutions providing sports education in the field of sports related to time management, although not on managers (4,9,20,44), there are also studies on the physical education teachers (16). In the literature, a limited number of studies on time management were found in the sample of sports managers. In the compilation study by İmamoğlu and Çimen (38) on effective time management for sports managers, which is one of the early studies, pointed out that sports managers should make maximum use of time management strategies. In the study of Gökçek (33), one of the recent studies, on the views of the managers of professional football teams on time management, it was stated that there are no significant differences in terms of age, marital status, education level, management task and managerial durations of the managers and management staff in professional football teams. In the study by ÖzsoyToksöz and Oğuzhan (62) on the time management attitudes of people working in public, private and municipal sectors who took part in sports organizations, it was stated that the time management attitudes and skills of individuals taking part in sports organizations have significant differences according to socio-demographic characteristics and sectors.

In relation to the two variables of time management and self-efficacy, Zimmerman and Martinez-Pons (91) stated that it is necessary to to be able to feel capable of learning the work within a certain time i.e. to have a high level of self-efficacy perception for learning in order to manage time effectively. Robinson and Godbey (65), with a different proposition, stated that time is a source of stress on individuals of all professions and general self-efficacy is a reflection of an individual's coping skills, while stressing that general self-efficacy may also have an impact on time management. Observing that time management practices reduce stress confirms this proposition. However, Britton and Tesser (14) state that one of the dimensions of time management is related to individuals'

perceptions and attitudes about time management. Therefore, time attitudes include 3 perceptions: "individuals control time", "individuals effectively manage their own time", and "individuals use time as a constructor". These time attitudes reflect a "sense of self-efficacy" which is a natural consequence of occupation with time management behaviors. Therefore, this is also an effective factor in general self-efficacy belief. In this context, it can be assumed that general self-efficacy perception may have an impact on time management.

As mentioned above, in line with the studies reached, a limited number of studies, in which the concepts of self-efficacy and time management are studied separately on sports managers, in the literature and lack of study specifically examining the relationship between sport managers' self-efficacy and time management makes this research important However, considering that sports managers, who on the one hand play an active role in the continuation of sports activities, which is an industry branch that is at the forefront of the world economy and on the other hand are involved in the dimensions of a social service and social responsibility through voluntary organization, are effective on the behavior of many organizations and structures in national and international area by controlling the behavioral process, it is important to examine the general self-efficacy perception of sport managers as a cognitive-perceptual factor and time management information. From this point of view, the purpose of the research is to determine the self-efficacy and time management skills of the public and sports club managers working in Turkey and to describe the relationship between them by examining them according to some demographic variables. It is thought that the explanations and suggestions that this research will provide in a framework which will allow the evaluation of this relationship will provide an infrastructure for future academic studies.

METHOD

In this study, descriptive survey model aiming to reveal the current situation, one of the quantitative research approaches, and relational survey model which is one of the general survey models are used.

Population and Sample

The population of the study was composed of sports managers working in public and private sectors in Turkey. The sample of the study consisted of 154 sports managers, managers working in public sector (Provincial Directorates of Youth Services and Sports n = 11, Federation Director n=31, n=13 under the Ministry of Youth and Sports General Directorate n=55 in total n=55) and sports club managers (n=99). The sample group was selected by simple random sampling method.

Data Collection Tools

Personal Information Form, Sports Managers Self-Efficacy Scale and Time Management Scale were used as data collection tools in the research.

Personal Information Form

In order to determine the personal characteristics of the managers, 7 questions (age, gender, marital status, education level, year of service, management year, and sports history), which are thought to be related to the subject, were created by the researcher through certain surveys.

Sports Managers Self-Efficacy Scale

Sports Managers Self-Efficacy Scale was developed by Çiftçi (22). The scale consists of 48 statements and four sub-dimensions. In this study, the scaling was prepared with 11 intervals between 0 and 100 that participants could mark. To make it easier for participants to mark appropriate statements, in the scale, there are statements of 0 "*not suitable for me at all*", 50 "*moderately suitable for me*", and 100 "*absolutely suitable for me*".

It was determined that the factor loadings emerged after the exploratory factor analysis (EFA) conducted by Çiftçi (22) were distributed in four dimensions and the total variance ratio explained was 55.54%. Eigen values of the factors and explained variance amounts are 17.61% for decision-making (20 items) sub-dimension, 14.56% for personal characteristics (6 items) sub-dimension, 12.32% for knowledge (14 items) sub-dimension and 11.38% for the sub-dimension of interpersonal relations (8 items). In order to determine whether the four-dimensional factor structure of the finalized sports managers self-efficacy scale was validated and to support construct validity, first level CFA was performed. The fit index values were RMSEA=0.071, NFI=0.94, NNFI=0.97, CFI=0.97, IFI=0.97, SRMR=0.065 and $x^2/df=2.05$. In addition, in the reliability study, internal consistency coefficients (Cronbach's alpha) values were found to be 0.94 for decision-making sub-dimension, 0.89 for personal

characteristics sub-dimension, 0.89 for Knowledge sub-dimension, 0.81 for interpersonal relations sub-dimension and 0.96 for the whole scale.

Time Management Scale

Time Management Scale was developed by Britton and Tesser (14). The reliability and validity study of the scale for Turkey was conducted by Alay and Koçak (5). The scale consists of 27 statements and three sub-dimensions. 5-point Likert type was used in the Time Management Scale: the form of straight scoring in positive questions was made as *always*: 5, *frequently*: 4, *sometimes*: 3, *infrequently*: 2, *never*: 1 and the form of reverse scoring in negative questions was made as *always*: 1, *frequently*: 2, *sometimes*: 3, *infrequently*: 4, *never*: 5. The number of items in the Turkish Time Management Scale is 27 and the total score of the scale varies between 5 and 135. A high score means that "time is better managed".

Factor loadings after factor analysis (EFA) conducted by Alay and Koçak (5) were distributed in three dimensions and the total variance ratio explained was 34%. Eigen values of the factors and explained variance amounts are 20% for Time Planning (Short and Long Term Planning) (16 items), 9% for Time Attitudes (7 items) and 6% for Time Wasters (4 items). In the reliability study for Turkey, internal consistency coefficients (Cronbach's alpha) values were found to be 0.88 for the Time Planning sub-dimension, 0.66 for the Time Attitudes sub-dimension, and 0.4781 for the Time Wasters sub-dimension and 0.87 for the whole scale. As a result of the analyses, it is seen that the scales are applicable in line with the purpose of the research.

Data Analysis

In the analysis of data, since the data and groups are not distributed homogeneously and the data is skewed to the left, non-parametric Mann Whitney U and Kruskal Wallis test techniques were used to determine the differences between the groups in the sub-dimensions of self-efficacy and time management, and Spearman Correlation Analysis technique was used in the relationship between Sport Managers' Self-Efficacy Scale and Time Management Scale.

FINDINGS

Table 1. Descriptive Statistics Related to Self-Efficacy and Time Management Scale and Dimensions

	Sub-dimensions	Mean	Sd	Min	Max
Self-efficacy	Decision-making	8.32	2.63	.00	11.00
	Personal Characteristics	8.37	2.63	.00	11.00
	Knowledge	8.40	2.62	.00	11.00
	Interpersonal Roles	8.41	2.59	.00	11.00
Time management	Time Planning	57.48	13.30	20.00	77.00
	Time Attitudes	22.12	1.80	17.00	29.00
	Time Wasters	8.99	4.88	4.00	20.00
	General Time Management	88.59	11.41	59.00	109.00

When Table 1 is examined, self-efficacy sub-dimension scores of sports managers were determined to have the arithmetic mean and standard deviation values of $x = 8.41 \pm 2.59$ in the self-efficacy sub-dimension related to Interpersonal roles, $x = 8.40 \pm 2.62$ in the self-efficacy sub-dimension related to Knowledge, $x = 8.37 \pm 2.63$ in the personal characteristics sub-dimension, $x = 8.32 \pm 2.63$ in self-efficacy sub-dimension related to Decision-making. When the findings are examined, it can be said that sports managers' self-efficacy scores are high in sub-dimensions. In addition, the time management sub-dimension scores of sports managers were found to have the arithmetic mean and standard deviation values of $x = 57.48 \pm 13.30$ for Time Planning sub-dimension, $x = 22.12 \pm 1.80$ for Time Attitudes sub-dimension, $x = 8.99 \pm 4.88$ for Time Wasters sub-dimension and $x = 88.59 \pm 11.41$ for General Time Management.

Table 2. Comparison of self-efficacy and time management scores of sport managers according to age variable

	Sub-dimensions	Age	n	Rank Mean	Sd	X^2	P
Self-efficacy	Decision-making	< 25	4	36.38			
		26-30	27	85.91			
		31-35	47	78.18	4	4.484	.344
		36-40	50	77.00			
		> 41	26	74.83			
	Personal Characteristics	< 25	4	39.25			
		26-30	27	83.87			
		31-35	47	79.52	4	4.085	.395
		36-40	50	78.31			
		> 41	26	71.56			
	Knowledge	< 25	4	34.75			
		26-30	27	86.61			
		31-35	47	78.12	4	5.053	.282
		36-40	50	77.59			
		> 41	26	73.33			
	Interpersonal Roles	< 25	4	40.13			
		26-30	27	83.89			
		31-35	47	77.37	4	3.823	.430
		36-40	50	79.73			
		> 41	26	72.56			
Time management	Time Planning	< 25	4	38.63			
		26-30	27	84.02			
		31-35	47	79.76	4	4.211	.378
		36-40	50	73.62			
		> 41	26	80.10			
	Time Attitudes	< 25	4	76.63			
		26-30	27	75.26			
		31-35	47	81.26	4	2.469	.650
		36-40	50	71.01			
		> 41	26	85.65			
	Time Wasters	< 25	4	98.63			
		26-30	27	74.76			
		31-35	47	80.33	4	1.695	.792
		36-40	50	77.67			
		> 41	26	71.65			
	General Time Management	< 25	4	40.13			
		26-30	27	84.17			
		31-35	47	79.80	4	4.348	.361
		36-40	50	72.65			
		> 41	26	81.50			

According to the findings in Table 2, it was determined that sports managers' mean scores of Decision-making, Interpersonal Roles, Knowledge and Personal Characteristics dimensions, which are among the sub-dimensions of self-efficacy and also their mean scores of Time Management, Time Attitudes and Time Wasters dimensions, which are among the sub-dimensions of time management, and the mean scores of General Time Management were not significantly different according to age variable.

Table 3. Comparison of self-efficacy and time management scores of sport managers according to gender variable

	Sub-dimensions	Gender	n	Rank Mean	Rank Total	U	P
Self-efficacy	Decision-making	Female	38	72.53	2756.00	2015.000	.428
		Male	116	79.13	9179.00		
	Personal Characteristics	Female	38	72.14	2741.50	2000.500	.393
		Male	116	79.25	9193.50		
	Knowledge	Female	38	73.93	2809.50	2068.500	.570
		Male	116	78.67	9125.50		
	Interpersonal Roles	Female	38	71.66	2723.00	1982.000	.351
		Male	116	79.41	9212.00		
Time management	Time Planning	Female	38	83.39	3169.00	1980.000	.347
		Male	116	75.57	8766.00		
	Time Attitudes	Female	38	79.07	3004.50	2144.500	. .797
		Male	116	76.99	8930.50		
	Time Wasters	Female	38	68.42	2600.00	1859.000	.141
		Male	116	80.47	9335.00		
	General Time Management	Female	38	79.55	3023.00	2126.000	.743
		Male	116	76.83	8912.00		

According to the findings in Table 3, it was determined that sports managers' mean scores of Decision-making, Interpersonal Roles, Knowledge and Personal Characteristics dimensions, which are among the sub-dimensions of self-efficacy and also their mean scores of Time Management, Time Attitudes and Time Wasters dimensions, which are among the sub-dimensions of time management, and the mean scores of General Time Management were not significantly different according to gender variable.

Table 4. Comparison of self-efficacy and time management scores of sport managers according to marital status variable

	Sub-dimensions	Marital Status	n	Rank Mean	Rank Total	U	P
Self-efficacy	Decision-making	Married	113	75.14	8490.50	2049.500	.274
		Single	41	84.01	3444.50		
	Personal Characteristics	Married	113	74.58	8427.50	1986.500	.176
		Single	41	85.55	3507.50		
	Knowledge	Married	113	76.08	8597.50	2156.500	.512
		Single	41	81.40	3337.50		
	Interpersonal Roles	Married	113	74.95	8469.00	2028.000	.237
		Single	41	84.54	3466.00		
Time management	Time Planning	Married	113	78.65	8887.00	2187.000	.596
		Single	41	74.34	3048.00		
	Time Attitudes	Married	113	78.61	8882.50	2191.500	. .599
		Single	41	74.45	3052.50		
	Time Wasters	Married	113	77.46	8753.50	2312.500	.987
		Single	41	77.60	3181.50		
	General Time Management	Married	113	79.01	8928.50	2145.500	.484
		Single	41	73.33	3006.50		

According to the findings in Table 4, it was determined that sports managers' mean scores of Decision-making, Interpersonal Roles, Knowledge and Personal Characteristics dimensions, which are among the sub-dimensions of self-efficacy and also their mean scores of Time Management, Time Attitudes and Time Wasters dimensions, which are among the sub-dimensions of time management, and the mean scores of General Time Management were not significantly different according to marital status variable.

Table 5. Comparison of self-efficacy and time management scores of sport managers according to educational level variable

	Sub-dimensions	Level of education	n	Rank Mean	Sd	X^2	P
Self-efficacy	Decision-making	Doctorate	11	61.45			
		Master's Degree	17	84.76			
		Undergraduate	66	77.38	4	3.647	.456
		Associate Degree	15	65.40			
		High school	45	82.89			
	Personal Characteristics	Doctorate	11	62.41			
		Master's Degree	17	80.50			
		Undergraduate	66	78.80	4	2.609	.625
		Associate Degree	15	67.07			
		High school	45	81.62			
	Knowledge	Doctorate	11	56.77			
		Master's Degree	17	84.44			
		Undergraduate	66	78.78	4	4.755	.313
		Associate Degree	15	64.20			
		High school	45	82.50			
	Interpersonal Roles	Doctorate	11	63.00			
		Master's Degree	17	80.15			
		Undergraduate	66	77.74	4	3.525	.474
		Associate Degree	15	64.33			
		High school	45	84.08			
Time management	Time Planning	Doctorate	11	73.64			
		Master's Degree	17	90.41			
		Undergraduate	66	73.77	4	2.019	. .732
		Associate Degree	15	77.83			
		High school	45	78.92			
	Time Attitudes	Doctorate	11	77.00			
		Master's Degree	17	80.47			
		Undergraduate	66	74.12	4	.765	.943
		Associate Degree	15	80.17			
		High school	45	80.57			
	Time Wasters	Doctorate	11	70.36			
		Master's Degree	17	73.79			
		Undergraduate	66	82.03	4	1.717	.788
		Associate Degree	15	80.93			
		High school	45	72.86			
	General Time Management	Doctorate	11	72.14			
		Master's Degree	17	89.94			
		Undergraduate	66	75.45	4	1.669	.796
		Associate Degree	15	79.23			
		High school	45	76.53			

According to the findings in Table 5, it was determined that sports managers' mean scores of Decision-making, Interpersonal Roles, Knowledge and Personal Characteristics dimensions, which are among the sub-dimensions of self-efficacy and also their mean scores of Time Management, Time Attitudes and Time Wasters dimensions, which are among the sub-dimensions of time management, and the mean scores of General Time Management were not significantly different according to educational level variable.

Table 6. Comparison of self-efficacy and time management scores of sport managers according to service year variable

	Sub-dimensions	Year of Service	n	Rank Mean	Sd	X^2	P
Self-efficacy	Decision-making	0-1 year	23	61.78	4	3.539	.472
		2-5 years	37	80.68			
		6-10 years	61	81.47			
		11-20 years	25	77.36			
		21 years and above	8	78.19			
	Personal Characteristics	0-1 year	23	62.35	4	3.609	.461
		2-5 years	37	81.65			
		6-10 years	61	81.75			
		11-20 years	25	75.42			
		21 years and above	8	75.94			
	Knowledge	0-1 year	23	60.61	4	4.188	.381
		2-5 years	37	80.62			
		6-10 years	61	81.04			
		11-20 years	25	76.98			
		21 years and above	8	86.25			
	Interpersonal Roles	0-1 year	23	60.93	4	4.214	.378
		2-5 years	37	82.57			
		6-10 years	61	81.47			
		11-20 years	25	75.30			
		21 years and above	8	78.31			
Time management	Time Planning	0-1 year	23	81.17	4	1.973	.741
		2-5 years	37	82.50			
		6-10 years	61	74.02			
		11-20 years	25	80.00			
		21 years and above	8	62.56			
	Time Attitudes	0-1 year	23	71.20	4	4.739	.315
		2-5 years	37	84.09			
		6-10 years	61	78.20			
		11-20 years	25	65.74			
		21 years and above	8	96.50			
	Time Wasters	0-1 year	23	76.50	4	.823	.935
		2-5 years	37	77.16			
		6-10 years	61	76.51			
		11-20 years	25	76.98			
		21 years and above	8	91.13			
	General Time Management	0-1 year	23	78.59	4	.788	.940
		2-5 years	37	82.30			
		6-10 years	61	75.25			
		11-20 years	25	77.08			
		21 years and above	8	70.69			

According to the findings in Table 6, it was determined that sports managers' mean scores of Decision-making, Interpersonal Roles, Knowledge and Personal Characteristics dimensions, which are among the sub-dimensions of self-efficacy and also their mean scores of Time Management, Time Attitudes and Time Wasters dimensions, which are among the sub-dimensions of time management, and the mean scores of General Time Management were not significantly different according to service year variable.

