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Movement Training Course View Scale Validity And Reliability of Study

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Abstract

Movement education is important for the development of children, so it should be ensured that children gain multiple experiences with movement education curriculum prepared by experts suitable for children's developmental periods. This should only be provided by experts who have taken or have taken the movement education course at universities' faculties of sports sciences or physical education and sports colleges. The aim of this research is to develop a valid and reliable scale in order to determine the attitudes of the students who take the movement education course towards the movement education course. The study group of this research consisted of 300 students, 178 of whom were enrolled in physical education and sports teaching and 122 of them were enrolled in the department of coaching education and took the movement training course, studying at the faculties of sports sciences and sports sciences schools of various universities in the spring semester of the 2021-2022 academic year. forms. 103 of the students are female and 197 are male. Cronbach Alpha coefficient was calculated to determine the reliability of the scale. As a result of expert opinion and exploratory factor analysis, a five-point Likert-type scale consisting of 26 items was obtained. The scale consists of three dimensions. In order to determine the internal consistency of the scale, the item-total correlation was calculated and it was seen that the correlation values of all items were high. The Cronbach Alpha reliability coefficient, which was calculated to determine the reliability of the scale, was calculated as .962. When the findings related to the validity and reliability studies of the scale are examined, it can be said that the scale is a valid and reliable measurement tool that can measure the attitudes of the students towards the movement education lesson.

Keywords: Movement training, Movement, University students

INTRODUCTION

Movement, which is among the basic needs of human beings, is one of the most effective methods that contribute to the protection and maintenance of people's mental, physical and social health (1). Movement is the location and position changes of the human body or different organs that occur in a dynamic process towards a specific goal in time and space (19).

Humans need to act in order to maintain a quality, healthy and qualified life (12).

With the hourglass model, Gallahue examines motor development stages in four stages: reflexive movements, primitive movements, basic movements and sportive movements (9). In early childhood, children between the ages of two and seven acquire basic skills. (9). These consist of the first basic movement forms such as walking, running, jumping, throwing, jumping, climbing, turning, rolling, hanging, overcoming, swinging, reaching, bending, crouching (9).

These movement forms are thought to be basic movements in terms of children's motor development (7). The basic movements phase consists of three phases: the initial phase, the first phase and the maturity phase (9, 17). Gallahue et al. argue that during the basic movements period, children should have acquired basic movement skills such as running, jumping, throwing, holding, balance and galloping, and they should be ready for the sports movements period, which is the last stage of the motor development period (9).

Children's coordination and rhythm skills are weak in the initial stage, which is the first stage of the basic movement period. At this stage, children try to discover their skills and make an effort to try. The stage in which children provide coordination and control in their movement skills is the first stage. In the first stage, it is seen that children's movements are more controlled and harmonious. The last stage is defined as the maturity stage. Children are about five years old at this stage. In this stage, children exhibit more harmonious, effective and controlled movements. (17).

At the same time, people complete the basic movement forms in the developmental sense in early childhood and are ready to perform these skills at the mature stage (20). The motor development process, which is among the important elements for child development, is in interaction with movement (17).

Since movement is important and valuable for the development of children, the most appropriate activities should be found to meet the mobility needs of children and children should be directed to these activities (1). The most sensitive period in the formation of basic movement skills covers the 6-12 age range of children. Children's ability to perform movements fluently and with fewer errors depends on the development of their coordinative skills. Movement training plays an important role in the development of coordinative skills (4). Movement education is a training program that enables children to perform motor behaviors in high-grade wide ranges of motion throughout their lives, allows them to get to know their bodies, makes them aware of their abilities, increases their physical fitness, improves neuromuscular coordination, supports social emotional development, improves learning ability, provides field dominance, and perceptual motor skills. It is all of the environmental factors that contribute to its development (11, 17).

The aims of movement education are to enable children to develop physical fitness, social emotional development, neuromuscular coordination, develop learning skills, evaluate their free time, and develop their sense of rhythm (3).

Movement education is important for the development of children, so it should be ensured that children gain multiple experiences with movement education curriculum prepared in accordance with the developmental periods of children (4).

One of the main purposes of movement education is to support the development of fine and gross motor skills of children, and to ensure that children are ready for the period of sports movements, as well as performing their daily life activities and self-care skills individually without support (21).

Movement education programs are largely included in the revised national education physical education and sports programs in our country, and the importance of movement education is frequently emphasized (14).

One of the main purposes of physical education and sports course, which is one of the most important building blocks of general education, is to maximize the movement capacity of children by contributing to their physical development through movements. In order to fulfill these aims in physical education and sports, three main basic elements are needed; these are a well-planned syllabus, student and teacher. These three elements are important elements that shape and direct physical education and sports lessons (22)

In the period of basic movements, it is not possible for children to learn their movements individually when they reach a certain level of maturity, at this stage families, teachers and educators are of great importance (9).

The most basic aims of teachers in physical education and sports lessons; It is the student's willingness and willingness to participate in the movement education practices applied in physical education and sports lessons, reaching the goals of the lesson, and forming a positive perspective towards movement education and sports (16).

Coaches and physical education teachers have a great role in directing children and youth to sports. Trainers are in constant contact with children in sports clubs, physical education teachers in schools and they are responsible for fulfilling their responsibilities by leading the children. (17).

As Küçükahmet (13) said, "The teacher himself is the magic wand in teaching", it is thought that the attitudes of future physical education teacher candidates and trainers towards the movement education lesson, which is thought to contribute significantly to all developmental areas of children, are also important.

As a result of the national and international literature reviews, no scale similar or identical to this study was found, and with this research, it was aimed to develop a valid and reliable scale in order to determine the attitudes of the students taking the movement education course towards the movement education course.

METHOD

Working group

The study group of this research consists of students studying at various universities' faculties of sports sciences and physical education and sports colleges in the spring semester of the 2021-2022 academic year and who took the movement education course. A total of 300 students participated in the study voluntarily. The study group, aged between mean 18 and 26, consists of 103 female and 197 male participants, and 178 of these participants are studying physical education and sports teaching and 122 of them are studying in coaching education

Data Collection and Analysis

Writing Items

In the preliminary stage of the study, first of all, the literature was examined and interviews were made with the academicians who gave movement education courses. In the light of the information obtained here, 41 items related to the movement training course were written.

Content Validity

The determined items were sent to the experts who gave movement training courses to be evaluated in terms of content validity, and necessary corrections were made in line with their feedback. In addition to these, opinions about the writing of the items were obtained from an assessment and evaluation expert. As a result of these opinions, 2 items (items 37 and 25) were removed from the scale. After the final version of the scale was created, the file created via the Google form was sent to the participants via e-mail and watsapp, and the data collection process was completed between 20.05.2022 and 12.10.2022.

Data Collection and Application

Scale items were prepared in a 5-point Likert-type rating scale format. Scale items “1. I strongly disagree”, “2. I disagree”, “3. I am undecided”, “4. I agree”, “5. I totally agree”. The scale was delivered to the participants online in the internet environment. Online forms were sent to 342 people, and the forms of 300 people were completely determined and included in the research.

Reliability Analysis

Exploratory factor analysis was used to determine the construct validity of the scale. In order to determine the reliability of the scale, the Cronbach Alpha coefficient was calculated.

RESULTS

Findings on Exploratory Factor Analysis (FFA)

Factor analysis is a statistical method that aims to determine the sub-dimensions in the measured structure in scale development studies. By combining a large number of variables, it produces fewer meaningful new variables. Exploratory factor analysis, on the other hand, is a technique that aims to determine the basic relationships between the variables of a structure whose sub-dimensions are not certain, and to reveal the existing theoretical structure (5) In this study, exploratory factor analysis was used to ensure construct validity as a stage of scale development.

Before applying the exploratory factor analysis, it was ensured that the data set was not missing and the reverse items were coded. Kaiser-Meyer-Olsen (KMO) statistics and Barlett's sphericity statistics values were examined and these values were found to be statistically significant (KMO = 0.957 and $p < 0.01$). According to Hutcheson and Sofroniou (1999), the KMO value being between 0.80 and 0.90 indicates the adequacy of the sample size. Field (6) stated that the correlation between the items should be sufficient and the Barlett value should be significant for factor analysis. When the available values were examined, it was seen that the data set was suitable for exploratory factor analysis.

Exploratory factor analysis was performed without any limitation on the number of factors and by applying varimax rotation. Items with a minimum factor load value of 0.40 and above were included in the scale. In determining the factor structure of the scale, it is accepted to reduce the item factor loads to 0.30 (2).

As a result of the exploratory factor analysis, 12 items (2,5,8,9,10,14,21,28,,32,38,39,40) with factor loadings below 0.40 were loaded under two different factors at the same time. removed from the scale. The final version of the scale consisting of 3 factors and 26 items was obtained. The first factor is the attitudes towards the contribution of the movement education course to all developmental areas of children, the second factor is the negative attitudes towards the movement education course, and the third factor is the positive attitudes towards the movement education course.

The total explained variance is 64.49%. The variance explained for the 1st factor was 29,978, for the second factor 19,429, for the 3rd factor 15,083. The factor loading values of the scale items are shown in Table 1.

Table 1. Factor Loads of Items

1. FACTOR		2. FACTOR		3. FACTOR	
Item No	**Factor Load**	**Item No**	**Factor Load**	**Item No**	**Factor Load**
Item12	.810	Item24	.800	Item1	.758
Item19	.766	Item23	.779	Item3	.746
Item30	.750	Item26	.745	Item15	.656
Item13	.746	Item27	.738	Item20	.613
Item17	.728	Item16	.663	Item7	.601
Item18	.710	Item6	.619		
Item29	.687	Item4	.600		
Item31	.672				
Item33	.671				
Item34	.661				
Item22	.648				
Item36	.598				
Item11	.578				
Item35	.510				
Item36	.736	.960	Item20	.786	.960

When Table 1 is examined, it is seen that the factor loads of the items in the measurement tool are between .510 and .810. Scale items have very high factor loads. There are 14 items in the 1st factor, 7 items in the 2nd factor and 5 items in the 3rd factor.

Reliability and Item Total Correlation

In order to ensure the internal reliability of the scale, item analysis based on item-total correlation was performed. In order to determine the reliability of the scale, the Cronbach Alpha reliability coefficient was calculated. Item-total correlation expresses the relationship between the value of each item in the measurement tool and the total value taken from the entire measurement tool. On a scale, values above 00.30 are considered good values. In addition, item-total correlations are expected not to be negative (16,20). The Cronbach Alpha reliability coefficient is a measure of the internal consistency of the scale between test scores, and values of 0.70 and above are considered sufficient for the reliability of the scale (2). In this study, the Cronbach Alpha reliability coefficient was calculated as. 962When the reliability of the sub-dimensions was calculated, the Cronbach's alpha coefficients were found to be 0.95 for the 1st factor, 0.90 for the 2nd factor, and 0.887 for the 3rd factor. It can be said that the scale is quite reliable. The item-total correlation of the scale is given in Table 2.

Table 2. Item-Total Correlation

Item No	Item-Total Correlation	Cronbach Alpha Value When Item Is Deleted	Item No	Item-Total Correlation	Cronbach Alpha Value When Item Is Deleted
Item12	.769	.960	Item35	.647	.961
Item19	.785	.960	Item24	.634	.961
Item30	.723	.960	Item23	.544	.962
Item13	.703	.960	Item26	.590	.962
Item17	.661	.961	Item27	.740	.960
Item18	.764	.960	Item16	.629	.961
Item29	.561	.960	Item6	.730	.960
Item31	.723	.960	Item4	.664	.961
Item33	.777	.960	Item1	.660	.961
Item34	.800	.960	Item3	.679	.961
Item22	.715	.960	Item15	.687	.961
Item11	.685	.961	Item7	.735	.960
% of Variance	29.978			19.429	15.083

When Table 2 is examined, it is seen that the item-total correlation coefficients vary between .544 and .800. Since each correlation coefficient is higher than 0.30, it can be said that the internal consistency of the scale is high. In addition, when we remove any item in the scale from the scale, it is seen that the Cronbach Alpha coefficient decreases.

DISCUSSION AND CONCLUSION

With this research, it is aimed to develop a valid and reliable scale in order to determine the attitudes of the students who take the movement education course towards the movement education course. The higher the score from the scale, the more positive the attitude towards the movement training course.

As a result of the expert opinion and exploratory factor analysis for the draft form consisting of 41 items at the beginning, a five-point Likert type scale consisting of 26 items was obtained. The scale consists of three dimensions.

In order to determine the internal consistency of the scale, the item-total correlation was calculated and it was seen that the correlation values of all items were high. The Cronbach Alpha reliability coefficient, which was calculated to determine the reliability of the scale, was calculated as.962.

When the findings related to the validity and reliability studies of the scale are examined, it can be said that the scale is a valid and reliable measurement tool that can measure the attitudes of the students towards the movement education lesson.

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The Effect of Aerobic Endurance on Agility and Speed in Amateur Soccer Players

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Abstract

The aim of this study is to examine the effect of aerobic endurance on speed and agility performance in amateur soccer players. 18 male soccer players at the Türkiye regional amateur league voluntarily participated in the research. The means age of the soccer players participating in the research; 24.61 ± 4.434 years, means height; 181.50 ± 0.041 cm and means body weight; 73.17 ± 6.364 kg. In the study, the yo-yo test was used to determine VO2Max levels, the 30-meter sprint test to determine sprint performance, and the pro-agility test to determine agility performance. The results of this study were that high VO2max levels in soccer players had a significant effect on agility and speed performance. Additionally, when the effect size was examined, it was seen that VO2max level was more effective in speed performance than agility. Also, it was found that the VO2max level explained the speed performance by 37% and a 1-unit change in the VO2max level affected the speed by 0.16, while the VO2max level explained the agility performance by 40.2% and a 1-unit change in the VO2max level affected the agility performance by 0.11. In conclusion, It has been observed that aerobic endurance affects sprint performance more than agility. Considering the distances related to agility (18.28 m) and sprint test (30 m), it is thought that the effect level of aerobic endurance increases as the running distance increases. Therefore, aerobic endurance levels should also be considered when applying agility and speed exercises.

Keywords: Aerobic, agility, endurance, soccer, speed

Amatör Futbolcularda Aerobik Dayanıklılığın Çeviklik ve Sürat Üzerine Etkisi

Özet

Bu araştırmanın amacı amatör futbolcularda aerobik dayanıklılık seviyesinin sürat ve çeviklik performansı üzerindeki etkisini incelemektir. Araştırmaya Türkiye Bölgesel Amatör Ligi seviyesinde 18 erkek futbolcu gönüllü olarak katılmıştır. Araştırmaya katılan futbolcuların yaş ortalamaları; 24.61 ± 4.434 yıl, boyları; 181.50 ± 0.041 cm,

vücut ağırlığı ortalamaları; 73.17 ± 6.364 kg'dir. Araştırmada VO2max seviyelerinin belirlenmesi için yo-yo testi, sürat performansının belirlenmesi için 30 metre sürat testi ve çeviklik performansının belirlenmesi için pro-agility testi kullanıldı. Bu araştırmanın bulgularında, futbolcuların VO2max seviyesinin yüksek olmasının çeviklik ve sürat performansı üzerinde önemli bir etkisinin olduğu görülmüştür. Ayrıca etki boyutu incelendiğinde VO2max seviyesinin çevikliğe göre sürat performansında daha etkili olduğu tespit edilmiştir. VO2max seviyesinin sürat performansını % 37 oranında açıkladığı ve VO2max seviyesindeki 1 birimlik değişimin sürati 0,16 oranında etkilediği bulunurken, VO2max seviyesinin çeviklik performansını % 40.2 oranında açıkladığı ve VO2max seviyesindeki 1 birimlik değişimin çeviklik performansını 0,11 oranında etkilediği bulunmuştur. Sonuç olarak, aerobik dayanıklılığın çeviklikten çok sprint performansını etkilediği görülmüştür. Çeviklik (18,28 m) ve sprint testi (30 m) ile ilgili mesafeler dikkate alındığında, koşu mesafesi arttıkça aerobik dayanıklılığın etki düzeyinin arttığı düşünülmektedir. Bu nedenle çeviklik ve sürat çalışmaları uygulanırken aerobik dayanıklılık seviyeleri de dikkate alınmalıdır.

Anahtar Kelimeler: Futbol, aerobik dayanıklılık, çeviklik, sürat

INTRODUCTION

While both aerobic and anaerobic energy systems are usually used in soccer, it is considered as a sport prone to aerobic endurance due to the long duration of competitions. Soccer players travel an mean of 9-10 km during a match. Based on the reality , the endurance levels of the players should be at an advanced level. It is stated that the level of endurance specific to soccer affects the level of performance in soccer more than aerobic endurance. Therefore, it is necessary to focus more on soccer-specific endurance in soccer training. In other words, it is stated that classical aerobic endurance exercises do not have a sufficient effect on performance in a competition (5, 17). Soccer is a team sport in which anaerobic components such as speed and agility are important as well as the development of soccer-specific aerobic endurance in order to resist physiological violence for a long time during a competition (28, 15, 37, 10). Soccer is a sport characterized by sudden acceleration, deceleration, change of direction, short sprints, jumps and double struggles (1, 6, 24, 22). Multi-faceted players influencing each other, fast and continuous actions, unpredictable game models are unique features of soccer (38). In soccer competitions, athletes perform many movements such as sudden changes of direction, double combat and speed for 90 minutes (8, 7). It is stated that high levels of many motoric features such as aerobic capacity, anaerobic capacity, agility, speed and flexibility in soccer are important for success (40). Speed is defined as the ability to move the body at maximum fast. Speed is very important in soccer since speed runs cover a maximum of 25-30 meters (9, 36). The fact that the speed feature is developed allows to turn what they perceive into reality, to reach the result or to prevent the opponent from going to the result. In other words, it allows the actions that will affect the outcome of the match. The game structure of soccer requires players not only to have speed but also to have good agility (34). Agility can be expressed as the ability of the athlete to control and maintain body position during sudden changes in direction. It has a very important place in soccer, as in many sports branches. A soccer player exhibits sudden changes in direction, sudden accelerations, decelerations and stopping movements in the flow of the game. Since agility includes all these components, the agility of the soccer player is important for high performance (33, 2). Although the contribution of features such as speed and agility to the performance in soccer is below 15%, these features constitute important moments of the match such as possession of the ball, scoring or conceding a goal (31). Furthermore, these features differ according to the position of the players and the game strategy of the team (20). Therefore, in this study, it was aimed to examine the effect of aerobic endurance performance on agility and speed.

METHODS

Experimental Approach

This study includes section design to evaluate agility and speed abilities of amateur soccer players according to their aerobic endurance. A total of 18 amateur soccer players were participated. These soccerers have played in Türkiye regional league. F-MARC test battery designed by FIFA was used for warm-up of soccer players.

Subjects

The aerobic endurance of 18 soccer players were examined. Before conducting the experiment, all subjects were informed of the risks of the study and gave an informed consent. The study was approved by a local ethics board and met the conditions of the Helsinki Declaration.

Procedures

In this study, the F-MARC test battery designed by FIFA was used for warm-up. The test battery should inform about the warm-up procedure, about endurance, and about agility, power and speed (35).

All of the soccer players participating to the study had the same physical fitness because they attended the preparatory period. The tests were applied in the contest season, and the aims of all tests were explained to the players before the tests were conducted. The tests were started with a 20-minute warm-up session. The tests were performed on different days. While the tests were conducted, the same weather conditions were taken into consideration. This was followed by the administration of yo-yo, 30-m sprint, and pro-agility tests.

Each test was applied twice, with a 3-minute interval, and the best result was recorded. Photocell, cone, and tape measure for distance were used. The methodology employed during the tests is summarized in the following paragraphs.

30-m Sprint

This test allows the assessment of sprinting ability. The player waits for the signal at the starting point. On the signal, he runs at maximum speed. When he reaches the finish point, the time between the starting and finish lines is measured with photocell in terms of seconds.

Yo-Yo IRT-1 Test

The subject runs from cone B to cone C. During the runs, when one comes from cone B to cone C, a signal sounds and the line is stepped on and back to cone B is run. When the subject comes to cone B, the signal is heard again and it is jogged from cone B to cone A and it has waited until the starting point cone B is heard again. Running speed increases according to the test protocol. If the athlete cannot catch the signal for the first time when he comes to cone B, he or she receives an error and the second time in a row, if the signal is heard and, the subject is not on the point of B, the test is ended. Each time the subject arrives at cone B, the test distance is marked on the sheet and recorded. The test conditions to be performed should always be in the same field and weather conditions (such as not hot or cold, the ground not being wet to prevent the subjects from slipping). The subjects participating in the test should be asked to wear the same type of soccer shoes (crampons) so that they do not fall during running, and the running area should be made on the natural grass area. Test running speed will start at 10 km / h. At the end of every 40 meters, the running speed will increase by 0.5 km / h or 1 km / h depending on the test protocol (5).

VO2max = 36,4+(0,0084 x running distance) (5).

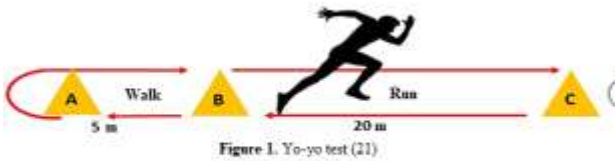

Figure 1. Yo-yo test (21)

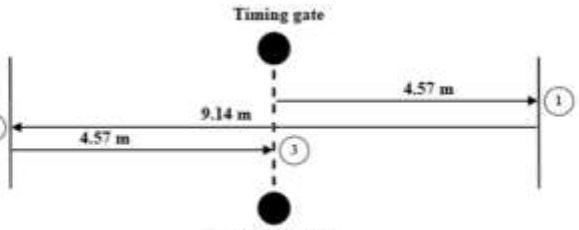

Figure 2. Pro-agility test (27)

Pro-Agility Test

For the pro-agility run, the participants started on a centreline facing the researcher. The participants sprinted 4.57 m (5 yards) to the left, then 9.14 m (10 yards) to the right, and 4.57 m (5 yards) back to finish the test as they crossed the centreline. Three trials within each testing session were used to gather mean performance data. Three minutes of passive rest was provided between trials to limit performance fluctuations resultant from fatigue and decrease risk of injury. The instructions were provided to, stand in a 3-point stance with their left foot 30 cm behind the start/finish line. Once the participant was stable, a "go" command was

given. Timing started when the turned 90 degrees to the left and ran through timing gate 1. Touched the change of direction (COD) line with their left hand, the participant then turned and ran to the other side and touched the COD line with their right hand, the test was then finished by turning and running back through the middle line. To ensure the athletes touched the line, the researchers observed each trial. In the case, the athlete did not touch the line, slipped, or had a mistrial, they were given a retrial after three minutes of passive rest (27).

Statistical Analyses

Descriptive statistics were calculated for all test variables. Linear Regression tests, according to the results of the test of normality, were conducted to determine if there were any significant differences between the test scores of amateur soccer players. Data were analyzed using the SPSS IBM 22 for Statistical Package. Significance was set at $p \leq 0.05$, and results were presented as mean ± SD.

RESULTS

Table 1. Physical characteristic and performance data for the test subjects.

Variables	Mean (N=18)	SD
Age (y)	24,61	4,434
Height (cm)	181,50	0,041
Weight (kg)	73,17	6,364
30 m sprint (sec)	4,663	0,501
Pro-agility (sec)	5,713	0,322
VO_{2max} (ml/kg/min)	44,163	1,911

When Table 1 is examined, the mean age of the participants is 24.61 ± 4.434 years, their mean height is 181.50 ± 0.041 cm, their body weight is 73.17 ± 6.364 kg, their 30 m mean speed rating is 4.663 ± 0.501 sec, their mean agility time is 5.713 ± 0.322 sec. and VO2max mean was found to be 44,163 ± 1.911 (ml/kg/min).

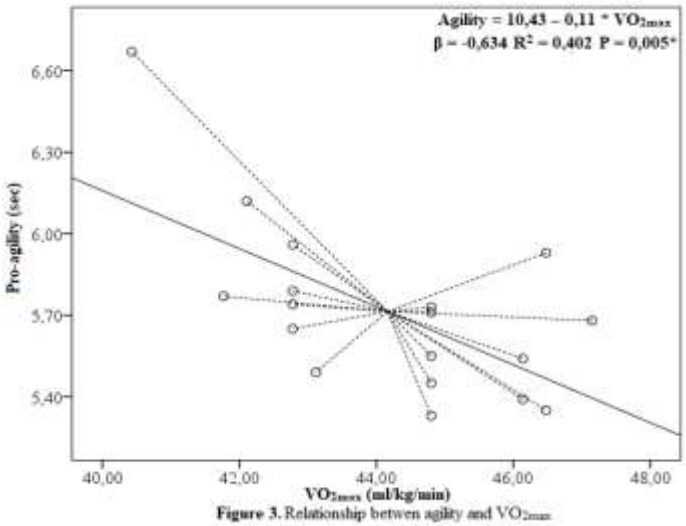

Figure 3. Relationship between agility and VO_{2max}

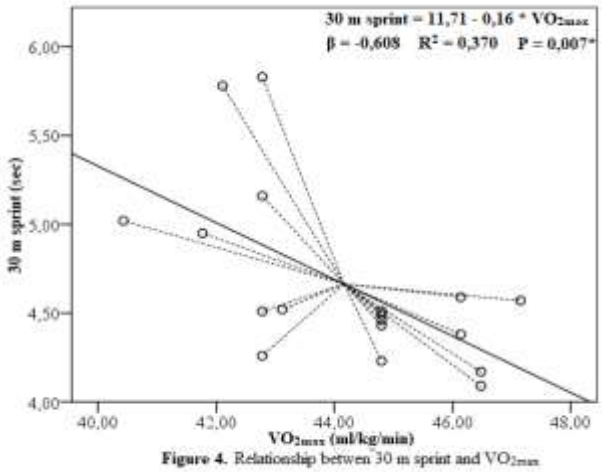

Figure 4. Relationship between 30 m sprint and VO_{2max}

When Figure 3 was examined, it was determined that there was a significant correlation in the same direction between VO2max and agility performances of soccer players. It was observed that VO2max explained agility by 40.2%. A one-unit change in VO2max affects agility by 0.11. A unit decrease in VO2max worsens agility by 0.11, while an increase by one unit improves agility by 0.11.

When Figure 4 was examined, it was determined that there was a significant correlation in the same direction between VO2max and 30 m sprint performances of soccer players. It was observed that VO2max explained the 30 m speed by 37 %. A one-unit change in VO2max affects 30 speed by 0.16. One unit reduction in VO2max worsens the 30-meter speed by 0.16. On the other hand, an increase in VO2max by one unit improves the 30-meter speed by 0.16.

DISCUSSION

In the current study, the VO2max level of 18 soccer players at the same competitive level was determined and its effect on agility and speed performance was examined. The primary finding of this study was that high VO2max levels in soccer players had a significant effect on agility and speed performance. Additionally, when the effect size was examined, it was seen that VO2max level was more effective in speed performance than agility.

There are many studies in the literature in which the VO2max, speed and agility values of soccer players were determined, and in addition to the studies showing similarity with the VO2max, speed and agility values we obtained in our study, lower and higher VO2max, speed and agility values were also found. In a study, it has been emphasized that the maximum speed distance is 20-30 meters on mean and 40 meters at the most (25). Aslan and Koç (3) found the 30 m sprint value of 70 soccer players to be 4.30 ± 0.18 seconds in their study. Cerrah et al. (14) in their study with 89 amateur soccer players measured the 30 m speed values for soccer players as 4.31 seconds, 4.17 seconds, 4.25 seconds and 4.15 seconds. Duyul et al. (16) determined the aerobic capacity value of athletes as 49.91 ml/kg/min in their study. Erkmen et al. (18), in their study, reported that the aerobic capacity value they obtained from the 20 m shuttle run was 44.60 ml/kg/min. In another study, the mean VO2max value of young soccer players (n=14) was found to be 51.84 ± 7.56 ml/kg/min, and the 30 m sprint value was found to be 4.21 ± 0.17 sec (30). Kayhan et al. (23) determined the pro-agility test means as 4.96±0.17 seconds in their study on soccer players. Canlı (11) reported pro-agility test means as 5.73±0.36 sec in their study. In the literature, it is emphasized that aerobic training improves an athlete's endurance performance and also affects an athlete's ability to repeatedly apply maximal efforts (7). In a study evaluating aerobic endurance and 40 m sprint performance in soccer, it was determined that there was a slight relationship between 40 m sprint performance and VO2max, but this situation was not statistically significant (4). In another study, it was observed that there was a decrease in the performance levels of elite soccer players in the second half of the competition, and it was stated that continuity in sprints could be ensured by increasing the aerobic level (39). Önürme (30) reported that speed, mean speed, jump and maximum heart rate values were effective in the change in VO2max value by approximately 50%. In a study, it was stated that high VO2max levels increase post-exercise recovery, and it was stated that soccer players with higher VO2max levels can run longer distances during a match and sprint more than those with lower VO2max levels (29). Raymundo et al. (32) in their study examining the relationship between VO2max and agility, reported a stronger correlation between agility and VO2max performance, especially in attacking players. When the literature is examined, it is seen that there is a significant relationship between aerobic endurance and anaerobic characteristics such as speed and agility. Studies have found that there is a highly significant relationship between the total running distance covered in the Yo-yo level 1 test, and the high-intensity running distance and high-intensity movements covered in the competition (26, 12, 13). In another study, Francini et al. (19) stated that there is a moderate to high relationship between the total running distance covered in the yo-yo test in 68 young male soccer players, and the high-intensity running distance and high-intensity movements, as well as the sprint distance.

This study has a limitation due to the methodological differences that may exist in evaluating the speed, agility and aerobic capacity. Therefore, caution is needed when comparing the results of the present study with other studies. Besides the relevance of the variables evaluated in this study, it is also important to add more variables in future studies based on the specific characteristics needed by soccer players during a match.