Table 7. Comparison of self-efficacy and time management scores of sport managers according to management year variable

	Sub-dimensions	Management Year	n	Rank Mean	Sd	X^2	P
Self-efficacy	Decision-making	1-4 years	44	77.61	3	2.383	.497
		5-9 years	68	77.63			
		10-14 years	34	82.31			
		15 yearsand above	8	55.31			
	Personal Characteristics	1-4 years	44	76.84	3	3.529	.317
		5-9 years	68	79.07			
		10-14 years	34	81.75			
		15 yearsand above	8	49.69			
	Knowledge	1-4 years	44	79.01	3	.173	.982
		5-9 years	68	76.21			
		10-14 years	34	78.82			
		15 yearsand above	8	74.56			
	Interpersonal Roles	1-4 years	44	78.48	3	1.660	.646
		5-9 years	68	78.32			
		10-14 years	34	79.22			
		15 yearsand above	8	57.81			
Time management	Time Planning	1-4 years	44	86.30	3	3.682	.298
		5-9 years	68	70.68			
		10-14 years	34	81.16			
		15 yearsand above	8	71.56			
	Time Attitudes	1-4 years	44	79.08	3	3.274	.351
		5-9 years	68	72.85			
		10-14 years	34	79.21			
		15 yearsand above	8	101.13			
	Time Wasters	1-4 years	44	66.08	3	6.247	.051
		5-9 years	68	88.26			
		10-14 years	34	69.72			
		15 yearsand above	8	81.88			
	General Time Management	1-4 years	44	82.83	3	1.468	.690
		5-9 years	68	72.97			
		10-14 years	34	80.13			
		15 yearsand above	8	75.50			

According to the findings in Table 7, it was determined that sports managers' mean scores of Decision-making, Interpersonal Roles, Knowledge and Personal Characteristics dimensions, which are among the sub-dimensions of self-efficacy and also their mean scores of Time Management, Time Attitudes and Time Wasters dimensions, which are among the sub-dimensions of time management, and the mean scores of General Time Management were not significantly different according to management year variable.

Table 8. Comparison of self-efficacy and time management scores of sports executives according to the status of doing sports with license

	Sub-dimensions	Sports History	n	Rank Mean	Rank Total	U	P
Self-efficacy	Decision-making	I did	93	75.86	7055.00	2684.000	.573
		I didn't	61	80.00	4880.00		
	Personal Characteristics	I did	93	76.68	7131.00	2760.000	.777
		I didn't	61	78.75	4804.00		
	Knowledge	I did	93	74.41	6920.50	2549.500	.288
		I didn't	61	82.20	5014.50		
	Interpersonal Roles	I did	93	76.79	7141.50	2770.500	.807
		I didn't	61	78.58	4793.50		
Time management	Time Planning	I did	93	70.32	6540.00	2169.000	**.014**
		I didn't	61	88.44	5395.00		
	Time Attitudes	I did	93	76.38	7103.00	2732.000	.691
		I didn't	61	79.21	4832.00		
	Time Wasters	I did	93	78.16	7269.00	2775.000	.817
		I didn't	61	76.49	4666.00		
	General Time Management	I did	93	69.94	6504.50	2133.500	**.009**
		I didn't	61	89.02	5430.50		

According to the findings in Table 8, it was determined that sports managers' mean scores of Decision-making, Interpersonal Roles, Knowledge and Personal Characteristics dimensions, which are among the sub-dimensions of self-efficacy and also the mean scores of Time Attitudes and Time Wasters dimensions, which are among the sub-dimensions of time management, were not significantly different according to the status of doing sports with license.

Time Planning mean score, one of the time management sub-dimensions, and General Time Management mean score of the managers who do sports with license is higher than the mean score of managers who do sports without license, and the difference between the scores were statistically significant ($p<0,05$).

Table 9. Comparison of self-efficacy and time management scores of sport managers according to the sector variable

	Sub-dimensions	Sector	n	Rank Mean	Rank Total	U	P
Self-efficacy	Decision-making	Sports Club Managers	99	80.14	7933.50	2461.500	.324
		Public Sports Managers	55	72.75	4001.50		
	Personal Characteristics	Sports Club Managers	99	78.57	7778.50	2616.500	.689
		Public Sports Managers	55	75.57	4156.50		
	Knowledge	Sports Club Managers	99	81.80	8098.00	2297.000	.108
		Public Sports Managers	55	69.76	3837.00		
	Interpersonal Roles	Sports Club Managers	99	79.93	7913.00	2482.000	.364
		Public Sports Managers	55	73.13	4022.00		
Time management	Time Planning	Sports Club Managers	99	82.03	8121.00	2274.000	.090
		Public Sports Managers	55	69.35	3814.00		
	Time Attitudes	Sports Club Managers	99	83.79	8997.50	2297.500	**.049**
		Public Sports Managers	55	69.77	3837.50		
	Time Wasters	Sports Club Managers	99	78.04	7726.00	2669.000	.837
		Public Sports Managers	55	76.53	4209.00		
	General Time Management	Sports Club Managers	99	83.03	8219.50	2175.500	**.039**
		Public Sports Managers	55	67.55	3715.50		

According to the findings in Table 8, it was determined that sports managers' mean scores of Decision-making, Interpersonal Roles, Knowledge and Personal Characteristics dimensions, which are among the sub-dimensions of self-efficacy and also the mean scores of Time Attitudes and Time Wasters dimensions, which are among the sub-dimensions of time management, were not significantly different according to sector variable. Time Planning mean score, one of the time management sub-dimensions,

and General Time Management mean score of the Sports Club Managers is higher than the mean score of Public Sports Managers, and the difference between the scores were statistically significant ($p<0,05$).

Table 10. The relationship between general time management and self-efficacy scale and dimensions

		Decision-making	Personal Characteristics	Knowledge	Interpersonal Roles
	r	.184*	.168*	.197*	.180*
General Time management	p	.022	.037	.015	.025
	N	154	154	154	154

Considering that $0\leq r\leq 0.25$ is a very weak relationship, $0.26\leq r\leq 0.50$ is a weak relationship, and $0.51\leq r\leq 0.75$ is a moderate relationship, $0.76\leq r\leq 0.95$ is a strong relationship, $0.96\leq r\leq 1$ is a very strong relationship (Senocak, 1986), when the findings in Table 10 were evaluated, a very weak, positive and significant relationship was found between General Time Management and Decision-making, Personal Characteristics, Knowledge and Interpersonal Roles dimensions of self-efficacy scale.

CONCLUSION

In this research, it was tried to determine the self-efficacy and time management skills of the public and sports club managers working in Turkey and examine them according to some demographic variables and reveal the relationship between them.

For this purpose, the following conclusions have been reached:

It was found that sports managers perceived themselves to be "highly sufficient" regarding their self-efficacy belief levels.This can be considered as the reason for their high belief in their competence in relation to their work since people at the management level received specific training and their experience improved their level of knowledge and skills. When the studies on the managers were examined, Işık and Gümüş (36) stated the general self-efficacy beliefs of the school administrators were high, Çiftçi (22) stated same for sports administrators, Uyanıker (81) for executive nurses, and Okutan and Kahveci (58) state it for the primary school principals.

In addition, it can be said that sports managers have "high" mean scores showing their opinions on "General Time Management" and its sub-dimensions (Time Planning, Time Attitudes and Time Wasters), in other words, it can be said that sports managers manage their time well. When the relevant literature on managers is examined, in their studies on the time management skills, likewise, Şahin and Gümüş (76) identified high time management scores of primary school administrators, Kıdak (47) for hospital managers, Gökçek (33) for professional football teams managers, and Uyanıker (81) for the administrative nurses.It is also important to note that the Time Consuming Things sub-dimension, which includes questions about wasting time, has the lowest value. The most important factor that wastes time for managers is the desire not to continue the habits and activities that do not benefit. This may also indicate that the time they devote to management tasks is more than the time they devote to their own private business. Time Wasters can be caused by deficiencies in the social and cultural sphere. However, this is not the only reason for this. In this context, in this study, it was investigated whether time management beliefs change according to the personal structure of sport managers (age, gender, marital status, education level, year of service, managerial year and sports history). The next part of the study is devoted to evaluations on this subject.

The findings of the study revealed that age was not an effective variable on the self-efficacy beliefs of sports managers. Individuals complete their social-emotional and cognitive development as their age progresses, and their self-assessment about their environment and themselves becomes more realistic and their self-awareness increases. In other words, considering the effects of past experiences (experience, life experience, success) on self-efficacy, age factor is expected to affect self-efficacy perception. However, research findings do not support this. This can be considered as a natural result of not being differentiated according to age variable by virtue of the responsibility and the

nature of the work owing to the responsibility of fulfilling the management duty due to the fact that the study is conducted in the sample of the manager. In addition, although self-efficacy beliefs are seen as an increasing function of age, age may be associated with other variables such as experience and amount of knowledge in psychological structures.In the study by Çiftçi (22) in order to examine the self-efficacy beliefs of sports managers, which supports our research findings, it was stated that age variable did not affect general self-efficacy perceptions. When the related literature is reviewed, while the findings of the study were similar to the findings of the research (54,71,63) on different samples, they differed with some research findings (82,3,59,80).

Similarly, time management skills of sport managers do not vary according to age. In the study of Gökçek (33), which supports our research findings, on the examination of the time management skills of the managers working in professional football teams, it was stated that the age variable did not affect the time management skills. When the related field is reviewed, while the findings of the study were similar to the findings of the research done in different samples (19,26,27,45), it differed with some of the research findings (10,13,15,56,61,67,72,76,90).

Another result of the study is that gender is not an effective variable on the self-efficacy beliefs of sport managers. This finding may be due to the convergence of job descriptions and behavioral characteristics of women and men socially, and the fact that women occupy managerial positions .in addition, the fact that the self-efficacy perceptions of female sports managers showing similarity with male sports managers may be due to the similarity in relation to factors such as effective communication, cooperation, teamwork and employee motivation, which are the perceptions in women's beliefs in competence in Interpersonal Relationship resulting from the characteristics of sports. Although there is not much research on the managers' self-efficacy perception, in the study conducted by Çiftçi (22) in order to examine the self-efficacy beliefs of sports managers, which support our research findings, it was stated that gender variable does not affect general self-efficacy perceptions. In the study of Izgar and Dilmaç (37), which differ from our research findings, conducted by the aim of examining the self-efficacy perceptions of the manager candidate teachers, it was determined that there was a difference between the genders in favor of male manager candidate teachers.It is a predictable outcome that gender self-efficacy varies from profession to profession and according to the socio-cultural structure of society. However, the fact that female sports managers have similar perceptions to male managers in self-efficacy perceptions points to a positive situation in the field.

In addition, time management skills of sports managers do not vary depending on gender. That is, the opinions of male managers and female managers on Time Planning and Time Attitudes and Skills are similar. At the same time, it can be argued that male and female managers show similar behaviors in planning short and long term work and controlling time. When the relevant literature is examined, the findings of the study are similar to the findings of the research (68,45) done in different samples, but differ with some research findings (15,19,25,28,34,47,48,61,72,77,75,90).

Another result of the study is that being married or single of sports managers does not affect self-efficacy beliefs. In the study conducted by Çiftçi (22) in order to investigate the self-efficacy beliefs of sports managers, which support our research findings, it was stated that the marital status variable did not affect the general self-efficacy perceptions. These findings are consistent with the studies of Sergek and Sertbaş (71) and Pekmezci (63) conducted in different samples in the literature, and that being married or single is not effective on the general self-efficacy belief levels of the manager.

In addition, it was seen that the marital status of sports managers is not a determinant factor in whether or not they use time effectively in this study, that is, the time management skills of managers do not differ according to marital status. In the study by Gökçek (33), in support of our research findings, conducted by the aim of examining the time management skills of the managers working in professional football teams, it was stated that marital status variable does not affect time management skills. These findings are consistent with the studies of Bahçecik ve ark (10), Sarp ve ark (67), Kıdak (47), Bülbül (15), Karasu (45) and Döner (24) done in different samples in the literature, which determined that marital status is not an effective factor on time management attitudes. Contrary to the results of analysis, Sökmen (72) found that married health managers were more

positive in Time Attitudes but fell more intensely into time traps.

Education levels were not a variable affecting the self-efficacy beliefs of sport managers in this study. Considering the contribution and advantages for higher level educated individuals while carrying out the sports management, they are expected to have higher self-efficacy scores, contrary to the research findings. Based on this finding, this can be explained by the fact that these people do not receive field training in administration and management, even though their education levels are high. Moreover, the fact that education levels of sports managers are not a determinant factor in the self-efficacy can be explained by the fact that the expected differences between sports managers are neutralized by the experiences acquired in the work process (field experiences, development studies under the leadership of successful people, experiences in different organizations, etc.) and thus their self-efficacy levels have become almost close.

The results show that the educational status of sports managers does not affect time management skills. In the study of Gökçek (33), conducted to examine the time management skills of the managers working in professional football teams, it was stated that the educational status variable did not affect the time management skills. When the studies (69,46,47,24,7) conducted in different sectors are examined, it was found that the effective use of time behaviors did not show significant difference according to education level. Contrary to the results of the analysis, it differs from some research findings (1,10,13,15,72,74,75). This difference in the results of the study may be due to sample groups.

In the research, self-efficacy beliefs of sport managers do not show significant differences according to service and management years. The fact that the beliefs of sports managers do not differ according to the year of service and the year of management suggests that they are related to the resources (sports backgrounds, necessity of having certain competencies of the sports manager duty, occupational preferences, etc.) that constitute self-efficacy for sports managers. Sullivan and Kent (73) show that past coaching experiences positively affect the self-efficacy of coaches. As a result of the research conducted by Yılmaz and Gürçay (88) on teacher candidates, it was found that teacher candidates' self-efficacy of teacher, general self-efficacy, self-efficacy beliefs related to field teaching and self-efficacy beliefs related to their fields are at a high level. The reason for the difference between the findings of the study can be thought that other environmental, behavioral and personal factors, which affect the change of self-efficacy status of the sport manager, during the managerial period, and previous performance situations, indirect experiences, verbal persuasion and emotional state sources may be effective. In addition, the fact that the sport managers' self-efficacy status does not change according to their total managerial periods also supports the findings that the self-efficacy status does not change according to the year of service in the institution.

Furthermore, in this study, time management skills of sport managers do not vary depending on the years of service and management. Kıdak (47) showed that there is no difference between the time management attitudes of hospital managers and their working hours. Similarly, Karasu (45) found that their professional experience was not an effective factor on time management attitudes. Other studies with different results (13,15,24,25,48,49,64,69,88,89) show that time management skills are related to past experience.

One of the important results of the study is that doing sports with license does not have a significant effect on the self-efficacy beliefs of sports managers. Considering the contributions and advantages for the managers, who do sports, in terms of their past life and field experiences while carrying out sports management, they are expected to have a higher self-efficacy score in contrast to the research findings. Based on this finding, it can be said that doing sports, that is, knowledge of the field (specific information about athletes, coaches, referees, facilities, competitions and all other elements of sports environment) will not be sufficient for performing sports management alone. In the study of Öcal and Aydın (60), which supports the findings of the study even though they are in a different sample group, on the relationship between the perception of collective competence, self-efficacy and sincerity in sports teams, and the perception and expectations of success, it was determined that self-efficacy belief had no effect on athletes' perceptions of past success and expectations for future success.

In addition, there is no significant relationship between sub-dimensions of Time Attitudes, Time Wasters of time management skills and "doing

sports with license". However, in our study, there was a significant difference between dimension of Time Planning of time management skills and General Time Management and the status of doing sports with license in the past. Accordingly, managers doing sports as licensed in the past, compared to those who do sports without it, are better in doing daily, weekly, periodic plans, clarity in plans, and determining aims and priorities. In the study of Samuk (66), which supports the findings of the study, which examined academics' understanding of time management according to their participation in physical activities, it was found that there was a significant difference in the Time Planning sub-dimension in favor of those doing sports.

No difference in self-efficacy beliefs of sports managers according to the task sector and generally similarity in self-efficacy scores of public and sports club managers may be due to the fact that the people in the positions have certain education and experience and the high and similar belief in their competence in relation to their work.in the study of Çiftçi (22) on the examination of the self-efficacy beliefs of sports managers, which partially supports the findings of the study, it was determined that the managers working in public or sports clubs did not affect their self-efficacy perceptions about Personal Characteristics, Knowledge and Interpersonal Roles, and Decision-making self-efficacy scores of sports managers working in the public field were higher than sports club managers.

In addition, no significant relationship was determined between the time management and time management skills' sub-dimensions of Time Planning and Time Wasters of sports managers and the sector. However, in our study, significant differences were found between Time Attitudes dimension of time management skills and General Time Management, and the sector. General Time Management and Time Attitudes of sports managers working in sports clubs are significantly better than sports managers working in public areas. According to this, managers working in sports clubs are better at being aware of their degree of competence in attitudes, behaviors and approaches to using time, in making decision-making skills and avoiding engagements that prevent their essential business than managers working in the public field. They can also be said to use their time better. In the study by Fidan (31), which supports our research findings although it is in a different sample group, on the examination of the time management behaviors of private sector and public managers, it was determined that private sector SME managers are more sensitive to time management than public sector managers.

According to the findings of the study, there is a very weak, positive and significant relationship between General Time Management and self-efficacy skills dimensions of Decision-making, Personal Characteristics, Knowledge and Interpersonal Roles, which shows parallelism with the results obtained from the studies of Terry (78), Claessens (18), Garson (32), Zimmerman and Cleary (91), Welsh (83), Terry and Doolittle (79), Uyanıker (81).Accordingly, general self-efficacy perceptions of sports managers are effective on time management perceptions, while time management perceptions are also effective on general self-efficacy perceptions. A weak positive relationship was observed between General Time Management and all dimensions of Self-Efficacy (Decision-making, Personal Characteristics, Knowledge and Interpersonal Roles), which also shows that the studies that will increase the perception of time management will increase the self-efficacy belief level.

The findings of this study, which aims to examine the relationship between self-efficacy of sport managers and time management, are important in terms of emphasizing the importance of sport managers on the success and effectiveness of sport organizations. However, the study has some limitations. Firstly, in this study, self-efficacy and time management were determined based on the perceptions of sports managers. More reliable results can be achieved by determining the sports manager's self-efficacy by associating them with more objective indicators such as relationship with time management, organizational success or the perceptions of stakeholders of sports organizations (such as sports professionals, employees and/or athletes) about these behaviors (self-efficacy, time management). Failure to evaluate these behaviors is the main limitation of this and many other studies. However, it should be kept in mind that the failure to carry out such a study plan due to its some possible implementation and ethical problems is also a problem.

In addition to determining the self-efficacy and time management skills of sport managers,

qualitative research should be conducted on issues such as how to develop self-efficacy and time management skills and how to provide training to support them. In this context, a training to be given especially to the newly appointed public sports managers can be considered to have contribution. However, it can be said that an in-service training environment where sports managers who have gained experience in time management and who use managerial time efficiently in the organization and newly appointed managers can work together can be beneficial.

As a result, based on the current literature, it is seen that the time management of those with high self-efficacy beliefs is relatively better and the self-efficacy beliefs of those with high time management are relatively high. It is thought that sports managers with these characteristics show a more effective performance in dealing with the problems that may be encountered in the public and club management, that they impove public and sports clubs service quality, contributing positively to not only sport managers but also managed employees, and that expanding the existing educational curricula of higher education institutions, providing training for sport manager and sport manager candidate to cover these issues more improves the quality of sports management. In this direction, it is recommended to increase the effectiveness of the training provided for the sports managers to improve themselves.

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The Effect of Primary School Students' Participation in Active Games involving Physical Movement on Life Satisfaction

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Abstract

This study intends to determine the impact of the participation of second grade elementary school students in games involving physical activities on their Life Satisfaction. The sample of the study consisted of 706 students in 6 primary schools in the province of Gaziantep in the academic year 2016-2017.

The "Playfulness scale" was used in order to determine the students' attitudes towards playing games with physical activity, and the"life satisfaction scale" was used to assess their impact on the satisfaction they get from life. The playfulness scale was developed by Hazar (2015) while the Life Satisfaction Scale used in the study is the one translated by Sevil (2015) into Turkish.

Statistical analyzes were performed on the data obtained in the study by using the SPSS 22.0 package program. In the evaluation of data, frequency, percentage, mean, standard deviation were used while the Kolmogorov-Smirnov test was used in the conformity check of continuous variables to normal distribution. The Student T-Test was conducted to compare the two independent groups of variables with normal distribution, and the ANOVA and Tukey multiple comparison tests were conducted for the comparison of more than two independent groups of variables and the correlation between the numerical variables was tested through Correlation analysis.

According to the findings; 73.4% of the participants were in the age bracket of 11-12 years (518 people) and 26.6% were between the ages of 13-14 (188 people). 58.9% were female (416 people) and 41.1% (290 people) were male and 51.1% of them were in the 5th grade (354), 22.7% in the 6th grade (160 people) and 27.2% (190 people) in the 7th grade. It was established that there was a significant difference between the ages of the students in the Playfulness Scale and the Life Satisfaction Scale; between the students' grades in the Playfulness Scale and the Life Satisfaction Scale as well as a low degree of meaningful relationship between the Playfulness Scale and the Life satisfaction scale.

Key words: Physical Activity, Game, Attitude, Life Satisfaction.

INTRODUCTION

The game, which was thought to exist before the achievable records of human history, can be said to be a phenomenon that has many functions such as maturing, acquiring skills, socializing, self-expression, self-healing, transferring cultural heritage and having fun.

Games have an important place in human lives, starting from birth and continuing across the human lifespan. What really changes is how the games are played. Playing games is fun and gives people joy. Games help players build a bridge between their inner world and the external social world and they contribute positively to development (Engin, Seven and Turhan, 2004; Ersan, 2006; Gazezoglu, 2007; Ozdogan, 2000; Sevinc, 2004).

Games are fun activities that involve certain skills and intelligence which are played during leisure times according to certain rules in a certain place and time whereby people put to use their physical and mental skills to fulfill the game's objectives (Hazar, 2000).

Games refer to voluntary movements or activities performed freely within a certain place and time period according to certain binding rules (Huizinga, 1951). Games are a way of dealing with stress (Barnett and Storm). They are effective assistants in learning. There are no time and space limitations with games (Georges, 2007). Games optimize the motivation of their players (Nikfarjam, 2012). Games are a way of relaxing, getting rid of excess energy, and meeting physiological needs (Razon, 1985). Games are spontaneous activities that are performed freely and they bring joy and contribute positively to life satisfaction (Basal, 2007).

Games have a great role in learning and personal development and they bring health and happiness and promote creativity (Isenberg and Jalongo, 2001). Thanks to games, individuals make contact with society and the social world. Individuals learn to perform more complex body movements while learning how to live in harmony within their social environment (Anderson, Miles, Mahoney and Robinson, 2002; Tkachuk, Leslie-Tosgood and Martin, 2003).

To sum up, learning with games increases the self-confidence of children, improves their problem solving skills and makes them better able to cope with issues; in addition, the entire body, all the muscles and the skeletal system work during a game and games allow children to become more sociable by giving them a better understanding of the environment in which they live. With games, children improve their social relationships. Games are critical for the learning process of children. Children can learn many things playing games while simultaneously being prepared for their future lives. Children playing games that involve physical movement make important progress in terms of what has been cited above and the games contribute positively to their life satisfaction levels.

MATERIAL AND METHOD

In this section, the study model, study population, and data collection tools used in the study as well as the statistical methods used in analyzing the obtained data will be presented.

Experimental Design

The relational screening modelwas used to determine the attitudes of students in the second level of primary education (5th grade, 6th grade and 7th grade) towards playing games that involve physical activity and their impact on their life satisfaction levels. The relational research model is used to determine relationships between variables and to predict possible outcomes. The relationship between two or more variables is measured using statistical tests(Ersöz, 2016). The screening model tries to make sense of events by looking at the circumstances under which they take place, investigating their characteristics, and determining the relationship between them rather than dwelling on their causes (Kaptan, 1995).

Study Population and Sample

The study population consists of students from different schools in the Gaziantep Province in the academic year 201-2017. The number of university students included within the scope of the study is shown in Table 1.

The random sampling method has been used in the sample selection. Random sampling is the sampling method in which each person in the study population has an equal chance of being selected (Arlı and Nazik, 2004). Through random sampling, 706 students were included in the sample.

Table 1. Personal information relating to the study group

Variable	Groups	N	Percentage (%)
	Female	416	58.9
Gender	Male	290	41.1
	Ages 11-12	518	73.4
Age	Ages 13-14	188	26.6
	5th Grade	354	50.1
Grade	6th Grade	160	22.7
	7th Grade	192	27.2
n=387			

Table 1 shows the personal characteristics of the study group and the distribution of responses to the related questions. Accordingly, 58% of the participants are female (416 people) and 41.1% are male (290 people); 573.4% of the participants (the majority) (518 people) are between the ages of 11-12 while 26.6% (the minority) (188 people) are in the age bracket of 13-14; 5th grade students make up the majority of participants with 50.1% (354 people) while 6th grade students are the minority with 22.7% (160 people).

Preparation of the Data Collection Tool

The "Playfulness Scale" developed by Hazar (2013) and the "Life Satisfaction" scale translated into Turkish by Sevil (2015) were used to determine the attitudes of 5th, 6th and 7th grade students towards Playing Games that Involve Physical Activity. The playfulness scale consists of 5 sub-dimensions, namely Passion for Games, Risk Taking, Social Adaptation, Willingness to play games and Enjoying oneself and 20 questions. The "life satisfaction" scale consists of 5 questions. The items in the scale were evaluated using a 5 point Likert scale.

Data analysis

SPSS for Windows 22 suite was used for the analysis of the study. In the study, the "KMO" analysis has been performed to test the sample size. Accordingly, it was seen that the KMO test was greater than .60 (Playfulness Scale 0.764, Life Satisfaction 0.858) and the Bartlett test was significant ($p < .0.001$). Therefore, the sample is sufficient and the existence of a structure is detectable.

The Kolmogorov-Smirnov test was used in the conformity check of continuous variables to normal distribution for data analysis. The t test was used to compare two independent groups of variables with normal distribution, and ANOVA and Tukey multiple comparison tests were used for variables with normal distribution in the comparison of two independent groups, and frequency, percentage and mean and standard deviation values were given as descriptive statistics. $P < 0.05$ was accepted as significant in the statistical analyzes performed in the

RESULTS

The t-test was used to determine whether the scores of the students participating in the study differed significantly according to their age from the Playfulness Scale and Life Satisfaction Scale

Table 2. Comparison of Gaming and Life Satisfaction Scales by Age

Factor	Age	*N*	Mean	*SD*	*t*	*p*
Passion for Games	Ages 11-12	518	3.12	0.91	7.23	0.00*
	Ages 13-14	188	3.64	0.84		
Risk taking	Ages 11-12	518	3.21	0.97	2.52	0.01*
	Ages 13-14	188	3.40	0.88		
Social adaptation	Ages 11-12	518	1.56	0.59	0.98	0.34
	Ages 13-14	188	1.60	0.55		
Willingness to play games	Ages 11-12	518	1.95	0.76	4.70	0.00*
	Ages 13-14	188	2.26	0.74		
Enjoying oneself	Ages 11-12	518	2.14	0.79	3.79	0.00*
	Ages 13-14	188	2.40	0.78		
Total Game	Ages 11-12	518	2.42	0.60	5.66	0.00*
	Ages 13-14	188	2.69	0.53		
Life satisfaction	Ages 11-12	518	2.06	0.69	2.07	0.02*
	Ages 13-14	188	2.22	0.94		

n =70

When Table 2 is examined, there is a statistically significant difference between the total points from the Playfulness Scale and the points from the sub-sets of Passion for Games, Risk Taking, Willingness to play games, Enjoying oneself and Life satisfaction while no such difference exists with regards to the subset of Social adaptation in the Playfulness scale according to the age variable. According to these results, it can be seen that

Primary School Students participate more in Games Including Physical Activity as they grow older whilst their life satisfaction also increases.

Anova test was performed to determine whether the scores of the students participating in the study from the Playfulness Scale and Life Satisfaction Scale differ significantly according to their age. Tukey multiple comparison tests were used to determine the differences between the groups.

Table 3. Comparison of Gaming and Life Satisfaction Scales by the Grade Variable

Factor	Grade	*N*	Mean	*SD*	*F*	*p*	*Significant Difference*
Passion for Games	5th Grade (a)	354	3.10	0.90	26.9	0.00*	
	6th Grade (b)	160	3.12	0.88			a<c, b<c
	7th Grade (c)	192	3.66	0.87			
Risk taking	5th Grade (a)	354	3.13	0.99	7.51	0.01*	
	6th Grade (b)	160	3.35	0.83			a<b, a<c
	7th Grade (c)	192	3.43	0.92			
Social adaptation	5th Grade (a)	354	1.56	0.57	1.99	1.37	
	6th Grade (b)	160	1.65	0.72			
	7th Grade (c)	192	1.54	0.46			
Willingness to play games	5th Grade (a)	354	1.88	0.74	18.5	0.00*	
	6th Grade (b)	160	2.05	0.72			a<c, b<c
	7th Grade (c)	192	2.29	0.77			
Enjoying oneself	5th Grade (a)	354	2.10	0.74	11.5	0.01*	
	6th Grade (b)	160	2.18	0.86			a<c, b<c
	7th Grade (c)	192	2.44	0.77			
Total Game	5th Grade (a)	354	2.38	0.56	18.1	0.00*	
	6th Grade (b)	160	2.49	0.58			a<c, b<c
	7th Grade (c)	192	2.69	0.59			
Life satisfaction	5th Grade (a)	354	2.01	0.66	5.98	0.02*	
	6th Grade (b)	160	2.16	0.77			a<c
	7th Grade (c)	192	2.23	0.91			

Table: 4. Correlation Table for Life Satisfaction Scale, Gaming Scale and their Sub-Sets

	n	r	p
Passion for Games	706	0.168	0.000**
Risk taking	706	0.152	0.000**
Social Adaptation	706	0.199	0.000**
Willingness to Play Games	706	0.226	0.000**
Enjoying oneself	706	0.224	0.000**
Total Game	706	0.253	0.001**
p<0.05			

When Table 3 is examined, there is a statistically significant difference between the total points from the Playfulness Scale and the points from the sub-sets of Passion for Games, Risk Taking, Willingness to play games, Enjoying oneself and Life satisfaction while no such difference exists with regards to the subset of Social adaptation in the Playfulness scale according to the age variable. According to these results, students in the 7th grade received higher scores in the subsets of

Passion for Games, Risk Taking, Willingness to play games, Enjoying oneself and the Playfulness scale indicating that they play more games than 6th and 5th grade students and that 7th grade students have a higher level of life satisfaction than 5th grade students.

Correlation analysis was conducted to test whether there was a relationship between life satisfaction and playfulness characteristics of the students. p<0.05

When Table 4 is examined, a positively low correlation was observed between the Life Satisfaction Scale score and the Playfulness Scale and its sub-sets. According to this result, the participation of primary school students in active games involving physical movement has a positive impact on their life satisfaction. It was established that students participating in games that involve physical activity have most of their life expectations met, have increased levels of satisfaction with life, have most of the important things they expect from life and so they do not wish to make any changes to their lives.

CONCLUSION AND EVALUATION

There is a statistically significant difference between the total points from the Playfulness Scale and the points from the sub-sets of Passion for Games, Risk Taking, Willingness to play games, Enjoying oneself and Life satisfaction according to

the age variable. As age increases, participation in physical activities and life satisfaction also increase.

The literature offers similar results; a study by Sevil titled the Impact of Participation in Therapeutic Recreational Activities on Perceived Levels of Satisfaction from Leisure Time, Life Satisfaction and Quality of Life (2015) also reports a significant difference by age, with life satisfaction increasing as age increases. In their study, Boley (2001) and Hribernik and Mussap (2011) also found that satisfaction achieved through leisure time increases with age.

In terms of different results cited in the literature, Janke et al. (2006) and Agahi et al.(2006) found that participation in activities as well as the variety of activities participated in decrease due to a lessening of physical skills during the later stages of life. Broughton and Beggs (2007) and Foret (1985) reported that perceptions of social satisfaction decrease with age.

In the study conducted by Hazar et al. (2017), it was concluded that the playfulness scores of 12 and 13 year-old students were significantly higher than 14-year-old students.

There is a statistically significant difference between the total points from the Playfulness Scale and the points from the sub-sets of Passion for Games, Risk Taking, Willingness to play games, Enjoying oneself and Life satisfaction according to the class variable. The literature contains both similar and different results.

When the literature is examined for similar results, a study conducted by Kerkez et al. (1996) found a statistically significant difference following the comparison of 58 variables concerning the physical fitness of 108 young persons in the age group of 12-15 undertaking different types of sports and 19 sedentary young persons. Berg et al. (1995) found physical differences in a study involving sedentary children and young sportsmen. In a study with 300 students selected from 3rd, 7th and 11th grades, Nordqvist (2003) found that physical activity decreases with age. In a study on 2185 children aged between 9 and15, Riddoch and Boreham (2004) found a significant difference between the physical activity levels of children aged 9 and 15 years old.

When the literature is examined for different results, a study by Oztürk (2016) titled the Attitudes of Students studying in the Departments Coaching and Sports Management towards Playing Games that Involve Physical Activities found no significant differences. A positively high correlation has been found between the Life Satisfaction Scale score and the Playfulness Scale and its sub-sets. According to this result, the participation of primary school students in active games involving physical movement has a positive impact on their life satisfaction.

When the literature is examined for similar results, Jim and Chen (2009) reported that physical activities in old age comprise of passive, relaxing activities which are individual in nature. In a study conducted by Heller at al. (2004), it was reported that there is a correlation between satisfaction achieved through leisure time and satisfaction from life and that social, aesthetic and psychological dimensions of satisfaction play a defining role.

In his study, Boley (2001) reported that satisfaction achieved through leisure time determines the level of satisfaction from one's entire life. Similar to the results obtained by Heller et al. (2004), it was concluded that ensuring satisfaction from leisure time has an impact on life satisfaction. Mc Guinn and Mosher (2001) reported that individuals participating more frequently in physical activities get more satisfaction from life.

Broughton and Brent (2007) found that participation in physical activities is beneficial for ensuring social and aesthetic satisfaction and relaxation. Lloyd and Auld (2002) showed that the level of leisure time satisfaction of those participating in physical activities has a positive impact on quality of life and that satisfaction from leisure time as well as aesthetic and psychological satisfaction have an impact on satisfaction from life.

Conclusion and Recommendations

Games based on physical activity played from childhood improve physical and mental health, and strengthens one's will. Playing games involving physical activity strengthens the will, helps boost self-confidence and makes a person more mature.

Stimulating one's hidden abilities and constructive side also makes spiritual and social development possible, as well as physical development. The maturation of personality in pre-adolescence as opposed to the stopping of physical development contributes to spiritual and social development.

Leading a physically active life appears to have positive effects on quality of life. On the basis of these results, it can be inferred that children should be encouraged by families, pedagogues and the state to lead an active life from an early age to increase the quality of life. Efforts should be made to encourage children to play games that involve physical activity to raise healthy generations and help increase children's' satisfaction from life.

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The Effect Of Basketball Training On Agility Of Children

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Abstract

This study has been done for the aim of determining the effects of basketball practices on agility and a number of physical and motorial features. The research group of thisempirical researchstudy in which pretest and posttest are made as a quantitative research models,consisting of a control and an experimental group, consists of 12 years old 60 boys who played basketball (n=30) and didn't play (n=30. Basketball practices made with the player (research) group for 16 weeks but no practices made with the non-player (control) group. Before practices(pre-test) and after practices (post-test) height, weight, right flexibility, left flexibility, illinuois agility, vertical jump, stabile jump and balance features of children's who are in the experimental and control groups in the study, has been measured with necessary techniques and data are gathered.Gathered data have been analized with SPSS 25.0 statistic analyze program and findings are gained. In this context , T test for the analyze of independent variable data in the normally distributed variables, Mann-Whitney U test which is one of the non-parametric tests,for the analyze of non-normally distributed variables and Wilcoxon signed rank test for detecting the change between groups have been chosen. As a result of this study it's stated that basketball practices are caused a significant change on boys' height, right flexibility, left flexibility, illinuois agility, balance and stabile jumping features who are in the experimental group. With comparing the boys' pre-test post-test measurements who are in non player control group, it's indicated that there is a significant change on height, weight, right flexibility, left flexibility and balance features. Also, comparing two groups' pre-test measurements, a difference is detected on the side of control group that non-players of basketball before about right flexibility, left flexibility and balance features but a change is detected on the side of experimental group that players of basketball before about illinuois agility, vertical jump and stabile jump features. In this study, when we compared the post-test measurements of the groups, it's detected that there is a differentation about right flexibility feature on the side of control group and a change about illinuois agility, vertical jump, balance and stabile jump features on the side of experimental group.