In conclusion; It has been observed that aerobic endurance affects sprint performance more than agility. Considering the distances related to agility (18.28 m) and sprint test (30 m), it is thought that the effect level of aerobic endurance increases as the running distance increases. Therefore, aerobic endurance levels should also be considered when applying agility and speed exercises.

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Investigation of Fair Play Behaviors of Secondary School Students Participating in School Sports

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Abstract

This research aims to examine the fair play behaviors of secondary school students who participate in school sports. The sample of the research consists of 495 secondary school students who continue their education in Niğde in the 2022-2023 academic year and are selected by criterion sampling from purposive sampling methods. "Frequency of Exhibiting Fair Play Behaviors Scale" was used as a data collection tool in the research. Descriptive statistics, t-tests, and ANOVA tests were performed in the analysis of the data, and a significance level of .05 was taken into account in the interpretation of the data. According to the research findings, the students who participated in school sports exhibited fair play behavior at a frequent level in the spectator dimension; at a very frequent level in team, negative behavior, opponent dimension, throughout the scale. Fair play behaviors of female students were higher than male students ($p<.03$). According to the grade level, the scores of the 5th-grade students were found to be significantly higher than the 7th-grade students ($p<.01$). While the fair play behaviors of the students playing football in the spectator dimension of the scale were higher than the athletes interested in individual branches ($p<.00$), no significant difference was found in other dimensions ($p>.05$). In the variable of sports age, the fair play behaviors of the students who do sports for 1-3 years were found to be higher than the students who did sports for less than 1 year ($p<.00$). As a result of the research, it has been determined that secondary school students participating in school sports exhibit fair play behaviors very often and develop more positive attitudes towards their team. It is recommended that secondary school students participate in events such as games, competitions, and tournaments within the scope of school sports.

Keywords: Fair play, school sports, secondary school, sports branch, sports age

INTRODUCTION

Sport; It includes all kinds of physical activities that contribute to physical fitness, mental well-being, and social interaction with the help of organizational, competitive or traditional games (1-2). Many sports branches such as football, basketball, handball, volleyball, tennis, skiing, equestrian, wrestling, and athletics are used in fulfilling physical activity on the basis of sports (3). The aforementioned sports branches are grouped as individual-team or contact-non-contact according to the way they are practiced (4). To be successful and outperform in sports, talented young people should be selected and trained in line with their abilities (5). In which sports branch the young people will be active can be with the guidance of sports experts or with the voluntary participation of the young people. For example, while football is the most preferred sport among boys, girls prefer volleyball more (6).

Sport is also accepted as a universal language and it is a very powerful tool that brings people together with a structure that transcends borders, cultures, and religions, and develops peace, tolerance, and understanding (7-8). For young people participating in sports; interpersonal communication skills, self-esteem, academic achievement, academic motivation, and school commitment are developing (9). Sport is an effective strategy to prevent early leaving and social marginalization (10). As can be seen, sports are widely used to bring individuals in achievement multidimensional gains and values (11).

In formal education, sports branches are taught by physical education teachers with the help of physical education lessons (12). The physical education course aims to enable students to recognize sports, perform simple movements, and gain affective achievements. Affective gains take precedence over success and high-performance indicators in sports (13). It focuses on the transfer of values such as helping each other, developing friendships, playing fair, taking responsibility, respecting, and establishing cooperation (14-15). Physical education teachers form school sports teams by guiding their students in line with their abilities. Students gain an athlete identity with their participation in performance-oriented sports (16). Physical education teachers participate in school sports organizations, which are planned under the coordination of the ministry of youth sports and the ministry of national education, with the sports team they have established.

Within the scope of school sports, sports competitions are organized in 59 different branches (17). Physical education teachers optionally participate in sports organizations with one or more teams. School sports activities make great contributions to the students and the society in which the students live (18). As students participate in school sports, their commitment to their school, teachers, and parents increases. It fulfills its responsibilities with the fear of losing social relations as a result of commitment (19-20). As a result of this behavior, the social control effect occurs in society. School sports provide educational benefits to students in formal education, wherever they are practiced in the world. Undoubtedly, acting in accordance with fair play behaviors on the basis of adherence to the rules of the game takes place in the formation of this situation (12, 21).

The concept of fair play appears as fair and honest play (22). It is a result of the understanding of fair play that the athletes patiently, consistently, and consciously obey the rules even under difficult conditions in the competitions, do not accept unfair competition, see the opponent not as an enemy, on the contrary, as a partner who ensures the realization of the game and has equal rights with the athlete himself (23). Fair play appears in two different ways, formal and informal. In the formal fair play approach, the athlete exhibits the behaviors of accepting and complying with the game rules determined by the authorized federation. Informal fair play, on the other hand, is a high-level moral stance that is not mandatory to be sanctioned based on the rules, that the athlete takes the risk of competing with his opponent on equal terms, that reacts in moderation to wins and lose, that respects the opponent and the referee (24). In order for an athlete behavior to be described as fair play, he must take a determined stance on the side of justice, ignoring the interests of individual, the team, and the country. This behavior should not be accidental or one-off, but fair play should guide the athlete's life (25). In other words, it is the avoidance of aggressive behavior by empathizing with the events that individuals encounter (26).

The Council of Europe (27), by declaring the "Declaration of Sport Tolerance and Fair Play", has adopted that sport is an important field of education. The International Fair Play Committee (28) defined fair play as the basic value that directs people's lives. Fair competition, respect, friendship, team spirit, equality, doping-

free sports, honesty, solidarity, entertainment, tolerance, and excellence are at the forefront of the core values. The International Olympic Committee, on the other hand, emphasized the value of excellence, respect, and friendship for the establishment of fair play behaviors. Excellence is to experience the challenges and successes of sports by developing skills, not attempts to win. Respect is being considerate of others in or out of the game. Friendship creates the spirit of Olympism. In the competitions, the athletes form friendships as a result of their fair play behaviors (29). Education should be given from an early age in order to raise moral athletes and to enable them to set an example for society (30).

Despite the fact that fair play education is provided through the physical education lessons given in schools and the competitions within the scope of school sports, undesirable situations are also encountered (31). In today, competitiveness has been removed and schools which have good financial potential surpass overwhelmingly schools which take place in underpriviliged region (32-34). When students participate in school sports, they adopt the principle of "winning at any cost" and inflict violence on their opponents (35-36). It has been understood that athletes can discriminate, bet, match-fix and dope with the desire to win, excessive commitment to their team and friends, and the ambition to prove themselves (37-38).

Behaviors that are not suitable for fair play are encountered in most sports branches. Football, which has a large spectator in most studies, is in the first place in displaying inappropriate behaviors (39-40). In football, non-fair play actions such as playing illegal players, pretending to be injured, provoking cards by provoking the opponent, and reducing the tempo of the game are frequently seen (41). Moreover, young players who follow the sports media apply the inappropriate behaviors they learn in contact sports such as football and basketball to win in school competitions (42). These attempts to win are appreciated by the group of friends and those who watch the sport (43). In martial sports such as boxing, karate, and taekwondo, which are another version of contact sports, less violence is encountered than in football (3). Of course, this may also be related to the number of athletes. The group that plays and watches football is considerably higher than the group of players and spectator in other branches.

Most young people and parents agree that the time spent by students participating in school sports is unnecessary and reduces academic achievement (44-45). Athletic youth at all levels of formal education may be exposed to violent behavior (46). Fair play behaviors of athlete students are affected by many variables such as gender, sports branch, and age of sports. For example, it has been observed that young people who have been doing sports for many years have developed self-control skills and display virtuous human behaviors away from aggression (47). When appropriate teaching materials are used (48) and thanks to the role model of the trainer (49), students can display fair play behaviors in school sports. Guided by the findings in the literature, the research was conducted to determine whether the fair play behaviors of secondary school students participating in school sports vary according to their status, gender, grade level, sports branch, and year of doing sports. With the renewed physical education curricula, students' learning and internalization of universal values within the understanding of fair play is based (50). In the research, it is thought that the results of the study will be important to learn the fair play behaviors of secondary school students and take possible precautions.

METHOD

Research Model

In this study, causal comparison design, one of the quantitative research methods, was used. Causal comparison research is studies that aim to determine the causes and consequences of differences on human groups, without any intervention on conditions and participants (51).

Sampling

Since the fair play behaviors of the students participating in the competitions within the scope of school sports are examined in the research, the sample group has been chosen purposefully. 495 secondary school students participating in school sports in Niğde formed the research sample. In scientific research, a sample size of 250 (52) or more than 400 provides very reliable results (53-54). In this direction, it is assumed that the sample group that voluntarily participates in the research is sufficient. The demographic characteristics of the students are shown in Table 1 in detail.

Table 1. Demographic characteristics of students

Variable	Sub Categories	f	%	Total
Gender	Male	220	44,4	495
	Female	275	55,6	
Grade	5	81	16,4	
	6	102	20,6	
	7	172	34,7	
	8	140	28,3	
Sports branch	Individual	203	41,0	
	Football	133	26,9	
	Volleyball	106	21,4	
	Basketball	53	10,7	
Sports age	less than 1 year	247	49,9	
	1-3 years	141	28,5	
	more than 3 years	107	21,6	

Data Collection Tool

Frequency of Exhibiting Fair Play Behaviors Scale

There are 14 items in the 3-point Likert-type scale developed by Temel et al., (55). 6 of the scale items contain negative statements and 8 positive statements. The scale has 4 dimensions: team, spectator, negative behavior, and opponent. Items in the negative behavior dimension (5-10) are used with reverse coding. Cronbach's alpha reliability coefficient was .65 in the team dimension, .65 in the spectator dimension, .73 in the negative behavior dimension, .71 in the opponent dimension, and .61 in the overall scale. The variance explained by the 4 dimensions is 55.12%. It is possible to get 14-42 points on the total points and 1-3 points on the average from the scale. High scores obtained from the scale indicate that the frequency of fair play behaviors is at a good level.

Collection of Data

The research was initiated after receiving the ethical report from "Niğde Ömer Halisdemir University Scientific Research and Publication Ethics Committee" (dated 31.05.2022 and document number E-86837521-050.99-209502). From the school sports service of the Provincial Directorate of Youth and Sports of Niğde, schools, and students who will participate in school sports in the 2022-2023 academic year were learned. After learning about the schools that will participate in the competitions, the relevant schools were visited and the voluntary consent form was approved by the students and parents by obtaining the necessary permission. Then, the data were collected by meeting face-to-face with the students in the sports fields where the races are held.

Data Analysis

The data were analyzed using the SPSS (Ver: 24.0) statistical package program. The conformity of the data to the normal distribution was checked with reference values of “skewness -3 and kurtosis +3” (53). Since appropriate reference values were determined for the scale used in the study (skewness -.048; kurtosis .696), parametric tests were used during the analysis. In the research, descriptive statistics, independent samples t-test, and ANOVA tests were performed and a .05 significance level was taken into consideration.

RESULTS

In the study, descriptive analysis was made to find out the frequency of fair play behaviors of secondary school students participating in school sports. Comparisons were made according to gender, class level, sports branch, and sports age, which are independent variables that may be related to the display of fair play behaviors.

Table 2. The students' exhibiting fair play behavior scores

Dimensions	n	Min	Max	$\bar{x}$	Sd
Team	495	1,00	3,00	2,759	,408
Spectator	495	1,00	3,00	2,125	,627
Negative behavior	495	1,00	3,00	2,483	,388
Opponent	495	1,00	3,00	2,476	,432
Scale whole	495	1,93	3,00	2,469	,251

Table 2 shows the fair play behavior scores of the students participating in school sports. According to the table, the students most wish success to their teammates and coaches; It was noted that the behavior of greeting the spectator was at a lower level. It was observed that the students scored well in the dimensions of avoiding negative behaviors (cursing, provocation, foul) and congratulating the opponent. It has been determined that the students' fair play behavior scores are at a very good level throughout the scale.

Table 3. Comparison of students' fair play behavior scores according to their gender

Dimensions	Gender	n	$\bar{x}$	Sd	t	p	η^2
Team	Male	220	2,713	,448	2,249	,025*	,010
	Female	275	2,796	,370			
Spectator	Male	220	2,184	,605	-1,872	,062	,007
	Female	275	2,078	,640			
Negative behavior	Male	220	2,422	,416	3,125	,002*	,019
	Female	275	2,531	,357			
Opponent	Male	220	2,467	,404	,447	,655	,000
	Female	275	2,484	,454			
Scale whole	Male	220	2,442	,257	2,133	,033*	,009
	Female	275	2,491	,244			

*(p<.05)

There was no significant difference in fair play behaviors towards spectators and opponents according to gender (p>.05). A significant difference was found in favor of female students regarding positive behavior towards their team, avoidance of negative behavior, and overall scale (p<.05).

Table 4. Comparison of students' fair play behavior scores according to grade level

Dimensions	Grade	n	$\bar{x}$	Sd	F	p	η^2	Difference
Team	5	81	2,802	,341	,992	,396	,006	
	6	102	2,740	,465				
	7	172	2,726	,430				
	8	140	2,789	,370				
Spectator	5	81	2,135	,524	,461	,710	,003	
	6	102	2,142	,646				
	7	172	2,081	,632				
	8	140	2,160	,663				
Negative behavior	5	81	2,516	,424	1,610	,186	,010	
	6	102	2,521	,346				
	7	172	2,492	,358				
	8	140	2,425	,426				
Opponent	5	81	2,601	,386	6,517	,000*	,038	7 < 5, 6
	6	102	2,541	,408				
	7	172	2,373	,456				
	8	140	2,483	,418				
Scale whole	5	81	2,527	,246	3,461	,016*	,021	7 < 5
	6	102	2,504	,272				
	7	172	2,433	,252				
	8	140	2,456	,229				

*(p<.05)

No significant difference was found in the dimensions of the team, spectator, and negative behavior according to the grade level of the students (p>.05). In the opponent dimension, the scores of the 5th and 6th-

grade students were higher than the 7th-grade students (p<.05). On the whole scale, fair play behaviors of 5th-grade students were found higher than 7th-grade students (p<.05).

Table 5. Comparison of students' fair play behavior scores according to sports branches

Dimensions	Branch	n	$\bar{x}$	Sd	F	p	η^2	Difference
Team	Individual	203	2,706	,446	2,313	,075	,014	
	Football	133	2,778	,386				
	Volleyball	106	2,830	,364				
	Basketball	53	2,773	,374				
Spectator	Individual	203	2,029	,638	4,245	,006*	,025	Individual < Football
	Football	133	2,266	,588				
	Volleyball	106	2,094	,613				
	Basketball	53	2,198	,645				
Negative behavior	Individual	203	2,474	,406	,700	,553	,004	
	Football	133	2,456	,385				
	Volleyball	106	2,507	,374				
	Basketball	53	2,534	,351				
Opponent	Individual	203	2,469	,461	1,649	,177	,010	
	Football	133	2,501	,393				
	Volleyball	106	2,415	,456				
	Basketball	53	2,566	,343				
Scale whole	Individual	203	2,442	,263	2,043	,107	,012	
	Football	133	2,488	,245				
	Volleyball	106	2,468	,242				
	Basketball	53	2,529	,224				

*(p<.05)

No significant difference was found in the team, negative behavior, opponent, and overall scale according to the sports branch of the students (p>.05). In the spectator dimension, the scores of those who play football were found to be significantly higher than those who do individual sports (p<.05).

Table 6. Comparison of students' fair play behavior scores according to sports age

Dimensions	Sports age	n	$\bar{x}$	Sd	F	p	η^2	Difference
Team	less than 1 year	247	2,710	,441	6,877	,001*	,027	less than 1 year, more than 3 years < 1-3 years
	1-3 years	141	2,865	,321				
	more than 3 years	107	2,733	,408				
Spectator	less than 1 year	247	2,018	,636	8,217	,000*	,032	less than 1 year <1-3 years, more than 3 years
	1-3 years	141	2,187	,625				
	more than 3 years	107	2,289	,562				
Negative behavior	less than 1 year	247	2,479	,385	1,763	,173	,007	
	1-3 years	141	2,527	,375				
	more than 3 years	107	2,434	,408				
Opponent	less than 1 year	247	2,418	,445	4,896	,008*	,020	less than 1 year < more than 3 years
	1-3 years	141	2,517	,431				
	more than 3 years	107	2,558	,384				
Scale whole	less than 1 year	247	2,428	,248	7,185	,001*	,028	less than 1 year < 1-3 years
	1-3 years	141	2,524	,251				
	more than 3 years	107	2,492	,242				

*(p<.05)

No significant difference was found in the dimension of avoiding negative behavior according to the sports age of the students (p>.05). In the team dimension, the scores of those who were engaged in sports for 1-3 years were significantly higher (p<.05). In the spectator dimension, the scores of those who did sports for 1-3 years and for more than 3 years were found to be significantly higher than those who did sports for less than 1 year (p<.05). In the Opponent dimension and in the general scale, the scores of those who did sports for 1-3 years were found to be significantly higher than those who did sports for less than 1 year (p<.05).

DISCUSSION AND CONCLUSION

In the research findings, the fair play behaviors of secondary school students were found at a very good level. While the students followed the fair play behaviors very often towards their team, they frequently performed the behaviors related to the spectator salutation. Chung et al., (56) reported that Singaporean students internalized fair play behaviors in football-friendly competitions, which they happily participated in, and completed their sports activities with the help of their teammates in difficult situations. Milla & Nurja (57) found that with the participation of secondary school students in school sports, their mental health improved and they moved away from aggressive behaviors. It is a reality accepted by everyone that middle school students avoid aggressive behaviors, take responsibility, and cooperate with their friends with the ability to empathize, which is the prerequisite of fair play (58). Hassandra et al., (31) found that after giving Olympic education to secondary school students, students behaved in accordance with fair play in sports competitions and transferred these positive behaviors to their lives. Ludwiczak & Bronikowska (59) conducted education with moral dilemmas for young people participating in sports. As a result of the training, it was seen that the young people obeyed the rules brought by fair play and adopted social values. Flynn & LaFrance (60) observed an increase in the values of honesty, justice and responsibility of the athletes as a result of the moral training they applied to the athletes. Ibraheem et al., (1) concluded that Nigerian secondary school students contribute to the values of peace, unity and togetherness by participating in sports in their free time. Edim & Odok (7) found that Nigerian secondary school students mingled with children of different ethnicities and adapted to the society through sports competitions. Emphasizing the importance of social cohesion, American researchers Veliz & Shakib (20) reported that significantly less and less criminal behavior was found in schools with high participation in sports. Students' commitment to the institution, their belief and academic success have increased with the help of sports. Çavdar et al., (61) found that teachers and students participating in school sports swear and insult the referee-opponent. This result is an indication that negative effects can be experienced. In line with the research findings and the results in the literature, it is seen that the secondary school students in the sample of Niğde act in accordance with fair play in their participation in school sports. It can be said that teamwork applied to students serves the purpose.

Fair play behaviors of female students were found to be better than male students in terms of exhibiting positive behaviors toward their own team and avoiding negative behaviors toward their opponent. Female students exhibit moral behaviors in school sports due to their ability to understand the feelings of others, and to put themselves in someone else's shoes, that is, to have good empathy skills (62). Especially, female students who abstain from exhibiting inappropriate behaviors are successful in fair play behaviors (63-64). Since female students can control their anger, they avoid aggressive behaviors (65). In addition to these positive features, Yalçın et al. (66) found that female athletes respect the rules and management. Although males' participation in sports and their inclination towards sports are high, female students are better at fair play (18, 67). It has been observed that the high participation and predisposition to sports affects male students negatively. Pepe et al., (68) reported that the behavior of amateur sportswomen in the sports environment reflects sports ethics. These results are similar to the findings of the study. Contrary to the findings of the study, Tomik et al., (69) argued that males can gain positive behaviors better because they value sports activities better than girls. Böyükelhan et al., (70) found that male students who value sports care about winning fairly and oppose cheating. In the study of Kural et al., (71), it was reported that male students who received religious-based education were more sensitive in sports activities. Yaneva et al. (4), on the other hand, found that men engaged in martial arts participate in sports activities with a fair understanding away from aggression. The expected result in education is that male and female students who attend secondary school physical education classes learn fair play behaviors at a similar level and apply them with the same sensitivity (72). Burgueño & Medina-Casaubón (73) confirmed that male and female students who benefited from the sports education model in basketball education developed fair play behaviors such as respect to the opponent and loyalty to the team, and obeying the rules at a similar level. Model-based education has served the purpose of sports. Kayışoğlu et al., (74) determined that secondary school students who participated in physical education classes, and Şahin & Çoymak (75) found that male and female students participating in school sports had a similar understanding of fair play. The implementation of fair play behaviors mostly stems from the character of the person (49). Students participating in school sports should be helped to exhibit appropriate behaviors by providing effective character education. Thus, the objectives of the curriculum will be achieved.

Fair play behaviors of secondary school students in sports matches are generally positive. Grade 5 students showed better behavior in greeting and respecting opponents than students in upper grades. Children who have just started secondary school get to know sports branches through physical education and sports lessons. In this process, he shows closeness with his teacher and tends to obey the rules unconditionally. Gaining the teacher's appreciation is a great source of happiness for children. Since students who obey the rules are loved by their teachers, the frequency of showing behaviors by fair play increases (76). Altun & Güvendi (77) determined that the 5th-grade students attending the physical education lesson obey the rules in the sports fields and respect the opponent and the referees. Stunning others with their sports skills, the children were included in the school teams and earned the right to represent their school. In this direction, Yıldız & Özgül (18) determined that the 5th-grade students participating in school sports behaved within the framework of fair play. Secondary school students exhibit fair play behaviors more frequently than primary school students (78) and high school students (79-80). It can be said that within the formal education steps, the fair play education for the 5th-grade students in secondary school has achieved its purpose. Altın et al., (81) on the other hand, found that there was no significant difference in the fair play behaviors of amateur students according to the grade level. It is seen that the students with the identity of athletes have a good level of fair play behaviors and similar moral behaviors according to their education level (82). These results appear as important arguments supporting the study findings.

The students who participate in school sports have similar characteristics in exhibiting fair play behaviors according to their branches. Students playing football displayed more virtuous behaviors in behavior toward the spectator, compared to students operating in individual branches. As a result of taking part in school teams, students learn and practice fair play behaviors regardless of the branch (66, 83). Apart from school and education activities, it has been observed that young people who do sports under license in different branches have a similar moral structure (82). Karafil et al., (84) determined that secondary school students who participate in team sports complete their moral maturity and play sportsmanly in sports environments. It has been found that the students playing football act in a fairer game approach before starting a match (78) or after the match (79). Contrary to these results, inappropriate behaviors are observed on and off the field in contact sports such as football that involve one-on-one interaction with the opponent (85-86). Young people caught in the excitement of the game tend to use abusive speech and aggressive behavior (87). Young people engage in deceptive behaviors for the sake of winning when it comes to team benefit (88). Moreover, sports managers in football can also impose unethical sports behaviors on students (49). In the literature, it is seen that there are positive and negative results as a result of the studies on football. According to the findings of the study, it was determined that the students who did different sports were at a similar developmental level. The positive development of the behaviors in the football branch shows that school sports activities serve their purpose. Students have achieved positive gains with their participation in football, which has a high audience potential (89).

According to the sports age variable, the fair play behaviors of the students who do sports for 1-3 years are better than those who do sports for less than 1 year. Experienced athletes displayed more virtuous behavior towards their team and spectator. Altın et al., (81) found significant differences according to the sports ages of the athletes who play football and futsal at the amateur level. In the study, it was concluded that the athlete students who were engaged in sports for 1-3 years respected their teammates and traditions, and stood against unfair winning. Similarly, Tomik et al. (69) reported that students who participated in school sports for 3 years had a good level of social value acquisition. With long-term participation in sports, not only social values but also academic gains are achieved. Students have fulfilled their learning responsibilities by participating in sports for many years (11). In line with the information in the literature, it is thought that the students who participate in sports at the basic level attach importance to fair play behaviors. It is an undeniable reality that young people who struggle for a long time in sports branches exhibit negative behaviors by having the desire to win (49).

As a result of the research, it has been determined that secondary school students participating in school sports exhibit fair play behaviors very often and develop more positive attitudes towards their team. Regardless of the characteristics of the sports branch, the outcome of competition only determines the superior one. However, the only thing that makes a finished match to be remembered even after centuries is the attitudes and behaviors exhibited when lost or won (81). To embed this understanding in school sports,

curricula should be utilized to a great extent (90). In summary, it is recommended that secondary school students participate in events such as games, competitions, and tournaments within the scope of school sports.

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For a Higher Sprint Running Performance, in Which Part of the Warm-Up Protocol Should the Dynamic Stretching Phase be Applied?

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Abstract

The literature has frequently examined the acute effect of warm-up protocols on athletic performance components. The lack of evidence in static stretching studies led researchers to dynamic stretching protocols that simultaneously enhance basic skill level, kinaesthetic awareness, range of motion, and core temperature. However, it needed to be clarified in which part of the warming up the dynamic stretching phase should be done. This study investigated the acute effect of the dynamic stretching exercise phase before and after a warm-up on the 20m sprint performance. The study included forty-four soccer players, aged 16.59±1.06 years, who played for amateur teams. Participants were randomly divided into two groups on the first day of the study. In the first group, dynamic stretching was performed before warm-up (BGW), and the players' 20m sprint performances were tested. In the second group, dynamic stretching was performed after the warm-up (AGW), and the players' 20m sprint performances were tested. On the second day of the study, the same protocol was applied to the same players by changing groups of players. The average speed in the 20m sprint test of the BGW group (2.96±0,13 sec.) was found to be significantly shorter than the AGW group (3.01±0,12 sec., $p<0.05$). The difference in the 20 m speed test values between groups was significant ($p<0.05$). The findings obtained in the applied experimental condition show that the dynamic stretching protocol applied before the warm-up running phase increases the sprint running performance. It may be more beneficial for the performance of athletes to do dynamic stretching before sprint running performances.

Keywords: Sprint Performance, Dynamic Stretching, Warm-up protocol, Running Speed

INTRODUCTION

The development of short-distance sprint (short-sprint) performance (i.e., 5–20 m) is a vital component of the athletic performance of football players (1). One of the key factors of success in speed and power-based sports is to apply a good warm-up routine before the performance (1-3). When the emergence of warming routines is examined, it can be observed that the warming components are formed more conventionally than they are applied according to scientific evidence (1, 3). Generally, the warm-up section consists of a general warm-up, stretching-mobility phases, sport-specific movements, and activation sections (4, 5). Planning a good warm-up routine considers duration, content, intervals, intensity, and how long before the performance did. Recently, researchers have been especially focused on the acute effects of static and dynamic stretching in the content title and discussed their effects on athletic performance and their physiological dimensions (6). Interestingly, there is no information on which part of the warm-up dynamic stretching phase applications acutely produces higher performance output.

The movements applied during dynamic stretching activate the integrity of the muscle, ligament, and joint (7). The applied movements are generally in the form of specific movement patterns or similar forms belonging to the sports branch. These aspects activate skeletal musculature and other related systems (8, 9). The movements are performed repeatedly with a dynamic relaxation phase after a short stretching phase. The applied movements should be performed in a fluent tempo, rhythmically (2 seconds of a stretch: 2 seconds of relaxation or 4:4 or 2:4) and with high movement quality. The total number of moves is between 4 and 10. 2-4 sets of 8-16 repetitions are performed in 5-12 minutes. Such applications generally lead to physiological responses such as increased cardiac output and intramuscular and core body temperature. (10-12). The increase in temperature in the muscle causes a decrease in muscle viscosity, and the decrease in viscosity causes an increase in the range of motion of the joint. In addition, acute improvement of muscle coordination with the specific movement patterns applied increases the muscle-reflex activation in the working muscle with the firing and synchronization of motor units. In addition, the specific movement patterns are applied to increase the muscle-reflex activation in the working muscle, improving acute muscle coordination, firing, and synchronization of motor units. Recent reports show that dynamic stretching creates a post-activation potential associated with stimulating the motor units of type 2 muscle fibres (10-12).

During a sprint performance, alactic anaerobic energy pathways dominate, and a high involvement of Type 2 muscle fibres is observed with a high motor unit firing (13, 14). Meanwhile, the Stretch-shortening cycle takes place at a very high speed. Stimulation of these mechanisms is an important prerequisite in the warm-up routine. Short sprints at high speeds are commonly used in the warm-up routine to achieve this. Several studies suggest that dynamic stretching has a greater positive effect on sprint performance and stretching procedures than static stretching (8, 9). However, few studies have reported negative effects (15, 16). In this regard, we hypothesized that the dynamic stretching phase performed prior to the general warm-up would improve sprint performance. The study aims to investigate which part of the warm-up protocol dynamic stretching phase should be applied for a higher sprint running performance.

MATERIAL AND METHOD

Participants

Forty-four male, healthy football players (16.5 ± 1 age, 1.72 ± 7.4 cm height, and 61.7 ± 7.7 kg weight) who played in regional football leagues participated in the study. The average training history of the participants is 4.5 years. The subjects had no neurologic, medical, or cardiovascular disease symptoms and were not taking any medications. The sample size was calculated with the GPower 3.1.9.4 program. Accordingly, the sample size was 44 participants with an alpha (mistake) rate of 5% and 95% power with a medium effect size for the dependent t-test. All subjects were informed about the procedures, and each gave written consent. The Ethics Committee of Dokuz Eylül University approved all procedures and the experimental design (2018/19-13). The study protocol conformed to the guidelines of ethical principles of the Declaration of Helsinki, and the aims and risks of the study were understood before the beginning of the study by all participants and their parents who signed informed consent.