Key words: Basketball, Agility,Practice, Motorial Feature

INTRODUCTION

Players do lots of quick moves and short distance run during the competititon in basketball games. The aim is winning the game by making pressure on the oppenent with sudden and quick attacks, speedig up the game. However they have to be successful at the defence with the same tactics (25)

Players speed and moves are some of the most dominant features of his/her athletic skills. In a basketball game players never hit the top speed; repeating short and fast rus are more frequent. For example the skill of speeding up as soon as possible(acceleration) is knowns as the best qualification at games like basketball. Also acceleration and speed are known as seperate and special qualifications.

Basketball, as a branch, is a kind of sport that needs motorial qualifications to be at top. Anaerobic power gains importance as energy sistems and correspondingly there is a harmony between quickness, timing and strenght. It is an activity that combined with making existing athletic position stronger with vertical jump, balance, skill,

ability, timing, rhythm and speed and supporting these qualifications to make technical moves more smooth and easy (12). Bompa (1998), claims that the best ages for starting to basketball are 7-8, for learning 10-12, for specializing and high performance 20-25. According to Sevim (2002), first achievements phase is 20-22 ages, ideal achievement ages are 23-36 and maturity and high level achievement ages are between 27-30 for the basketball players.

Agility is expressed as changing direction quickly among series of movements and a coordination ability that makes body and joints move forward (15, 26, 30). With agility it is the essential aim to make whole body organs or some parts reaching the ideal angular values that needs to be. For this reason a move ensuring agility with a spurt, shape, move or event may be expressed as a qualificaiton of praparing and making quickly the moves that known or unknown before (24). Çeviklik Agility is a motorial component that can be developed and trained with a progressive training education (16, 9).

Basketball, as a branch, is a kind of sport that needs motorial qualifications to be at top. Anaerobic power gains importance as energy sistems and correspondingly there is a harmony between quickness, timing and strenght. It is an activity that combined with making existing athletic position stronger with vertical jump, balance, skill, ability, timing, rhythm and speed and supporting these qualifications to make technical moves more smooth and easy (12).

The essential aim of the whole trainer and players is to catch the best performance on the branch they're working. Therefore it is important to use scientific disciplines to ensure optimum performance. It is important to use scientific techniques at every sport branch to improve player's poerformance. Certainly the improvement of player's motorial features can be created with exercises and trainings about sport branches (17).

This study is carried out for specifing the impact of basketball practices on 12 years old boys' agility and some kind of physical and motorial features.

MATERIAL & METHOD

Research Model

Study is carried out with experimental model including pre-test, post-test control (G1) and experiment(G2) groups. In the model dependent variable is 12 years old boys' Height-Weight Measurements, Right and Left Flexibilities, Vertical Jump, Stabile Jump, Illinuois Agility Test and Balance Test results, independent variable is "Basketball Practices and Trainings".

Population and Sample

Study group of thisresearch is consists of total 60 male students, 30 players of basketball (n=30)from Konya Ayyıldız Basketball Clup at Konya city center and 30 non-players of basketball or any other sports (n=30) from Konya Esentepe College.

In the study basketball practices organized for the kids in experimental group for 16 weeks three days a week. Every week on Wednesdays, Fridays and Sundays between 18:30-20:00 warm-up and stretching for 15 minutes, then technical and tactical basketball practices are done. Then relaxing time given for 15 minutes. On the other side in control group at the same time there wasn't any additional training and practice except their P.E lesson and sports in their schools.

Data Collection Tools

Height and Weight Measurements: Hights of the kids who joined the experimental study have been measured twice with naked feet with a stadiometer that measures ±1 mm before and after the experimental study. And the weights have been measured with a bascule(Tanita401 A, Japan) that measures with ±100 gr sensivity as they are wearing just shorts and t-shirts.

Right and Left Flexibility Measurements: Flexibility measurements of the subjects have been done on the flexibility table. Subjects sit, they reach their naked feet to the test table without bending them, they push forward the ruler with their left and right hands on that table as far as they, they wait at the top distance for 1-2 seconds and the stretching distance have been noted as cm. This activity have been done twice as a trial with both right and left

hands and once for main and the biggest value is accepted.

Vertical Jump Measurements: For making the vertical jump measurements of participants it's been wanted from them to put their hands on their waist on exact squat position and try to jump as far as they can with full power without any springiness on their knees. Time has been started with participant's vertical jump and stopped when he touched the platform back. In this way participant's jumping levels have been measured from the time they stayed on air..In here it's assumed that the paticipant's position stayed the same when he jumped and came down to the platform. It's been conditioned for participants to not change place forward, back or sides and to keep their hands on their hips among jumpings during the test. Test has been repeated twice for the best result and the highest value is accepted.

StabileJump Measurements: For making the two feet long distance stabile jump measurements of participants they've been kept their feet together and toe edges at the back of the springboard. They've been wanted to bend their knees and stretch their both arms backwards. At this position they've seconds. For the best scores it's repeated twice with a full recovery and the best one's recorded.

Balance Measurements: For the balance measurements of participantsthey put their one foot to the feet kit and bends the other one back and they hold them with their hands at the same side and stands like flamingos. Thet try tos tay balanced with their free hand. They hold the helpers' arms and keep their balance, when they leave it their time starts. Time will be stopped on deformation of the position, on slip of foot, hand's leaving the leg and it is noted. Falling number is noted in 60 seconds. If there would be 15 falls in 30 seconds zero score is noted. On other assessment total number of falls or losing the balance in 60 seconds. The test has been repeated twice fort he best scores and the best measurement lavues are saved.

Data Analysis

Measured data has been analyzed using the SPSS 25.0 program. Both pre and advanced analyze techniques has been used for statistical analyze of data. Averages of whole test measurements of group been jumpedas far as possible by pushing their legs and flinging their arms forward. They've tried to come down on their both feet without falling down. After jumping distance of the nearest toe to the starting point has been noted as cm. Test has been repeated twice and the highest value is written.

Illinuois Agility Measurements: For making the illinuois agility measurements of participants, firsta test section has been set which has 5 m width, 10 m lenght, and with 3 cones on a flat line with 3.3 m spaces on the middle side. Test consists of 40 meters straight run with 180 degrees turning at each 10 meters and 20 meters slalom run between cones. An electronic stopwatch with photocell that can measure with 0.01 sec. sensivity has been set at the starting point of test section. Before the test the section's been introduced, and the participants have been informed and allowed to make workouts with low tempo. Then participants make 5-6 min. warm-up and stretching practices with a low tempo that they settled theirselves. It's been wanted from participants to start from the starting point lying down on their face and their hands on the same level with their shoulders and touching the ground. Finishing time of the section has been noted

and standard deviation have been identified and shaped on the pre-analyze techniques. Whether the data have a normal distribution or not has been tested with the One-Sample-Kolmogorov-Smirnov test. After this test a normal distribution has been seen about height, stabile jump, height 2, weight 2, vertical jump and balance 2. It's stated that the other weight, right flexibility, left flexibility, illinuois agility, vertical jump 2, balance, right flexibility 2, left flexibility 2, illinuois agility 2, stabile jump datahasnt got a normal distribution.

In-group comparisons have been made at the analyze of data showing normal distribution by using T Test for Independent Variables(IndependentSample T Test)

On the other hand at the analyze of data not showing normal distribution the necessary comparisons are made by using Mann-Whitney U Test because non-parametric tests gives us more powerfull results.

Wilcoxon Signed-Rank Test has been used for identifying that wheather there is a meaningful change between experimental and control groups or not.

RESULT

Tablo 1: Descriptive Statistics of Groups Pre-test and Post-test Measurements

Variables	Pre-test and Post-test Measurements	Control Group (G1) (n=30)		Experimental Group (G2) (n=30)	
		$\bar{X}$	Ss	$\bar{X}$	Ss
Height (m)	**pre-test**	1,66	0,095	1,66	0,105
	post-test	1,69	0,090	1,67	0,102
Weight (kg)	**pre-test**	60,27	17,84	58,91	13,24
	post-test	62,06	17,52	59,09	12,83
Right Flexibility (cm)	**pre-test**	27,90	8,00	22,27	3,39
	post-test	23,23	7,26	19,93	2,80
Left Flexibility (cm)	**pre-test**	26,20	7,83	21,87	2,82
	post-test	21,90	7,01	19,23	4,45
İllinuois Agility (sec.)	**pre-test**	20,66	1,70	18,47	1,50
	post-test	20,48	2,27	17,96	1,66
Vertical Jump (cm)	**pre-test**	28,76	7,94	36,44	8,96
	post-test	29,17	7,77	35,81	6,79
Balance	**pre-test**	9,43	5,48	5,33	4,28
	post-test	4,46	2,97	7,06	2,34
Stabile Jump (m)	**pre-test**	1,50	0,22	1,72	0,31
	post-test	1,48	0,22	1,78	0,34

***P<0.05**

When the Table 1 examined the height pre-test value of Control Group was 1.66± 0.095 m before while the post-test valuewas1.69± 0.090 m, the weight pre-test value was 60.27± 17.84 kg before while the post-test valuewas62.06± 17.52 kg,the right flexibility pre-test value was 27.90 ± 8.00 cm before while the post-test valuewas 23.23 ± 7.26 cm, the left flexibility pre-test value was 26.20 ± 7.83 cm before while the post-test valuewas 21.90 ± 7.01 cm, the illinuois agility pre-test value was 20.66 ± 1.70 sec. before while the post-test value was 20.48 ± 2.27 sec., the vertical jump pre-test value was 28.76 ± 7.94 cm. before while the post-test valuewas29.17 ± 7.77 cm, the balance pre-test value was 9.43 ± 5.48, before while the post-test value was 4.46 ± 2.97, the stabile jump pre-test value was 1.50 ± 0.22 m before while the post-test value was 1.48 ± 0.22 m.

The height pre-test value of Experimental Group was 1.66± 0.105 m before while the post-test value was 1.67± 0.102 m, the weight pre-test value was 58.91± 13.24 kg before while the post-test value was 59.09± 12.83 kg, the right flexibility pre-test value was 22.27 ± 3.39 cm before while the post-test value was 19.93 ± 2.80 cm, the left flexibility pre-test value was 21.87 ± 2.82 cm before while the post-test value was 19.23 ± 4.45 cm, the illinuois agility pre-test value was 18.47 ± 1.50 sec.before while the post-test value was 17.96 ± 1.66 sec.,the vertical jump pre-test value was 36.44 ± 8.96 cm before while the post-test value was 35.81 ± 6.79 cm, the balance pre-test value was 5.33 ± 4.28 before while the post-test value was 7.06 ± 2.34, the stabile jump pre-test value was 1.72 ± 0.31 m before while the post-test value was 1.78 ± 0.34 m.

Table 2: Comparison of the pre-test measurement values between groups

Variables		G 1 Control Group (n=30)		G 2 Experimental Group (n=30)		P
		$\bar{X}$	Ss	$\bar{X}$	Ss	
Height (m)	**pre-test measurement**	1,66	0,095	1,66	0,105	0,939
Weight (kg)	**pre-test measurement**	60,27	17,848	58,91	13,24	0,871
Right Flexibility (cm)	**pre-test measurement**	27,90	8,00	22,27	3,39	0,002*
Left Flexibility (cm)	**pre-test measurement**	26,20	7,83	21,87	2,82	0,006*
İllinuois Agility (sec.)	**pre-test measurement**	20,66	1,70	18,47	1,50	0,000*
Vertical Jump (cm)	**pre-test measurement**	28,76	7,94	36,44	8,96	0,001*
Balance	**pre-test measurement**	9,43	5,48	5,33	4,28	0,003*
Stabile Jump (m)	**pre-test measurement**	1,50	0,22	1,72	0,31	0,003*

***P<0.05**

It's been stated that there is statisticly no significant difference (p= ,939; p> ,05) at height pre-test measurement values between Control Group ($\bar{X}$=1.66; SS= 0,095) and Experimental Group ($\bar{X}$=1.66; SS= 0,105). It's been stated that there is statisticly no significant difference (p= ,871; p> ,05) at weight pre-test measurement values between Control Group ($\bar{X}$=60,27; SS= 17,848) and Experimental Group ($\bar{X}$=58,91; SS= 13,24). There is a statisticly significant difference (p= ,002; p< ,05) at right flexibility pre-test measurement values between Control Group ($\bar{X}$=27,90; SS= 8,00) and Experimental Group ($\bar{X}$=22,27; SS= 3,39). There is a statisticly significant difference (p= ,006; p< ,05) at left flexibility pre-test measurement values between Control Group ($\bar{X}$=26,20; SS= 7,83) and Experimental Group ($\bar{X}$=21,87; SS= 2,82). There is a statisticly significant difference (p= ,000; p< ,05) at illinuois agility pre-test measurement values between Control Group ($\bar{X}$=20,66; SS= 1,70) and Experimental Group ($\bar{X}$=18,47; SS= 1,50). So it's been identified that the illinuois agility values of the basketball playing kids before practices are better then the non-players. There is a statisticly significant difference (p= ,001; p< ,05) at vertical jump pre-test measurement values between Control Group ($\bar{X}$=28,76; SS= 7,94) and Experimental Group ($\bar{X}$=36,44; SS= 8,96). There is a statisticly significant difference (p= ,003; p< ,05) at stabile jump pre-test measurement values between Control Group ($\bar{X}$=1.72; SS= 0.31) and Experimental Group ($\bar{X}$=1.50; SS= 0.22). There is a statisticly significant difference (p= ,003; p< ,05) at balance pre-test measurement values between Control Group ($\bar{X}$=9.43; SS= 5.48) and Experimental Group ($\bar{X}$=5.33; SS= 4.28).

Table 3: Comparison of the post-test measurement values between groups.

Variables		G 1 Control Group (n=30)		G 2 Experimental Group (n=30)		P
		$\overline{X}$	Ss	$\overline{X}$	Ss	
Height (m)	**post-test measurement**	1,69	0,090	1,67	0,10	0,549
Weight (kg)	**post-test measurement**	62,06	17,52	59,09	12,8	0,456
Right Flexibility (cm)	**post-test measurement**	23,23	7,26	19,93	2,80	0,009*
Left Flexibility (cm)	**post-test measurement**	21,90	7,01	19,23	4,45	0,059
İllinuois Agility (sec.)	**post-test measurement**	20,48	2,27	17,96	1,66	0,000*
Vertical Jump (cm)	**post-test measurement**	29,17	7,77	35,81	6,79	0,001*
Balance	**post-test measurement**	4,46	2,97	7,06	2,34	0,000*
Stabile Jump (m)	**post-test measurement**	1,48	0,22	1,78	0,34	0,000*

***P<0.05**

It's been stated that there is statisticly no significant difference (p= ,549; p> ,05) at height pre-test measurement values between Control Group ($\overline{X}$=1.69; SS= 0,090) and Experimental Group ($\overline{X}$=1,67; SS= 0,10). There is statisticly no significant difference (p= ,456; p> ,05) at weight pre-test measurement values between Control Group ($\overline{X}$=62,06; SS= 17,52) and Experimental Group ($\overline{X}$=23,23; SS= 7,26). There is a statisticly significant difference (p= ,009; p< ,05) right flexibility pre-test measurement values between Control Group ($\overline{X}$=23,23; SS= 7,26) and Experimental Group ($\overline{X}$=19,93; SS= 2,80). There is statisticly no significant difference (p= ,059; p> ,05) at left flexibility pre-test measurement values between Control Group ($\overline{X}$=21,90; SS= 7,01) and Experimental Group ($\overline{X}$=19,23; SS= 4,45). There is a statisticly significant difference (p= ,000; p< ,05) illinuois agility pre-test measurement values between Control Group ($\overline{X}$=20,48; SS= 2,27) and Experimental Group ($\overline{X}$=17,96; SS= 1,66). There is a statisticly significant difference (p= ,001; p< ,05) vertical jump pre-test measurement values between Control Group ($\overline{X}$=29,17; SS= 7,77) and Experimental Group ($\overline{X}$=35,81; SS= 6,79). There is a statisticly significant difference (p= ,000; p< ,05) stabile jump pre-test measurement values between Control Group ($\overline{X}$=1,48; SS= 0,22) and Experimental Group ($\overline{X}$=1,78; SS= 0,34). There is a statisticly significant difference (p= ,000; p< ,05) balance pre-test measurement values between Control Group ($\overline{X}$=4.46; SS= 2,97) and Experimental Group ($\overline{X}$=7,06; SS= 2,34).

Table 4: Comparison of pre-test and post-test measurements of the Control Group.