Experimental Design

The experiments of the study were completed in three days. On the first day of the study, the participants were informed in detail about the research. Then, anthropometric measurements [height, body weight, muscle mass, and fat percentage were made with a bioelectrical impedance device; Biospace Inbody, Seoul, Korea; (17)] and maximum oxygen consumption values were measured. The participants were randomly divided into 2 groups on the second day of the study. Group 1 performed dynamic stretching before the general warming phase (BGW; Figure 3). The second group performed dynamic warming after the general warming phase (AGW; Figure 3). On the 2nd and 3rd test days, both groups performed 20 meters of sprint performance after two different conditions (Figure 1). All warm-up exercises and measurements were carried out by researchers at the same hours (5.00 PM). The subjects were asked to refrain from caffeine intake on each testing day and avoid food consumption 2 hours before testing. The subjects were encouraged to drink ad libitum to ensure adequate hydration status.

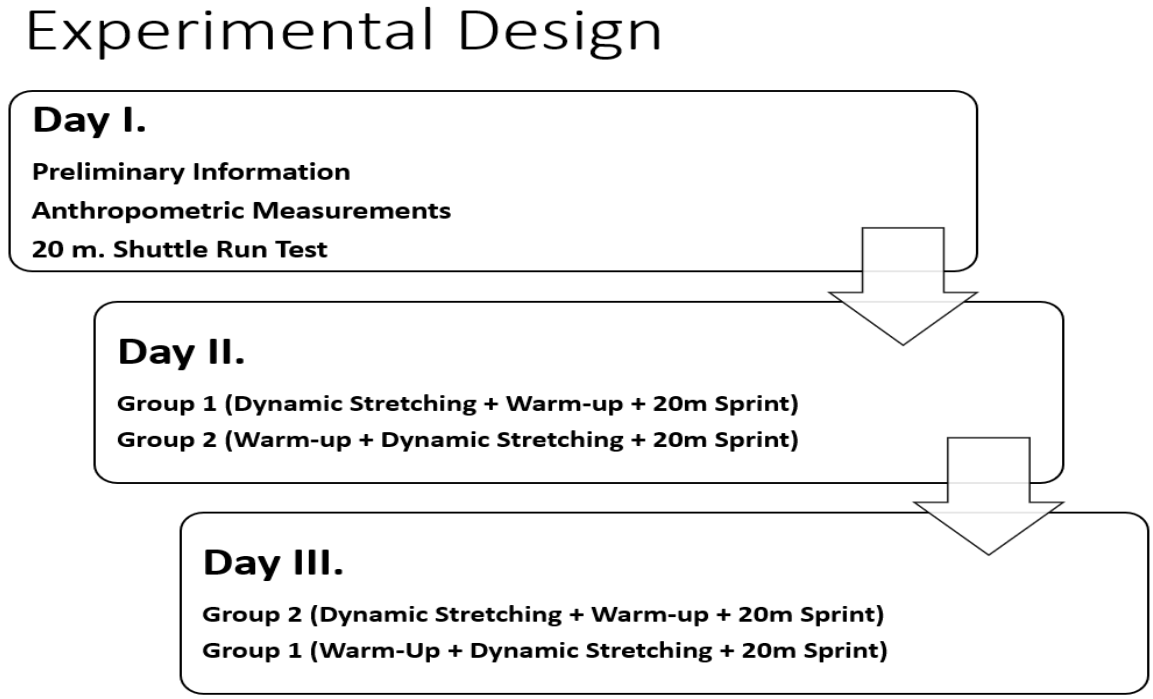

Figure 1: Experimental Design

20m. Shuttle Run Test (VO_2 Max)

Participants were instructed to run back and forth between two lines 20 meters apart, with a running velocity determined by audio signals (18). Starting speed was 8.5 km/h, and every minute (stage), the speed was increased by 0.5 km/h until the subject could no longer keep pace with Physical Workload and Work Capacity and did not reach the lines in time twice in a row. The test result corresponded to the number of reached stages and shuttles and was used to predict VO_2Max according to a validated table.

General Warm-up Protocol

Adhering to the classical warm-up method, a warm-up run was applied at low-intensity aerobic speeds for an average of 5 minutes at an individual pace. In the protocol context, a 2 x 10 meters sprint was applied to increase neuromuscular stimulation toward the end.

Dynamic Stretching Protocol

The dynamic stretching protocol was created from 6 basic exercises for the hamstring, quadriceps, and hip extensor muscles used during the sprint. The movements were performed in 14 repetitions for each dynamic stretching exercise. The movements were smoothly applied at a 2: 2 tempo, moderate stretches were

applied, and walking intervals of three steps were given during the relaxation phase. 10 seconds of rest in between movements was applied. The protocol was completed in about 5 minutes (Figure 2).

Figure 2: Dynamic Stretching Protocol (Respectively; Standing quadriceps stretching, standing knee pull, Hip internal rotation, Hip external rotation, standing hamstring stretching, Standing toe touch)

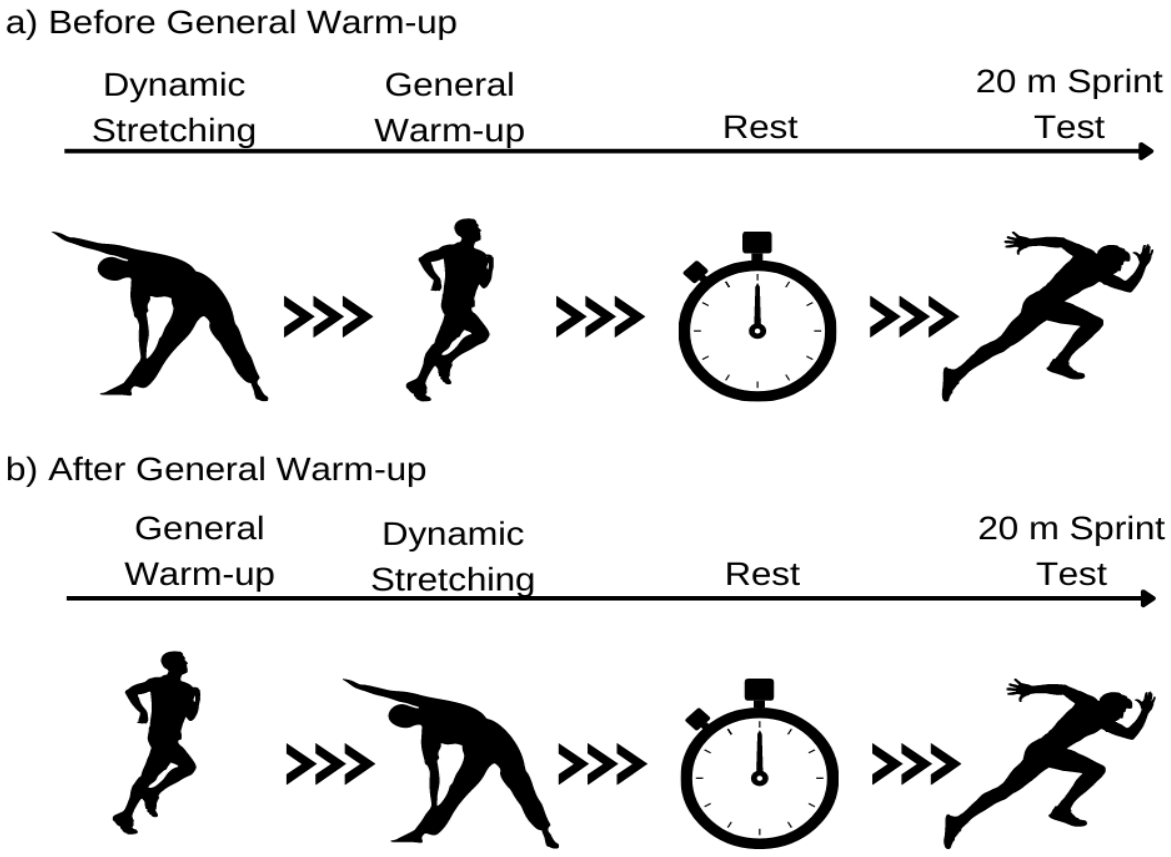

Figure 3: Warm-up Strategies a) Before General Warm-up Protocol, b) After General Warm-up Protocol

20m. Sprint Running Protocol

Test conducted in windless weather and synthetic ground. Participants wore the same and soccer-specific standard shoes to each testing session. Running times were recorded with the "Newtest Powertimer 300-series" device (Newtest Powertimer 300-series, Oulu, Finland; 19), which had previously determined the validity and reliability of the Enoksen., and Tonnessen., (2009). Photocells connected to a two-beam single photoelectric gate were placed 20 m apart. The participants started 0.3 m behind the 1st beams, which were placed at a 0.3-m height and the last pairs of beams were placed at a 0.7-m height to avoid the participants throwing their arms or legs forward to get a faster time. The participants began trials in their own time, from a standing start of 0.3 m behind the first timing gate to avoid any reaction time effect, which could be because of a starter's

instruction, and also to avoid triggering the electronic gate prematurely. No feedback was provided to the subjects who were given standard track and field instructions during the experimental conditions. tried to apply their maximum performance in the test.

Statistical Analysis

The data were evaluated with the SPSS 22.0 package program. Shapiro-Wilk tests were used to control the normality of the data. All of the data were distributed normally. Pre and Post measurements of the groups were tested via Dependent Groups T-Test. A Variance Analysis test was used to compare the differences between groups. The level of significance was set at $p < 0.05$. The effect size was calculated with the Cohen d formula. 0.20 was considered a small effect, 0.50 a medium effect, 0.80 a large effect, and 1.30 and above as a very large effect (20).

RESULTS

Forty-four male healthy football players who played in regional football leagues participated in the study (1.72 ± 7.4 cm height, 61.7 ± 7.7 kg weight, 16 ± 1 year, 20.6 ± 1.7 BMI, 31 ± 4.1 kg Muscle Mass, 6.5 ± 2.4 kg Fat Mass, and 48.8 ± 4.5 ml/kg/min VO2 Max). The average of the 20m speed performance of the groups tested BGW and AGW exercises are given in Table 1.

Table 1. 20 m sprint performances results according to test days

	Groups (n:44)	N	Mean ± SD
First Test Day	**BGW**	26	2,99 ± 0,1
	AGW	18	3,08 ± 0,1
Second Test Day	**BGW**	18	2,91 ± 0,1
	AGW	26	2,96 ± 0,1

BGW: before the general warming, AGW: after the general warming, SD: standard deviation

The sprint times of the group that performed BGW were found to be significantly shorter (Table 2; $p < 0.05$).

Table 2. 20 m sprint performances of BGW and AGW groups

Groups (n:44)	Mean ± SD (sec.)	Sig.(p)	Effect Size (Cohen's d)
BGW Running Time	2,96 ± 0,1	0,033 *	0.9 (large effect)
AGW Running Time	3,01 ± 0,1		

BGW: before the general warming, AGW: after the general warming, SD: standard deviation
*p< 0.05

DISCUSSION

The study investigated the acute effect of applying the dynamic stretching phase in different warm-up parts on 20-meter sprint performance. The study's key finding is that conducting dynamic stretching exercises before the general warm-up improves acute 20-meter sprint performance.

A classical warm-up procedure generally includes low-intensity aerobic exercise (jogging or running), followed by a series of static & dynamic stretching routines, and finishes with sport-specific movement patterns. Recently cumulative research results suggested a negative impact of acute static stretching on subsequent sprint running performance (21-24). Otherwise, many research data showed that dynamic stretching enhances sprint running performance (25, 26). Although the duration of the dynamic stretching routine is related to the intensity and volume of the stretching movements (25, 27), it has been reported that the most optimal routine consists of one or two sets of 12 movements performed at a fluent tempo (28). 20 meters sprint performance requires high acceleration skills. Ground reaction force (29), muscle temperature, type 2 a-b motor unit recruitment, synchronization, running mechanic, technique, step frequency, and distance all play important roles in the development of this acceleration. Stimulation of all physiological components during the warm-up phase can directly impact sprint performance. Different parts applied during the warm-up affect these physiological mechanisms at different levels. More metabolic gains can be achieved in the sub-

max running phase of the general warm-up phase. In the dynamic stretching phase, motor unit activation and synchronization, its relationship with the running technique components, and stretch-shortening cycle mechanism gains can be achieved. In the activation part, it is known that a suitable physiological basis for performance in neuronal, neuromuscular, and intramuscular mechanisms of sprint performance is provided (26). The times at which the activated physiological processes achieve peak performance and then return to baseline differ. The motion forms applied in dynamic stretching can positively affect the locomotor mechanism needed during running.

Another potential mechanism for dynamic stretching to increase performance is post-activation potentiation (PAP). The moderate intensity of the movement patterns, especially for the lower extremity, during dynamic stretching creates a PAP effect through contraction and stretching in the antagonist's muscles to be used before the sprint. Performance improvement after PAP has been reported to be related to improved motor unit excitability (30), increased motor unit involvement and synchronization, decreased presynaptic inhibition, or greater central activation of motor neurons (31). On the other hand, PAP-induced phosphorylation in myosin contributes to an increase in the prolongation-shortening cycle rate (31). As a result of this study, it is known that the time interval where the PAP effect provides the highest gain is 8-12 minutes, among the possible reasons for higher sprint performance in BGW (32). General warm-up and transition phase time intervals of 5 minutes after dynamic stretching may have brought the participants closer to the 'maximum effect time interval'. Another possible mechanism may be that general warm-up increases the metabolism and intramuscular temperature of muscle groups whose activation is increased by movements similar to running mechanics in dynamic stretching through warm-up running.

Another important factor is the increase in core and intramuscular temperature during the warm-up period. The increase in muscle temperature after warm-up causes an increase in performance in power and speed-based sports (33). Studies have shown that the temperature of the vastus lateralis muscle increased by ~3 degrees after dynamic stretching and a 15-minute sprint-based warm-up (33). Especially after the general warm-up period, the core temperature increase continues gradually, reaching its peak in ~ 10 minutes (34). The increase in performance seen in BGW, the gradual increase in the heat gain provided by dynamic stretching, and the gradual increase in general warming may have improved other physiological mechanisms associated with sprint performance.

Limitation

In the study's experimental design, applying a 20-meter sprint performance test without warming up could have helped better understand the subject. However, it could not be performed considering the risk of injury (35).

CONCLUSION

The study showed that dynamic stretching before the general warm-up affected the 20-meter sprint performance more positively than AGW. Athletic performance coaches and coaches should experience which warm-up strategy their athletes respond better to achieve higher performance in sprint-based training and competitions. In future research, studies designed with a test-retest experimental approach and physiology-based studies are needed to understand the gains obtained. Furthermore, only 20 meters sprint performance was performed in this study. Considering the dynamics of a soccer game, it should be noted that it will have different factors that should be clarified in future studies.

Conflicts of interest

The authors declare no conflict of interest.

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Investigation of Weight Loss Methods of Wrestlers Fighting in Different Styles and Categories During the Competition Period

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Abstract

This research was conducted in order to determine the preferred weight loss methods of wrestlers in the category of juniors, cadets and espoir who compete in Greco-Roman and freestyle wrestling. 215 male wrestlers between the ages of 14 and 17 participated in the study. In order to determine the weight loss methods of wrestlers, the "athlete weight loss methods and effects scale" developed by Yarar et al. (2016) and the personal information form developed by the researchers were used. In the analysis of the data obtained from the wrestlers SPSS package program was used. Independent t test was used from binary comparisons and ANOVA test was used for multiple comparisons. Significance level was accepted as $p<0.05$. According to the styles variable, it was found that there was a significant difference between free and Greco-Roman wrestlers in the diet sub-dimension of the athlete weight loss and effects scale ($p<0.05$). According to the category variable, it was determined that there was a significant difference in the diet and ergogenic aids sub-dimensions of the juniors and the espoir ($p<0.05$).
As a result, it is observed in the research findings that wrestlers usually use the diet method as a method of weight loss. It is thought that one of the most appropriate methods to protect the health and athletic performance of athletes is to apply a conscious diet, which will be more advantageous than other methods. In addition, it can be said that wrestlers consciously and healthily apply weight loss methods as they get older.

Keywords: Wrestle, Weight Loss, Competition Period

INTRODUCTION

According to the definition of the International Amateur Wrestling Federation (FILA), wrestling; is a struggle in which two people try to bring each other's backs to the ground or achieve technical superiority in accordance with certain rules by using their strength, endurance, technique, skill, flexibility and intelligence on the mat that meets certain standards, without using any tools (1,2). Wrestling is a sport that is among the Olympic competition sports and whose popularity is increasing day by day (3). Mattress wrestling, which is conducted according to the rules established by the World Wrestling Association, is applied in two ways: freestyle wrestling and Greco-Roman style wrestling (4). United Word Wrestling (UWW), which aims to make wrestling known as a fairer competitive sport and to develop the basic rules of this sport, has created weight categories to enable its athletes to participate in the competition with certain body weights (3).

Athletes lose weight in order to compete in their own weight, to look more aesthetic, or to improve their performance capacity and gain an advantage over a weaker and thinner opponent in a lower weight category (5). Due to the fact that wrestling consists of different weights, athletes may want to participate in the competition in a lower weight category by losing weight. Because weight loss has been a method that attracted attention by athletes since the 1924 Paris Olympics (6). Weight loss and participation in the underweight competition, which is also of interest to Turkish wrestlers, is a very common practice (4,7). In these applications, athletes generally reduce 2 to 10% of their body weight before each competition (usually 2-3 days before the weigh-in) to compete in the lighter weight category (8,9). It has been determined by studies that athletes deliberately starve for a long time (>24 hours), exercise excessively, reduce their food and fluid intake, train with plastic/rubber clothing, and resort to traditional methods such as sauna in order to reduce their body weight sharply and rapidly. As a result of these methods, it has been reported that rapid weight loss creates disadvantages in the physiological and psychological states of wrestlers along with a decrease in their sportive performance (5, 10,11).

It has been indisputably true that rapid weight loss negatively affects a number of health-related variables (12, 13). Weight loss of athletes with calorie restriction method will cause the loss of minerals or vitamins necessary for the body and the participation of athletes in competitions at low energy levels (14). Rapid weight loss methods harm the aerobic and anaerobic performance of the athlete, accelerate the emptying of glycogen stores in the muscles, cause negativity in the heat regulation system, reduce the volume of fluid plasma, disrupt the fluid-electrolyte balance and increase the number of heart beats above normal (12). In addition, rapid weight loss is reported to increase the level of depression, aggression, anger and fatigue in athletes, as well as to cause short-term memory, self-confidence and concentration decreases (12, 15).

Athletes unconsciously apply the weight loss methods they prefer to compete in a lower weight category and ignore the negative effects of this situation (16). In addition, it is known that families, sports and health professionals are concerned about methods used for rapid weight loss such as excessive fluid loss, calorie restriction, use of diuretic drugs, diet pills, diarrhea medications, training clothes made of nylon material, vomiting and some other methods (17).

It is important to determine the rapid weight loss methods preferred by the athletes and the disadvantages resulting from these methods. Therefore, this research was carried out in order to determine the weight loss methods preferred by the wrestlers in the categories of juniors, cadets and espoir competing in Greco-Roman and freestyle before the competition period, and to determine the negative effects of these methods.

METHOD

Before starting the research, first of all, "Bingöl University, Health Sciences Scientific Research and Publication Ethics Committee has been approved by the decision no. 16 dated 18/10/2022 and meeting number 22/18.

Model of the Research

In this study, general survey model, one of the quantitative research methods, was used. This model is a type of scanning that will be carried out on the whole universe or the sample to be taken from it in order to make a general judgment about the universe in a universe consisting of large numbers (18).

Study Group of the Research

The study group of this research consisted of n= 215 male athletes who participated in wrestling competitions in different styles (Greco-Roman and freestyle) and categories (juniors, cadets and espoir) in Bingol.

Data Collection Tools

In this study, it was focused on determining the methods of losing weight during the competition period in Greco-Roman and freestyle wrestlers aged 14-17. Personal information form and athlete weight loss methods and effects scale were used as data collection tools.

Personal Information Form:

A Personal Information Form developed by the researcher was used to collect data about the independent variables of the study. The personal information form was evaluated by the answers of the athletes participating in the research to five questions in total to determine their style, age, height, normal weight and competition weight.

Athlete Weight Loss Methods and Effects Scale:

The Athlete Weight Loss Methods and Effects Scale, which was developed by Yarar et al. (2016) and was reliably validated (alpha value α=0.74), consists of a total of 19 questions and 5 sub-dimensions. When we look at the content and question distribution of these sub-dimensions;

1. **Diet:** In this sub-dimension, the level of reducing the consumption of fats, the consumption of carbohydrates and food consumption in general, which is one of the diet methods, is measured while the athlete loses weight. (Question 1,2,3).

2. **Fluid Loss:** In this sub-dimension, it is measured to what extent the athlete tends to lose weight with actions such as sweating, spitting and jogging with a raincoat by entering the sauna while losing weight (Question 4,5,6).

3. **Ergogenic Aids:** This sub-dimension measures weight loss methods and measures the degree to which the athlete uses chemical substances such as diureticians, diet pills, etc. while losing weight (Question 7,8,9).

4. **Physiological Effect:** In this sub-dimension, the degree to which the athlete experiences muscle cramps, heart palpitations, respiratory distress, disability, and the physiological effects of an increase in body temperature while losing weight is measured (Question 10,11,12,13,14).

5. **Psychological Impact:** In this sub-dimension, the athlete's psychological state of feeling about his desire to do sports, nervousness, fatigue, stress and performance levels while losing weight is measured (Question15,16,17,18,19).

The questionnaire consists of 5 likerts. The numerical equivalent of the answers to be given; Never=1, Rarely=2, Occasionally= 3, Often= 4, Always=5 (19).

Implementation of Research:

Before the scale was applied, the wrestlers' coaches, their families and themselves were interviewed and the necessary information was given about the purpose of the research, and the athletes who were eligible for the research were included in the research.

Analysis of Data

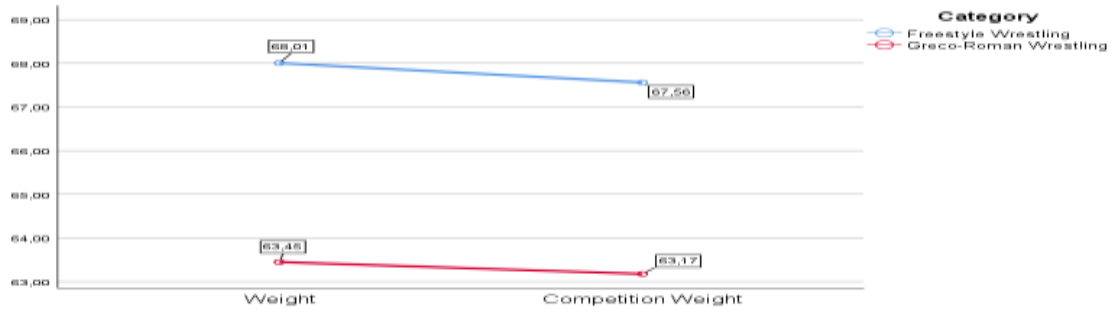
The analysis of the obtained data was performed in SPSS 25 package program. According to the Kolmogorov Smirnov test, since the data showed a normal distribution, the independent t test was used from the binary comparisons in the scale scores and the One-way analysis of variance (ANOVA) was used in multiple comparisons. The differences resulting from ANOVA were evaluated by Tukey HSD test. The significance level was accepted as $p<0.05$.

FINDINGS

Table 1. Average Height and Body Weight of Wrestlers

Variables	Branch	N	$\bar{x}$ ± S.S.
Height (cm)	Freestyle Wrestling	112	1.70 ±.08
	Greco-Roman Wrestling	103	1.69 ± .10
Normal weight (kg)	Freestyle Wrestling	112	68.01 ± 17.71
	Greco-Roman Wrestling	103	63.44 ± 17.65
Competition weight (kg)	Freestyle Wrestling	112	67.56 ± 17.14
	Greco-Roman Wrestling	103	63.17 ± 17.52

Graphic 1. Normal body weight and competition body weight by category



When the graph is examined, it is seen that the Freestyle wrestlers were 68.01±17.71 kg, but they decreased to 67.56±17.65 kg for the competition. It is seen that Greco-Roman wrestlers were 63.44±17.65 kg, but for the competition, they dropped to 63.17±17.52 kg.

Table 2. Comparison of sub-factors by styles

Variables	Branch	N	$\bar{x}$ ± S.S.	t	p
Diet	Freestyle Wrestling	112	2.98±1.00	**-2.272***	0.045
	Greco-Roman Wrestling	103	3.24±0.99		
Fluid Loss	Freestyle Wrestling	112	2.10±0.99	-0.140	0.889
	Greco-Roman Wrestling	103	2.11±0.94		
Ergogenic Aids	Freestyle Wrestling	112	1.46±0.89	0.622	0.534
	Greco-Roman Wrestling	103	1.38±0.90		
Physiological effect	Freestyle Wrestling	112	1.99±0.83	0.164	0.870
	Greco-Roman Wrestling	103	1.97±0.92		
Psychological impact	Freestyle Wrestling	112	2.09±0.85	-0.741	0.458
	Greco-Roman Wrestling	103	2.18±0.95		

*<0.05

A significant difference was found at the p<0.05 level between freestyle wrestling and Greco-Roman wrestlers in the "Diet" sub-dimension of the athlete's weight loss and effects scale. It was determined that the average scores of Greco-Roman wrestlers were higher, in summary, they were more inclined to diet. There was no significant difference in the sub-dimensions of "fluid loss, ergogenic aids, physiological effect and psychological effect". It was determined that the average scores of "fluid loss and physiological effect" in the categories were close to each other. It was determined that freestyle wrestlers were more prone in the "ergogenic aid" sub-dimension, and Greco-Roman wrestlers were more prone in the "psychological impact" sub-dimension

Table 3. Comparison of sub-factors by categories

Variables	Groups	N	$\bar{x}$ ± S.S	F	p	Tukey HSD
Diet	Juniors	54	2.88±1.12	**4.493***	0.011	Juniors-Espoir *
	Cadets	98	3.04±0.94			
	Espoir	63	3.41±0.91			
Fluid Loss	Juniors	54	2.27±0.96	1.207	0.276	---
	Cadets	98	2.10±1.03			
	Espoir	63	1.98±0.84			
Ergogenic Aids	Juniors	54	1.67±1.12	**3.241***	0.017	Juniors-Espoir *
	Cadets	98	1.43±0.92			
	Espoir	63	1.20±0.49			
Physiological effect	Juniors	54	2.14±0.99	1.108	0.237	---
	Cadets	98	1.97±0.92			
	Espoir	63	1.86±0.65			
Psychological impact	Juniors	54	2.12±0.89	0.090	0.897	---
	Cadets	98	2.16±0.95			
	Espoir	63	2.10±0.83			

*<0.05

A significant difference was found at the p<0.05 level in the sub-dimensions of "Diet and Ergogenic Aids" of the athlete's weight loss and effects scale according to categories. It is seen in the table that this difference stems from the "juniors and espoir" group. It is seen from the average scores that in the "diet" sub-factor espoir tend to diet more, and in the "ergogenic aids" sub-factor, the juniors tend to use more ergogenic aids. No significant difference was found in the sub-factors of "fluid loss, physiological effect and psychological effect". It was determined that the average scores of the juniors in the "fluid loss and physiological effect" sub-factor and the stars in the "psychological effect" sub-factor were higher.

DISCUSSION AND CONCLUSION

This research was carried out to determine the weight loss methods preferred by wrestlers in the categories of juniors, cadets and espoir competing in Greco-Roman and freestyle styles. According to the results obtained from the athletes participating in the research; It was observed that there was a significant difference between freestyle wrestling and Greco-Roman wrestlers in the "Diet" sub-dimension of the athlete weight loss and effects scale (p<0.05). It was determined that the average scores of Greco-Roman wrestlers were higher and that the athletes were more likely to diet in the formation of this difference. There was no significant difference in the sub-dimensions of "fluid loss, ergogenic aids, physiological effect and psychological impact".

It was determined that the average scores of "fluid loss and physiological effect" in the categories were close to each other. It was determined that freestyle wrestlers were more prone in the "ergogenic aid" sub-dimension, and Greco-Roman wrestlers were more prone in the "psychological impact" sub-dimension.

When the researches in the literature related to the results of our research were examined, it was seen that the research comparing the weight drop scale of wrestlers competing in Greco-Roman and freestyle was limited. Cesur reported that there was a significant difference in favor of freestyle wrestlers in the physiological effect sub-dimension according to the sport branch variable, and that while freestyle wrestlers lost weight, they were physiologically affected more than Greco-Roman style wrestlers (20). He also reported that there was no significant difference in terms of other sub-dimensions. Although this result does not show parallelism with the result of our research, it is important in terms of contributing to the literature.

In the literature, there are studies examining the weight loss methods of wrestlers with different aspects. The percentage of elite wrestlers who prefer diet and exercise method as a weight loss method is higher than

those who prefer the pills and sauna method (21). Considering the weight loss methods generally preferred by elite wrestlers, it has been reported that they prefer methods such as restricting food intake and reducing fat consumption (22). Freestyle wrestlers have been reported to reduce food consumption and fat consumption mostly in diet size from weight loss methods, while Greco-Roman style wrestlers prefer to reduce fat consumption mostly in diet size (20). It is stated that the main weight loss method of wrestlers is a gradual diet (79.4%) (23). In his study, Çolak reported that wrestling, judo and teakwondo athletes used the diet method the most and the least ergogenic aids method among the physiological, psychological, ergogenic, diet and fluid loss methods (24). It is seen that wrestling and judoka athletes adjust their weight loss process by dieting 1-2 weeks in advance, and the vast majority of them reduce their fat and carbohydrate consumption. In addition, it is stated that athletes have the right approach in both branches as diet and training while losing weight, but they lose weight quickly (25). In his study, Yağmur stated that 92.9% of elite Greco-Roman wrestlers reduced their weight by reducing their food consumption, 87.1% their carbohydrate consumption, and 95.7% their fat consumption (26). Reducing the weight consumption of wrestlers in the diet sub-dimension (heavyweight 54.1%; middleweight 37.2%; light weight 35.6%) was found to be the most preferred response (14). According to the results of the literature research and our study, it is seen that wrestlers generally prefer the diet method as a weight loss method (21,22, 20, 23, 24, 25,26,14).