Variables		Pre-test		Post-test		P
		$\overline{X}$	Ss	$\overline{X}$	Ss	
Height (m)	**G 1**	1,66	0,095	1,69	0,090	0,000*
Weight (kg)	**G 1**	60,27	17,848	62,06	17,527	0,000*
Right Flexibility (cm)	**G 1**	27,90	8,00	23,23	7,26	0,000*
Left Flexibility(cm)	**G 1**	26,20	7,83	21,90	7,01	0,000*
İllinuois Agility (sec.)	**G 1**	20,66	1,70	20,48	2,27	0,289
Vertical Jump (cm)	**G 1**	28,76	7,94	29,17	7,77	0,447
Balance	**G 1**	9,43	5,48	4,46	2,97	0,000*
Stabile Jump (m)	**G 1**	1,50	0,22	1,48	0,22	0,314

***P<0.05**

It's been stated that there is a statisticly significant difference (p= ,000; p< ,05) between pre-test height average measurement values($\overline{X}$=1,66; SS= 0,095) and post-test height average measurement values($\overline{X}$=1,69; SS= 0,090) of the Control Group. There is a statisticly significant difference (p= ,000; p< ,05) between pre-test weight average measurement values ($\overline{X}$=60,27; SS= 17,848) and post-test weight average measurement values ($\overline{X}$=62,06; SS= 17,527) of the Control Group.There is a statisticly significant difference (p= ,000; p< ,05)

between pre-test right flexibility average measurement values ($\bar{X}$=27,90; SS= 8,00) and post-test right flexibility average measurement values ($\bar{X}$=23,23; SS= 7,26) of the Control Group.There is a statisticly significant difference (p= ,000; p< ,05) between pre-test right flexibility average measurement values ($\bar{X}$=27,90; SS= 8,00) and post-test right flexibility average measurement values ($\bar{X}$=23,23; SS= 7,26) of the Control Group.There is a statisticly significant difference (p= ,000; p< ,05) between pre-test left flexibility average measurement values ($\bar{X}$=26,20; SS= 7,83) and post-test left flexibility average measurement values ($\bar{X}$=21,90; SS= 7,01)of the Control Group.There is no statisticly significant difference (p= ,289; p >,05) between pre-test illinuois agility average measurement values ($\bar{X}$=20,66; SS= 1,70) and post-test illinuois agility average measurement values ($\bar{X}$=20,48; SS= 2,27) of the Control Group.There is no statisticly significant difference (p= ,447; p >,05) between pre-test vertical jump average measurement values ($\bar{X}$=28,76; SS= 7,94)and post-test vertical jump average measurement values ($\bar{X}$=29,17; SS= 7,77) of the Control Group.There is no statisticly significant difference (p= ,314; p >,05) between pre-test stabile jump average measurement values ($\bar{X}$=1,50; SS= 0,22) and post-test vertical jump average measurement values ($\bar{X}$=1,48; SS= 0,22) of the Control Group.There is a statisticly significant difference (p= ,000; p< ,05) between pre-test balance average measurement values ($\bar{X}$=9.43; SS= 5,48)and post-test balance average measurement values ($\bar{X}$=4,46; SS= 2,97)of the Control Group.

Table 5: Comparison of pre-test and post-test measurements of the Experimental Group.

Variables		Pre-test		Post-test		
		$\bar{X}$	**Ss**	$\bar{X}$	**Ss**	P
Height (m)	**G 2**	1,66	0,105	1,67	0,102	0,006*
Weight (kg)	**G 2**	58,91	13,24	59,09	12,83	0,387
Right Flexibility (cm)	**G 2**	22,27	3,39	19,93	2,80	0,003*
Left Flexibility(cm)	**G 2**	21,87	2,82	19,23	4,45	0,001*
İllinuois Agility (sec.)	**G 2**	18,47	1,50	17,96	1,66	0,001*
Vertical Jump (cm)	**G 2**	36,44	8,96	35,81	6,79	0,314
Balance	**G 2**	5,33	4,28	7,06	2,34	0,015*
Stabile Jump (m)	**G 2**	1,72	0,31	1,78	0,34	0,035*

***P<0.05**

It's been stated that there is a statisticly significant difference (p= ,006; p< ,05) between pre-test height average measurement values ($\bar{X}$=1,66; SS= 0,105) and post-test height average measurement values ($\bar{X}$=1,67; SS= 0,102) of the Experimental Group. There is a statisticly significant difference (p= ,387; p> ,05) between pre-test weight average measurement values ($\bar{X}$=58,91; SS= 13,24)and post-test weight average measurement values ($\bar{X}$=59,09; SS= 12,83) of the Experimental Group.There is a statisticly significant difference (p= ,003; p< ,05) between pre-test right flexibility average measurement values ($\bar{X}$=22,27; SS= 3,39) and post-test right flexibilityaverage measurement values ($\bar{X}$=19,93; SS= 2,80) of the Experimental Group.There is a statisticly significant difference (p= ,001; p< ,05) between pre-test left flexibility average measurement values ($\bar{X}$=21,87; SS= 2,82) and post-test left flexibility average measurement values ($\bar{X}$=19,23; SS= 4,45) of the Experimental Group.There is a statisticly significant difference (p= ,001; p< ,05) between pre-test illinuois agility average measurement values ($\bar{X}$=18,47; SS= 1,50) and post-test illinuois agility average measurement values ($\bar{X}$=20,48; SS= 2,27) of the Experimental Group.There is no statisticly significant difference (p= ,314; p> ,05) between pre-test vertical jump average measurement values ($\bar{X}$=36,44; SS= 8,96) and post-test vertical jump average measurement values ($\bar{X}$=35,81; SS= 6,79) of the Experimental Group. It can be seen that the practices as a experimental work didn't cause a significant change on vertical jump features of the experimental group that consists of basketball playing boys. There is a statisticly significant difference (p= ,035; p< ,05) between pre-test stabile jump average measurement values ($\bar{X}$=1,72; SS= 0,31) and post-test stabile jump average measurement values ($\bar{X}$=1,78; SS= 0,34)of the Experimental Group.There is a statisticly significant difference (p= ,015; p< ,05) between pre-test balance average measurement values ($\bar{X}$=5,33; SS= 4,28) and post-test balanceaverage measurement values ($\bar{X}$=7,06; SS= 2,34) of the Experimental Group.

DISCUSSION

As a result of studies have been carried out to observe the effect of basketball practices on 12 years old boys' agility and a series of physical and motorial features;

When we compared pre-test values between groups it's been stated that the heights and weights are equal and there is no significant difference between. Thus, Danacı (10)'s study that couldn't find a significant difference between the heights and weights of 14-16 years old adolescents who are doing and not doing sports shows pharallelism with our results. It's confirmed that the agility, vertical jump, stabile jump feature levels of the twelve years old boys who play basketball before basketball practices are better thatn the boys who didn't play. At this juncture it can be said that basketball sport improves kids' agility, vertical jump and stabile jump features. Likewise Danacı (10) has claimed that motorial features and and vertical jumps of sportsmen develops better than the non-sportsmen group. Also basketball playing boys' right flexibility, left flexibility and balance abilities before practices are weaker than non-player boys is one of the other results of this study.

When the last-test measurements of experimental and control groups are compared it's been concluded that height and weight averages are still equal and there is no change between groups. The process and practices effected the groups in the same way and groups showed no change from each other. But the significant change on heights inside each group mathces up with lots of results in litterateur (8, 27, 34, 32).

When the last-test measurements of experimental and control groups are compared it's been concluded that there is a significant change about their right flexibility, left flexibility, illinuois agility, vertical jump, stabile jump and balance measurement averages and the groups are not equal about these features.

From the all last-test results of illinuois agility, vertical jump, balance and stabile jump features it's been concluded that experimental group is better than the control group.

It's been observed that the balance ability which was better on the side of control group before practices is changed after 16 weeks on the side of experimental group who played basketball. Practices improved balance performance of the kids playing basketball.

However it's been detected that there is a change on the side of experimental group about agility and jump features before and after the practices. It's because of the practices and exercises that the basketball playing kids done in the past already improved the agility and jump abilities of players Bonetto (6), Toumi et al. (30), Kubo et al. (18), Bavlı (4); It's been detected that the plyometric exercises that basketball players regularly do positively effected their vertical jump performances. In a study Demirarar (11), indicated that the basketball practices which is combined with suspension exercises positively effected the balance and vertical jump but didn't effect agility, and this supports our work's part about jump performance and matches up with the part about agility.

It's been concluded that experimental group's last-test right flexibility and left flecibility abilities are weaker than the control group. It's observed that the right and left flexibility features that was on the side of control group on the pre-test values didn't change at the post-test. Actually it is an important necessity to start sportive activities with stretching and movement width. Because the increment in ossification rate of joints with increasing age causes negative occasions like decrease in flexibility of muscle, gut and adhesives, cell decreases, dehydration and a wane of flexibility factors. A number of study shows that the best ages of flexibility practices for people to not lose their flexibility are between 11-14 ages (22). In our study we got stretching moves done by experimental group before practices. But it seemed that the time and the type of practices couldn't change flexibility abilities on the side of experimental group.

When pre-test and post-test parameters of control group are compared it's detected that there's a significant change on height, weight, right flexibility, left flexibility and balance features. Raise in heights and weights of the kids who're in adolescence ages acknowledge normal. Couldn't find a significant result about pre-test post-tests of right flexibility, left flexibility and balance values.

Again it's detected that there's no significant change on agility, vertical jump and stabile jump features of control group and pre-test post-test parameters are

equal. This result is important in terms of showing the impotance of exercises and practices and to improve motorial features. Thus the quality of agility requires association in speed, balance, power and coordination. Fort his reason, agility is s motorial ability that can be taught and improved with regular progressive(strengthening) exercises (16, 9). These statements explains the reason of result we found in our study. Because the agility capacities of experimental group who played basketball showed improvement with practices. But its considered to be some reasons are efficent on there's no significant change about vertical jump abilities. Bavlı (4), applied plyometric exercises before practices to one of the groups who he trained and the vertical jump performance performance differentiated on the side of experimental group who did that exercises.

The basketball practices with plyometric exercises caused a significant change on basketball players's vertical jump and when two groups are compared there is a positive result on the side of experimental group (8). These results explains that standard trainings that we used in our research had no posivite effect on vertical jump performances of experimental group because of its content.

When pre-test and post-test parameters of experimental group are compared it's stated that it caused a significant change on height, right flexibility, left flexibility, agility, balance and stabile jump features. Besides, it can also be understood from the results that there is no significant change on weight averages. Başkal (3), stated that there is a statistic change on height averages between active basketball players and who stopped playing or who don't do any kind of sports. Uluçay (32), expressed that practices he made adolescence players to do increased participants' heights. And again Orhan et al.(23), confirmed that there is a significant increase on heights of group who skips rope as compaed with the group who does standard practices but there is no change on their weights. These studies sports our study.

In a different study Ateş et al.(1), confirmed the practices 16-18 years old male football players are doing caused an increase on players' body weights. Also Cicioğlu (7) detected a statisticly significant change between body weights of experimental groups sportsmen before and after practices.

A suggestive result couldn't be found from the both pre-test and post-test of experimental group about flexibility values. Yazarer et al. (33), couldn't detect a significant change on kid's flexibilities at summer school basketball practices. Orhan et al. (23), concluded that skipping rope and weighted rope practices didn't make a significant change on basketball players' flexibilites. These studies supports our research and Şen (27)'s study that detects an effect about flexibility on both experimental and control group also supports our research.

It's been concluded that our study made a statisticly difference on illinuois agility, balance and stabile jump features of experimental group. Thus, the results of the studies on this subject supports our study's results. Atılan (2), stated the impotance of practices to improve agility performances of sportsmen in a study that detecting strength exercises made by 12-14 years old basketball playing sportsmen effects the illinuois agility performances positively. With a research, Miller et al. (21) detected that 6 weeks of plyometric practices is effective on increasing the agility of sportsmen. Titiz (29), stated basketball practices have more positive effects on balance than sportsmen who don't do recovering exercises.

A significant result found when the experimental group's stabile jump pre-test and post-tests compared. Cicioğlu et al. (8), Gcmar (13), Şenel (28) and Günay et al. (14) recorded with their work on basketball players that horizontal jump values are improving. These studies shows parallelism with our study. Besides, a meaningful result couldn't be found on experimental group's vertical jump values. Atılan (2), with strenght practices made basketball players to do, couldn't find a statisticly significant change on sportsmens vertical jump. Within this context, there are study results that conflicts with our result as there are studies showing parallelism with our result. Thus, Kuter ve Öztürk (20) detected in their study that height results in a Turkey champion team with 14.5 age average as 58.73cm and 37.1cm in a team that hasn't got a rank. Kotzamanidis (19),indicated that plyometric exercises gave more positive results than physical education trainings on vertical jump features of adolescence kids in his study which compares physical education trainings with plyometric exercises on vertical jump features. While Günay et al. (14), states that plyometric trainings has a

positive effect on vertical and horizontal jump distances, Ateş et al. (1) concluded that plyometric exercises improve vertical jump feature in a research they did to detect the effects of plyometric training on 16-18 years old sportsmens strenght parameters. Yörükoğlu ve Koz (34) found that there is a significant change between basketball players' vertical jump who does trainings for five days and who does trainings for two days at summer school.

Consequently, when pre-test and post-test results of the kids in experimental group, a statisticly significant difference is found on their height, right flexibility, left flexibility, illinuois agility, balance and stabile jump values. When pre-test and post-test results of the kids in control group, a statisticly significant difference is found on their height, weight, right flexibility, left flexibility, and balance values. Besides when pre-test values of both groups are compared it's stated that there is a difference on the side of control group about right flexibility, left flexibility and balance features but there is a difference on the side of experimental group on illinuois agility, vertical jump and stabile jump. In the research when we compare the post-test measurement values between groups, it's detected that right flexibility feature changed on the side of control group while illinuois agility, vertical jump, balance and stabile jump features changed on the side of experimental group.

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The Effect of Balance Exercises on Success Level of Air Pistol Shooters*

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Abstract

The aim of this study is to research the effects of air pistol balance shootings on shooting success, which performed for 12 weeks with certain air pistol shooters.49 volunteer shooters has participated in the shootings, which composed of 25 women between 15-17 ages (n=13 experiment, n=12 control) and 24 men (n=12 experiment, n=12 control) from three shooting sports club in Ankara. While the experiment and control groups continued shooting trainings, experiment groups were practised balance exercises with bosu ball three times a week during 12 weeks following the shooting training. SPSS 23 package program was used in the analysis of the obtained data. In order to determine whether the data showed normal distribution, normality analysis was conducted and the distribution was found to be normal. The comparison of the control and experimental groups were analyzed by independent sample t test and the pre- and post-test comparisons were analyzed by paired sample t test. Pearson correlation analysis was used to determine the relationship between achievement score and static and dynamic balance. In the statistical analyzes used in the research, the significance level was accepted as 0.05 and 0.001. At the end of 12 weeks, on both women and men experiment and balance groups, significant differences were detected between dynamic balance pre-test and post-test results ($p<0.05$). As for the static balance results of both genders, only on the experiment groups considerable differences were found ($p<0.001$).As a result of the study it can be concluded that the balance exercises practiced for 12 weeks have affected the shooting performance positively by improving static and dynamic balance.

Key Words: Shooting, Balance Training, Air Pistol.

INTRODUCTION

Shooting is a static sport where the shooter's body coordination, condition and concentration are at the forefront. The main factors that influence shooter's shooting success are keeping the balance during shooting, setting the correct and proper position, controlled squeezing of the trigger and the athlete's resistance to various environmental conditions (17). In addition to the shooter's talents and skills, his cautiousness, concentration on his shot and target, his determination and motivation for shooting also affect the shooter's performance. Although shooting is a static sport, after considering such factors it can be understood that it requires self sacrifice (38). In order to display a good performance in sports, the athlete should develop his/her psychological and physiological features. Similarly, an athlete must achieve his or her own development in order to achieve superior degrees in shooting. After having a proper and fruitful preperation period, squeezing the trigger will affect positively on his/her shooting performance (10,17). This preparation period includes the training before shooting and physical and mental self-preparedness during the shooting (38).

The athlete's balance control is of great importance on his performance in static sports such as shooting and archery, as well as in dynamic sports such as football, wrestling and gymnastics. In literature, balance is defined as the ability to react

quickly and effectively against instability and external perturbations, in order to regain stability by making postural adjustments before, during and after voluntary movement (40). Balance position should also be taken and maintained in the shooting branch. Balance is of great importance in maintaining body composition for a successful shot. In shooting, body oscillation is one of the most important factors affected directly by the balance. The oscillation of the athlete's body left and right or back and forth during the shooting adversely affects the athlete's performance (37). Physiological condition of the shooter is one of the main factors that affects body oscillation and consequently his/her balance. In some studies where the correlation between balance and athlete's body weight is investigated, it was found that the body oscillation increases as the body weight increases (6,44).

This study aimed to analyze the effects of twelve weeks of balance training of air pistol shooters on their shooting success.

MATERIAL & METHOD

Research Group

The study was practiced on totally 49 volunteer athletes aged 15 to 17, of whom 25 females (n=13 experimental, n=12 control) and 24 males (n=12 experimental, n=12 control) compete in three shooting sports clubs in Ankara. Prior to the application, the participants were informed about the tests to be applied within the scope of the research and the application processes, and a consent form was obtained regardingvoluntary participation.

Measurements Applied in Research

Height and body weight measurements:

The height measurements of the subjects were made by Holtain brand stadiometer. Height measurements were taken while the body weights were balanced on both legs, the heels touched the platform perpendicular to the hip and scapula, and subjects were in upright position. Body weights (kg) were measured by Tanita brand mechanical weighing machine with 100 grams measurement precision, participants were as light clothes as possible, and Body-Mass Index (BMI) was measured by dividing body weight into square of body height (kg/m2).

Dynamic Balance:

Dynamic balance was measured by Star Balance Test. The subjects lied down the ground on which star-shaped directions (totally 8 directions) drawn, with a 45-degree angle, and their lying distance was recorded in cm. Prior to the implementation, the subjects were given 180 seconds to recognize the test and 120 seconds rest between implementations. Also 5 seconds were given between each lyings to let them stand ontheir two feet. Balance point was measured by the following formula: Balance point= distance / leg length x 100 (5,41).

Static Balance:

Static balance was measured by Flamingo Balance Test (FBT). The subjects stepped on 50 cm long, 4 cm high, and 3 cm wide wooden balancing equipment and stayed in balance. They held their foot with their same side hand, bending it from the knee, and pulling it towards the hip. Time started while the subjects were in balance with one foot, and they tried to stay in this position for 1 minute. Time was stopped when the balance was broken.Time resumed when the research group re-balanced on balancing equipment. Test was continued for 1 minute in that way. When the time was up, each attempt by the subjects to achieve balance (after each falling) was counted, and this number was recorded as the score of the subjects (26).