Individuals who exercise need nutrition programs that contain sufficient energy and nutrients in order to reach their ideal body weight. Individuals who exercise regularly need to take macro and micro nutrients at a sufficient level in order to avoid negative situations that may cause performance loss such as injury and loss of concentration during training and competition. In addition, issues that individuals need support such as health, sports, food choices, body weight and body composition should be planned by experts and dietitians (27,28).

Another result obtained from the wrestlers participating in our research is that there is a significant difference in the "Diet and Ergogenic aids" sub-dimensions of the athlete weight drop and effects scale according to categories ($p<0.05$). This difference stems from the “juniors and espoir” groups. In the diet sub-factor, it is seen from the average scores that young people tend to diet more, and in the "ergogenic aids" sub-factor, the juniors tend to use more ergogenic aids. No significant difference was found in the sub-factors of “fluid loss, physiological effect and psychological effect”. It was determined that the average scores of the juniors in the "fluid loss and physiological effect" sub-factor and the cadets in the "psychological effect" sub-factor were higher.

When the studies in the literature related to the result of our research were examined, it was seen that the studies that compared the sub-dimensions of the weight loss scale of the wrestlers according to the categories were limited. Yılmaz reported in his study that there was a significant difference ($p<0.05$) in the diet, fluid loss, psychological sub-dimensions and total scale scores of judo and wrestlers (25).

As a result, it is seen in the findings of our study that wrestlers generally use the diet method as a weight loss method. We think that one of the most appropriate methods to protect the health and sportive performance of athletes is to implement a conscious diet, which will be more advantageous than other methods. In addition, we can say that as the age progresses, the wrestlers apply the methods of losing weight consciously and in a healthy way.

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Training Monitoring and Effect of Training Variables on Wellness Score in Elite Male Fencers

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Abstract

Subjective measures such as well-being indices may be beneficial to balance fatigue and recovery on the fatigue continuum and awareness of well-being is considered a useful sign for identifying nonfunctional overreaching (NFOR) status. Recovery and neuromuscular fatigue process from training may be delayed because of the eccentric component during a stretch-shortening cycle (SSC) type activities and needs to be well monitored during fencing training and matches. The aim of the study is to investigate training monitoring of elite male fencing athletes aged 15-23 and to examine the variables that affect wellness during intensified training sessions. The study includes 16 elite men's saber fencers who train regularly and comprised of 139 data concentrated on training and 6 data engrossed on competitions. These data were examined throughout 2 different time sessions and an overall duration. Wellness scores, acute/chronic workload ratio (ACWR) and monotony scores were collected. The main findings of this study, in training loads a statistically significant difference was not observed between sessions, but in wellness scores, a significant difference was observed between sessions (acute load, p=0.861; hooper index, p=0.003). ACWR (p=0,6103) and monotony (p=0,4810) scores were not observed to be significant predictors of wellness both univariate and multivariate. In summation, this investigation concluded and reinforced the notion that the wellness score is a vital criterion in training and performance monitoring. It was discovered and noted that the continuity of the trainings and the increased intensity of the competition resulted in the wellness score to increase during the second session.

Keywords: Training monitoring, fencing, wellness, sRPE

Elit Erkek Eskrimcilerde Antrenman Takibi ve Zindelik Skoruna Antrenman Değişkenlerinin Etkisi

Zindelik indeksi gibi subjektif ölçütler, yorgunluk ve toparlanmayı dengelemek için faydalı olabilir. Ayrıca zindelik farkındalığı, işlevsel olmayan aşırı erişim (non-functional overreaching) durumunu belirlemek için faydalı bir işaret olarak kabul edilir. Antrenman kaynaklı toparlanma ve nöromüsküler yorgunluk süreci, gerilme-kısalma döngüsü (stretch-shortening cycle. - SSC) tipi aktiviteler sırasında eksantrik bileşen nedeniyle gecikebilir, dolayısıyla eskrim antrenmanı ve maçları sırasında iyi izlenmesi gerekir. Çalışmanın amacı, 15-23 yaş arası elit erkek eskrim sporcularının antrenman takibini ve yoğunlaştırılmış antrenman dönemlerinde zindeliği etkileyen faktörleri incelemektir. Çalışma, düzenli olarak antrenman yapan 16 elit erkek kılıç eskrimcisini kapsamaktadır. 139 antrenman ve 6 müsabaka verisi değerlendirmeye dahil edilmiştir. Bu veriler birinci, ikinci dönem ve genel

dönem olarak sınıflandırılmıştır. Zindelik skorları, akut/kronik iş yükü oranı (Acute/Chronic Workload Ratio - ACWR) ve monotonluk skorları toplandı. Bu çalışmanın ana bulguları, antrenman yüklerinde dönemler arasında istatistiksel olarak anlamlı bir fark gözlenmezken, zindelik puanlarında dönemler arasında anlamlı bir fark gözlemlenmiştir (akut yük, p=0.861; hooper indeksi, p=0.003). ACWR (p=0,6103) ve monotonluk (p=0,4810) puanlarının hem tek değişkenli hem de çok değişkenli analizde zindelik durumunun kestiricisi olmadığı gözlemlenmiştir. Özetle, bu araştırma, zindelik puanının antrenman ve performans takibinde önemli bir kriter olduğu fikrini desteklemiştir. Antrenmanların devamlılığının ve müsabaka yoğunluğunun artmasının ikinci periyotta zindelik puanının yükselmesine neden olduğu gözlemlenmiştir.

Anahtar Kelimeler: Antrenman takibi, eskrim, zindelik, aAZD

INTRODUCTION

Fencing is an Olympic combat sport which includes both attacks and defensive movements between two athletes in regards to their respective weapons discipline and the rules regulated by the Fédération Internationale d'Escrime (FIE). During a fencing bout, lots of lunges, forward and backward change of direction (COD) occurs in a very short session of time and those high intensity explosive movements are interspersed with low-intensity mechanics (33). Over the years, the FIE has drastically altered the competitive nature of the rules governing each branches weapons. This has provoked elite level sportsman to perceive the importance of adopting superior footwork focused predominantly on explosiveness, speed, acceleration, and COD (2). As a result of these, the training load varied and it became important for trainer or researchers to calculate it in order to analyze both fitness and fatigue.

Recovery and neuromuscular fatigue process from training may be delayed because of the eccentric component during a stretch-shortening cycle (SSC) type activities and needs to be well monitored during fencing training and matches (16). Training load monitoring is a popular practice of today's sport science world and being used to observe whether an athlete is adapting to his/her training program. Acute:chronic workload ratio (ACWR) concept, introduced by Gabbett and Tim (14), aims to monitor an individual's response to training, assessing fatigue and the associated need for recovery, and minimizing the risk of nonfunctional overreaching (NFOR), injury and illness. These training-induced adaptations are associated with the internal training load which consists of the actual physiological stress imposed on the athlete's organisms. While heart rate (HR) and lactate are relatively poor tools for the measurements of internal load to monitor training stress for short duration high intensity or intermittent exercises. The rapid change in the rates of HR and oxygen consumption (VO2) during the exercises may not yield efficient results in determining the training intensity. Precise determination of training loads is of particular importance for annual planning. Therefore, the modified sRPE scale for resistance training started to be used in exercises (7). Session rated perceived exertion (sRPE; CR-10) is considered to be a valid and reliable tool with good internal consistency for both team sports and individual sports (7,28,29,35). Moreover, it has found that sRPE has a very strong relationship with internal (Edward and Bannister's TRIMP) and external (total distance, number of accelerations) training load parameters (1).

Given the complexity of team sports' intense training sessions, physical performance tests can be difficult to perform frequently. Due to various problems (material, logistical, physical etc.) it requires choosing cost-effective, non-intrusive devices that facilitate monitoring (23). Well-being assessment is a non-invasive, cost-effective, and convenient tool to assess readiness in team sports (32). The relationships between the perceived well-being of the athletes and the state of neuromuscular fatigue encourage the use of this method (19). The data show that perceived well-being exhibits some association with acute and chronic training loads. Subjective measures such as well-being indices may be beneficial to balance fatigue and recovery on the fatigue continuum. Awareness of well-being is considered a useful sign for identifying NFOR status. Hooper index is a well-being rating system, relative to fatigue, stress level, delayed-onset muscle soreness (DOMS) and sleep quality disorders. It is significantly vital that trainers take into consideration the subjective evaluations of their athletes while preparing a training schedule (21). Pre-season camp sessions are the intensified training sessions for a fencer and need to be well monitored with the wellness measures in order not to face with NFOR status.

In this line, training load and wellness monitoring has an important role because of the competitions which will be held consecutively. There are limited monitoring studies about fencing, which highlights internal training load (s-RPE) and wellness in the literature.

Therefore, in line with this information, the aim of the study is to investigate training monitoring of elite male fencing athletes and to examine the variables that affect wellness during intensified training sessions. It was hypothesized that ACWR and monotony would affect the Wellness score.

Materials And Methods

Participants

The study includes 16 elite men's saber (median age 16, 15.0-23.0 years; mean training age 6.88±2.45 years; height 177±52 cm; body mass 68.69±8.17 kg; body mass index 21.84±1.89 kg/m2) fencers who train regularly at the National Training Center. Participants were included and informed of the in-depth analysis conducted through their signatures of the designated consent form in accordance with the ethical standards of the Helsinki Declaration. This document was distributed to both those over the age of 18 who could legally give consent without permission from a guardian, as well as those under the age of 18, with the consent of a parent to participate.

Experimental approach and Study Design

The study is of an observational analytical nature and the data structure is longitudinal. No intervention was made on the participants, they were only monitored. The examination/analysis was conducted under the duration of 14 weeks, this applied to each athletic candidate enrolled in the experimentation. Throughout the time session of 14 weeks, both extensive and meticulous information was gathered, this comprised of 139 data concentrated on training and 6 data engrossed on competitions. Data of competitions were included to weekly load of training loads. The first 3 weeks weren't included in the statistical analysis as it was considered an adaptation session. The procedure had been scrutinized and examined throughout 2 different time sessions and an overall duration; weeks 4-8 being the first time session (61 trainings and 2 competitions), weeks 9-14 being the second time session (78 trainings and 4 competitions) and weeks 4-14 being the overall duration. During the study, the wellness scores were obtained via the Hooper index questionnaire (21). Acute load, chronic load, acute/chronic workload ratio (ACWR) and monotony values were taken by session rating perceived of exertion (sRPE) and duration of training (24). These values were collected every day and included to the statistical analysis. Afterwards, the differences between the first and second sessions were examined. Moreover, correlation of the variables between training monitoring dataset and wellness were examined, and the variables affecting wellness were examined (Table 1.).

Table 1. Schema of Study Design

SESSIONS			
1-3 Weeks	4-8 Weeks	9-14 Weeks	4-14 Weeks
Adaptation Session	First Session	Second Session	Overall Session
DATA COLLECTION			
sRPE		Wellness Scores	
After 30 minutes each training / bout		Every day - Wake up time	

sRPE: session rating of exertion.

Evaluation of Wellness Scores

Participants filled out the Hooper index questionnaire every morning and determined the values of sleep quality, muscle soreness, stress level and fatigue (34). The questionnaire is 7-point Likert type and "1" representing the best or the lowest level, while "7"represents the worst (e.g., sleep) or the highest (e.g., stress, muscle soreness) level. The wellness value is obtained by the sum of 4 sub-scales. The data gathered is than incorporated and implemented into each fencer's own private page via Google Sheets where the results are evaluated meticulously. Thus, peer influence was avoided and tampering of the results.

Evaluation of Training Load, ACWR and Monotony Values

With the sRPE CR-10 Borg Scale, training intensity was evaluated subjectively 30 minutes after each training or each bout (34). Fencers answered the question on the Borg scale, "How tiring and physically exhausting was the training/bout?" to gather intel directly correlating and highlighting to sRPE guidelines and standards, dictating where the participant stands on the scale. The training load is obtained as a unit by multiplying the athlete's sRPE value by the training or bout duration (in minutes). Acute load, chronic load, ACWR and training monotony values were determined by training load in addition (25).

Acute load represents the intensity of the training and competition carried out in 7 days (1 week). Chronic load represents the average intensity of the trainings and competitions performed in 21 days (3 weeks). ACWR is calculated by dividing acute workload by chronic workload. In this study, exponentially weighed moving average (EWMA) method was used in the ACWR calculation. The EWMA cares about the physical fitness levels of athletes as it does not separate historical data from the average data. Accordingly, it was seen that EWMA gave better results than the rolling average (RA) model (18).

The monotony value is calculated by dividing the weekly average load by the standard deviation of the weekly load. While this value may be high as a result of continuing the training with similar loads, its value will be low as a result of performing with changeable loads (13).

Statistical analysis

The Shapiro-Wilk test of normality was used to evaluate the distribution of the data. Mean±standard deviation values were used for normally distributed variables. The median (minimum value-maximum value) was used for variables with skewed distribution. The "Paired Sample t Test" and "Wilcoxon Test" were used to evaluate the differences between the sessions. Generalized Estimation Equations (GEE) method, one of the common approaches to analyze longitudinal data. This was used to examine the effects of session (time), age, EWMA-ACWR and monotony on wellness of the fencers. The final model was selected using The Corrected Quasi-likelihood under Independence Model Criterion (QICC), and the working correlation structure was selected using the quasi-likelihood information criterion (QIC). Variables, which did not have a significant effect, were not included in the final model. In order to evaluate the predictive performance of the model, Root Mean Square Error (RMSE) was calculated. Significance level was set at 0.05. Box plots were created using R, reshape2, ggpub, ggplot2 packages. Statistical analyses were performed using IBM SPSS Statistics for Windows, version 23.0 (Armonk, NY: IBM Corp.).

RESULTS

The main findings of this study, in training loads (TL) a statistically significant difference were not observed between sessions, but in wellness scores, a significant difference was observed between sessions. When the sub-scales were examined, a significant difference was observed in muscle soreness, fatigue and stress scores while no significant difference was observed in sleep quality (Table 2 and Figure 1.)

Table 2. Comparison of the Score Distribution of Hooper Index and Its Subscales between Session Groups (n=16)

Variable	Session 1 (Week 4-8)	Session 2(Week (9-14)	p
Hooper Index[a]	77.306±26.1914	91.073±30.7711	0.003[#]
Sleep Quality[a]	21.615±7.291	23.365±7.972	0.181
Muscle Soreness[a]	16.731±7.8928	20.01±9.1616	0.040[#]
Fatigue[a]	21.804±10.589	23.667±10.6225	0.032[#]
Stress[b]	13.7 (7.6-43)	19.417 (9.167-49)	0.003[#]
Acute Workload[a]	2684.375±1298.694	2731.25±1345.868	0.861
Chronic Workload[a]	3131.1±1529.0036	2760.208±1374.3429	0.206
ACWR[b]	0.967 (0.258-1.84)	0.963 (0.272-1.148)	0.569
Monotony[a]	1.065±0.3279	0.973±0.307	0.200

[a]. Paired samples t test ; [b]. Wilcoxon test ; [#]. significant effect at the p<0.005 level

bold p values indicates that the difference between session groups is statistically significant at p<0.05

In Table 3, GEE is used to determine the predictors of the hooper index. GEE have been developed to obtain longitudinal, clustered, more efficient and unbiased estimations. And it can make predictions by

making the assumption of normality and unrelated error terms unnecessary. The increase in the wellness score in the second session was statistically significant both univariate and multivariate. Age, EWMA ACWR and monotony scores were not observed to be significant predictors of wellness both univariate and multivariate.

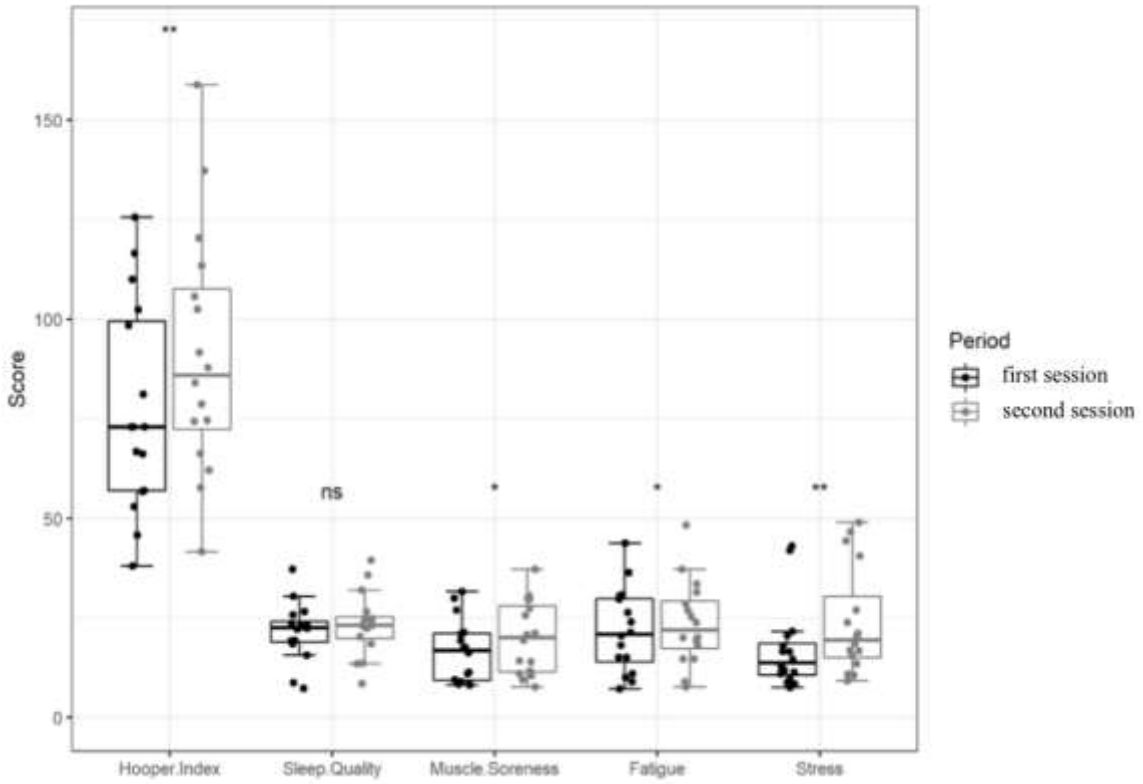

Figure 1. Plot of Hooper Index scale and its sub-scales in periods.

Table 3. Results of the Generalized Estimating Equation Models for Predicting Hooper Index

Variable	Univariate			Multivariate		
	Coefficient	p	RMSE	Coefficient	p	RMSE
Session 2 (Week 9-14)*	13.77	0.0003#	27.67	13.40	0.0009#	27.96
Age	-0.54	0.7235	28.48	-0.58	0.7601	
ACWR	-4.60	0.6103	28.54	-4.20	0.5580	
Monotony	-7.31	0.4810	29.06	-3.69	0.8453	
*Referance group is Session 1 group						
# significant effect at the p<0.005 level						
Model residuals were normally distributed at 0.05 significance level in all univariate and multivariate models.						

A moderate correlation (0.30-0.50) was observed between Hooper Index value and acute load for all sessions. A moderate correlation (0.30-0.50) was observed with acute load in the first session in sleep quality and fatigue sub-scales. In muscle soreness, the correlation level was small with all sessions of acute load. And for stress, the correlation level was trivial (-0.10 - +0.10) with second session and overall of acute load (Figure 2.).

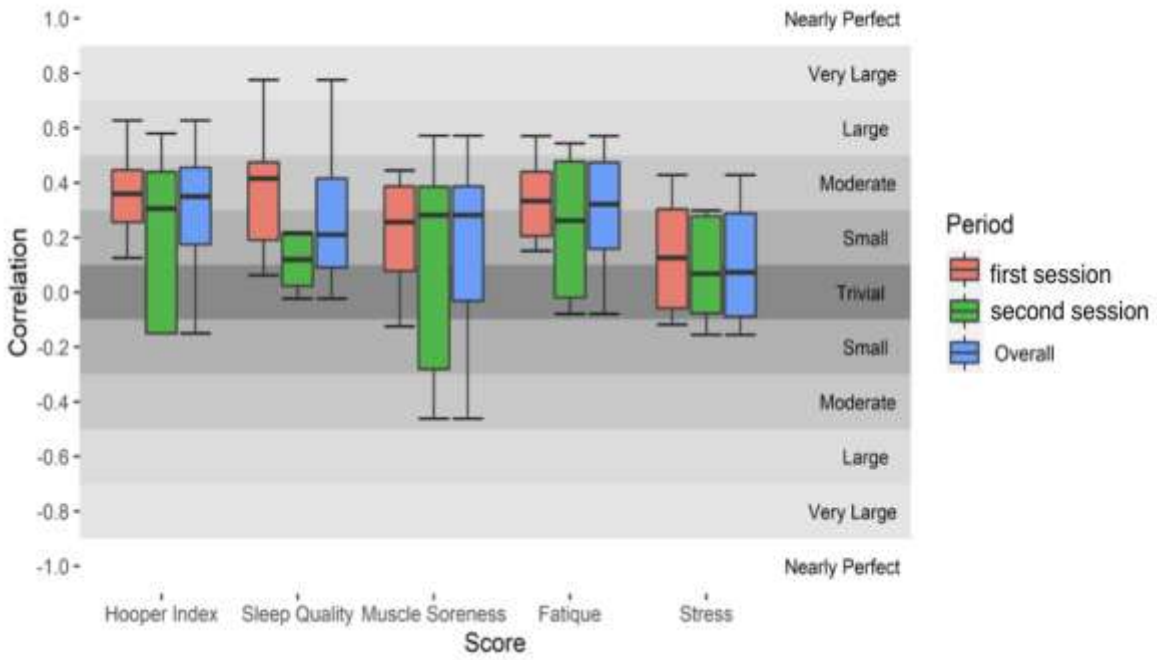

Figure 2. Correlations between Acute Load (AL) and Hooper Index scale and its sub-scales. First box plots represent the first session, second box plots represent the second session, and the last box represent the overall results.

A small correlation (0.10-0.30) was observed in the ACWR score in the second session of the hooper index, the second session of sleep quality, the second session of the fatigue score, the second session of the stress score. And correlation level was trivial between ACWR and first session of hooper index, sleep quality and overall of hooper index, sleep quality fatigue and stress (Figure 3.).

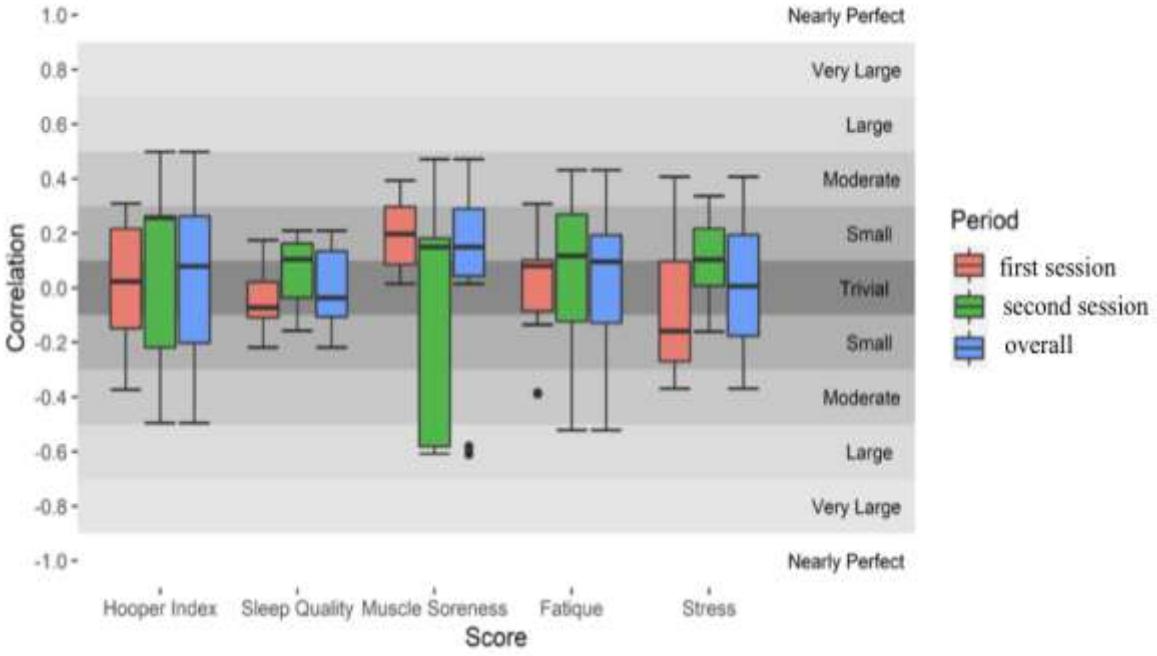

Figure 3. Correlations between ACWR and Hooper Index scale and its sub-scales. First box plots represent the first session, second box plots represent the second session, and the last box represent the overall results.

DISCUSSION

In this study, the experimentation meticulously examined training monitoring and the variables affecting the wellness score of elite male fencers. In this context, a significant difference was observed between the sessions of wellness among the fencers who participated in the study. Moreover, a significant difference was observed between sessions in muscle soreness, fatigue and stress scores, while no significant differences was found in sleep quality. No significant difference was observed between the sessions in the parameters of acute load, chronic load, ACWR, and monotony.

When the training monitoring data was examined, it can be said that the training load values were at the optimal level (14). Similarly, it was observed that the monotony values were far from the overtraining level (13). The training loads, acute and chronic workloads in this study were similar in studies performed in different sports branches (29, 30). In this line, Nobari et al. (29), observed similar values in acute load (pre-season:2269, mid-season: 2497, end-season: 2414), (pre-season: 2209, mid-season: 2507, end-season: 2469) and ACWR in their study on wrestlers (ACWR: Pre-season: 1.11, mid-season:1.00, end-season: 0.99). Paulauskas et al. (34), in their study on female basketball players, observed that there were similar results in acute load, chronic load, ACWR, and monotony values (30). Contrary to these studies Turner et al. (35), in their study on fencers, observed that the weekly training load was higher compared to this study. Again, Turner et al. supported this study with the finding that sRPE is a reliable scale in fencers.

The increase in the wellness score means the decrease of the fitness levels of the athletes. Therefore, compared to the first session, it can be said that the training and competitions in the second session affected the athletes both mentally and physically. Acute load and chronic load values support these findings. Recent studies in the literature have reported that there is a relationship between training load and well-being (sleep, stress, muscle pain) (10,17,26). In the second session, while the acute load value representing fatigue increased, the chronic load value representing the fitness level decreased. However, no statistically significant differences was observed. As a result of the study of Windt et al. (36) according to the importance of the match or event, the coaches suggested that they could reduce the training intensity in order to prevent poor performance and injury. The stress associated to an important competition or big organization such as the Olympic games can increase the stress level of the athlete and it is highly recommend that a plan should be implemented accordingly. In this study, the biggest increase occurred in the stress variable in the second session. It can be said that the stress level of the athletes are associated with the increase in the intensity of the competition and the increase of the importance of the competition during the season, each competition distributes different amounts of both prestige and points on the world ranking, distributing different amounts of stress on each individual fencer.

The change of well-being between sessions can be considered normal in sports teams. Well-being scores decreased during the intense, fast-paced and tiring sessions of the season (5). In a sport that includes repetitive explosive movements such as volleyball, the effect of training is generally associated with certain sessions of the season (8). For example, it has been reported that the monitoring of training load has a positive relationship with health before and in the middle of the season, while it has a negative relationship with well-being towards the end of the season (7). Considering the results of these research findings, the reason for the increase in the second session well-being score may be the accumulated fatigue and the increased number of competitions. It can be said that there are 2 competitions in the first session, 4 competitions in the second session and the increasing importance of the competitions affect the wellness scores of the athletes negatively. Similar to our study, Hills et al. (20) it has been reported that the accumulated fatigue and low rest towards the end of the season in rugby athletes at 12-week monitoring negatively affect well-being scores. Although the training load has similar values, the low monotony value may be due to the fact that the practitioners followed a planned and conscious training program. The fact that the ACWR value is also at an optimal level supports this interpretation. Nobari et al. (27) reported a significant increase in DOMS scores in wrestlers during the peak sessions of the season. Again, Clemente et al. (6) found that the wellness scores in basketball players was higher in the weeks with 2 games compared to the weeks with a single game. Considering these results in the literature, the decrease in the well-being of the current study during the busy weeks of the season supports the literature.

The sub-scales of the Hooper index are as important as the overall wellness score. There are numerous of studies in the literature that examine this situation individually. Govus et al. (17), stated that muscle soreness is associated with sRPE and stated that muscle soreness is important in the responses of the training given to the athletes. Similarly, Tavares et al. (31) stated that the muscle soreness monitoring of rugby athletes is more important especially in the lower body and depends on the training performance of the athletes. In this study, the increase in muscle soreness in the second session can be explained by increasing loads by continuing training and competitions without interruption. It is known that keeping sleep quality at a good level is one of the best recovery methods against fatigue. At the same time, it was seen in a study that sleep can be affected by many external factors like stress, environmental pressure, and anxiety (12). Driller et al. (11) in another study, which compared the sleep of athletes and non-athletes, and found that although athletes need more sleep, they sleep less than sedentary people. Parallel to this study, Ma et al. (22) concluded that knee injury due to overuse did not affect sleep quality in male fencers.

In this study, it was seen that while the Hooper index provided moderate correlation with acute load, it provided a small correlation with ACWR. Moreover, as a result of the GEE analysis, it was observed that the fitness score was not a significant predictor of age, ACWR and monotony values, except for the sessions. As a result of a comprehensive (n=14109) study on this subject, Campbell et al. (3) reported that both internal and external load were predictors of the wellness score to a limited extent and stated that practitioners should be careful when interpreting scores. Similar to the findings of this study, Delaney et al. (9) did not find a significant relationship between pre-training wellness scores, external load and sRPE. Nobari et al. (28) reported that the hooper index is the best predictor of acute load. In the same study, the sleep quality also stated a significant correlation with acute load. Clemente et al.(4) observed that the Hooper index was associated with acute load, chronic load, and ACWR. Gallo et al. (15) reported that pre-training wellness score is related to external load and internal load and can provide information about the training output that players can produce for a session. As a result of these findings, it can be said that the wellness scores of the athletes may be affected by other external factors as well as the training load. In addition, analyzes of well-being and training load can help make the management of trainers' training load more effective and prevent harmful acute reactions such as muscle pain, sleep, stress and fatigue. This study is limited to 16 fencers training at Turkish Olympic Training Center. It is also limited to male fencers and sabre fencers. Due to the small number of athletes in this training center, no calculation was made regarding the sample size and all athletes who volunteered to participate in the study were included in the study.

CONCLUSION

In summation, an in-depth carefully analyzed study was conducted exhibiting and portraying elite male fencers training monitored results. This investigation concluded and reinforced the notion that the wellness score is a vital criterion in training and performance monitoring. It was discovered and noted that the continuity of the trainings and the increased intensity of the competition resulted in the wellness score to increase during the second session. Nevertheless, it should be duly noted that the wellness score is a sensitive variable and may be affected by other factors such as education and social environment that were not included in the study. It is advocated and recommended that further training monitoring studies are crucial to evaluate fencers and their wellness score to alter the trajectory of future studies and analysis in order to foster more appropriate and effective training programs for recreational, competitive, national team, and Olympic level fencers.

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Examining the Relationship of Some Performance Tests Applied to Young Soccer Players

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Ethical Statement: It is declared that scientific and ethical principles have been followed while carrying out and writing this study and that all the sources used have been properly cited.

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Abstract

Soccer is a team sport that requires complex and high levels of tactical, technical and physical ability to be successful. In a soccer match, various combinations of technical and tactical parameters, as well as power and explosiveness are displayed intermittently for 90 minutes. From this point of view, the aim of this study was to examine the relationship between different performance tests applied in young soccer players.

21 male soccer players (16.33± 0.66 years, height; 172± 6.05 cm, body weight; 57.00± 8.81 kg) from an amateur soccer team in Konya voluntarily participated in the study. In the study, anthropometric measurements, two legged vertical jumping, yo-yo intermittent recovery 1 and 2 test, 30m sprint test and agility t test parameters were measured. The data were analyzed using the SPSS 24 package program, and the Pearson Correlation test was used in the analysis of the obtained data.

As a result of analysis of data; a negative correlation was found between two legged vertical jumping data and 30m speed and agility t test. A significant positive correlation was found between 30m sprint test and agility t test. Again, a negative correlation was found between agility t test and yo-yo 1 and 2 tests. In addition, there was also a positive correlation between the yo-yo 2 test and the yo-yo 1 test.

As a result, it has been observed that different performance tests applied to young soccer players in determining their basic motoric characteristics have both negative and positive correlations with each other.

Keywords: Agility, soccer, speed, yo-yo.

Genç Futbolculara Uygulanan Bazı Performans Testlerinin İlişkisinin İncelenmesi

Futbol, başarılı olabilmek için karmaşık ve yüksek seviyelerde taktik, teknik ve fiziksel yeteneği içinde barındıran bir takım sporudur. Bir futbol müsabakasında teknik ve taktik parametrelerin yanı sıra güç ve patlayıcılık gerektiren çeşitli kombinasyonlar aralıklı olarak 90 dakika boyunca sergilenmektedir. Bu noktadan hareketle, yapılan çalışmada genç futbolcularda uygulanan farklı performans testlerinin birbiri ile olan ilişkisine bakılması amaçlanmıştır.

Yapılan çalışmaya Konya ilinde yer alan bir amatör futbol takımından 21 erkek futbolcu (16.33± 0.66 yıl, boy uzunluğu; 172± 6.05 cm, vücut ağırlığı; 57.00± 8.81 kg) gönüllü olarak katılmıştır. Çalışmada antropometrik ölçümler, dikey sıçrama testi, yo-yo aralıklı toparlanma 1 ve 2 testi, 30m sürat testi ve çeviklik t testi parametreleri

ölçülmüştür. Veriler SPSS 24 paket programı kullanılarak analiz edilmiş olup, elde edilen verilerin analizinde Pearson Korelasyon testi kullanılmıştır.

Verilerin analizi neticesinde; dikey sıçrama verileri ile 30m sürat ve çeviklik t testi arasında negatif yönlü bir ilişki tespit edilmiştir. 30m sürat testi ve çeviklik t testi ile pozitif yönde anlamlı bir ilişki bulunmuştur. Yine, çeviklik t testi ile yo-yo 1 ve 2 testleri arasında negatif yönlü anlamlı bir ilişki tespit edilmiştir. Ayrıca, yo-yo 2 testi ile yo-yo 1 testi arasında da pozitif yönde anlamlı bir ilişki görülmüştür.

Sonuç olarak, temel motorik özellerinin belirlenmesinde genç futbolcularda uygulanan farklı performans testlerinin birbiri ile hem negatif yönde hem de pozitif yönde bir ilişki içerisinde olduğu gözlemlenmiştir.

Anahtar Kelimeler: Çeviklik, futbol, sürat, yo-yo.

INTRODUCTION

Soccer is one of the most popular sports in the world with its spectators, media, sponsors, technical staff and all other components (3). An official soccer competition consists of two halves of 45 minutes each, with a 15-minute break between halves. In general terms, soccer is a team sport that requires complex and high levels of tactical, technical and physical ability to be successful. Moreover, various combinations of technical and tactical parameters, as well as power and explosiveness, are intermittently displayed for 90 minutes (3, 10, 27).

In professional soccer, intense training is necessary to reach peak performance and improve performance (6, 19). The intensity and duration of training is the main point in determining the training load. The optimal training load varies among players due to individual differences such as training history, school exams and injuries (6, 13). For this reason, performance tests are important for designing training plans and determining the current status of players (7). In the light of the data obtained from these tests, players' performance outputs are obtained, players are monitored and training planning is designed according to the results of these performance tests (7, 13).

In order to build a successful professional sports career, the young players must achieve adequate development in various aspects (11). Many soccer clubs and soccer federations invest most of their investments in the development, identification and classification of talented young soccer players in order to ensure their training conditions and high quality training (1, 5, 12, 20).

In the light of the above-mentioned information, it is known that soccer demands a multifaceted development and in this direction, information on the performance data of young soccer players is a key factor in the development of players. At this point, performance tests are important for planning the training of young soccer players and choosing the right training method. With this study, it was aimed to determine the different performance tests applied in young soccer players and to examine the relationship between these tests and each other.

MATERIAL and METHOD

Participants

The study was conducted with 21 male soccer players who were actively training in an amateur soccer team in Konya province and had played soccer for at least 2 years. The criterion was that the participants did not have any health problems and sportive injuries.

Table 1. Descriptive statistics for participants

Parameters	Mean± SD
Age (years)	16.33± 0.66
Height (m)	1.72± 6.05
Weight (kg)	57.00± 8.81

The height, weight and age of the participants were first determined. The participants performed the test(s) after a standard warm-up (15 minutes) on each test day. The participants performed agility t-test on the first day, vertical jump test and 30m sprint test on the second day, yo-yo intermittent recovery 1 test on the

third day, the fourth day was determined as a rest day with no test, and yo-yo intermittent recovery 2 test was performed on the fifth day.

Written informed consent forms were obtained from the participants and the study was approved by the non-interventional ethics committee of Selcuk University Faculty of Sport Sciences (E-40990478-0.50.99-75471).

Anthropomeric measurements

Height and Body Weight Measurements

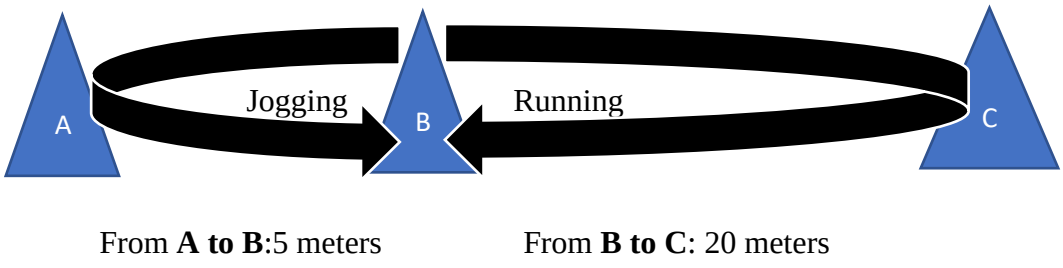
The height of the volunteer athletes was measured with a wall-mounted Stadiometer (Holtain Ltd, UK) with an accuracy of ±0.1 mm. Scales were used to determine the body weight and body fat percentage of the volunteers. Measurements were made by ensuring that both feet were equal on the scale while the volunteers were standing upright and motionless (17).

Vertical jump (Two-legged vertical jump)

The aim of the test is to determine the distance of double leg standing jump. The subjects were asked to reach the highest distance they could reach on the wall by standing straight with their faces and the tips of their feet facing the wall and the soles of their feet fully on the ground, and the top point was marked and recorded in cm. Then, the subjects made 3 attempts by jumping to the highest distance they could reach with both feet. The highest value obtained was determined and the difference between the values obtained by standing and jumping was recorded with a precision of 0.5 cm unit (25).

Yo-Yo intermittent recovery 1 and 2 test

The run was done by going from point B to point C in a 20-meter area and then coming back to point B at the beginning. When reaching B, the participants jogged between points B and A and waited at the starting point B until the signal sounded again. The running speed increased according to the test protocol and the participants were given a warning about their pace with the audio recording of the protocol. If the athlete did not catch the signal for the first time when he/she arrived at B, he/she received an error and the test was terminated if he/she was not at B when the signal sounded for the second time in a row. Each time the athlete reached point B, the test distance was marked on the test paper and recorded. Yo-yo IR1 and IR2 test have the same course but level 2 (Yo-yo IR2) has done at higher speed at the begining. The test started at a running speed of 10 km/h in Yo-yo IR1. At the end of every 40 meters, running speed increased by 0.5 km/h or 1 km/h depending on the test protocol (2, 8). Starting at 13 km.h-1, the Yo-yo 2 test increases by 2 km.h-1 after the first stage and increases by 1 km.h-1 after each second stage. In the following process, the speed increase of 0.5 km.h-1 after each stage continues until the person's exhaustion point (15).



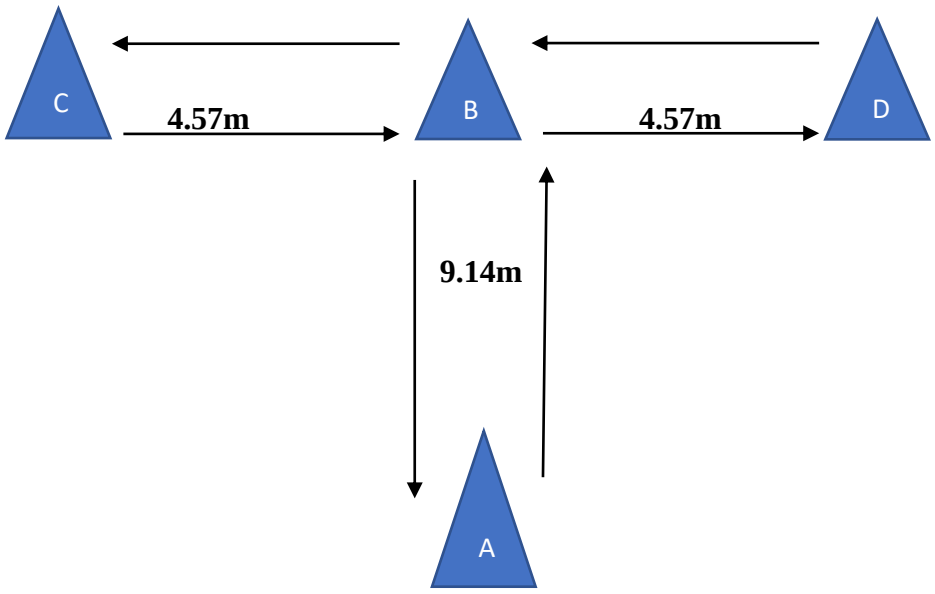
Form 1. Yo-yo IR1 and IR2 test course

30 m sprint test

A 30-meter sprint test was applied to determine the sprint performance of the soccer players. The photocells in the Newtest 300 (Finland) test battery were placed at distances of 0 and 30 meters, and the soccer players were ensured to be within 1 meter before the test start line. After the first measurement, the subjects were given enough rest time to recover, they repeated the test twice and their best times were recorded.

Agility t-test

The 3 funnels were placed in alignment with a distance of 4.57 meters between them. Funnel A was also placed at a distance of 9.14 meters from funnel B in the middle. The participants were first asked to touch the funnel at point B with their right hand starting from point A. Then, they were asked to move from funnel B to funnel C with sliding steps and touch it with their left hand. Afterwards, the test was completed by going from funnel C to funnel D with sideways sliding steps, touching it with the right hand, and then running backwards to point A after touching funnel B with the left hand. The participants' time to finish the test was measured with a stopwatch. Each subject repeated the test twice and the best time was recorded in seconds as the person's rank.



Form 2. Agility T test course

RESULTS

The grades of the tests applied to the soccer players participating in the study are presented in detail in Table 2.

Table 2. Descriptive statistics for variables

Parameters	Mean± SD
Two legged vertical jumped(cm)	45.86± 5.51
30 m sprint test (sec)	4.43± 0.23
Agility t test (sec)	9.84± 0.43
Yo-yo IR-1 (mL/kg/dk)	46.64± 4.68
Yo-yo IR-2 (mL/kg/dk)	56.71± 3.76

When the findings of the participants were examined, the vertical jump data were found to be 45.86± 5.51cm on average. Thirty-meter sprint data was 4.43± 0.23 seconds, while T test data was 9.84± 0.43 seconds. Yo-yo IR-1 test data applied to determine the VO2max values of the athletes were found to be 46.64± 4.68 mL/kg/min, while Yo-yo IR-1 test data were found to be 56.71± 3.76 mL/kg/min.

Table 3. The relationship between various tests applied to soccer players

Pearson Correlation (n:21)	(1)	(2)	(3)	(4)	(5)
Two legged vertical jumped (1)	-				
30m sprint (2)	**-,621*** **0,003**	-			
Agility T test (3)	**-,560*** **0,008**	**0,629*** **0,002**	-		
Yo-yo IR-1 (4)	0,159 0,492	-,275 0,227	**-,489*** **0,024**	-	

Yo-yo IR-2 (5)	0,343 0,128	**-,471*** **0,031**	**-,710*** **0,00**	**,615*** **0,003**	-

As a result of the analysis of the data; a significant negative correlation was observed between vertical jump data and 30m sprint (r= -0,62, p<0.05), and a similar situation was found between vertical jump data and agility t-test (r= -0,56, p<0.05).

In addition, a significant positive correlation was found between the 30m sprint test and agility t-test (r= 0.62, p<0.05). Again, a significant negative correlation was found between agility t-test and yo-yo IR-1 test (r=-0.49, p<0.05), and a similar situation was observed between agility t-test and yo-yo IR-1 test (r=-0.71, p<0.05). Finally, a significant positive correlation was observed between the yo-yo IR-2 test and the yo-yo IR-1 test (r= 0.62, p<0.05).

DISCUSSION AND CONCLUSION

With this study, it was aimed to examine the relationship between different performance tests applied in young soccer players. In a similar study, Taşkın et al. (26) examined the relationship between some motoric characteristics in young soccer players and stated that this relationship is important.

Vertical jump, which is a physical characteristic that should be taken into consideration for high-level performance, varies in importance depending on the positions in soccer. Explosive strength, which is associated with high level performance, is important in sports such as soccer (24). In this context, in the findings of our study, the average vertical jump test data was found to be 45.86± 5.51 cm. In a similar study in the literature, the vertical jump data of 40 soccer players with an average age of 14,40± 1,74 years were determined as 38,62± 7,48 cm (26). In another study conducted in 2044 male students between the ages of 7-14 years, the vertical jump data of the students were determined as 41,7± 9,3 cm (29). In another study, the average vertical jump values measured in 36 soccer players in the same age group (16 years) were reported as 39±0.13 cm (14). It is thought that the difference between the vertical jump data of our study and these two studies may be due to the age difference of young soccer players in the developmental period.

Agility, which is based on the ability to quickly change the body's position, is the result of a combination of strength, speed, balance and coordination (18). When we look at the relationship between these combinations, a negative relationship was found between vertical jump data and 30m sprint and agility t-test data in our study. In other words, the speed and agility performances of young soccer players who improve their vertical jumping ability also improve. It is known that plyometric training combined with maximal strength and heavy resistance exercises significantly improves sprint performance (22). In another study, it was determined that 6-week plyometric exercises applied to basketball players improved their vertical jump and 30m sprint performance (4). The studies show that in parallel with the development of strength parameters, speed and sprint performances also improve. These results show that this study gives results compatible with some studies in the literature. When the relationship between reactive strength and agility is examined in other studies, there are studies that show that there are significant relationships between reactive strength and agility (28) and studies that show that there are insignificant relationships between reactive strength and agility (23).

Acceleration, speed and agility parameters have been found to have a highly statistically significant relationship with each other, and it is known that every discipline related to speed contributes to success (16). In this study, a significant positive correlation was found between 30m sprint test and agility t-test. In other words, improvement in agility performance was also observed with the improvement in sprint performance. And also, while the 30m sprint performance obtained by Köklü et al. (14) in their study in the same age category was found to be 4.2±0.1 second on average, an average value of 4.43±0.23 second was obtained in our study. Although a positive relationship was found between speed and agility in our study, the need for specific studies on these two variables was emphasized in a study in the literature; in the study, it was concluded that each of the agility and speed training methods is specific and therefore limited transfer of one to the other is provided (28)

In studies conducted on soccer players, it was found that soccer players Yo-yo IR1 (1810m) who trained with low frequency (8, 15, 21). In a study conducted on soccer players, Yo-yo IR-2 (840 m) was found in

amateur soccer players (2). In another study, Ceylan (9) reported that the average distances measured at the end of the season in 16 age category soccer players are 2090 m for yo-yo IR-1. And also, the VO2max values of soccer players were reported as 51.65 mL/min/kg at the pre-season and 53.51 mL/min/kg at the end of the season (9). The VO2max values obtained in the study (yoyo IR-1 and 2 mean 51.67mL/min/kg) are similar to this study conducted in the same age group. In our study, these distances were 1280m on average for yo-yo IR-1, while this average was 840m for yo-yo IR-2. There was also a significant positive correlation between the yo-yo IR -2 test and the yo-yo IR-1 test.

In conclusion, when we examined the relationships between the tests, which are vital for determining the appropriate training load and updating the training programs for soccer players in the developmental period, based on the findings of the study, it can be said that speed and agility parameters also develop with strength development. In addition, it can be said that speed and agility values show a parallel development, but optimal development can be achieved by training the two characteristics separately.

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The Effect of Participation in Regular Tennis Exercise on Sportsmanship

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Ethical Statement: It is declared that scientific and ethical principles have been followed while carrying out and writing this study and that all the sources used have been properly cited.

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Abstract

This study examines the effect of participation in regular tennis exercise on sportsmanship in secondary school students. The research was carried out with an experimental method and sequential design. The study sample, 46 volunteer students, was divided into two groups as experimental and control groups. The "Personal Information Form" and the "Physical Education Lesson Sportsmanship Behavior Scale" were applied to the students in both groups as a pre-test in the first week and as a post-test after 12 weeks. Statistical Package for Social Sciences (SPSS) 17.0 program was used for data analysis. As a result of the normality tests (Skewness and Kurtosis), it was determined that the data showed normal distribution, so the Independent Sample T-Test and Paired Samples T-Test were applied. The significance level was accepted as $p<0.05$. According to the findings of the study, while there was a statistically significant difference between the pre-test (90.82 ± 14) and post-test (97.52 ± 10) of the experimental group's sportsmanship level, no statistically significant difference between the pre-test (85.73 ± 12) and post-test (83.52 ± 14) of the control group's sportsmanship levels between. Consequently, this study reveals that participation in 12 weeks of regular tennis exercise significantly increases the sportsmanship level of secondary school students.

Keywords: Physical activity, regular exercise, secondary school, sportsmanship, student, tennis

Düzenli Tenis Egzersizine Katılımın Sportmenlik Üzerine Etkisi

Bu çalışma ortaokul öğrencilerinde düzenli tenis egzersizine katılımın sportmenliğe etkisini incelemektedir. Araştırma deneysel yöntem ve sırasal tasarım ile gerçekleştirilmiştir. 46 gönüllü öğrenciden oluşan çalışma örneği deney ve kontrol grubu olarak iki gruba ayrıldı. Her iki gruptaki öğrencilere "Kişisel Bilgi Formu" ve "Beden Eğitimi Dersi Sportmenlik Davranışı Ölçeği" ilk hafta ön test, 12 hafta sonra ise son test olarak uygulanmıştır. Verilerin analizinde Statistical Package for the Social Sciences (SPSS) 17.0 programı kullanılmıştır. Normallik testleri (Çarpıklık ve Basıklık) sonucunda verilerin normal dağılım gösterdiği tespit edilmiş, bu nedenle Bağımsız Örneklem T-Testi ve Eşleştirilmiş Örneklem T-Testi uygulanmıştır. Anlamlılık düzeyi ise $p<0.05$ olarak kabul

edilmiştir. Araştırmanın bulgularına göre, deney grubunun sportmenlik düzeyi ön test (90.82 ± 14) ve son test (97.52 ± 10) arasında istatistiksel olarak anlamlı bir fark bulunurken; kontrol grubunun sportmenlik düzeylerinde ise ön test (85.73 ± 12) ve son test (83.52 ± 14) arasında istatistiksel açıdan anlamlı bir fark bulunamamıştır. Sonuç olarak, bu çalışma 12 haftalık düzenli tenis egzersizine katılımın ortaokul öğrencilerinin sportmenlik düzeyini önemli ölçüde artırdığını ortaya koymaktadır.

Anahtar Kelimeler: Fiziksel aktivite, düzenli egzersiz, ortaokul, sportmenlik, öğrenci, tenis

INTRODUCTION

Regular participation in physical activity has a positive effect on the behavioral, academic, and psychological characteristics of children and youth (8). So, first, it is helpful to define physical activity. Physical activity is a body movement produced due to the contraction of skeletal muscles, which requires people to spend more energy than they spend at rest (6).

The World Health Organization (32) recommends at least 60 minutes of moderate-to- vigorous intensity and mostly aerobic exercise once a week for children and adolescents aged 5-17 years. In addition, vigorous-intensity aerobic exercises at least three days a week and activities that strengthen muscles and bones are recommended for children and adolescents.

However, the COVID19 epidemic has affected the lives of individuals of all ages, including students. This situation has led to severe restrictions on education, school, and exercise (15, 26). Such adverse conditions can exacerbate stress, fear, and mental health disorders and cause psychological problems (14). Therefore, it is possible to say that the stress level of children and adolescents exposed to closure with the pandemic period and have additional problems due to this will increase. In the literature, it has been stated that with the increase of stress, a decrease in sportsmanship behaviors occurs (10). Therefore, it is a critical issue to examine the sportsmanship behaviors of adolescents through physical activities that they will participate in, especially during the pandemic period when they experience more stress, and to determine the factors that will positively affect their sportsmanship behaviors.

Sportsmanship refers to obeying the rules, not only winning but also enjoying participating in competitions, playing fair, and congratulating the opponent regardless of the result (22). However, the fact that sports have become increasingly political and commercial has overshadowed sportsmanship and fair play and has prevented amateur competition. The understanding of sportsmanship has changed its meaning in this process. Only following the rules has come to be understood as sufficient for sportsmanship. However, sportsmanship behavior is an understanding with high human values such as refusing to establish superiority unfairly, respecting the opponent in every sense, seeing the opponent as a friend rather than an enemy, and competing by keeping and preserving justice (33). Therefore, it is necessary for today's and future sports to convey the primary purpose of sportsmanship to children and adolescents correctly and to display their sportsmanship behaviors with a correct understanding. This approach expresses another importance of our study.

Many studies have been conducted in the literature to analyze sportsmanship. Especially since various practices in the field of physical education suggest improving sportsmanship, there have been promising findings in terms of sportsmanship. For example, it has been reported that sportsmanship behaviors increase through fair play practices (12), discussion groups (19), and problem-solving activities (3). In addition, previous studies based on the sports education model have revealed positive educational effects for students with physical education practices in schools (2, 5, 11, 13, 31). However, some studies have indicated that previous studies generally focused only on physical education interventions in schools, intervention times were also partially lower, and the need for different types of analyses (23, 25). Furthermore, studies emphasizing the importance of different samples, age groups, and extracurricular activities in analyzing sportsmanship also inspired our study. Therefore, we think that our research will contribute to the literature by addressing the shortcomings emphasized by previous studies.

The study aims to examine the effect of secondary school students' participation in regular tennis exercise on their sportsmanship levels. Therefore, it was assumed that the students participating in the study responded to the scale questions sincerely, that the sample selected for the study represented the population, and that the scales used could measure the sportsmanship level of the students.

Data are limited to the scales used and the sample selected. However, based on the relevant literature (21, 24, 27), it has been suggested that exercises performed for 12 weeks, five days a week, and 1.5 hours a day will increase the sportsmanship level of students:

H0: Participation in 12-week regular tennis exercise has a significant and positive effect on the sportsmanship levels of secondary school students.

MATERIALS AND METHODS

Study Model: This research was conducted with an experimental and sequential design.

Study Design: The research group consisted of 46 people, 23 people in the experimental group, and 23 people in the control group. The experimental group of the study consisted of 290 secondary school students who participated as athletes in the sports activities carried out by Turkey's Burdur/Bucak Youth and Sports District Directorate. The sample consisted of 23 secondary school students (16 females and seven males) between the ages of 10-13 who were selected by random sampling and volunteered to participate in the research. The population of the control group of the study was 73 secondary school students studying at Burdur/Bucak Gündoğdu Secondary School in Turkey, the sample was selected by criterion sampling method because there were some criteria (not participating in any sportive activity) that the control group had to meet, and the sample was similar to other demographic characteristics of the experimental group, The study consisted of 23 secondary school students (11 females and 12 males) aged 10-13 who did not participate in any sports activities and volunteered to participate in the research.

Table 1: Socio-demographical characteristics of the participants (n=46)

Characteristics		Frequency	%
Gender	Female	27	58,7
	Male	19	41,3
	10	7	15,2
Age	11	15	32,6
	12	17	37,0
	13	7	15,2
	5. grade	14	30,4
Grade	6. grade	15	32,6
	7. grade	17	37,0

Place and Date of the Study: This study was conducted by the Declaration of Helsinki. All participants were informed about the study processes, and an informed consent form was obtained from each participant. The experimental implementation phase of the research was carried out in the gym of the Burdur/Bucak Youth and Sports District Directorate for 12 weeks between November 2019 and January 2020. The first measurement was taken in November 2019, and the second was taken in the gym in January 2020. In addition, the scale application phase for the control group of the research was carried out in Burdur/Bucak Gündoğdu Secondary School classrooms. The scales were applied face to face with the students. The study, carried out in 2 sessions, started with the first measurement in November 2019 and ended with the last measurement in January 2020. For this reason, the ethics committee report was not requested. The necessary permission was obtained from the institutions where the data were collected. The data in the study I sent were collected before 2020, and in line with the information provided by ULAKBİM TR Directory on ethical rules, ("Should a retrospective ethics committee permission be obtained for the studies completed in the past years and the thesis?" Research data before 2020 were used, master's/ Ethics committee approval is not required for articles produced from doctoral studies (must be specified in the article), for which an application for publication was made to the journal in the previous year, accepted but not yet published.") Ethics committee report was not requested in the current study.

Procedure: The scale application phase for the experimental group was carried out in 2 sessions. The first session started in November 2019, and the second session ended in January 2020. The experimental implementation phase was continued for 12 weeks between these dates. Physical activities were planned for 1.5 hours, five days a week, after the necessary safety precautions were taken, and were done in 3 parts. The first is the preparatory phase, which includes various educational games and warm-up exercises. The second stage is the main stage in which loads affect different motoric features. At this stage, exercises such as rally training, throwing the ball to the target, forehand exercises, backhand exercises, service target exercises, forehand and backhand target training and volley target training were performed. The third phase is the final phase, which includes cool-down and recovery exercises. In any phase of physical activities, the loading intensity did not exceed 50%. The intensity of exercise was determined by the Rating of Perceived Exertion (RPE). The scale application phase for the control group of the research was carried out in Burdur/Bucak Gündoğdu Secondary School classrooms. The scales were applied face to face with the students. The study, carried out in 2 sessions, started with the first measurement in November 2019 and ended with the last measurement in January 2020. Control group students were not included in any exercise program.

Data Collection: A 3-question "Personal Information Form" created by the researchers was used to determine the participants' demographic characteristics (gender, age, and class). To determine the sportsmanship levels of the participants, the 'Physical Education Class Sportsmanship Behavior Scale (BEDSS)' was used.