10m Air Pistol Shooting Test:

During the air pistol shooting competitions, the athletes are given a 15 minute official test shooting time for 10 meter shots. Duration of the competition for male athletes is 1 hour 15 minutes for 60 shots, and for women athletes 50 minutes for 40 shots. Each shot is rated as 10 points. Competitions are rated for men at 600 points and for women at 400 points. In order to determine the effect of the training program on shooter's performance, the experimental group and the control group executed 10 m air pistol shooting before the training program.

Training Protocol

While the experimental and control groups continued shooting trainings, the experimental group was subjected to balance exercises 3 days a week for 12 weeks after shooting trainings. Bosu ball was used during balance exercises.

Name of the Activity	Number of Sets	Number of Training (Weekly)	Duration of the Training			Rest
			1-4 Weeks	5-8 Weeks	9-12 Weeks	
Flamingo on Bosu	3	3	20 sec	25 sec	30 sec	Full
Squat on Bosu	3	3	20 sec	25 sec	30 sec	Full
Jump on Bosu	3	3	20 sec	25 sec	30 sec	Full
Step on Bosu	3	3	20 sec	25 sec	30 sec	Full
Jump to Bosu	3	3	20 sec	25 sec	30 sec	Full
Stork on Bosu	3	3	20 sec	25 sec	30 sec	Full
One-Leg Balance on Bosu	3	3	20 sec	25 sec	30 sec	Full
Knee-Balance on Bosu	3	3	20 sec	25 sec	30 sec	Full
180-360 Spiral on Bosu	3	3	20 sec	25 sec	30 sec	Full
Glider	3	3	20 sec	25 sec	30 sec	Full

Statistical Analysis

SPSS 23 package program was used in the analysis of the obtained data. In order to determine whether the data showed normal distribution or not, normality analysis was conducted and the distribution was found to be normal. The comparison of the control and experimental groups were analyzed by independent sample t test and the pre-test and post-test comparisons were analyzed by paired sample t test. Pearson correlation analysis was used to determine the correlation between achievement score and static and dynamic balance. Level of significance was accepted as 0.05 and 0.001 in the statistical analyzes used in the research.

RESULTS

The arithmetic mean and standard deviation values of ages, heights, body weights, BMIs, and sporting ages of the female experimental and control groups participated in the study are given in Table 1below.

Table 1. The arithmetic mean and standard deviation values of ages, heights, body weights, BMIs, and sporting ages of the female experimental and control groups

	Group	n	Arithmetic mean	Standard Deviation
Age (year)	Control	12	15.66	0.77
	Experimental	13	15.61	0.65
Height (m)	Control	12	1.57	0.05
	Experimental	13	1.60	0.04
Body Weight (kg)	Control	12	51.90	6.54
	Experimental	13	56.15	7.47
BMI (kg/m^2)	Control	12	20.93	1.65
	Experimental	13	21.71	2.59
Sporting Age (year)	Control	12	2.50	0.67
	Experimental	13	2.30	0.48

The arithmetic mean and standard deviation values of ages, heights, body weights, BMIs, and sporting ages of the male experimental and control groups participated in the study are given in Table 2 below.

Table 2. The arithmetic mean and standard deviation values of ages, heights, body weights, BMIs, and sporting ages of the male experimental and control groups

	Group	n	Arithmetic mean	Standard Deviation
Age (year)	Control	12	15.33	0.77
	Experimental	12	15.91	0.66
Height (m)	Control	12	1.66	0.08
	Experimental	12	1.74	0.06
Body Weight (kg)	Control	12	63.10	9.06
	Experimental	12	66.63	9.62
BMI (kg/m²)	Control	12	22.76	2.72
	Experimental	12	21.82	2.47
Sporting Age (year)	Control	12	2.50	0.67
	Experimental	12	2.25	0.62

Table 3. Comparison of dynamic pre-test and post-test values of the female experimental and control groups

		n	Arithmetic mean	Standard Deviation	t	p
Control	Dynamic Balance Right FootPre-Test	12	640.48	64.34	-2.549	<0.05
	Dynamic Balance Right Foot Post-Test	12	652.63	50.53		
Experimental	Dynamic Balance Right Foot Pre-Test	13	578.28	76.72	-11.847	<0.001
	Dynamic Balance Right Foot Post-Test	13	735.38	73.27		
Control	Dynamic Balance Left Foot Pre-Test	12	642.71	61.56	-2.205	>0.05
	Dynamic Balance Left Foot Post-Test	12	656.01	52.71		
Experimental	Dynamic Balance Left Foot Pre-Test	13	575.44	68.95	-9.707	<0.001
	Dynamic Balance Left Foot Post-Test	13	734.98	71.79		
Control	Dynamic Balance Pre-Test	12	641.59	61.74	-2.504	<0.05
	Dynamic Balance Post-Test	12	654.32	49.98		
Experimental	Dynamic Balance Pre-Test	13	576.86	71.65	-11.653	<0.001
	Dynamic Balance Post-Test	13	735.18	69.70		

While there was a significant difference between the dynamic balance of the right foot pre-test and post-test values in the female control group ($p<0.05$), no significant difference was found in the left foot pre-test and post-test values ($p>0.05$). A significant difference was observed between pre-test and post-test values of dynamic balance ($p<0.05$). In addition to that, there was a significant difference between the pre-test and post-test values of the dynamic balance right foot, left foot and dynamic balance of the experimental group ($p<0.001$) (Table3).

Table 4. Comparison of static balance pre-test and post-test values of the female experimental and control groups

		n	Arithmetic mean	Standard Deviation	t	P
Control	Static Balance Right Foot Pre-Test	12	6.75	2.09	0.000	>0.05
	Static Balance Right Foot Post-Test	12	6.75	1.65		
Experimental	Static Balance Right Foot Pre-Test	13	5.07	3.37	5.926	<0.001
	Static Balance Right Foot Post-Test	13	1.61	1.55		
Control	Static Balance Left Foot Pre-Test	12	7.66	2.38	2.646	<0.05
	Static Balance Left Foot Post-Test	12	6.50	1.44		
Experimental	Static Balance Left Foot Pre-Test	13	5.00	2.48	6.178	<0.001
	Static Balance Left Foot Post-Test	13	2.07	1.32		
Control	Static Balance Pre-Test	12	7.20	2.10	1.765	>0.05
	Static Balance Post-Test	12	6.62	1.36		
Experimental	Static Balance Pre-Test	13	5.03	2.86	6.575	<0.001
	Static Balance Post-Test	13	1.84	1.23		

While there was no significant difference between the static balance right foot and static balance pre-test and post-test values of the female control group ($p>0.05$), it was found that there was a difference between the static balance left foot pre-test and post-test values ($p<0.05$). In the experimental group, a significant difference was observed between pre-test and post-test values of static balance, right foot, left foot and static balance ($p<0.001$) (Table 4).

Table 5. Comparison of success point pre-test and post-test values of the female experimental and control groups

		n	Arithmetic mean	Standard Deviation	t	P
Control	Success Point Pre-Test	12	316.25	17.05	-.410	>0.05
	Success Point Post-Test	12	317.16	11.30		
Experimental	Success Point Pre-Test	13	332.61	24.76	-6.366	<0.001
	Success Point Post-Test	13	352.30	18.60		

While there was no significant difference between the pre-test and post-test scores of the female control group, there was a significant difference between the pre-test and post-test values in the experimental group ($p<0.001$) (Table 5).

Table 6. Comparison of dynamic balance pre-test and post-test values of the male experimental and control groups

		n	Arithmetic mean	Standard Deviation	t	P
Control	Dynamic Balance Right Foot Pre-Test	12	667.26	52.98	-4.713	<0.01
	Dynamic Balance Right Foot Post-Test	12	676.50	52.38		
Experimental	Dynamic Balance Right Foot Pre-Test	12	663.11	71.28	-7.966	<0.001
	Dynamic Balance Right Foot Post-Test	12	787.33	51.90		
Control	Dynamic Balance Left Foot Pre-Test	12	662.65	64.52	-4.819	<0.01
	Dynamic Balance Left Foot Post-Test	12	677.06	58.49		
Experimental	Dynamic Balance Left Foot Pre-Test	12	642.86	67.81	-8.540	<0.001
	Dynamic Balance Left Foot Post-Test	12	786.77	54.71		
Control	Dynamic Balance Pre-Test	12	664.95	54.71	-5.802	<0.001
	Dynamic Balance Post-Test	12	676.78	51.43		
Experimental	Dynamic Balance Pre-Test	12	652.98	67.27	-8.673	<0.001
	Dynamic Balance Post-Test	12	787.05	52.68		

A significant difference was found between the pre-test and post-test values of the dynamic balance of right foot, left foot and dynamic balance of both male control and experimental groups (p<0.001) (Table 6).

Table 7. Comparison of static balance pre-test and post-test values of the male experimental and control groups

		N	Arithmetic mean	Standard Deviation	t	P
Control	Static Balance Right Foot Pre-Test	12	7.75	2.37	-.959	>0.05
	Styatic Balance Right Foot Post-Test	12	8.16	2.24		
Experimental	Static Balance Right Foot Pre-Test	12	6.16	2.94	7.607	<0.001
	Styatic Balance Right Foot Post-Test	12	2.50	1.67		
Control	Static Balance Left Foot Pre-Test	12	8.58	2.93	2.702	<0.05
	Styatic Balance Left Foot Post-Test	12	7.33	2.34		
Experimental	Static Balance Left Foot Pre-Test	12	7.16	3.15	5.457	<0.001
	Styatic Balance Left Foot Post-Test	12	3.58	2.50		
Control	Static Balance Pre-Test	12	8.16	2.44	1.283	>0.05
	Styatic Balance Post-Test	12	7.75	2.13		
Experimental	Static Balance Pre-Test	12	6.66	2.87	8.006	<0.001
	Styatic Balance Post-Test	12	3.04	1.88		

While there was no significant difference between the static balance right foot and static balance pre-test and post-test values of the male control group (p>0.05), there was a significant difference between the static balance left foot values (p<0.05).In the experimental group, a significant difference was observed between the pre-test and post-test values of the right foot, left foot and static balance (p<0.001) (Table 7).

Table 8. Comparison of competition pre-test and post-test values of the male experimental and control groups

		N	Arithmetic mean	Standard Deviation	t	P
Control	Success Point Pre-Test	12	492.33	24.42	.394	>0.05
	Success PointPost-Test	12	491.75	25.48		
Experimental	Success Point Pre-Test	13	489.00	21.20	-8.338	<0.001
	Success PointPost-Test	13	525.16	14.68		

While there was no significant difference between pre-test and post-test scores of male control group (p>0.05), there was a significant difference between pre-test and post-test values in the experimental group (p<0.001) (Table 8).

Table 9. The correlation between dynamic and static balance values and success results of experimental and control group

		Dynamic Balance	Static Balance
Success Point	r	.358*	.243
	p	.012	.093

A significant correlation was found between the success points of the athletes and the dynamic balance values (p<0.05). Although there is no significant difference between static balance values and success points statistically, a very low level of correlation was observed between them (Table 9).

Table 10. The correlation between dynamic and static balance values and success results of control group

		Dynamic Balance	Static Balance
Success Point	r	.220	.239
	p	.301	.261

No significant correlation was found between the dynamic balance and static balance and success points of the athletes in the control group (Table 10).

Table 11. The correlation between dynamic and static balance values and success results of experimental group

		Dynamic Balance	Static Balance
Success Point	r	.518**	.295
	p	.008	.152

There was a significant correlation between dynamic balance and success point ($p<0.01$). Although there is no significant difference between static balance and success points statistically, a very low level of correlation was observed between them (Table 11).

DISCUSSION

This study aimed to analyze the affects of twelve weeks lasted balance trainings on the success of air pistol shooters. At the end of the research, results showed that balance exercises increased the static balance and shooting success of both female and male experimental groups. While a significant correlation had been observed between success points and dynamic balance values of the participants prior to the trainings, after the balance training, only a significant correlation was observed between success points and dynamic balance values of the experimental group.

Analysing the balance of athletes in terms of performance is very important for trainers and athletes (25). In this study, it was found that balance training increased the dynamic balance in both control and experimental groups. It is believed that, increase in dynamic balance performance of the control group was caused by routine shooting trainings. In one of the studies conducted on biathlon athletes, it was stated that dynamic balance performance did not have a significant effect on the shooting performance of biathletes (7). In addition, Çağlayan (13) reported that dynamic balance practices in young male soccer players increased the dynamic balance. Erkmen (19) stated in his study where he compared the balance performances of the athletes that, balance parameters of the athletes in different branches became different. In another research on university students who do not do physical exercise, it was found that 10 weeks of exercises with the Swiss ball, caused a significant progress in dynamic balance values (12), of which is in parallel to our study. In the researches on disabled people, it has been found that balance training affected dynamic and static balance performances positively (15,39). In a study where the effect of balance on performance of elite alpine skiers was investigated, it was found that the average race scores of the skiers in the experimental group were higher than the control group and the balance training had a positive effect on the performance (3). The dynamic balance data obtained via portable platform before and after the implemented program showed that, balance exercise performances on both balance board and the bosu ball improved similarly for both groups (14). In another study, it was found that balance training not only improve balance performance, but also affect quickness and power performance (23). In a study on soccer players, it was reported that balance training improved the technique and balance performance, when balance training combined with technique (4). In a study comparing the static and dynamic balances of athletes in different branches, it was observed that the balance performances of soccer players were higher compared to other branches (2). In a study comparing the balance performances of female soccer players and sedentaries, it was stated that there were significant differences between the groups and the clubs that gained high level of success, also had better balance level (24). In a study where the effects of different balance exercises on volleyball players' static and

dynamic balance performance were investigated, it was found that balance exercises increased lower extremity muscle stabilization and static balance exercises were more effective on balance performance compared to dynamic balance exercises (18).

It was put forward that postural balance was both directly and indirectly related to rifle stability, shooting accuracy and shooting success, and it was suggested to implement additional balance training programs to improve postural skills of shooters. Good level of postural balance has a positive effect on the performance of the shooter, as it reduces the barrel movement. It is known that balance training increased the static balance and shooting performance in both men and women (33). In our study, no correlation was found between static and dynamic balance values of both control and experimental groups before balance training, however, after the balance training, a correlation was found between success point and dynamic balance. Aalto et al. (1) found high correlation between shooters' static balance and performance levels, as a result of their researches. In a different study, it was stated that special training including balance exercises applied to gun shooters increased the static and dynamic balance, and along with the increase, positively affected total shooting scores (30). Basically, the results of these studies support our findings in this study. Similarly, Park et al. (34) reported that, balance and breathing training applied to air rifle athletes for 6 weeks increased their shooting performance. Ball et al. (8) realised during their study on elite rifle shooters that, there was a correlation between the variables the oscillation at aiming point and shooting performance. Tutkun (43) stated that the harmony between the body and target is related to balance and has an effect on the shooting success. In another study conducted on the shooters, it was detected that the shaking in the body during shooting was caused by poor balance performance and this poor balance performance occured as a result of not being able to perform a complete and accurate series of movements requiring hand-eye coordination, affected aiming negatively and reduced the shooting performance (22,31). Era et al. (16) determined that less than 10% change in postural oscillation of elite rifle shooters had a decisive role in scores. In the study conducted on national air pistol athletes, Hawkins and Sefton (27) stated that different foot width affected shooting performance, as well as postural balance and gun stability. Tang et al. (42) concluded that, the postural balance oscillations of air pistol shooters were related to their talents and elite shooters had an impact on shooting success when they achieved to control pistol-hand coordination. In another study on pistol shooting accuracy, it has been reported that, the differences between experienced shooters at different levels were not related to the purpose or cognitive component of the task, but related to postural balance (20). Similarly, a significant correlation was found between body oscillations and performances of elite male pistol and rifle shooters during a competition (32).

In a study conducted on elite level air rifle shooters to determine the most important factors identifying the shooting performance, it was indicated that postural balance had no direct effect on performance, even less than 1% of quality trigger squeezing score (29). Zemkova (45) found that despite the increase in postural oscillation along with fatigue during shooting, it did not effect the professional shooters' accurate shooting performances. In a different study, it was concluded that fluctuations in body balance oscillation during shooting had no affect on the performance of elite pistol shooters, and shooters' errors were individual and specific, and it has been reported that private analysis should be preferred when examining the performances of elite level athletes (9). In a study, the effects of different stance angles on shooting performance was investigated, and no significant differences were found (28). In other studies related to shooting, Gould et al. (21) stated that there was no correlation between cognitive anxiety and shoting success, however somatic anxiety affected shooting performance. During the shooting, it has been proved that the target can be successfully hit by reducing the distortion of the arm-elbow stabilization in the vector line from the pistol barrel to the target (36). In another study conducted on police officers, it was found that shooting success rates did not decrease during test shootings and during the shootings executed right after fatigue

exercises (11). Sade et al. (35) applied state-trait anxiety and self-control questionnaires on 55 rifle shooters and reported that athletes with low levels of anxiety had better performance.

This research has many limitations. 15-17 is the age of the study, dealing with the limited number of athletes shooting in Turkey are among branches of limitations. Another factor that might affect the outcome of this study is the movements and procedural experiences of the participants in balance exercises. In conclusion, it can be said that balance exercises increase static balance and shooting success in both female and male experimental groups.

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The Relationship Between Motor Skills and Physical Activity Levels of the Children at 8-10 Years of Age

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Abstract

The aim of this study is to determine the physical activity levels (PAL) and motor skills (MS) of children aged 8-10, and to investigate the relationship of MS and PAL with body mass index (BMI). A total of 245 (female = 126, male = 119) volunteers aged 8-10 years participated in the study. The PALs of the participants were evaluated by Physical Activity Questionnaire for Older Children (PAQ-C). Gross motor skills of the participants, which is the total value of object control (OC) and locomotor (LOCO) skills were tested by means of Test of Gross Motor Development (TGMD-2) and BMIs were determined by [weight (kg) / height (m2)] formula. Pearson Correlation Analysis was used to investigate the relationships between PAL, BMI and MS. A negative correlation was found between BMI and MS in girls. On the other hand, it was also determined that LOCO skills of boys increased as their PALs increased while girls' OC skills increased as their PALs increased ($p < 0.05$, $p < 0.01$). As a result, the fact that PAL is significantly related with LOCO skills of boys and OC skills of girls may be related to the participation of children in the types of activities required by their gender. In addition, it was observed that PAL and MS levels of children are low. Considering that motor skill plays an important role in the physical structure and psychological condition of people during their childhoods and whole lives, it can be said that developing both MS and PAL by directing children to physical activity is extremely important.