Physical Education Lesson Sportsmanship Behavior Scale (PELSBS): The scale was developed by Koç (18) to measure the sportsmanship behaviors of secondary school students. The scale is in 5-point Likert type and consists of 22 items. 'Exhibiting Positive Behaviors' (Items 1, 2, 4, 7, 9, 11, 12, 14, 16, 19, and 21) and 'Avoiding Negative Behaviors'

(Items 3, 5, 6, 8, 10, 13), 15, 17, 18, 20 and 22) factors. Avoidance of Inappropriate Behavior factor is scored inversely. The answers to the scale questions were listed as "(5) Always, (4) Very Often, (3) Sometimes, (2) Rarely, and (1) Never". The score obtained from the scale's total is evaluated as 'Total Sportsmanship.' In the present study, the total sportsmanship score was used. The lowest total score obtained from the scale is 22, and the highest total score is

110. A high score on the scale indicates high sportsmanship. The Cronbach Alpha value of the full scale was calculated as 0.85. The Pearson Product Moments correlation coefficient of the scale was determined as 0.81.

Data Analysis: Statistical Package for Social Sciences (SPSS) 17.0 package program was used for data analysis. First, a descriptive statistical test was conducted to indicate the socio-demographic characteristics of the participants. Then, normality tests (Skewness and Kurtosis/Kolmogorov Smirnov) were applied to determine whether the data showed normal distribution, and it was determined that the data showed normal distribution. Finally, the independent sample t-test and Paired Samples t-test were applied because the data met the assumption of normal distribution. The significance level was determined as $p<0.05$.

RESULTS

This section shows the findings related to the normality test, pre-and post-test scores, and the differences between the experimental and control groups' scores from the sportsmanship scale are presented in tables.

Table 2: Normality test of pre-test and post-test scores obtained from the sportsmanship scale

Test	Skewness		Kurtosis	
	Value	SE	Value	SE
Pre-test	-,387	,350	-,858	,688
Post-test	-,551	,350	-,787	,688

The normality test was applied for the full scale, and skewness and kurtosis values were found to be between -1.5 and +1.5. Therefore, if the skewness and kurtosis values are between -1.5 and +1.5, the scores are considered to be normally distributed (29).

Table 3: The differences between experimental and control groups regarding pre-tests

Group	n	x	SD	df	t	p
Experimental	23	90,82	14,35	44	1,294	,203
Control	23	85,73	12,22			
(p>0,05).						

When Table 3 is examined, it is seen that there is no statistically significant difference between the pre-test scores of the sportsmanship levels of the experimental and control groups (p>0.05).

Table 4: The differences between experimental and control groups regarding post-tests

Group	n	x	SD	df	t	p
Experimental	23	97,52	10,28	44	3,819	**,000***
Control	23	83,52	14,26			
(p<0,05).						

When Table 4 is examined, it is seen that there is a statistically significant difference between the post-test scores of the sportsmanship levels of the experimental and control groups in favor of the experimental group (p<0.05)

Table 5: Pre- and post-test comparison of experimental and control groups

Group	Test	n	x	SD	df	t	p
Experimental	Pre-test	23	90,82	14,35	22	-2,112	**,046***
	Post-test	23	97,52	10,28			
Control	Pre-test	23	85,73	12,22	22	,914	,371
	Post-test	23	83,52	14,26			
(p<0,05).							

When Table 5 is examined, there is a statistically significant difference between the pre- test (90.82 ± 14) and post-test (97.52 ± 10) scores of the experimental group (p<0.05). However, there was no statistically significant difference between the pre-test (85.73 ± 12) and post-test (83.52 ± 14) scores of the control group (p>0.05).

DISCUSSION AND CONCLUSION

In this part of the study, which was conducted to determine the effect of 12-week regular tennis exercise participation of secondary school students on sportsmanship, the data we obtained were discussed considering the relevant literature.

46 (23 control, 23 experimental) secondary school students voluntarily participated in the study. According to the test finding conducted in line with the research hypothesis (Table 5), participation in the 12-week regular tennis exercise had a significantly positive effect on the sportsmanship behaviors of secondary school students. This finding reveals that participation in a 12-week regular tennis exercise program significantly increases the sportsmanship behavior levels of secondary school students. The result obtained in the study supports the hypothesis of the research. When the literature is examined, it is seen that there are many study findings consistent with the results of the current study:

Mendez Gimenez, Fernandez Rio and Mendez Alonso (20) revealed that the sports education model significantly increases students' sportsmanship levels. Davidson and Moran Miller (9) stated that positive changes occur in citizenship, character, sociability, and morality in individuals participating in physical education and sports activities. Hupp and Reitman (16), in their study on children with attention deficit-hyperactivity disorder, revealed that the sportsmanship levels of children who received sports training increased. Efek (10) stated that the sportsmanship levels of individuals who do sports are higher than the sportsmanship levels of those who do not do sports. Kahya (17) revealed that participation in regular sports positively affects appropriate play behaviors. Altun and Güvendi (1) compared secondary school students who do sports with those who do not. As a result of the study, it was stated that secondary school students who do sports exhibit a higher level of sportsmanship than secondary school students who do not. In the study carried out by Wahl-Alexander, Sinelnikov and Curtner-Smith (34), it is concluded that students who attend 5 years of sports education season experienced a stronger feeling of fair play at the end of 5 seasons. The

findings of the study with Russian students, carried out by Sinelnikov and Hastie (35), have revealed that sports education increases sportsmanship behaviors.

The present study results support the findings of the studies mentioned above. However, there are also different studies in the literature that are not consistent with the results of the present study:

Şeker and Uslu (28) stated that the aggression scores of university students who are engaged in sports are higher than those who do not engage in sports. Certel, Bahadır and Çelik (7) revealed that team sports athletes have lower avoidance scores for inappropriate behavior than those who do not. In addition, Barkoukis and Mouratidou (4) stated that there is no statistically significant difference between the level of sportsmanship and sports experience. The inconsistencies between the findings of the present study and these studies may have resulted from the selected sample group and the method of the studies. While the experimental and the sequential process were used in the present study, the method of the studies that gave inconsistent results with this study was cross-sectional. The sample group selected for the present study is a group that has just started sports and whose purpose is not to achieve outcomes such as awards and medals. The sample groups in other studies consisted of individuals who do sports at a higher level, older ages, and who do sports to win. Some factors, such as people's expectations from sports, the purpose of doing sports, and the desire for absolute victory, may lead to a low level of sportsmanship in people (30).

In accordance with the hypothesis of the research (H0: Participation in 12-week regular tennis exercise has a significant and positive effect on the sportsmanship levels of secondary school students.) and within the scope of the related literature, participation in regular tennis exercises improves sportsmanship behavior. But factors which are existent in sports such as high levels of competition environment, material or nonmaterial prizes and the idea of winning at any cost should not be involved in the exercise. The idea of winning at any cost which is existent within the nature of sports may lead to emergence of unsportsmanlike acts as mentioned in the discussion section. However, when participation in tennis is in the form of exercise and is practiced regularly students behave more sportsman-like and this indicates that regular tennis exercises would improve sportsmanship and the sports environment would gain more friendly atmosphere. Another comment which can be deduced from the studies in the discussion section and from the current study is that regular participation to the exercise is significant for improving sportsmanship.

The demographic characteristics of the participants selected for the present study, their different mental features, their relationships with the environment they live in, the type and intensity of exercise, and the biased responses they may have given to the scales are among the limitations of this study. Participants who gave incorrect answers to the scales or for different purposes were excluded from the process at the beginning of the study and were not included in the analysis before the statistical analysis was performed. It was assumed that all the remaining participants gave unbiased answers to the scales.

In conclusion, this study revealed that participation in 12-week regular tennis exercise significantly and positively affects the sportsmanship level of secondary school students. This result obtained in the study demonstrates the importance of involvement in physical activities in the development of sportsmanship, thus supporting and recommending physical activity participation to improve sportsmanship. In addition, based on the results obtained in the study, the following suggestions can be made for future research: Different variables may directly affect the sportsmanship levels of individuals. For this reason, different independent variables can be used in studies. In addition, larger sample groups from different ages and cultures can be studied with varying exercise studies.

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Examination of Service Quality Levels Perceived by Students who Participate in Youth Centre Activities

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Abstract

The aim of the present study is to examine the level of service quality perceived by students who are members of youth centre. Descriptive survey model was used in the study. Population of the study consists of students who are members of Youth Centres within the body of Ministry of Youth and Sports of the Republic of Turkey, while the sample consists of 196 participants who were selected with random sampling method among students who are members of Youth Centres within the body of Ministry of Youth and Sports of the Republic of Turkey. Personal Information Form developed by the researchers and "The Perceived Service Quality Scale for Youth Centres" developed for youth centres by Aycan (1) and revised by Polat et al. (5) were used in the study as data collection tool. Student t-test, one-way analysis of variance and Tukey multiple comparison test were used to analyse the study data. No significant difference was found in the variables of gender, age, membership duration, number of siblings, the state of doing sport, family income and having youth centre member in the family. In line with this result, it can be recommended for youth centres not to act with the same system and understanding in their activity programs. It can be said that if the system and functioning of each activity are different, this may have a positive effect on the curiosity and excitement of members. Besides, it would be appropriate to emphasize the point of communication between staff in youth centres and the members. It can be said that the level of relationship between staff and members will have a positive effect on the participation frequency of members.

Keywords: Student, youth centre, service quality

Gençlik Merkezi Faaliyetlerine Katılan Öğrencilerin Algıladıkları Hizmet Kalitesi Düzeylerinin İncelenmesi

Bu çalışmanın amacı gençlik merkezi üyesi olan öğrencilerin algıladıkları hizmet kalitesi düzeylerinin incelenmesidir. Araştırmada, betimsel nitelik taşıyan tarama modeli kullanılmıştır. Çalışmanın evreni, Türkiye Cumhuriyeti Gençlik ve Spor Bakanlığı bünyesinde bulunan Gençlik Merkezlerindeki üye öğrencilerden, örneklemi ise Türkiye Cumhuriyeti Gençlik ve Spor Bakanlığında bulunan Gençlik Merkezlerine üye olan öğrenciler arasından tesadüfi örnekleme yöntemi ile seçilmiş 196 katılımcı oluşturmaktadır. Araştırmada veri toplama aracı olarak, araştırmacıların oluşturduğu "Kişisel Bilgi Formu" ile Aycan (1) tarafından gençlik merkezlerine yönelik olarak geliştirilmiş olan Polat ve ark. (5) tarafından yeniden düzenlenmiş "Gençlik

Merkezlerinde Algılanan Hizmet Kalitesi Ölçeği" kullanılmıştır. Araştırma verilerinin analizinde, Student t-test, tek yönlü varyans analizi ve Tukey çoklu karşılaştırma testleri kullanılmıştır. Cinsiyet, yaş, üyelik süresi, gitme sıklığı, kardeş sayısı, spor yapma durumu ile aile gelir durumu ve aile içerisinden gençlik merkezine üye olma durumu değişkenlerinde herhangi bir anlamlı farklılık olmadığı tespit edilmiştir. Bu sonuç doğrultusunda, gençlik merkezlerinde faaliyet programlarının her zaman aynı sistem ve anlayış ile hareket etmemeleri önerilebilir. Her faaliyetin sistemi ve işleyişi farklı olduğu takdirde, üyelerin merak ve heyecanlarına da olumlu şekilde etkisi olabileceği söylenebilir. Bunun yanında gençlik merkezindeki personeller ile üyeler arasındaki iletişim noktasına vurgu yapılması yerinde olacaktır. Personellerin üyeler ile olan ilişkinin seviyesi ve önemi, üyelerin katılım sağlama sıklığına olumlu yönde etkileyeceği ifade edilebilir.

Anahtar Kelimeler: Öğrenci, gençlik merkezi, hizmet kalitesi

INTRODUCTION

There have been many projects and studies conducted on youth and the productivity of youth from the past to the present. It can be said that it is especially important for young people to make use of their leisure time. Because, making the most of young people's free time will benefit their social lives and educational processes. It can be stated that it is necessary in many ways for young people to make use of their leisure time and to use this time period beneficially. Young people's making use of their leisure time effectively may also reveal some of their talents. It can be thought that in this way young people will act in a sophisticated way and they will provide benefits to the society they live in. In addition, young people's making use of their leisure time in a beneficial way can also prevent the crises that may occur in the society from growing up.

In terms of our country, the activities of youth centres are of great importance in terms of youth. Youth centres, which include social, cultural, artistic and sportive activities, play a major role in the socialization of youth and in youth's discovering some of their skills (1). However, while youth centres are continuing these activities, the importance of service quality is also an indisputable fact. Service quality has two important factors. These are perceptions of customers and expectations of customers. These two factors have a great influence on the performance of employees. In the provision of services, the communication and experience of the staff is important in terms of customer satisfaction and service quality (2).

It can be said that service understanding of youth centres is based on young people's using their leisure time. The importance of youth centres increases with the development in technology. The reason for this is the fact that youth centres provide significant activities in terms of enabling youth to make use of their leisure time (5). The quality of activities in youth centres also affect the continuity of youth's participation. It can be said that efficient service quality in youth centres, where especially students show great interest, will support the development of youth in all aspects (education, social relations, etc.). However, the quality levels of youth services are also important. The results of the present study aim to show the service quality of youth centres. When the literature is reviewed, it can be seen that the results of the present study are important since there are few studies conducted on the research topic. Thus, the aim of the present study is to examine the level of service quality perceived by students who are members of youth centre.

METHOD

Study Model

Present study aims to determine the current situation. Therefore, the model of the study was determined as descriptive survey model. Survey model is research design aiming to reflect the existing situation as it is (4). In order to use the scales and collect the data, approval was taken from Ordu University Social and Human Sciences Research Ethics Committee with 06/10/2022 dated and 2022/165 numbered decision.

Population and Sample

Population of the study consists of students who are members of Youth Centres within the body of Ministry of Youth and Sports of the Republic of Turkey. Sample group consists of 196 participants selected by random sampling method among students who are members of Youth Centres.

Data Collection Tools

"Personal Information Form" and "The Perceived Service Quality Scale for Youth Centres" were used in the study. Personal Information Form included the variables of gender, age, duration of membership, frequency of visiting, the state of doing sports, family income status and having a youth centre member in the family. The Perceived Service Quality Scale for Youth Centres was developed by Aycan (1) for youth centres and it was edited by Polat et al. (5). The scale is a 5 Likert type scale with 23 items. The Perceived Service Quality Scale for Youth Centres consists of 3 factors as physical environment quality, interaction quality and output quality. Cronbach alpha internal consistency coefficients were found as 0,81 for physical environment quality factor, as 0,89 for interaction quality factor, as 0,68 for output quality and as 0.89 for the overall scale.

Statistical Analysis

In the study, first students who were members of youth centres were informed about the study. There was no time restriction during the collection of study data. Data collection process was started after parent approval form was filled in for participants aged 18 or younger. In the study, reliability coefficient, Cronbach alpha coefficient was calculated for the analysis of the internal consistency of responses given to scale. Cronbach alpha reliability coefficient was found as 0,93 for physical environment quality factor, as 0,96 for interaction quality factor, as 0,92 for output quality and as 0.97 for the overall Perceived Service Quality Scale for Youth Centres. In data analysis, Student t test was used for the variables of gender, the state of doing sports, and having youth centre member in the family; while one-way ANOVA was used for the variables of age, membership duration, frequency of visiting the centre, number of siblings and family income status. Pairwise comparisons between groups according to the one-way ANOVA test results were performed by Tukey test. The significance level in analysis was accepted as $p<0.05$.

RESULTS

Table 1. Distribution of students who are members of youth centre in terms of demographic characteristics

		n	%
Gender	**Male**	89	45.4
	Female	107	54.6
Age	**12-14**	14	7.1
	15-17	81	41.3
	18 and older	101	51.5
Membership duration	**1-6 months**	102	52.0
	7-12 months	20	10.2
	13-24 months	17	8.7
	25 months and longer	57	29.1
Frequency of visiting	**Every day**	17	8.7
	A few days a week	49	25.0
	A few days a month	130	66.3
Number of siblings	**None**	8	4.1
	1-2	101	51.5
	3 and more	87	44.4
State of doing sports	**Yes**	117	59.7
	No	79	40.3
Level of family income	**≤5000 TL**	59	30.1
	5001-10.000 TL	105	53.6
	≥10.001 TL	32	16.3
The state of having youth centre member in the family	**Yes**	82	41.8
	No	114	58.2

Table 2. Levels of Perceived Service Quality for youth centres in students who are members of youth centre in terms of gender

	Gender	n	Mean	Sd.	P
Physical environment quality	**Male**	89	37.71	9.36	0.143
	Female	107	39.50	7.63	
Interaction quality	**Male**	89	32.20	8.26	0.326
	Female	107	33.27	6.92	
Output quality	**Male**	89	19.82	5.09	0.194
	Female	107	20.67	4.06	
The Perceived Service Quality Scale for Youth Centres Total Score	**Male**	89	89.74	21.91	0.185
	Female	107	93.44	17.12	

There was no significant difference in the levels of perceived service quality for youth centres in students who are members of youth centres in terms of the variable of gender (p>0.05). (Table 2).

Table 3. Levels of Perceived Service Quality for youth centres in students who are members of youth centre in terms of age

	Age	n	Mean	Sd.	P
Physical environment quality	**12-14**	14	37.21	7.95	0.757
	15-17	81	38.58	9.61	
	≥18	101	38.99	7.60	
Interaction quality	**12-14**	14	34.07	7.40	0.648
	15-17	81	32.27	8.24	
	≥18	101	33.01	7.03	
Output quality	**12-14**	14	19.92	4.69	0.605
	15-17	81	19.95	4.68	
	≥18	101	20.60	4.47	
The Perceived Service Quality Scale for Youth Centres Total Score	**12-14**	14	91.21	18.68	0.820
	15-17	81	90.80	21.46	
	≥18	101	92.61	18.00	

There was no significant difference in the levels of perceived service quality for youth centres in students who are members of youth centres in terms of the variable of age (p>0.05). (Table 3).

Table 4. Levels of Perceived Service Quality for youth centres in students who are members of youth centre in terms of membership duration

	Membership duration	n	Mean	Sd.	P
Physical environment quality	**1-6 months**	102	38.04	8.78	0.495
	7-12 months	20	38.25	8.50	
	13-24 months	17	41.23	5.79	
	≥25 months	57	39.24	8.63	
Interaction quality	**1-6 months**	102	32.13	8.00	0.387
	7-12 months	20	32.70	7.63	
	13-24 months	17	35.47	5.24	
	≥25 months	57	33.17	7.26	
Output quality	**1-6 months**	102	19.84	4.63	0.352
	7-12 months	20	20.90	4.85	
	13-24 months	17	21.82	4.00	
	≥25 months	57	20.40	4.49	
The Perceived Service Quality Scale for Youth Centres Total Score	**1-6 months**	102	90.02	20.11	0.390
	7-12 months	20	91.85	19.93	
	13-24 months	17	98.52	14.24	
	≥25 months	57	92.82	19.45	

There was no significant difference in the levels of perceived service quality for youth centres in students who are members of youth centres in terms of the variable of membership duration (p>0.05). (Table 4).

Table 5. Levels of Perceived Service Quality for youth centres in students who are members of youth centre in terms of the frequency of visiting

	Frequency of visiting	n	Mean	Sd.	P
Physical environment quality	**Every day**	17	38,17	7,73	0,777
	A few days a week	49	39,42	8,63	
	A few days a month	130	38,48	8,57	
Interaction quality	**Every day**	17	32,00	5,52	0,696
	A few days a week	49	33,53	7,37	
	A few days a month	130	32,60	7,88	
Output quality	**Every day**	17	20,35	3,39	0,798
	A few days a week	49	20,65	4,36	
	A few days a month	130	20,13	4,79	
The Perceived Service Quality Scale for Youth Centres Total Score	**Every day**	17	90,52	14,81	0,740
	A few days a week	49	93,61	19,44	
	A few days a month	130	91,23	20,09	

It was determined no significant difference in the levels of perceived service quality for youth centres in students who are members of youth centres in terms of the variable of frequency of visiting (p>0.05). (Table 5).

Table 6. Levels of Perceived Service Quality for youth centres in students who are members of youth centre in terms of the number of siblings

	Number of siblings	n	Mean	Sd.	P
Physical environment quality	**None**	8	34.50	10.09	0.268
	1-2	101	38.42	7.77	
	≥3	87	39.39	9.08	
Interaction quality	**None**	8	29.37	9.08	0.430
	1-2	101	32.94	6.65	
	≥3	87	32.91	8.39	
Output quality	**None**	8	18.25	4.77	0.394
	1-2	101	20.22	4.41	
	≥3	87	20.54	4.72	
The Perceived Service Quality Scale for Youth Centres Total Score	**None**	8	82.12	23.32	0.328
	1-2	101	91.59	17.55	
	≥3	87	92.85	21.16	

It was seen no significant difference in the levels of perceived service quality for youth centres in students who are members of youth centres in terms of the variable of number of siblings (p>0.05). (Table 6).

Table 7. Levels of Perceived Service Quality for youth centres in students who are members of youth centre in terms of the state of doing sports

	The state of doing sports	n	Mean	Sd.	P
Physical environment quality	**Yes**	117	38.94	8.42	0.610
	No	79	38.81	8.61	
Interaction quality	**Yes**	117	32.92	6.92	0.758
	No	79	32.58	8.46	
Output quality	**Yes**	117	20.23	4.29	0.863
	No	79	20.35	4.97	
The Perceived Service Quality Scale for Youth Centres Total Score	**Yes**	117	92.11	18.46	0.763
	No	79	91.25	21.00	

There was no significant difference in the levels of perceived service quality for youth centres in students who are members of youth centres in terms of the variable of the state of doing sports (p>0.05). (Table 7).

Table 8. Levels of Perceived Service Quality for youth centres in students who are members of youth centre in terms of family income

	Family income	n	Mean	Sd.	P
Physical Environment Quality	**≤5000 TL**	59	39.98	8.46	0.190
	5001-10.000 TL	105	38.60	8.69	
	≥10.001 TL	32	36.59	7.59	
Interaction Quality	**≤5000 TL**	59	33.52	7.43	0.642
	5001-10.000 TL	105	32.57	7.52	
	≥10.001 TL	32	32.12	8.04	
Output Quality	**≤5000 TL**	59	20.79	4.49	0.592
	5001-10.000 TL	105	20.07	4.61	
	≥10.001 TL	32	20.03	4.60	
The Perceived Service Quality Scale for Youth Centres Total Score	**≤5000 TL**	59	94.30	19.07	0.400
	5001-10.000 TL	105	91.25	19.88	
	≥10.001 TL	32	88.75	18.91	

It was determined no significant difference in the levels of perceived service quality for youth centres in students who are members of youth centres in terms of the variable of family income ($p>0.05$). (Table 8).

Table 9. Levels of Perceived Service Quality for youth centres in students who are members of youth centre in terms of having youth centre members in the family

	Having youth centre members in the family	n	Mean	Sd.	P
Physical environment quality	**Yes**	82	37.84	8.92	0.234
	No	114	39.30	8.13	
Interaction quality	**Yes**	82	31.63	8.08	0.071
	No	114	33.61	7.08	
Output quality	**Yes**	82	19.90	4.59	0.320
	No	114	20.56	4.55	
The Perceived Service Quality Scale for Youth Centres Total Score	**Yes**	82	89.37	20.65	0.146
	No	114	93.48	18.49	

There was no significant difference in the levels of perceived service quality for youth centres in students who are members of youth centres in terms of the variable of having youth centre members in the family ($p>0.05$). (Table 9).

DISCUSSION AND CONCLUSION

The study was conducted to examine the level of service quality perceived by students who are members of youth centre. In the study, no significant difference was found in the variables of gender, age, membership duration, number of siblings, the state of doing sport, family income and having youth centre member in the family.

In terms of the variable of gender, no significant difference was found in The Perceived Service Quality Scale for Youth Centres Total Score and factor scores. The result can be due to the fact that female and male members receive similar services. When the literature is reviewed, it can be seen that while the results of Aycan (1), Yüzgenç and Özgül (10), Yavuz (8), Türksoy and Aycan (6) are similar to the results of the present study, the results of Üzüm et al. (7) and İlkutlu (3)'s studies are not similar.

In terms of the variable of age, no significant difference was found in The Perceived Service Quality Scale for Youth Centres Total Score and factor scores. The results found show that the variable of age does not have an effect on service quality. When the literature is reviewed, it can be seen that while the results of Üzüm et al. (7) are similar to the results of the present study, the results of Yavuz (8), İlkutlu (3) and Türksoy and Aycan (6) are not similar.

In terms of the variable of membership duration, no significant difference was found in The Perceived Service Quality Scale for Youth Centres Total Score and factor scores. The results can be due to the fact that there were members who had a short duration of membership in the sample. According to the literature

findings, it can be seen that while the results of Yavuz (8) are similar to the results of the present study, the results of Yıldız et al. (9) are not similar.

In terms of the variable of frequency of visiting, no significant difference was found in The Perceived Service Quality Scale for Youth Centres Total Score and factor scores. This result shows that the communication between staff in youth centres and the members is not very strong. When the literature is reviewed, it can be seen that the results of Yavuz (8)'s study are not similar to the results of the present study. In terms of the variable of family income, no significant difference was found in The Perceived Service Quality Scale for Youth Centres Total Score and factor scores. It can be seen that family income does not have an effect on service quality. It can be seen that the results of Türksoy and Aycan (6)'s study are not similar to the results of the present study.

No significant difference was found in The Perceived Service Quality Scale for Youth Centres Total Score and factor scores between the number of siblings and having youth centre members in the family. In the literature review, no studies were found on perceived quality of service in youth centres and these variables. It can be said that the results found can be a source for future studies.

The importance of levels of service quality in youth centres, which is the topic of the study, and a consistence maintenance of these services have been emphasized before. The results found did not show any significant difference in service quality perceptions of students who are members of youth centres. However, the results found lead to some recommendations. In terms of the variable of gender, the fact that similar activities and practices are provided to male and female members show that they may be in similar patterns. However, providing some practices in different groups may lead to differences. This may prevent acting with a similar pattern. It can also be recommended to conduct a meta-analysis of studies in literature on whether there is a significant difference between perceived service quality in youth centres and the variable of gender, as stated by Yavuz (8). In terms of membership duration, it can be said that especially new members do not show a difference and there are no differences in the perceptions of old members. It can be recommended for youth centres not to act with the same system and perspective all the time in their activity programs. It can be said that if the system and functioning of each activity are different, this may have a positive effect on the curiosity and excitement of members. Finally, in terms of the frequency of visiting, it would be appropriate to emphasize the point of communication between staff in youth centres and the members. It can be said that the level of relationship between staff and members will have a positive effect on the participation frequency of members. It can be said that it is very important to conduct research on young people, who are the future of our country. As a result, the frequency of studies on young people is of great importance.

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The Effects of Resistance Training Applied to Elite Field Hockey Players on Some Strength Parameters

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Ethical Statement: It is declared that scientific and ethical principles have been followed while carrying out and writing this study and that all the sources used have been properly cited.

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Abstract

This study is intended to investigate the effects of resistance training on the muscular strength and muscular endurance of elite female and male national team field hockey players. 30 female and 30 male national field hockey players aged between 17-28 participated in the study voluntarily. Before the training program of the participants, maximum muscular strength (bench press, leg extension, leg curl, push down) and muscular endurance (30 sec sit-up and 30 sec push-up test) were determined. The training program was applied to the players for 8 weeks, 3 days a week. SPSS 23.0 package program was used for statistical analysis. As a result of the analysis, it was seen that the distributions were normal, and therefore, t-test was used in dependent groups, which is one of the parametric tests, to compare the pre-test and post-test. The significance level was accepted as 0.05. After the 8-week training program, body weight, while body mass index and body fat percentage values decreased in both female and male field hockey players ($p<0.05$), 1RM values in bench press, leg extension, leg curl and push down applications and 30 sec sit-up and 30 sec push-up values increased significantly compared to the pre-training program ($p<0.05$). As a result, it can be said that regular resistance training has a positive effect on the body composition, muscular strength and muscular endurance of male and female elite field hockey players.

Keywords: Field hockey, Resistance training, Muscular strength, Muscular endurance

Elit Çim Hokeycilere Uygulanan Direnç Antrenmanlarının Bazı Kuvvet Parametreleri Üzerine Etkileri

Özet

Bu çalışmanın amacı direnç antrenmanlarının elit düzeydeki kadın ve erkek milli takım çim hokeyi oyuncularının kas kuvveti ve kassal dayanıklılığı üzerine etkilerinin araştırılmasıdır. Araştırmaya yaşları 17-28 arasında değişen 30 kadın ve 30 erkek milli çim hokeyi sporcusu gönüllü olarak katılmıştır. Katılımcıların antrenman programı öncesinde maksimum kas kuvveti (bench press, leg extansion, leg curl, push down) ve kassal dayanıklılığı (30 sn mekik ve 30 sn şınav testi) belirlenmiştir. Sporculara antrenman programı 8 hafta süresince, haftada 3 gün uygulanmıştır. İstatistiksel analizlerde SPSS 23.0 paket programı kullanılmıştır. Analiz sonucunda

dağılımların normal olduğu görülmüş ve bu nedenle ön test ve son test karşılaştırması yapmak için parametrik testlerden biri olan bağımlı gruplarda t testi kullanılmıştır. Anlamlılık düzeyi 0,05 olarak kabul edilmiştir. 8 haftalık antrenman programı sonrası hem kadın hem de erkek çim hokeyi sporcularında vücut ağırlığı, vücut kütle indeksi ve vücut yağ yüzdesi değerleri azalırken ($p<0,05$), bench pres, leg extansion, leg curl ve push down uygulamasındaki 1TM değerleri ile 30 sn şınav ve 30 sn mekik değerleri antrenman programı öncesine göre anlamlı düzeyde artmıştır ($p<0,05$). Sonuç olarak, düzenli olarak yapılan düzenli direnç antrenmanlarının kadın ve erkek elit çim hokeycilerinin vücut kompozisyonu, kas kuvveti ve kassal dayanıklılığını olumlu yönde etkilediği söylenebilir.

Anahtar Kelimeler: Çim hokeyi, Direnç antrenmanı, Kassal kuvvet, Kassal dayanıklılık

INTRODUCTION

Field hockey is a multidimensional Olympic sport that is played by men and women both recreationally and professionally, is popular around the world, and requires the contribution of many different physical and psychological components such as strength, speed and skill for elite success (Kahn 1999, Burr et al. 2008, International Hockey Federation 2019).

The game of hockey includes all the elements of physical fitness. Hockey is a fast game that requires a high level of conditioning in competitions. A successful hockey player must have a high level of aerobic and anaerobic capacity throughout the game. Success in attacking and defending in hockey requires being fast in short and long distance. Speed is a critical factor. Instantaneous velocity is required to accelerate with the stick and ball and steal the opponent's ball. With a high aerobic capacity, each sprint effort can be sustained (Traverner 2005). In other words, performance is determined by aerobic and anaerobic energy gain, tactical and psychological factors and neuro-muscular functions such as speed, strength and technique (Astrand and Rodalh 1986). Considering the playing time and the need to play quickly and accurately in hockey, the necessity of basic motor skills is important. However, similar to all team sports, some motor features such as quick power, speed, continuity in strength and coordinative abilities come to the fore in hockey (Şahin 2008). It is known that rapid changes and instantaneous velocity in branch-specific talents cause loss of balance and affect performance. That's why top hockey players need high-level technical skills. (Reilly and Borrie 1992). Success in sports can only be achieved with scientific methods today. To be successful, the performance output of the player is aimed to be at maximum levels both physically and mentally with long-term training programs (Günaydın et al. 2002).

Although hockey is one of the three most popular branches in Olympic and 120 countries, there are limited studies on hockey players in our country. For this reason, it is thought that our research will close the gap in the field and will shed light on the studies to be done in this field. In addition, in hockey, where aerobic and anaerobic energy systems are used intensively, general and special strength development is very important in terms of high-level performance. Therefore, this study is important in terms of investigating the effects of special strength training programs on hockey players. This study is intended to investigate the effects of resistance training on the muscular strength and muscular endurance of elite female and male national team field hockey players.

MATERIAL & METHOD

Research Group

30 female and 30 male national hockey players aged between 17-28 years who have no health problems to exercise participated in the study voluntarily. The purpose and application processes of the study were explained to the participants in detail, verbally and practically. Selçuk University Faculty of Sport Sciences Non-Invasive Clinical Research Ethics Committee Decision was taken for this research.

Measurements Applied in Research

Determining Body Composition

The body weights and heights of the national team players participating in the research were measured with a TanitaSc 330 brand device. The body weight of the subjects (kg) was measured with an accuracy of 0.01 kg, and height (cm) was measured with an accuracy of 0.01 cm when they were in anatomical position, wearing sports clothes and bare feet (without shoes).

Measuring Muscular Strength

One Rep Maximum (1-RM) Strength Measurement

In the study, bench press, leg extension, leg curl and push down applications were performed with free weights and on the smith machine. Subjects warmed up with 5-10 repetitions at an estimated intensity of about 50% of 1-RM. After 1 min of rest, participants performed one repetition (~80% of estimated 1-RM). After each successful performance, the weight increased until an unsuccessful attempt. One-minute rests were given between each attempt, and 1-RM was reached in about 5 attempts (Seo et al. 2012).

Muscular Endurance Measurement Method

30 second push-up and 30 second sit-up tests were used to determine muscular endurance.

Strength Training Program

A strength training program with an intensity of 50-70% was applied to the participant group 3 days a week for 8 weeks. The intensity, number of repetitions, number of sets and frequency of exercises related to free weight exercises, core exercises and resistance band exercises of the program are shown in tables below.

Table 1. Free Weight Training

Free Weight Exercises	**Week 1-2**	**Week 3-4**	**Week 5-6**	**Week 7-8**
Bench Press	Intensity: % 50 Repetition: 12 Set: 1 Frequency: 3	Intensity: % 50 Repetition: 12 Set: 2 Frequency: 3	Intensity: % 60 Repetition: 12 Set: 2 Frequency: 3	Intensity: % 70 Repetition: 12 Set: 3 Frequency: 3
Lat Front Pull Down				
Shoulder Press Dumball				
Ower Head Squat				
Dumball Lunge				
Barbel Crul				
Push Down				
Barbel Silkme				

Table 2. Core Exercises

Core Exercises	**Week 1-2**	**Week 3-4**	**Week 5-6**	**Week 7-8**
Leg Raise	Intensity: % 50	Intensity: % 60	Intensity: % 70	Intensity: % 70
	Repetition: 12	Repetition: 15	Repetition: 20	Repetition: 20
	Set: 1	Set: 1	Set: 2	Set: 3
	Frequency: 3	Frequency: 3	Frequency: 3	Frequency: 3
Hundred	Intensity: % 50	Intensity: % 60	Intensity: % 70	Intensity: % 70
	Repetition: 50	Repetition: 75	Repetition: 90	Repetition: 100
	Set: 1	Set: 1	Set: 2	Set: 3
	Frequency: 3	Frequency: 3	Frequency: 3	Frequency: 3
Plank	Intensity: % 50	Intensity: % 60	Intensity: % 70	Intensity: % 70
	Duration: 30 sn	Duration: 40 sn	Duration: 50 sn	Duration: 60 sn
	Set: 1	Set: 1	Set: 2	Set: 3
	Frequency: 3	Frequency: 3	Frequency: 3	Frequency: 3

Table 3. Resistance Band Exercises

Resistance Band Exercises	Week 1-2	Week 3-4	Week 5-6	Week 7-8
Behind Neck Press Lat Pul Down Lateral Raise Front Raise Chest Fly Biceps Curl Triceps	Intensity: % 50 Repetition: 12 Set: 1 Frequency: 3	Intensity: % 50 Repetition: 15 Set: 2 Frequency: 3	Intensity: % 60 Repetition: 20 Set: 2 Frequency: 3	Intensity: % 70 Repetition: 20 Set: 3 Frequency: 3

Statistical analysis

The mean and standard error mean of all values obtained from the participants are given. To see the effect of training, t-test was applied to independent groups.

RESULTS

The mean age of the female and male participants, the mean age of the player, the mean height and body weight are given in the table.

Table 4. Distribution of physical feature parameters by gender

Variables	Gender	n	Mean	Standard Deviation
Age (year)	Female	30	20,03	3,56
	Male	30	20,97	3,24
Player Age (year)	Female	30	7,23	2,54
	Male	30	7,87	2,88
Height (cm)	Female	30	164,70	0,05
	Male	30	177,03	0,06
Weight (kg)	Female	30	56,23	5,42
	Male	30	72,80	13,12

Table 5. Comparison of pre-test and post-test values of male players' body composition variables.

Variables	Training	Mean	Standard Deviation	t	p
Weight (kg)	Pre test	72,80	13,12	0,647	0,00
	Post Test	72,50	12,20		
Body fat percentage (%)	Pre Test	12,58	4,65	2,922	0,00
	Post Test	12,20	3,88		
Body Mass Index	Pre Test	23,07	3,33	0,576	0,00
	Post Test	23,02	3,00		

$p<0,05$

It was determined that there was a statistically significant difference between the body weight, body fat percentage and body mass index pre-test and post-test values of male players ($p<0,05$).

Table 6. Comparison of pre-test and post-test values of male players regarding maximal strength measurements.

Variables	Training	Mean	Standard Deviation	t	p
Leg extansion	Pre test	91,29	11,18	-14,66	0,00
	Post test	102,42	13,53		
Bench press	Pre test	71,94	8,13	-9,61	0,00
	Post test	78,81	8,97		
Leg curl	Pre test	112,42	20,81	-9,81	0,00
	Post test	123,77	20,89		
Push down	Pre test	62,10	7,39	-10,49	0,00
	Post test	68,71	6,95		
p<0,05					

It is seen that there is a significant difference between the pre-test and post-test values of male players for leg extension, bench press, leg curl and push down movements (p<0.05).

Table 7. Comparison of pre test and post test values of male players for 30 sec push up and 30 sec sit up tests.

Variables	Training	Mean	Standard Deviation	t	p
30 sec push up	Pre test	25,68	7,42	-10,05	0,00
	Post test	30,06	6,38		
30 sec sit up	Pre test	24,87	3,03	-9,20	0,00
	Post test	27,55	2,55		
p<0,05					

After the 8-week strength training program for male hockey players, it was determined that there was a significant difference between the pre-test and post-test values in both the 30-second push-up and 30-second sit-up tests (p<0.05).

Table 8. Comparison of pre test and post test values of body composition variables of female players.

Variable	Training	Mean	Standard Deviation	t	p
Weight (kg)	Ön Test	56,23	5,42	2,648	0,00
	Son Test	55,99	4,92		
body fat percentage (%)	Ön Test	20,36	3,94	4,870	0,00
	Son Test	19,34	4,11		
Body Mass Index	Ön Test	21,20	2,01	2,630	0,00
	Son Test	21,04	1,98		
p<0,05					

It was determined that there was a statistically significant difference between the body weight, body fat percentage and body mass index pre-test and post-test values of female players (p<0,05).

Table 9. Comparison of pre-test and post-test values of female players regarding maximal strength measurements.

Variables	Training	Mean	Standard Deviation	t	p
Leg extansion	Pre test	49,13	8,74	-29,43	0,00
	Post test	60,43	8,72		
Bench press	Pre test	34,93	5,85	-15,58	0,00
	Post test	43,70	6,61		
Leg curl	Pre test	69,67	10,42	-16,09	0,00
	Post test	80,23	11,48		
Push down	Pre test	34,00	8,749	-18,94	0,00
	Post test	46,60	7,38		
p<0,05					

It is seen that there is a significant difference between the pre-test and post-test values of female players for leg extension, bench press, leg curl and push down movements (p<0.05).

Table 10. Comparison of pre test and post test values of female players for 30 sec push up and 30 sec sit up tests.

Variables	Training	Mean	Standard Deviation	t	p
30 sec push up	Ön test	17,27	5,79	-9,40	0,00
	Son test	23,73	5,53		
30 sec sit up	Ön test	24,40	3,64	-5,72	0,00
	Son test	26,77	3,30		

p<0,05

After the 8-week strength training program for female hockey players, it was determined that there was a significant difference between the pre-test and post-test values in both the 30-second push-up and 30-second sit-up tests ($p<0.05$).

DISCUSSION

The aim of this study is to investigate the effect of resistance training applied for eight weeks on the muscular strength and muscular endurance of elite level female and male national team field hockey players. As a result of the research, resistance training significantly increased the muscular strength and muscular endurance of both male and female players.

Body composition has a significant impact on combined specific tests that can help sports scientists and conditioners adjust training programs better and optimize the performance of elite hockey players (Chiarlitti et al. 2018). In a study in which professional hockey players were followed for a long time, it was reported that when compared to players in the 1920s and 1930s, the current players have increased 17 kg in body weight, 10 cm in height, and 2.3 kg/m2 in their average body mass index. Researchers have reported that this increase in body mass index is not due to increased fat mass, because body fat percentage has remained unchanged over the past 22 years (Montgomery 2006). In a study in which hockey players were evaluated according to their positions, it was stated that defenders were taller and heavier, strikers were younger, and goalkeepers were shorter with less body mass and higher skinfold thickness (Quinney et al. 2008). Similarly, Vescovi et al (2006) found that while defenders are heavier and taller than goalkeepers and strikers, goalkeepers have a higher body fat percentage than strikers. Another study found no significant differences between defensive and forward hockey players in anthropometric or body composition measurements. Triplett et al (2018), on the other hand, found that ice hockey defenders were taller than strikers, and there was no significant difference in body fat percentage and body weights in terms of positions.

In the research conducted on the ice hockey players of the university school team, the average body fat percentage was 9.3% and the total skinfold was 57.7 mm (Brayne 1985). It was reported that the body fat percentage of hockey players who competed in the National Hockey League between 1980-1991 was between 10.7% and 14% (Cox et al. 1995). In several studies on elite male junior and adult ice hockey players, body fat percentages ranged from 8.6% to 16.1% (Green et al. 2006, Burr et al. 2008, Peyer et al. 2011, Runner et al. 2016, Chiarlitti et al. 2018). In a study examining the relationships between laboratory tests and skating performance on skating on ice in men's ice hockey players, the body fat percentage of hockey players was found to be 12%, and it was concluded that skating times were moderately associated with body fat percentages, and thus higher body fat percentage was related to slower skating speed (Potteiger 2010). Body fat percentages of elite female field hockey players were reported to be between 16% and 26% (Reilly and Borrie 1992). In our current study, body fat percentages of elite field hockey players were determined as 12.2% for men and 19.3% for women, and it was concluded that these values were similar to most of elite field hockey players in other studies. In addition, resistance exercises decreased body weight, body mass index and body fat percentage values in both genders. The differences in body fat percentages of hockey players can be explained by the size of the sample, age, nationality, etc., or it can be said that it may result from the differences in playing style.

Muscular strength and muscular endurance have important functions in hockey (Cox and ark 1995). High levels of lean tissue mass were reported to support the performance of men's hockey players, particularly in tests measuring the strength and power. The relationship between lean tissue mass and various combined physical fitness tests demonstrates the importance of developing and maintaining lean tissue mass in

providing improvements in muscular strength and power, which are critical components for optimum performance on ice (Chiarlitti et al. 2018). In a study evaluating the performance of elite ice hockey players in terms of positions, it was found that goalkeepers had lower upper body strength and anaerobic capacity than strikers and defenders (Vescovi et al. 2006). Toong et al (2018) found that the grip strength of young ice hockey players is higher than Canadian pediatric norms, grip strength increases with age in both genders, and boys and girls perform similarly until the age of 12, and boys, after this age, have more grip strength values than girls. In a different study investigating the effects of training applied for twelve weeks (5 days a week, 4 hours a day) on some parameters of field hockey players of different age groups after the training program, while significant increases were observed in lean body mass, grip strength and back strength of players especially under 16, 19 and 23 years old, significant decreases were found in body fat. When compared according to age groups, field hockey players under the age of 23 and in the senior category were reported to have higher lean body mass and strength, and lower body fat than players under the age of 16 and 19. In addition, the researchers stated that the unique profiles of age-related changes should be taken into account when training players, and this provides an opportunity for coaches to evaluate a player's current status and degree of training compliance and modify the training program accordingly to achieve the desired performance (Manna et al. 2011). Cordingley et al. (2019) followed the physical and physiological development of male young hockey players for 3 consecutive years, and at the end of the study, while height and body mass increased each year, there was no change in body fat percentage. In addition, pull-ups, long jump and grip strength improved with age, however, push-up performance increased only between 13 and 14 years of age, while maximum plank time decreased between 14 and 15 years of age. In a different study in which professional hockey players were followed for a long time, upper body strength was evaluated using a bench press test and the maximum 1 rep (1 RM) value for the 17-19 age group was determined as 107.0 kg, and for the 25-29 age group it was 128.1 kg. These gains in body mass were associated with increases in upper body strength (Montgomery 2006). Behm et al. (2005) measured the 1 RM leg press values of ice hockey players aged 16-25 (age 5-13 years in sports) as 133.9 kg. The researchers found low correlations between leg strength and skid speed and they emphasized the need for players to train to perform high-intensity contractions under relatively unstable conditions. Johansson et al. (1989), on the other hand, in their study investigating the quadriceps isokinetic muscle performance in elite ice hockey players, suggested individual programs for leg muscle training in ice hockey players due to large differences in individual muscle performance and different responses to similar training.

The results show that good body structure is important for women's skating performance in ice hockey. To improve women's skating performance in ice hockey, players need to increase quadriceps muscle strength, oxygen uptake and related muscle mass. Differences in body composition between men and women, when these values are given relative to lean body mass, result in large differences on ice, despite similar oxygen uptake and quadriceps muscular strength. This also suggests that there should be differences in training arrangement for men and women, as women are more dependent on quadriceps muscular strength for ice skating performance relative to body weight (Gilenstam et al. 2011).

Similar results were obtained in studies conducted on non-athletes. Gürbüz (2013) reported that 6-week maximal strength training resulted in significant increases in 1 RM bench press, shoulder press, biceps curl, squat, biceps in flexion and biceps values in extension. In a different study in which a weight training program was applied for eight weeks, four days a week, for two hours a day, a statistical increase was found in bench press, squat, arm curl, deadlift and shoulder press movements compared to the weights lifted at the beginning of the work out (Büyükipekçi 2015). Chilibeck et al (1998) reported significant increases in bench press and arm curl exercises at the end of 20 weeks in their study to determine the effect of resistance training applied to young women on strength and muscle mass. There are many studies examining the relationship between resistance training and performance in different sports branches. In our current study, at the end of the eight-week resistance exercise program, the 1RM values of both female and male field hockey players in bench press, leg extension, leg curl and push down applications, and the 30-second push-up and 30-second sit-up values, which are indicators of muscular endurance, increased significantly. Barjaste and Mirzaei (2018) examined the effect of resistance training on football players. The results of the study showed that muscular strength and explosive performance in players with little experience in resistance training can be significantly improved upon completion of the general phase of resistance training periodization using moderate loads. McKinlay et

al. (2018) stated that eight-week free weight resistance training and plyometric training provided significant improvements in muscular strength and jump performance in elite young football players, and both methods resulted in similar muscle hypertrophy. Similarly, the performance improved in both the hip thrust exercise group and the squat exercise group after seven weeks of resistance training in young female football players (González et al. 2019). At the end of the whole body and regional body training program (twenty weeks, two days a week, at 75-90% intensity, 6-12 repetitions) in female players, while there was a significant difference in maximal strength bench press, lat pulldown, arm curl, triceps extension, leg extension and leg curl exercises, no difference was observed between the groups (Calder et al. 1994). Barbalho et al. (2020) compared the effects of twelve weeks of squat and hip thrust exercises on muscle strength and hypertrophy in well-trained women. Researchers found that training increased hip extensor muscle size and 1RM hip thrust values in both groups. They also stated that the increase in quadriceps femoris and gluteus maximus muscle size and in 1RM squat values was higher in the squat group than in the hip thrust group.

Our study has some limitations. First, the training program is limited to eight weeks. Second, the tests were determined by the field method only.

As a result, it can be said that the resistance exercise program applied for eight weeks positively affects the maximum muscular strength and muscular endurance of both female and male field hockey players.

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Review of the Emotional Intelligence and Self-Leadership Levels of Students at the Faculty of Sports

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Ethical Statement: It is declared that scientific and ethical principles have been followed while carrying out and writing this study and that all the sources used have been properly cited.

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Abstract

This study aims to determine the emotional intelligence and self-leadership levels of the students of the sports science faculty. The general scan model is a quantitative study used. The data collection tools to be used in research are the scale-short form of emotional intelligence by Deniz et al. (7) developed by Petrides and Furnham (21, 22) to reveal the emotional intelligence of individuals. Another tool to be used in the study is the measure of Self-Leadership developed by (12) and conducted by Tabak et al. (28) in Turkish validity reliability studies. As an analysis method, T-test in independent groups was used to compare two unrelated samples, and one-way ANOVA tests to compare more than two unrelated samples. The SPSS 22.0 package program has been utilized for the analysis of the data obtained. As a result of the research; In the gender variable, a significant difference was found in terms of emotional intelligence and self-leadership levels ($P<0.05$). While a significant difference was found in the level of self-leadership according to the department variable ($P<0.01$), there was no significant difference in the level of emotional intelligence ($P>0.05$). When the "class" variable was examined, there was no difference in both variables ($P>0.05$). In addition to these results, the positive relationship between emotional intelligence and self-leadership was also revealed ($P<0.01$).

Keywords: Sport Sciences, Emotional Intelligence, Self-Leadership

Spor Bilimleri Fakültesi Öğrencilerinin Duygusal Zekâ ve Öz-Liderlik Düzeylerinin İncelenmesi

Bu araştırma, spor bilimleri fakültesi öğrencilerinin duygusal zeka ve öz-liderlik düzeylerini incelemeyi amaçlamaktadır. Genel tarama modeli kullanılan, nicel bir araştırmadır. Araştırmada kullanılacak veri toplama araçları ise bireylerin duygusal zeka özelliğini ortaya koymak için Petrides ve Furnham (21, 22) tarafından geliştirilen ve Türkçe geçerlik güvenirlik çalışmaları Deniz ve ark. (7) tarafından yapılan Duygusal zekâ özelliği ölçeği- kısa formudur. Çalışmada kullanılacak bir diğer ölçek ise, (12) tarafından geliştirilen ve Türkçe geçerlik güvenirlik çalışmaları Tabak ve ark. (28) tarafından yapılan Öz Liderlik ölçeğidir. Analiz yöntemi olarak, iki ilişkisiz örneklemi karşılaştırmak için bağımsız gruplarda T-testi, ikiden fazla ilişkisiz örneklemi karşılaştırmak için One-Way Anova, testlerinden yararlanılmıştır. Elde edilen verilerin analizi için SPSS 22.0 paket programından yararlanılmıştır. Araştırma sonucunda; cinsiyet değişkeninde duygusal zeka ve öz-liderlik düzeylerine göre

anlamlı farklılık tespit edilmiştir (P<0.05). Bölüm değişkenine göre öz-liderlik düzeyinde anlamlı farka rastlanırken (P<0.01), duygusal zeka düzeyinde anlamlı fark çıkmamıştır (P>0.05). "Sınıf" değişkenine bakıldığında ise her iki değişkende de fark çıkmamıştır (P>0.05). Bu sonuçlara ek olarak duygusal zekânın öz-liderlik özelliği ile olan pozitif ilişkisi de ortaya konulmuştur (P<0.01).

Anahtar Kelimeler: Spor Bilimleri, Duygusal zekâ, Öz-liderlik

INTRODUCTION

Emotional intelligence is a skill in relation to the ability to understand the feelings of both our own and others, manage emotions, empathize, and motivate oneself (11). It is possible to be a successful and satisfied person in life thanks to high emotional intelligence. At the same time, the fact that it is an ability that can be developed or learned shows that emotional intelligence is not destiny (29). Goleman (10), scrutinized emotional intelligence in five dimensions. These dimensions are, in short, the ability to understand one's own emotions, manage emotions, motivate oneself, understand the emotions of others, and cope with relationships. Emotional intelligence is a skill that provides an individual with an advantage in every aspect of his/her life and is even more important than IQ (10).

Emotional intelligence is a skill associated with many features such as self-esteem, empathy, ability to convey feelings, ability to communicate, ability to cope with stress, and being happy and optimistic (14). While individuals with high emotional intelligence are more persistent in actions that require effort, they also have a positive approach to life. In this way, they may have a chance to achieve better results (19).

The importance of emotional intelligence in business life or working environment is being better understood day by day and studies on its relationship with leadership are also becoming widespread (1, 6, 15, 34, 8, 27, 30, 33). It is important for a team to work in harmony in order to attain success in both business life and the world of sports. It is possible to provide a good team environment with individuals having high emotional intelligence. Leaders try to reach targets by inspiring and motivating people. Ability to create excitement within the team is one of the most important qualities of a leader. Likewise, a leader with high emotional intelligence can be a more effective leader by appealing to people's feelings and values thanks to that trait. If leaders can use their authority by creating an impact, they can achieve their best performance as a team (3).

The fact that university students will be successful and self-confident employees in the world of work that they will encounter when they graduate is closely related to their emotional intelligence and leadership abilities. Knowing the level of both emotional intelligence and leadership abilities of the students taking part in the study is important in view of guiding them and supporting their talent development.

This research aims to scrutinize the emotional intelligence and self-leadership levels of the students of the faculty of sports sciences and to offer suggestions by making use of the findings obtained. The questions of the research are provided below:

1. What are the emotional intelligence levels of the students of the faculty of sports sciences like?

2. What are the self-leadership levels of the students of the faculty of sports sciences like?

3. Do the emotional intelligence and self-leadership levels of the students of the faculty of sports sciences differ according to the variables of gender, department, and class?

4. Is there a relationship between emotional intelligence and self-leadership levels of sports sciences faculty students?

MATERIAL AND METHODS

Research Model: This study is a quantitative research and is in the general survey model. Screening studies are the ones conducted to reveal the predetermined characteristics of a group. In this study, it is aimed to present the data on the emotional intelligence and self-leadership levels of the students of the faculty of sports

sciences. This research is in a relational research type designed to reveal possible relationships between cases (5).

Population and Sample: The population of the research comprises the students of Düzce University Faculty of Sports Sciences and Selçuk University Faculty of Sports Sciences. The sample of the research consists of 511 students who took classes and participated in the research in the fall semester of the 2022-2023 Academic Year at the Faculty of Sports Sciences of Düzce University and the Faculty of Sports Sciences of Selçuk University. As the sampling method, the simple random sampling method was used. In this method, individuals taking part in the sample have an equal chance of being included in it (5). Voluntary participation in the research is essential.

Data Collection Tools

Emotional Intelligence Trait Scale –Short Form (EITS-SF) is a scale developed by Petrides & Furnham (21, 22) in order to reveal the level of self-recognition of an individual regarding his/her emotional skills, whose Turkish validity and reliability studies were conducted by Deniz, Özer and Işık (7). The scale consists of a total of 30 items and is in 7-point Likert type. The scale has 4 sub-dimensions as "Subjective well-being" [6, 13, 16, 18], "Self-control" [2, 4, 10, 14], "Emotionality" [5, 11, 15, 19] and "Sociability" [3, 7, 8, 17]. In the studies conducted, Cronbach's Alpha coefficients varied between .74-.80 for well-being, .59-.75 for self-control, .66-.69 for emotionality, .60-.69 for sociability, and .87-.90 for total EITS (20, 23). Items 2, 4, 5, 7, 9, 11, 12, 14, 17, 19 are reversely scored. High scores obtained from the scale point out high emotional intelligence.

Another scale to be used in the research is the scale developed by (12). and whose Turkish validity and reliability studies were conducted by Tabak, Sığrı, and Türköz (28).

Self-Leadership Scale: It is a 5-point Likert-type scale consisting of 29 items. The scale has three dimensions in total as "Behavior-oriented strategies" [17, 24, 28, 3, 10, 19, 5, 12, 21, 26, 6, 13, 22, 27, 7, 15] "Natural reward strategies" [14, 29], and "Constructive thought model strategies" [1, 8, 16, 23, 2, 9, 18, 4, 11, 20, 25]. As the items in the "Self-Punishment" [5, 12, 21, 26] sub-factor of the "behavior-focused strategies" dimension contain negative behaviors, reverse scoring was considered appropriate. Cronbach's Alpha coefficients for the sub-dimensions of this scale were as follows: self-rewarding [α=.90], self-talk [α =.89], imagining successful performance by setting goals for oneself [α =.88], setting reminders for oneself [α =.80], self-punishment [α =.76], self-observation [α =.74], evaluating thoughts/ideas [α =.67] and focusing thoughts on natural rewards [α =.51] (12).

Analysis of the Data: SPSS 22.0 package program was used for the analysis of the data obtained. After the data entries were made, the normality test was conducted to check whether the data distributions deviated from normality. As a result of the normality test, it was seen that the skewness and kurtosis values were within the limits of +/-1. If the skewness and kurtosis values are within the limits of +/-1, the data point out a normal distribution (5). As it was understood that the data were normally distributed, carrying out parametric tests was considered appropriate. In order to compare two unrelated samples, t-test, which is one of the parametric tests, was used on independent groups. One Factor Analysis of Variance was used for more than two unrelated measurements. In order to present the relationship between the independent variables, the Pearson Correlation coefficient was calculated. SPSS 22.0 package program was used for the analysis of the data obtained.

Ethical Statement: Our study was approved ethically according to the decision of the Scientific Research and Publication Ethics Committee of Düzce University, dated 01.09.2022, and numbered E-16530984-100-191522.

FINDINGS

The distribution of the participants in the sample according to different variables is provided in Table 1.

Table 1. Descriptive statistics values of the participants.

Variables		F	%
Gender	Female	181	35.4
	Male	330	64.6
	Total	**511**	**100,0**
Department	Teaching	111	21,7
	Management	47	9,2
	Coaching	159	31,1
	Recreation	194	38,0
	Total	**511**	**100,0**
Class	1st Grade	59	11,5
	2nd grade	184	36,0
	3rd grade	214	41,9
	4th grade	54	10,6
	Total	**511**	**100,0**
University	Düzce University	321	45,2
	Selcuk University	280	54,8
	Total	**511**	**100,0**

Table 2. T-test Result of Emotional Intelligence Levels by Gender Variable

	Gender	N	X	S	sd	t	p
Emotional Intelligence Total Score	Female	181	101,23	19,86	509	2,07	**,038***
	Male	330	97,64	17,96			

*p<. 05

In the results of the analysis present in Table 2, a statistically significant difference was found in the Emotional Intelligence levels of the students as per the gender variable [t(509)=2.07, p<.05].

Table 3. Comparison of Emotional Intelligence Sub-Dimension Scores by Gender Variable

Sub-Dimensions	Gender	N	X	S	sd	t	p
Subjective Well-Being	Female	181	20,53	5,19	509	,778	,437
	Male	330	20,17	4,84			
Self-Control	Female	181	19,04	5,63	509	1,016	,310
	Male	330	18,56	4,85			
Emotionality	Female	181	20,07	4,42	509	3,961	**,000***
	Male	330	18,46	4,35			
Sociability	Female	181	20,88	4,52	509	1,214	,225
	Male	330	20,37	4,48			

*p<. 01

In the comparison of students' Emotional Intelligence sub-dimension scores according to gender variable in the analysis results in Table 3, no statistically significant difference was found in the sub-dimensions of "Subjective Well-Being," "Self-Control," and "Sociability" [t(509)=.778,p>.05, t(509)=1.016,p>.05, t(509)=1.214,p>.05]. When comparing the Emotional Intelligence sub-dimension scores of the students according to the gender variable, a significant difference was found in the "**Emotionality**" sub-dimension [t(509)=3.961,p<.05].