Key words: Children, motor skill, physical activity, BMI, TGMD-2

INTRODUCTION

Participating in physical activities (PA) is part of development in children. The International Classification of Function, Disability and Health for Children and Youth (ICF-CY) emphasized the importance of PA in children (34). Although PA has been common during childhood (9), there has been a trend towards a more sedentary life in recent years (1).

Although children have plenty of free time, they do not spend much of this time on PA and games that develop motor skills (21). The therapists dealing with children have reported that children spending their free time on physical activities and games are better in terms of mental and physical well-being (35). PAs help with motor development and create the basis of proper health (28). Several studies have reported that low Motor Skill (MS) and low Physical Activity Level (PAL) have a strong correlation with each other (7,33). In fact, the main reason is that children with low motor skills avoid participating in physical activities. Motor development in children who do not participate in PA is limited; besides, they have lower motor skills than their peers and thus causing physically negative conditions (2,22). The most important of these negative conditions is that low PAL and MS may cause overweight in children (23). To sum up, it is possible to state that low MS decreases the desire for participating in physical activities in children and low physical activity causes obesity.

Fransen et al. (8) reported that the children with high motor competence were more successful in physical fitness tests, and they participated in sports activities more than their peers. Stodden et al. (27) noted that there was a strong relationship between PA, MS, physical fitness and obesity. As a result of low level of MS, participation in PA decreased causing adverse health effects and weight gain as well as obesity. It is evident that there is a strong relationship between MS, PAL and BMI.

8 and 10 ages which constitute critical periods in children's development towards their adult health status. Moreover, the relation between children's ages and PAL as well as their MS after age 8 and 10 allow us to estimate the causal effect of conditions at certain ages on adult life. Therefore, the purpose of this study was to investigate the relationship between MS, PAL and BMI among children aged 8-10 years and determine the MS and PAL levels of the study subjects.

MATERIAL AND METHOD

There are various reasons why the subjects were chosen at certain ages. The most general related concerns were the identification of critical age in human development. Since negative conditions at a certain age before reaching adulthood have particularly severe long-run effects on health, the quality of life is reduced for those who are affected. Considering the long-run effects of conditions during childhood on health in adulthood, this may be smaller than the instantaneous effects of current conditions, but the former exert their influence over a longer time span. Moreover, the presence of a time interval between childhood and the manifestation of the effect implies that there is a scope for identification of the individuals at risk. The randomly chosen subjects were those who studied at different schools at Nigde province in Turkey. The most important reason to determine the criteria of choosing subjects was that they were all healthy individuals.

Therefore, 126 female and 119 male voluntary children aged 8-10 years participated in the study. The children who participated in the study were informed and necessary permissions were obtained from their families. Physical Activity Questionnaire (PAQ-C) was used to determine the physical activity levels of the children who participated in the study and each child was asked to complete Test of Gross Motor Development (TGMD-2) was performed in order to determine the motor skills of the subjects. The test was described and illustrated once, but no correction was made during the test.

Physical Activity Questionnaire for Older Children

Physical Activity Questionnaire for Older Children (PAQ-C) was developed by Crocker et al. (5), and adapted into Turkish by Sert and Temel (24) who conducted validity and reliability studies PAQ-C for children aged 8-14 years. PAQ-C is a measure that assesses the activities performed during a 7-day period, and could be filled in by the individuals. It evaluates general PALs of children up to 8-14 years of age. The PAQ-C scale for reminiscent of activities in the last 7 days is applicable in the classroom environment and provides insight into participants' general physical activity habits. PAL consists of nine questions and each question is evaluated between the score of 1 and 5 and in determining the total score, final score is divided by 9. In PAQ-C scale, 5 indicates the highest 1 indicates the lowest score. In calculating the physical activity scores of the participants in the study, the average of all scores related to the questions is taken into consideration. They are classified as inactive, moderately active according to the reference values obtained from PAQ-C scores of the children who participate in the study.

TGMD-2 (Test of Gross Motor Development)

The Test of Gross Motor Development Second Edition (TGMD-2) (30) was performed to assess fundamental motor skills. The TGMD-2 is considered as a criterion and norm-referenced standardized test that quantitatively assesses the fundamental motor skills of children between the ages of 3 and 10. The test consists of 12 items and they were grouped into two sub-scales; LOCO and OC. The loco-motor subscale focuses on six LOCO skills (running, leaping, horizontal jumping, sliding, galloping and hopping). On the other hand, OC focuses on throwing, kicking, catching, striking, dribbling, and rolling make-up. Each skill is evaluated using 3 to 5 performance criteria. For example, one performance criterion for running was the 'arms move in opposition to the legs with the elbows bent.' If participants demonstrate this behavior, they take the score called '1'; if they do not demonstrate the behavior, they take the score called '0'. The raw scores from the two TGMD-2 subscales (LOCO and OC) range from the scores between 0 and 48. The two sub-scale scores are combined and yield the TGMD-2 total score that ranges from the lowest 0 to the highest 96. A higher raw score and total score represent higher MS competence, while lower raw scores and total score indicate the absence of critical elements (i.e. lower motor skill competence). The LOCO and OC skill raw scores were used for the analyses instead of the standard scores for the following reasons.

The total scores of LOCO and OC skills constitute Gross Motor Skills score, which was

transformed into total GMS after converting LOCO skill total score and OC skill total score into standard scores. Total GMS score was calculated in this way. The GMS score was classified in 6 levels as very poor, poor, below average, average, superior, and very superior (30).

Table 1. Classification of motor coordination levels according to motor scores of TGMD-2

Descriptive Rating	Gross Motor Skills Standard Score
Very Poor	<70
Poor	70-79
Below Average	80-89
Average	90-110
Above Average	111-120
Superior	121-130
Very Superior	>130

Statistical Analysis

Statistical analysis was conducted through Statistical Package for Social Sciences (SPSS 24.0), which is statistical package software programme developed by IBM Company in Armonk, New York, the USA. In order to determine demographical information and physical properties and TGMD-2 sub-score test scores, the descriptive analysis was conducted. The relationship between PAL BMI and TGMD-2 sub-dimensions in terms of the children was determined through Pearson correlation analysis. Percentage frequency analysis was performed for the categorical data. In the current study, the level of significance was determined as $p<0.05$, $p<0.01$.

FINDINGS

Table 2. Demographical features of the children according to age and gender

	Male			Female			Total		
	8 Years Old (n=35)	9 Years Old (n=46)	10 Years Old (n=38)	8 Years Old (n=42)	9 Years Old (n=46)	10 Years Old (n=38)	8 Years Old (n=77)	9 Years Old (n=92)	10 Years Old (n=76)
Weight (kg)	32,37 ±6,53	36,72 ±6,62	37,87 ±7,36	28,86 ±5,07	33,78 ±4,80	36,03 ±6,97	30,45 ±6,00	35,25 ±5,93	36,95 ±7,18
Height (cm)	133,63 ±8,48	139,50 ±8,43	143,84 ±10,06	131,12 ±6,39	139,54 ±7,28	144,74 ±9,11	132,26 ±7,46	139,52 ±7,83	144,29 ±9,54
B MI (kg/m²)	18,03 ±2,61	18,92 ±3,43	18,33 ±3,08	16,81 ±2,71	17,33 ±1,98	17,21 ±3,20	17,36 ±2,71	18,13 ±2,90	17,77 ±3,17

Table 3. MS and PAL of children according to age and gender

	Male			Female			Total		
	8 Years Old (n=35)	9 Years Old (n=46)	10 Years Old (n=38)	8 Years Old (n=42)	9 Years Old (n=46)	10 Years Old (n=38)	8 Years Old (n=77)	9 Years Old (n=92)	10 Years Old (n=76)
LOCO	31,54 ±7,48	33,20 ±6,34	34,76 ±6,95	34,38 ±5,85	31,59 ±5,23	35,42 ±5,33	33,09 ±6,74	32,39 ±5,83	35,09 ±6,16
OC	30,74 ±5,63	32,87 ±6,20	34,37 ±4,91	29,79 ±6,95	31,67 ±5,68	33,21 ±4,89	30,22 ±6,36	32,27 ±5,94	33,79 ±4,90
GMS	67,69 ±10,62	67,07 ±12,95	70,39 ±10,65	70,00 ±9,76	63,54 ±9,44	69,45 ±10,60	68,95 ±10,15	65,30 ±11,41	69,92 ±10,56
PAL	2,94 ±0,61	3,05 ±0,81	3,24 ±0,80	3,15 ±0,76	2,88 ±0,98	3,20 ±0,83	3,05 ±0,69	2,96 ±0,89	3,21 ±0,81

Table 4. The classification of GMS scores through percentage

	N			Percentile		
Levels	**Female**	**Male**	**Total**	**Female (%)**	**Male (%)**	**Total (%)**
Very poor	72	62	134	57,1%	52,1%	54,7%
Poor	39	38	77	31,0%	31,9%	31,4%
Below average	14	13	27	11,1%	10,9%	11,0%
Average	1	6	7	,8%	5,0%	2,9%
Above average	0	0	0	0,0%	0,0%	0,0%
Superior	0	0	0	0,0%	0,0%	0,0%
Very Superior	0	0	0	0,0%	0,0%	0,0%

When the table 4 is examined, the poor and very poor categories of both male and female are found to be at the highest level as percentage. Besides, there are no male and female subjects in the categories as superior demonstrating the highest level and above and average and very superior demonstrating the intermediate level.

Table 5. The relationship between MS, PAL and BMI of children

		Female			
		LOCO	**OC**	**GMS**	**PAL**
PAL	r	,105	,210*	,212*	
	p	,244	,018	,017	
	n	126	126	126	
BMI (kg/m²)	r	-,240**	-,141	-,218*	,023
	p	,007	,114	,014	,800
	n	126	126	126	126
		Male			
PAL	r	,260**	,161	,242**	
	p	,004	,081	,008	
	n	119	119	119	
BMI (kg/m²)	r	-,154	,042	-,100	-,116
	p	,095	,653	,278	,211
	n	119	119	119	119

* p<0.05 **p<0.01

According to Table 5, while a positive relation is detected between PAL and OC - GMS (p<0,05) of female subjects participating in the study, there is a negative relation between BMI and LOCO skill (p<0,01) and GMS (p<0,05). There is a positive relations between PAL and LOCO skill and GMS (p<0,01) of male subjects.

DISCUSSION

In today's world, the scarcity of playgrounds (3), and the improvements in technological devices (29) have caused children to adopt a more sedentary life style. Williams et al. (33) reveal that today children spend daily 600 kcal less energy average than their peers did 50 years ago. Thus, low PA restrics the development of motor skills in children. Ružbarská (23); Chovanová (4); and Stodde et al, (26) reported a positive relationship between PA and MS. The children with serious MS problems and low MS level did not participate in physical activities, and thus limiting their motor developments (2,22,27).

It was noticed that the male and female subjects who participated in the study had "low" and "medium" physical activity levels, and it was determined that MS levels were in "very poor" and "poor" categories. In a study conducted through TGMD-2, which was used in the current study, it was determined that 10% of the American children were in "poor" and "very poor" categories in terms of their MS, and "below average" and "average" categories had the highest percentage (13). In another study, Mukherjee et al. (16) the motor development of children at 6-9 ages was analyzed with TGMD-2 test, and it was concluded that motor skill levels of the children were at "average" and "below average" level. In their study conducted with 2740 children at 6-12 ages in western part of Belgium (32) the motor skills of the children was conducted with KTK test, and compared the KTK scores of the children with the KTK scores of German children in 1974 (12). Vandorpe et al. (32) reported that KTK motor skill scores of children decreased when compared with those living in Germany 35 years ago. It was specified that MS and PA values in aforementioned studies were also low, which paralled with the results is obtained in the current study.

In fact, low MS and PA level of children has been one of the most fundamental problems in today's world. Although there are several factors influencing motor skills, PA is remarkably important to increase MS. Previous studies revealed that children needed comfortable areas to play games including physical activities (6). However, urbanization and unplanned settlement due to modernity level of the societies and the increase in industrialization have remarkably decreased children's playgrounds (3). Furthermore, the reasons such as playing with computer games through tablets and mobile phones and the increase in the amount of time they spend on watching television have increased sedentary activities and decreased sportive activities (14,19,20,29). As already mentioned above, there are various factors leading children to sedentary life styles, which causes a significant decrease in PA and MS levels of the children.

During the developmental period, there is a weak relationship between physical development and motor competence. However, it has still been under debate whether gender differences have an important effect on MS. In terms of motor performances, gender differences have been investigated depending upon four different factors such as body size, anatomic structure, physiological functions and social and cultural differences.

The most important property specifying the gender difference in motor performance is social and cultural differences. As of their birth, depending on their gender, children are supposed to do whatever they are expected, which causes social pressure on them. During their childhood, female and male children are considered to be stereotype, and this has also been maintained by their teachers in their subsequent schooling period (15). Such factors have an effect on MS development and types

of activities in which children participate. In previous studies, OC skills of female children such as throwing, catching and dribbling were mentioned to be higher than the male children (11,17,25,31), which is considered to stem from two reasons. First, the situations and games children participate in due to the conditions of cultural structure of their society, and the other is their participation in physical activities. Female children need more social and family support than male children in terms of the participation in physical activities (10).

It was noticed that there was a positive significant relationship between PA levels and OC skills of the female subjects who participated in the current study. Since female children participate in the activities which develop their OC skills more instead of such activities as jumping, jumping and running that develop LOCO skills, which is considered to develop OC skills more. In the current study, it was determined that there was a positive significant relationship between PA level and LOCO skills of male children. Adequate level of strength is required to keep the body off the ground in LOCO skills such as jumping and hopping. For that reason, lower extremity muscle strength has a significant effect on LOCO skills (17,18). It has been considered that male children's preference for such sports as soccer and basketball. In such games, activities include catching, jumping and hopping, which allows children's LOCO skills to develop. Moreover, in the current study, since there was a significant relationship between GMS and PA level in both male and female children, the researchers considered that female children were more dominant in OC skills, whereas male children were more dominant in LOCO skills.

In the current study, it was found that there were two important results. The first one was gender differences, which cause the different kinds of development of motor skills in children. This was coherent with the relationship between OC skills and PA levels of female children and LOCO skills and PA levels of the male children. The second result was the negative effect of the decrease in PA level on motor skills. Considering that motor skill was a significant factor at any period of life as of childhood, it was possible to mention that motor skills should be improved through directing the children towards physical activities. Furthermore, it can be considered that the factors such as spending more time with technological devices, the increase in the number of course hours children are involved in and fewer playgrounds are significant for the decrease in the development of motor skills.

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Individual Innovativeness Levels of University Student

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Abstract

Aim:This study prepared for analyzing the individual innovatiandness leandls of the students who participate in interuniandrsity Badminton competition.

Research sample consists total of 469 students who participate ininteruniandrsity Badminton competition in 2018. Innovatiandness scale, which was deandlopped by Hurt et al (1), and made adaptation in Turkish by Kilicer and Odabasi, used for determining individual innovatiandness leandls of the students (2).

Material and Methods:The datas obtained in this study statistically analysed by using SPSS 22.0 package software.in data evaluation; frequency, percentage, aandrage, standard deviation used as statistical method, student t-test used for two independent groups, ANOVA and Tukey multiple comparison tests used for comparing more than two independent groups.

Results:As a result of the study, it is concluded that uniandrsity students are mostly high leandl of innovatiandness; there is a significant difference between their gender and department and also between sub-dimensions of innovatiandness which are; opinion leader&openness to experience; there is a significant difference between age and total point of innovatiandness and all its sub-dimensions. Uniandrsity students who plays Badminton, take place respectiandly in categories of İnitiator, İnterrogator, Sceptical and Traditionalist.

Key words: Innovation, Individual innovatiandness, Sport, Uniandrsity

INTRODUCTION

Innovativeness is derived from the Latin "innovatus", which, when considering its lexical meaning, is defined as the use of new methods in social, cultural and official environments (3). Innovativeness is the accommodating of an individual or a group to new ideas before other members of the system in which they live (4), it is being an innovator (5). Innovativeness can be defined by one or all of these verbs: producing new ways to do something, testing a produced way and using it in economical and social activities related to humans and adopting it (6). It is also the reactions given to innovations (7).

Innovativeness is the producing or developing of ideas, periods, products and services which are perceived as new by the relevant person or department (8). Innovativeness is a skill and is the ability to think critically and creatively, to problem solve and to look at things from a broad perspective (9,10). It can be defined as keeping people in step with changes and developments, and as the behavior modification process of individuals (11). The concept of inventiveness is sometimes a thing, idea or implementation in itself, but sometimes it is part of an innovation, and refers to the cognitive and behavioral reactions of the adopter (7). As well as being new, it also works over the existing one (12).

Innovativeness is occupied with innovation (1) and is a tendency to support new products, services and new ideas which are concluded by a technological process, experience or creative process (13). Innovativeness is defined as new ways to find success, new organizational structures which can dominate social change and find new solutions to traditional problems, lifestyles and the rules organizing life (14).

Individual innovativeness is the willingness of individuals to adopt new things, use them and benefit from them. It is the individual being disposed to innovation, adopting it, having a positive attitude to innovation, and using and benefiting from it (2). It is finding solutions to improving standards of living by establishing a connection between new ideas and uncovered needs (15).

Innovativeness is the accommodating of an individual to innovation before the other members of the system in which they live. It is the differentiation of the level at which every individual in society adopts developing technology (4).

Individual innovativeness concerns the individual's willingness to innovate and create difference by reacting positively to innovations as a behavior, while corporate innovativeness relates to creating value by using new products, services, methods and processes before ones rivals. Individual innovativeness is the level at which an individual embraces innovation (16).

Consequently; Creating innovations in order to keep pace with the ever-changing social and economic conditions has become a necessitate both an individual and social level. It is necessary to make essential improvements according to the changing times, science and technology, create solutions, modify ones vision and mission and find new ways of doing things.

Simply having a common vision or management philosophy and an outlook on the topic is undoubtedly insufficient for performing innovation management. Especially where educational innovation is concerned, making sure all educational institutions' visions, missions and individuals are open to innovation is the first necessary step.

MATERIALS AND METHODS

The research model, population, data collecting tools, and statistical methods used in the analyzing of data will be discussed in this chapter.

Research Model

The scanning method was used for determining the individual innovativeness levels of university students who play badminton and the category in which they belong. The scanning method attempts to determine the environment, properties and relation between the incidents rather than the reasons for the incidents (17).

Population and Sample

The population consists of university students who participated in an interuniversity badminton competition across Turkey in the 2017-2018 academic year. The number of students included in the research is shown in Table 1. The random sampling method was used when choosing samples. Every person in the population had a fair chance of being selected in the random sampling method. 469 students were included in the sample through the random sampling method.

Table 1: Personal characteristics of the research group

Variable	Groups	N	Percentage(%)
	Female	241	51.4
Gender	Male	228	48.6
	Age 17-19	157	33.5
Age	Age 20-22	224	47.8
	Age 23 and over	88	18.8
Department	Physical Education and Sports	399	85.1
	Other departments	70	14.9

n=469

The distribution of the given answers regarding personal characteristics in the research group are seen in Table 1. Accordingly; 51.4%(241 people) of the participants were female, 48.6% (228) of the participants were male, 47.8% (224 people)of the participants were in the 20-22 age range and most of the participants (85.1%, 399 people) studied Physical Education and Sports.

Preparation of Data Collection Tool

The Individual Innovativeness Scale whose original source language is English, which was improved by Hurt et al. (1), and adapted into Turkish by Kılıçer and Odabaşı (2),was used to determine the individual innovativeness levels of the university students playing badminton and the category in which these students belonged. Validity and reliability studies made by Kılıcer and Odabası were used.

The scale consists of 20 expressions which represent five different individual's characteristics in the innovation category indicated by Rogers . The items on the scale were analyzed using a five-point Liker scale.

The innovativeness scale consists of a total of 4 sub-dimensions; resistance to change (4,6,7,10,13,15,17,20), opinion leadership

(1,8,9,11,12), openness to experience (2,3,5,14,18), and risk taking (16,19). The scale consists of 12 positive items (1,2,3,5,8,9,11,12,14,16,18,19) and 8negativeitems (4,6,7,10,13,15,17,20).

The data was statistically analyzed by the SPSS 22.0 program. KMO analysis was carried outto test the sample size in the study. Accordingly, it is seen that the KMO (Kaiser-Meyer-Olkin) test is higher than 0.60 (0.847) and the Barlett test is significant ($p<0.001$). Thus, it is seen that the sample is sufficient and its existence is determinable. The reliability co-efficient of the innovativeness scale were examined and a Cronbach Alpha value of 0.70 was obtained.

Analysis of Data

SPSS for Windows 22 package program was used for the quantitative analysis of the study. The items of the Individual Innovativeness Scale were prepared using the five-point Likert scale. The Cronbach Alpha internal consistency co-efficient, which was calculated for testing the reliability of the scale, was found to be 0.70.

The scale was analyzed on the basis of items that would find a solution to the first problem of the study. Afterwards it was attempted to determine the students' individual innovativeness dimensions using the average points given to the scale by the participants. While calculating innovativeness points, positive items' points (1, 2, 3, 5, 8, 9, 11, 12, 14, 16, 18 and 19) were added at first and negative items' points (4, 6, 7, 10, 13, 15, 17 and 20) were added in the second step. The 42+ total points of positive items-total points of negative items formula was used in calculating individual innovativeness points. Teachers were categorized according to the total obtained points; if they got over 80 points, they were classified as innovators, if they got between 69-80 points, they were classified as Early adopters, if they got between 57-68 points, they were classified as Early majority, if they got between 46-56 points, they were classified as late majority, and if they got under 46 points, they were classified as laggards (1).The individual innovativeness levels of the participants were calculated and their innovativeness categories determined according to the score interval in the scale. Besides this, it is also possible to categorize participants according to scale points. Participants who got 68 points and overage high level innovators, while participants who got 64 points and less are low level innovators (2).

The data obtained in this study was statistically analyzed using SPSS 16.0 package software. The Kolmogorov Smirnov Test was used in testing the conformance of the continuous variable with normal distribution in data analyzing. The Student T-Test was used for two independent groups having variables with normal distribution, the ANOVA and Tukey Multiple Comparison Tests were used for comparing more than two independent groups having variables with normal distribution and frequency, percentage and average values given as informative statistics. The significance level was considered as $p<0.05$ in the statistical analysis.

FINDINGS

Table 2. Descriptive Statistics Values Regarding Innovativeness Levels

Innovativeness Level		$\overline{X}$	Frequency (f)	**Percentage (%)**
High Innovativeness	Level	68<	229	48.8
Medium Innovativeness	Level	68-64	29	6.2
Low Innovativeness	Level	64>	211	45.0
Total			469	100
		64.43		

When examining the innovativeness points in Table 2, it can be seen that 48.8% of the students are high level innovators, 6.2% are medium level innovators, and 45% are low level innovators. When considered generally, the innovativeness average points ($\overline{X}$ =64.43) of the students is between 68-64,which is classified as medium level innovator. It is seen that most of the students are high level innovators (48.8%).

Table 3. Comparison of Individual Innovativeness Scale Points According to Gender

		n	$\overline{X}$	*SS*	*sd*	*t*	*p*
Resistance to Change	Female	241	20.55	7.14	467	4.58	**0.00***
	Male	228	23.58	7.14			
Opinion Leadership	Female	241	18.95	2.74	467	0.48	0.62
	Male	228	18.82	3.22			
Openness to Experience	Female	241	20.18	2.34	467	4.12	**0.00***
	Male	228	19.18	2.90			
Risk Taking	Female	241	5.75	2.03	467	1.30	0.19
	Male	228	6.00	2.10			
Total Innovativeness Points	Female	241	65.44	8.60	467	2.44	0.15
	Male	228	67.58	10.30			

When we examine the total average points of the participants according to gender in Table 3, the average points for males was $\overline{X}$ =67.58, while the average points for females was $\overline{X}$ =65.44. There is no statistically significant difference between the total points of the students according to gender variable (t=2.44 p>0.05).Considering the sub-dimensions; there is a significant difference between Resistance to Change (t=4.58 p<0.05) and Openness to Experience (t=4.12 p<0.05), while there is no significant difference between gender and other sub-dimensions. Opinion Leadership points are t=0.48 p>0.05and Risk Taking points are t=1.38 p>0.05.

There is a significant difference between the gender of the students and the innovativeness sub-dimensions of Resistance to Change and Openness to Experience, while there is no significant difference between gender and the other sub-dimensions of Total Points, Opinion Leadership and Risk Taking. According to these results, males resist innovativeness more than females and they are less open to experience.

Table 4. Comparison of Individual Innovativeness Scale Points According to Departments

		n	$\overline{X}$	*SS*	*sd*	*t*	*p*
Resistance to Change	Physical Education and Sports	399	21.66	7.17	.359	.259	**0.00***
	Other departments	70	24.10	7.68			
Opinion Leadership	Physical Education and Sports	399	18.96	2.74	.150	1.35	0.62
	Other departments	70	18.44	3.00			
Openness to Experience	Physical Education and Sports	399	19.72	2.84	.134	.430	**0.00***
	Other departments	70	19.57	2.90			
Risk Taking	Physical Education and Sports	399	5.75	2.03	.101	3.02	0.19
	Other departments	70	6.55	2.17			
Total Innovativeness Points	Physical Education and Sports	399	66.10	9.50	475	2.08	5.91
	Other departments	70	68.67	9.38			

When we look at Table 4 according to department variables, it is seen that the average total points of the students is $\overline{X}$ =66.10 for those who study in the Department of Physical Education and Sports, while the other departments' average points was $\overline{X}$ =68.67. There is no statistically significant difference between the total points obtained from the scale according to department variable (t=2.08, p>0.05). Considering sub-dimensions, there is a significant difference between the department of the students and Resistance to Change (t=.259, p<0.05) and Openness to Experience(t=.430, p<0.05), while there is no significant difference between other sub-dimensions. Opinion Leadership points is t=1.35,p>0.05 and Risk Taking points is t=3.02, p>0.05.

There is a significant difference between the department of the students and the innovativeness sub-dimensions of Resistance to Change and Openness to Experience, while there is no significant difference between the department and other sub-dimensions of Total Points, Opinion Leadership and Risk Taking. According to these results students who study in the Department of Physical Education and Sports resist innovativeness more than students from the other departments and they are less open to experience.

Table 5. Comparison of Individual Innovativeness Scale According to Age

	Age	N	Average	S.s.	f	p	Significant Difference
Resistanc	(a) Age 17-19	157	20.14	6.24			
to Change	(b) Age 20-22	224	22.91	7.29	7.34	**0.00***	**a-b, a-c**
	(c) Age 23 and over	88	23.14	8.38			
Opinion	(a) Age 17-19	157	19.39	2.34			
Leadership	(b) Age 20-22	224	18.31	3.06	8.12	**0.00***	**b-a, b-c**
	(c) Age 23 and over	88	19.44	3.51			
Openness to	(a) Age 17-19	157	20.12	1.99			
Experience	(b) Age 20-22	224	19.39	2.70	3.51	**0.03***	**a-b**
	(c) Age 23 and over	88	19.71	3.47			
Risk	(a) Age 17-19	157	5.15	1.82			
Taking	(b) Age 20-22	224	6.34	1.97	16.41	**0.00***	**a-b, a-c**
	(c) Age 23 and over	88	5.94	2.36			
Total	(a) Age 17-19	157	66.53	8.02			
Innovative	(b) Age 20-22	224	63.14	8.91	4.27	**0.01***	**a-c**
Ess Point	(c) Age 23 and over	88	63.95	8.70			

Participants aged between 17-19 resist innovation significantly less than the other participants whose age range is between 20-22 and 23 and over in the sub-dimension of Resistance to Change.

Participants aged between 20-22 exhibit less opinion leadership behavior than the other participants whose age range is between 17-19 and 23 and over in the sub-dimension of Opinion Leadership.

Participants aged between17-19 are significantly more open to experience than the other participants aged 20-22 in the sub-dimension of Openness to Experience.

Participants aged between 20-22 exhibit more risk taking behaviors than the other participants whose age range is between 17-19 and 23 and over in the sub-dimension of Risk Taking.

Participants aged between 17-19 exhibit more innovativeness behavior than the other participants whose age range is between 23 and over according to total innovativeness points.

Table 6. Distribution of Innovativeness Categories

Categories of Innovativeness	Frequency	Percentage%
Innovators	-	-
Early adopters	229	48.8
Early majority	122	26
Late majority	107	22.8
Laggards	11	2.3
Total	469	100

When examining Table 6, it is seen that most of the participants are within the category of Leaders (f=229, 48.8%), and after that they are classified in order of frequency as Early majority (f=122, 26%), Late majority(f=107, 28.8%), and Laggards(f=11, 2.3%). It is seen that none of the students were categorized as innovators.

DISCUSSION AND CONCLUSION

When examining the innovativeness points of the students, it can be seen that 48.8% of the students are high level innovators, 6.2% are medium level innovators, and 45% are low level innovators. It is seen that most of the students are high level innovators (48.8%).

Other studies have proven to have similar results, such as Kılıcer (1), who determined the average individual innovativeness points of a Physical Education and Sports Department's prospective teachers as being at 67.54 (high level innovators), Yılmaz Oztürk , who determined primary school teachers as being 43.3% high level of innovators in his study which examines individual innovativeness levels of the primary school teachers and influencing factors (17), Kosterelioglu and Demir, who determined the average individual innovativeness points of teachers as being 74.62 (18), Ozgur, who determined the average individual innovativeness points of prospective teachers as being at 67.04 (19), and Van Braak, who determined in his study that teachers who use computers in education havea higher innovativeness levels than those who do not (20).

Studies whose results differ from those of this study include Kılıc H. (2015),who determined10.3% of subject teachers to be high level innovators, 20.3% to be medium level innovators, and 69.3% to below level innovators, and Yılmaz, who determined in his study that more than half of preschool teachers are low level innovators (21).

The total average points for males was $\overline{X}$ =67.58, while the average points for females was $\overline{X}$ =65.44. There is no statistically significant difference between the total points of the students according to gender variable (t=2.44 p>0.05). Considering the sub-dimensions; there is a significant difference between Resistance to Change (male $\overline{X}$ =23.58, female $\overline{X}$ =20.55)and Openness to Experience (male $\overline{X}$ =19.18, female $\overline{X}$ =20.18). When considering other studies, there is a significant difference in the sub-dimensions of Resistance to Change and Openness to Experience, while there is no significant difference in Total Points and other sub-dimensions.

Studies having similar results to this study are Cuhadar et al., who determined that there is no significant difference between the individual innovativeness characteristics of prospective teachers and gender (22) and Yılmaz Oztürk, who indicated that the total average points for males is $\overline{X}$ =66.97, while women's average points are $\overline{X}$ =66.71 according to gender variable (17). There is no statistically significant difference between the points of teachers according to gender variable. Kılıcer indicated that the innovativeness points of prospective female teachers is ($\overline{X}$ =67.53), while the innovativeness points of prospective male teachers is ($\overline{X}$ =67.55) (2). proved that there is no statistically significant difference between the points of preschool teachers and preschool prospective teachers according to gender variable. In his study, Innovation Diffusion. Rogers concluded that there is no significant difference between innovativeness and gender variable (4).

Rogers and Wallace concluded that there is no significant difference between innovativeness and gender variable in their study "Teacher's Technology Integration in Education: Preparation Concern and Innovativeness". In a comparison of the innovativeness perception of individuals who are studying at different departments (23), Kert and Tekdal deduced that the individual innovativeness levels of teachers are similar for both genders (24). Cuhadar, Bulbul and Ilgaz (22).

deduced the same result in their study, Examining the Relation between Individual Innovativeness Characteristics of Prospective Teachers and their Techno Pedagogic Education Competence.

Studies with different results to this study include Demirsoy, who researched adaptation towards internet banking and concluded that gender is an important factor for early adaptation and late adaptation and also that men adapt earlier compared to women (25), Shim and Kotsiopulos, who researched textile retailers in terms of technological innovativeness within the scope of spreading innovations and concluded that gender is an important factor in terms of innovativeness categories and adaptation towards technological innovations (26), and Ozbek, who researched the effect of gender variable on the chronologic pedagogic field information competence of teachers'

innovation levels and concluded that it has a significant effect and that the competence of male teachers is higher than the competence of female teachers (27). As a result of the study conducted by Jang and Tsai regarding whiteboard usage of Taiwanese primary math and science teachers, it was concluded that the competence of male teachers is higher than the competence of female teachers (28). As a result of the study conducted by Jordan regarding the competence of Australian teachers in computer-assisted learning, it was determined that the competence of male teachers is higher than the competence of female teachers (29).

According to the innovativeness variable, the average total points of the students who study in the Department of Physical Education and Sports is $\overline{X}$ =66.10,while the other departments' average points is $\overline{X}$ =68.67.There is a statistically significant difference between total points obtained from the scale according to department variable.

Considering sub-dimensions, there is a significant difference between Resistance to Change and Openness to Experience, while there is no significant difference between Innovativeness Total Points and other sub-dimensions.

Studies having similar results to this study include Yalcın and Yanpar, who determined that there is no significant difference in their study, Innovativeness Levels of Primary Prospective Teachers (30), and Yılmaz, Sogukcesme, Ayhan, Tuncay, Sancar and Deniz, who determined that there is no significant difference in their study "Analysis of Occupational Tendencies among Primary Prospective Teachers in term of Various Variables" (31). Studies having different results to this study include Bitkin's "The Relation between Individual Innovativeness Levels of Prospective Teachers (32) and Knowledge Acquisiton Ability", in which it was determined that the individual innovativeness levels of the students studying classroom teaching is higher than the students studying other subjects. It was concluded that there is a significant difference between the age of the students participating in the study and their total innovativeness points and between other sub-dimensions.

Studies with similar results to this study include Yılmaz Ozturk , who determined that there is a significant difference between the Resistance to Change points of primary school teachers and their educational background (17). Studies with different results to this study include, who determined that there is no statistically significant difference between the total points of preschool teachers and prospective preschool teachers obtained from the scale according to age variable. It is seen that most of the participants are within the category of Early adopters and are then Early majority, late majority and laggards, in order of frequency. It was determined that none of the students were classified in the innovators category.

Studies with different results from this study include Gunes (2010), who determined that participants' adaptation towards innovation was distributed as 21% leaders, 16.6% early adopters, 32.9% early majority, and 24.4%late majority (33). As a result of the study conducted by Sahin and Thompson on instructors regarding the distribution of instructors according to innovativeness categories, it was concluded that they mostly fall into the category of Early majority (34). According to a study conducted by Ozbek , most teachers think of themselves in terms of individual innovativeness as being in the group of Early majority (39.7%) and leaders (37.3%), while the remaining teachers think of themselves as being innovators (11.6%) and late majority (11.4%), demonstrating an equal distribution (27).

CONCLUSION

Technology is developing rapidly in today's living conditions and people integrate these technological innovations according to their personal characteristics. Some individuals welcome these innovations with great eagerness and comply with them, while others resist change. This situation results from people having different points of views and it has caused the term "individual innovativeness" to be coined.416 university students who played badminton in 2015 in Turkey participated in this study, which researched the individual innovativeness levels of students. It was seen that students who play badminton like to experience new ideas, search for different ways to do something, develop new methods while solving a problem, are not sceptical to new inventions, try to be creative in their thoughts and behaviors, have creative personalities, like to take responsibility

related to leadership, are open to new ideas and are not sceptical to new ideas.

SUGGESTIONS

It is seen that university students are open to innovation and exhibit positive behaviors towards innovation. Universities are the places where science is produced and developed, so giving students a chance to improve their innovativeness will contribute to the success of the country, of society, and of the individuals themselves.

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