Table 4. One-Way Analysis of Variance Results of Emotional Intelligence Levels according to the Department Variable

	Sum of Squares	sd	Mean of Squares	F	p
Between Groups	2526,66	3	842,220	2,423	,065
In-Group	176235,05	507	347,604		
Total	178761,71	510			

*p<. 05

In the results of the analysis in Table 4, there was no statistically significant difference in the Emotional Intelligence levels of the students according to the department variable [F(3-507)=2.423, p>.05].

Table 5. Tukey Test Results of Emotional Intelligence Levels by Department Variable.

Department		N	X	Ss	Sd	F	p
Teaching	Coaching	159	97,93	18,60		2,423	,979
	Recreation	194	101,63	20,27	3-507		,162
	Sports management	47	85,51	15,70			,966
Coaching	Teaching	111	97,02	16,74			,979
	Recreation	194	101,63	20,27	3-507		,250
	Sports management	47	85,51	15,70			,862
Recreation	Teaching	111	97,02	16,74			,162
	Coaching	159	97,93	18,60	3-507		,250
	Sports management	47	85,51	15,70			,182
Sports management	Teaching	111	97,02	16,74			,966
	Coaching	159	97,93	18,60	3-507		,862
	Recreation	94	101,63	20,27			,182

*p<. 05

In the analysis results in Table 5, no statistically significant difference was found in the Emotional Intelligence levels of the students according to the department variable.[F(3-507)= 2,423, p>.05].

Table 6. One-Way Analysis of Variance Results of Emotional Intelligence Levels by Class Variable

	Sum of Squares	sd	Mean of Squares	F	p
Between Groups	1198,290	3	399,430	1,140	,332
In-Group	177563,420	507	350,224		
Total	178761,710	510			

*p<. 05

In the analysis results in Table 6, no statistically significant difference was found in the Emotional Intelligence levels of the students according to the class variable [F(3-507)=1.140, p>.05].

Table 7. T-test Results of Self-Leadership Levels by Gender Variable

	Gender	N	X	S	sd	t	p
Self-Leadership Total Score	Female	181	110,18	15,28	509	2,18	**,029***
	Male	330	107,11	15,08			

*p<. 05

In the analysis results in Table 7, a statistically significant difference was found in the self-leadership levels of the students according to the gender variable [t(509)=2.18, p<.05].

Table 8. Comparison of Self-Leadership Sub-Dimension Scores by Gender

Sub-Dimensions	Gender	N	X	S	sd	t	p
Behavior-Oriented Strategies	Female	181	58,48	8,28	509	1,926	,055
	Male	330	57,06	7,76			
Natural Reward Strategies	Female	181	8,18	1,52	509	,727	,467
	Male	330	8,07	1,68			
Constructive Thought Pattern Strategies	Female	181	43,51	7,30	509	2,270	**,024***
	Male	330	41,97	7,35			

*p<. 05

In the analysis results in Table 8, no statistically significant difference could be found in the sub-dimensions of "Behavior-Oriented Strategies" and "Natural Reward Strategies" in the comparison of the Self-Leadership sub-dimension scores of the students according to the gender variable [t(509)=1.926,p>.05, t(509)=.72, p>.05]. A significant difference was found in the "**Constructive Thinking Model Strategies**" sub-dimension in the comparison of the students' Self-Leadership sub-dimension scores according to the gender variable [t(509)=2.270, p<.05].

Table 9. One-Way Analysis of Variance Results of Self-Leadership Levels by Department Variable

	Sum of Squares	sd	Mean of Squares	F	p
BetweenGroups	3160,498	3	1053,499	4,65	**,003***
In-Group	14863,741	507	226,556		
Total	118024,239	510			

*p<. 01

When Table 9 is scrutinized, it appears that the students' self-leadership levels differ significantly according to the department variable [F(3-507)=4.65, p<.05]. In order to understand between which departments this difference is present, the Tukey Test was conducted and the results are construed below.

Table 10. Tukey Test Results of Self-Leadership Levels by Department Variable.

Department		N	X	Ss	Sd	F	p
Teaching	Coaching	159	106,86	15,04	3-507	4,65	,917
	Recreation	194	110,78	15,12			427
	Sports management	47	102,40	15,74			,136
Coaching	Teaching	111	108,06	14,62	3-507		917
	Recreation	194	110,78	15,12			072
	Sports management	47	102,40	15,74			282
Recreation	Teaching	111	110,78	14,62	3-507		427
	Coaching	159	106,86	15,04			072
	Sports management	47	102,40	15,74			**,004***
Sports management	Teaching	111	108,06	14,62	3-507		136
	Coaching	159	106,86	15,04			282
	Recreation	94	110,78	15,02			**004***

*p<. 01

In the results of the analysis in Table 10, it is understood that there is a significant difference between the Sports Management and Recreation departments and this difference is in favor of the students of the Recreation department [F(3-507)=4.65, p<.05].

Table 11. One-Way Analysis of Variance Results of Self-Leadership Levels by Class Variable

	Sum of Squares	sd	Mean of Squares	F	p
Between Groups	791,242	3	263,747	1,141	,332
In-Group	117232,997	507	231,229		
Total	118024,239	510			

p>0.05

In the results of the analysis in Table 11, there was no statistically significant difference in the Self-Leadership levels of the students according to the class variable [F(3-507)=1.141, p>.05].

Table 12. Correlation Results between Emotional Intelligence and Self-Leadership Levels.

		Self-Leadership	Emotional Intelligence
Self-Leadership	Pearson Correlation	1	,549**
	Sig. (2-tailed)		,000
	N	511	511
Emotional Intelligence	Pearson Correlation	,549**	1
	Sig. (2-tailed)	,000	
	N	511	511

**. Correlation is significant at the 0.01 level (2-tailed).

When Table 12 is pored over, it is understood that there is a moderate, positive, and significant relationship between students' self-leadership and emotional intelligence levels, r=0.549, p<.05.

DISCUSSION

It was aimed in this research to present the emotional intelligence and self-leadership levels of the students of the faculty of sports sciences. For this purpose, the relationships between the variables were tested first and a significant difference was found in the gender variable in terms of emotional intelligence and self-leadership levels (Table 2 and Table 7). While a significant difference was encountered in the level of self-

leadership according to the department variable (Table 9), no significant difference in the level of emotional intelligence took place (Table 4). When the "class" variable was scrutinized, no difference appeared in both variables (Table 6 and Table 11). According to the department variable of individuals' self-leadership levels, a significant difference was encountered in the Recreation and Sports Management department in the Tukey test results (Table 10). By examining the results that came out of the table, it can be said that the students of the recreation and management department of the faculty of sports sciences have higher self-leadership levels compared to the students of the coaching and teaching department. In addition to these results, the positive relationship of emotional intelligence with self-leadership was also demonstrated (Table 12).

According to the results of a study conducted to show the relationship between the emotional intelligence and leadership traits of university students, the emotional intelligence levels of the students differ significantly according to their grade levels, compared to the results of a study that included the students of the teaching department (32). In the study of Seyis (25) on secondary school students, when the relationship between emotional intelligence and motivation of students and their academic success was scrutinized, it was determined that academic success was effective on motivation and emotional intelligence, and the outcome that results of emotional intelligence and academic success were significantly higher in favor of secondary school female students was obtained. In this study, an inverse relationship was determined between motivation and academic achievement levels and grade level; that is to say, it was shown that there was a decrease in motivation and academic achievement with the increase in grade level. İşeri (13) determined in a study that the emotional intelligence and social emotional learning structures of high school students are interconnected. As a result of their study, Mayer and Salovey (17) determined that emotional intelligence is a common product of cognitive and emotional systems. According to research findings in the study of Aydın (2), it is thought that the determination and self-confidence of adolescents with high social self-efficacy support them in solving the problems they encounter and, as a result of this situation, in the achievement of success. In a study poring over the relationship between emotional intelligence levels and self-efficacy perceptions of adolescents, a positive significant difference was found between academic self-efficacy and emotional levels, social self-efficacy and emotional intelligence levels, and emotional self-efficacy and emotional intelligence levels (24).

According to the results of the study by Köstereliоğlu (16) on the perception of self-leadership and the predictions of cognitive flexibility as emotional intelligence, whether self-leadership and emotional intelligence predict cognitive flexibility was examined, and in the research results, it was concluded that the predictive impact of cognitive flexibility with all dimensions of self-leadership and emotional intelligence is present. In a study conducted, the relationship between emotional intelligence, leadership self-efficacy, and collective task efficacy with group performance was examined. According to the results of the study, it was determined that self-efficacy is a mediator between leadership self-efficacy and collective task efficacy. In addition, although emotional intelligence is positively related to leadership self-efficacy, no significant relationship between emotional intelligence and collective task efficacy was found (31).

In their study, Esen and Bulut (9) first examined the concepts of emotional intelligence and self-leadership, and then the impact of emotional intelligence on self-leadership. As a result of the analysis, they reached the conclusion that emotional intelligence has a positive and significant impact on the concept of self-leadership. In their study, Mayer and Salovey (18) concluded that emotional intelligence is significantly and positively related to openness to different experiences, which is a feature that partially reflects the individual's willingness to engage in unusual thoughts and activities. Şenel (26) obtained a positive correlation between the concept of self-efficacy belief and emotional intelligence levels in the study in which the social support perceptions, self-efficacy beliefs, and emotional intelligence levels of the students studying at the college of physical education and sports were examined. In the study conducted by Bozyiğit and Çetin (4) on sports science students, no statistically significant difference was found in the age, class, gender, and department variables belonging to self-leadership level.

CONCLUSION

According to the findings obtained from this study, a significant difference was found in the emotional intelligence levels of individuals according to the gender variable. In the comparison of emotional intelligence sub-dimension scores according to the gender variable, a significant difference was reached in the

"Emotionality" sub-dimension, and it was determined that the emotional level of the female participants was higher than that of the male participants. According to the results of the study, no significant difference was encountered in the emotional intelligence levels of individuals as per the "Department" and "Class Level" variables. A significant difference was obtained in self-leadership levels according to the results of the analysis of gender and department variables. At the same time, in the comparison of the self-leadership sub-dimension scores according to the gender variable, a significant difference was reached in the "Constructive Thinking Model Strategies" sub-dimension, and it was determined that the constructive thinking model strategies of female participants were higher than that of the male participants. In addition, by poring over the Tukey test results according to the department variable, it can be said that the students of recreation and management departments have higher self-leadership levels than those of the students of the coaching and teaching departments. It can be shown as the justification for this result that the students have acquired self-leadership awareness with the inclusion of leadership courses in the curriculum of the recreation and management departments of the faculty of sports sciences. No significant difference was found in the scrutiny conducted according to the class variable in self-leadership levels. According to the results of the study, due to the fact that self-leadership and emotional intelligence levels are concepts that predict each other, it is very important to increase awareness and include necessary psycho-education programs in this context in order to bring these skills to the students of the faculty of sports sciences. This study is limited to the students of the Faculties of Sport Sciences of Selçuk University and Düzce University and it is recommended that future research can be conducted with these two important concepts and a larger sample by using different demographic variables. As a result, it is thought that the findings obtained from this study will guide and contribute to new studies.

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Mental Toughness Levels of Male and Female Football Players

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Ethical Statement: It is declared that scientific and ethical principles have been followed while carrying out and writing this study and that all the sources used have been properly cited.

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Abstract

The aim of this study is to determine the mental toughness levels of male and female football players in sports. The population of the study consists of female football players from the Super League in 2021-2022 and amateur football players in the province of Batman. The sample of the study consists of 232 football players who voluntarily participated in the online questionnaire. Data on the introductory characteristics of the players were obtained with a "personal information form". "Sport Mental Toughness Questionnaire-SMTQ" was used to determine mental toughness of the players. The obtained data were transferred to the SPSS 22 software program for statistical operations. Frequency analysis, percentage analysis, arithmetic mean, t test, Anova analysis and post hoc tests were used to analyze the data. According to the variables of age, education level, years of licenced player and their level of football, statistically significant differences were found between the mental toughness levels among football players ($p<.05$). According to gender, no difference was found between the mental toughness levels of the football players ($p>.05$). It is thought that it is important to perform mental training in a disciplined way in order for the football players to be psychologically ready for the match as well as their competitive performance.

Keywords: Football; Male; Female; Mental Toughness in Sports

Erkek ve Kadın Futbolcuların Zihinsel Dayanıklılık Düzeylerinin İncelenmesi

Gerçekleştirilen bu çalışmanın amacı; erkek ve kadın futbolcuların sporda zihinsel dayanıklılık düzeylerini belirlemektir. Çalışmanın evreni 2021-2022 yılında Süper Lig'de oynayan kadın futbolcular ve Batman ilinde oynayan amatör futbolcular oluşturmaktadır. Araştırmanın örneklemi ise gönderilen çevrimiçi anket çalışmasına gönüllü olarak katılım gösteren 232 futbolcu oluşturmaktadır. Futbolcuların demografik özelliklerine ilişkin bilgiler ''kişisel bilgi formu'' ile elde edilmiştir. Futbolcuların sporda zihinsel dayanıklılık düzeylerini belirlemeye ilişkin bilgiler 'Sporda zihinsel dayanıklılık ölçeği' ile elde edilmiştir. Elde edilen veriler istatistiki işlemler için SPSS 22 yazılım programına aktarılmıştır. Verilerin çözümlenmesinde frekans analizi, yüzde analizi, aritmetik ortalama, t testi, Anova analizleri ve post hoc testleri kullanılmıştır. Gerçekleştirilen Analiz sonucunda; yaş, eğitim durumu, kaç yıldır lisanslı sporcusunuz ve futbolculuk seviyeniz değişkenlerine göre futbolcuların sporda zihinsel dayanıklılık düzeyleri arasında istatistiksel olarak anlamlı farklar bulunmuştur($p<.05$). Cinsiyet değişkenine göre ise futbolcuların sporda zihinsel dayanıklılık düzeyleri arasında herhangi bir farklılık tespit edilmemiştir($p>.05$). Futbolcuların müsabaka performansının yanı sıra psikolojik olarakta maça hazır olabilmeleri için disiplinli bir şekilde zihinsel antrenmanlarının yapılmasının önemli olduğu düşünülmektedir.

Anahtar Kelimeler: Futbol; Erkek; Kadın; Zihinsel Dayanıklılık

INTRODUCTION

One of the new and important ideas seen in exercise and sports psychology in order to raise the performance levels of football players to a better level is the concept of mental toughness (1,2).

Mental training methods are carried out with the aim of reinforcing physical exercises in motor skill acquisition (3). There are studies that mental training methods have benefits for motor skill learning in individuals with a high level of health, affect them positively, and although they are not as effective as physical exercise alone, if they are applied together with physical exercise, they are more (4).

Although there are different definitions of mental toughness, which is important and necessary for football players to exhibit and maintain the high performance they need, the perspective on the concept of mental toughness is that it is very beneficial for successful athletes (5). Mental toughness is seen as a necessary, beneficial and rewarding quality for the development of skills in environments with adverse conditions such as football training and challenging exercises (6). mental stamina; Mental thinking is expressed as a process of imagining skills and abilities in their minds, as well as a visualization training (7).

It is important that mental development coincides with the development of physical skills. For this reason, it is important to increase mental endurance, to provide and maintain mental development. It is seen that it is important for the development of the athletes that the football players do mental skill training in regular physical training and that these skill techniques are applied systematically (8,9).

Mental endurance training is beneficial in increasing and maximizing the athlete's performance in training and competitions. It supports the acquisition and use of mental and physical skills and sees it as an effective and tactical approach. The psychological level, character qualities, spiritual skills of the athletes and the technical features and tactics they apply in order to develop all of them show that they are in mental preparation (10).

The purpose of mental training; It is to reduce stress by using all kinds of tactics in order to control the physical and mental fatigue of the athlete, to keep his emotional level under control, to keep himself under control and to achieve a holistic recovery (11). Prominent uses of mental training techniques include imagination, self-talk, useful thinking, concentration exercises, stretch training, breathing techniques, and feedback (12).

"Mental stamina; It is the power to recuperate in some negative situations such as disability, failure, turmoil and increasing obligation every day, and it is defined as the positive spiritual capacity that can be developed for regeneration (13).

It is inevitable for football players with high mental endurance and continuous mental training to achieve success and maintain this success. This study, it was aimed to determine the mental endurance levels of male and female football players.

MATERIALS AND METHODS

Ethics Committee Decision

This study was approved by the Ethics Committee of Yozgat Bozok University on 24.06.2022. As stated in the letter E-55135017-770-79642, it has been decided that there is no ethical objection.

Universe and Sample

The universe of the research consists of amateur football players playing football in Batman province and female football players playing in the super league in the 2021-2022 season. The sample of the research consists of 232 football players who participated in the online questionnaire sent.

Data Collection Tools

In the first stage of the research form applied in the research, the personal information form was used, and in the other stage, the "Mental Endurance Scale in Sports" was used to determine the mental toughness levels of female and male football players.

Mental Endurance Inventory in Sports

The scale, which was developed by Sheard, Golby, and Van Wersch (2009) to measure the mental endurance levels of the athletes, was adapted into Turkish by Altıntaş (2016) (14,15). In addition to giving information about total mental toughness, the scale; It consists of 14 questions that determine the sub-dimensions of trust (1,5,6,11,13,14), continuity (3,8,10,12) and control (2,4,7,9). Athletes use a 4-point Likert type measurement (completely false, false, true, completely true) to indicate to what extent they agree with the statements in the items. The scale includes reverse questions (2,4,7,8,9,10).

In this study, the reliability of the trust sub-dimension was determined as 0.68, the reliability of the continuation sub-dimension as 0.58 and the reliability of the control sub-dimension as 0.73. Therefore, it was determined that the scale was reliable.

Analysis of Data

The data obtained in the study were transferred to the SPSS 22.0 program. It is very important to prepare the data obtained in the study before the analysis processes and to make it suitable for the analysis processes. Data with skewness and kurtosis values between +1.5 and -1.5 show normal distribution (16). The skewness and kurtosis values were calculated for all dimensions in the scales. Since the skewness and kurtosis coefficients of the variables within the scope of the study are below 1.5, it meets the normal distribution assumption of the variables.

Frequency and percentage analysis, t test and ANOVA analysis were used and the statistically significant difference level was determined as 0.05.

FINDINGS

Table 1. Findings of the demographic variables of the football players.

Variables	Category	n	%
Gender	Male	131	56.5
	Female	101	43.5
	18 - 20 years old	110	47.4
	21 - 23 years old	49	21.1
	24 - 26 years old	43	18.5
Age	27 - 29 years old	19	8.2
	30 and older	11	4.7
	primary education	9	3.9
	high school	115	49.6
education status	associate degree	27	11.6
	licence	71	30.6
	high education	10	4.3
	less than 1 year - 2 years	58	25.0
	3 - 5 year	56	24.1
Sports year	6 - 7 year	48	20.7
	8 year and older	70	30.2
	Professional	104	44.8
Position	Amateur	128	55.2

When Table 1 is examined; 131 (56.5%) of the football players are male and 101 (43.5%) are female. 110 (47.4%) 18-20, 49 (21.1%) 21-23, 43 (18.5%) 24-26, 19 (8.2%) 27-29 age group, 11 (4%), 7 over 30 years old. 9 (3.9% primary school, 115 (49.6%) high school, 27 (11.6%) associate degree, 71 (30.6%) undergraduate, 10 (4%) graduate, 3 58% (25%) Less than 1 year – 2 years, 56 (24.1%) 3 – 5 years, 48 (20.7%) 6 – 7 years, 70 (30.2%) 8 years or more are licensed football players.

Table 2 presents the findings regarding the sub-dimensions of mental toughness in sports.

Table 2. Findings regarding the sub-dimensions of the mental toughness scale in sports and the total mean score.

sub dimensions	N	Min.	Max.	Mean	ss
Trust Sub-Dimension	232	10.00	24.00	1.41	3.20
Continuity Sub-Dimension	232	6.00	16.00	0.95	2.44
Control Sub-Dimension	232	4.00	16.00	0.67	3.21
Total Size	232	26.00	56.00	3.04	6.54

When Table 2 is examined; It is seen that the most important sub-dimension of mental toughness in sports is the sub-dimension of trust. The total mean score of the mental toughness scale in sports was determined as 3.04. It can be concluded that the mental endurance levels of the football players in sports are at a high level when the total score is considered.

Table 3. Gender variable t-test findings.

Sub-Dimensions	Gender	n	Mean	Ss.	t	p
Trust Sub-Dimension	Male	131	1,43	3,22	1,109	0,269
	Female	101	1,40	3,17		
Continuity Sub-Dimension	Male	131	0,97	2,47	1,633	0,104
	Female	101	0,93	2,39		
Control Sub-Dimension	Male	131	0,67	3,36	,131	0,896
	Female	101	0,66	3,02		

When Table 3 is examined; According to the gender variable, no significant difference was found between the mental toughness confidence sub-dimension, continuity sub-dimension and control sub-dimension in sports (p>.05). It has been determined that male football players have higher self-confidence, continuity and control levels than females.

Table 4. Findings of your age variable Anova analysis.

Sub-Dimensions	Age	n	Mean	Ss.	f	p	Difference
Trust Sub-Dimension	18 - 20 year old (1)	110	1.41	2.83	1.680	0.155	**-**
	21 - year old (2)	49	1,37	3,61			
	24 - 26 year old (3)	43	1,43	3,85			
	27 - 29 year old (4)	19	1,49	2,41			
	30 and older (5)	11	1,52	2,64			
Continuity Sub-Dimension	18 - 20 year old (1)	110	0,96	2,21	3,219	**0,014**	3 > 2
	21 - year old (2)	49	0,87	2,77			
	24 - 26 year old (3)	43	1,00	2,33			
	27 - 29 year old (4)	19	0,97	2,56			
	30 and older (5)	11	0,98	2,45			
Control Sub-Dimension	18 - 20 year old (1)	110	0,64	3,01	3,538	**0,008**	3 > 1,4
	21 - year old (2)	49	0,63	3,15			
	24 - 26 year old (3)	43	0,78	3,50			
	27 - 29 year old (4)	19	0,62	2,63			
	30 and older (5)	11	0,70	3,67			

*p<0,05

When Table 4 is examined; According to your age variable, there is a statistically significant difference between the continuity sub-dimension of the mental toughness scale and the control sub-dimension (p<.05). According to the results of the Anova analysis, which was conducted to determine between which age groups the mental endurance levels of the footballers differ in sports, the continuity levels of the football players between the ages of 24-26 are higher than those between the ages of 21-23. In the control sub-dimension, players aged 24 – 26 are higher than players aged 18–20 and 21–23. There was no significant difference in the confidence sub-dimension (p>.05).

Table 5. Findings of Anova analysis of educational status variable.

Sub-Dimensions	Educational Status	n	Mean	Ss	f	p	Difference
Trust Sub-Dimension	primary education(1)	9	1.35	2.23	3.552	**0.008**	4 > 3
	high school(2)	115	1.41	3.23			
	associate degree(3)	27	1.29	2.94			
	Licence(4)	71	1.48	2.95			
	high education(5)	10	1.45	4.24			
Continuity Sub-Dimension	primary education(1)	9	0.79	2.08	6.050	**0.000**	4 > 3.1
	high school(2)	115	0.96	2.29			
	associate degree(3)	27	0.86	2.34			
	Licence(4)	71	1.00	2.19			
	high education(5)	10	0.85	3.87			
Control Sub-Dimension	primary education(1)	9	0.67	2.92	1.303	0.270	-
	high school(2)	115	0.65	3.09			
	associate degree(3)	27	0.62	2.62			
	Licence(4)	71	0.71	3.42			
	high education(5)	10	0.72	4.29			

*p<0,05

When Table 5 is examined; It was determined that there was a statistically significant difference between the confidence sub-dimension and the continuity sub-dimension of the mental toughness scale in sports, according to the variable of educational status (p<.05). According to the results of the Anova analysis conducted to determine the differentiation between the education levels of the football players in the sports branch, it is seen that the football players with undergraduate education are at a higher level than the football players with associate education. In the trust sub-dimension, those with undergraduate education are at a higher level than those with associate degree education. In the continuity sub-dimension, it is seen that those who have undergraduate education are at a higher level than those who have primary education and associate degree education. There was no significant difference in the control sub-dimension (p>.05).

Table 6. How many years have you been a licensed athlete variable Anova analysis findings.

Sub-Dimensions	Sports Year	n	Mean	Ss	f	p	Difference
Trust Sub-Dimension	Less Than 1 Year - 2 Years(1)	58	1.35	2.80	6.134	**0.000**	4.3 > 1
	3 - 5 Year(2)	56	1.38	3.12			
	6 - 7 Year(3)	48	1.40	3.37			
	8 Year and Older(4)	70	1.51	3.12			
Continuity Sub-Dimension	Less Than 1 Year - 2 Years(1)	58	0.94	2.29	4.940	**0.002**	4 > 2
	3 - 5 Year(2)	56	0.90	2.48			
	6 - 7 Year(3)	48	0.94	2.63			
	8 Year and Older(4)	70	1.01	2.19			
Control Sub-Dimension	Less Than 1 Year - 2 Years(1)	58	0.62	2.96	2.947	**0.034**	4 > 1
	3 - 5 Year(2)	56	0.66	2.94			
	6 - 7 Year(3)	48	0.63	3.09			
	8 Year And Older(4)	70	0.73	3.54			

*p<0,05

When Table 6 is examined; According to the variable of your football playing level, a statistically significant difference was found in the continuity sub-dimension of the mental toughness scale in sports (p<.05). In the continuity sub-dimension, the continuity levels of amateur football players are higher than professional football players. There is no statistically significant difference between the confidence sub-dimension and the control sub-dimension of the mental toughness scale in sports (p>.05).

Table 7. T-test findings for your football player level variable.

Sub-Dimensions	Position	n	Mean	Ss	t	p
Trust Sub-Dimension	Professional	104	1.42	3.26	-0.018	0.985
	Amateur	128	1.42	3.16		
Continuity Sub-Dimension	Professional	104	0.90	2.59	-3.937	**0.000**
	Amateur	128	1.00	2.17		
Control Sub-Dimension	Professional	104	0.68	3.17	0.972	0.332
	Amateur	128	0.66	3.24		

*p<0,05

When Table 7 is examined; According to the variable of your footballing level, a statistically significant finding was found in the continuity sub-dimension of the mental toughness scale in sports (p<.05). In the continuity sub-dimension, the continuity levels of amateur football players are higher than professional football players. There is no statistically significant difference between the confidence sub-dimension and the control sub-dimension of the mental toughness scale in sports (p>.05).

CONCLUSION AND DISCUSSION

As a result of the study, no significant difference was found between the mental toughness confidence sub-dimension, continuity sub-dimension and control sub-dimension in sports according to the gender variable (p>.05). It has been determined that male football players have higher levels of confidence, continuity and control than female. It can be said that men show more interest in football than female, they start football at an early age, they train harder and more, they watch football matches more, and they evaluate every field where they can play football and play football. In general, it is thought that men show more interest than female, start football at an early age and receive training in an infrastructure. In the literature, there are similar results in studies investigating the mental endurance levels of different participants in sports, and there are also results that do not show similarity.

In the study in which the exercise addiction and mental endurance levels of the students of the faculty of sports sciences were examined, it was determined that there was no semantic difference between the mental endurance levels in sports according to the gender of the participants (17). In the study, no statistically significant difference was found between mental endurance in sports and gender (18). It is seen that the results of the study are similar to the present study.

In the studies conducted in the literature review, a significant difference was found between the levels of mental endurance in sports according to gender (19,20,21,22,23,24). It is seen that the findings of the study do not show similarity with this research. Findings determined in the literature in which various studies are researched are seen in studies that do not show similarities as well as similarities with this research.

According to the age variable of the football players participating in the study, it is seen that there is a statistically significant difference between the mental endurance continuity sub-dimension and control sub-dimension in sports (p<.05). According to the results of the Anova analysis, which was carried out to determine between which age groups the mental endurance levels of the footballers differ in sports, the continuity levels of the football players between the ages of 24-26 are higher than those of the football players between the ages of 21-23. In the control sub-dimension, football players aged 24 – 26 are higher than those aged 18 – 20 and 21 – 23. As football players get older, they have more professional thinking, gain experience and experience, work harder than football players younger than themselves, and keep themselves under control in order to increase their performance with the experience they have gained. It is thought that by paying attention to their eating and drinking and social life, they want to increase their level of continuity in training and competitions and reach the peak in their performance. No significant difference was found in the trust sub-dimension (p>.05). In the literature review, the same results as well as different results are seen in the studies in which the mental endurance levels of the participants in sports are investigated.

In the study conducted to examine the mental endurance levels of the groups of athletes who do team and individual sports at elite level according to different variables, it is seen that there is a significant difference between the mental endurance levels in sports according to the age variables of the participants (18). The study of Crust et al. also shows parallelism with the study and states that age is important for determining mental

endurance in sports (25). Studies conducted in the literature review report that mental endurance in sports develops directly with the age of the football player (26-27). It was observed that the findings obtained in the study were similar to the research conducted.

In another study, it was found that there was no statistically significant difference between mental endurance and age in sports (28). The findings in the study do not show parallelism with the study. Findings in the literature, in which different studies are investigated, are seen in studies that do not show similarities as well as similarities with this research.

According to the educational status variable of the football players participating in the study, it is seen that there is a statistical significance in the sub-dimension of confidence in sports mental toughness scale and in the sub-dimension of continuity ($p<.05$). Mental endurance levels of football players in sports according to their education level in the trust sub-dimension, it is seen that the football players who have undergraduate education are at a higher level than the football players who have an associate degree education. In the continuity sub-dimension, it was determined that those who received undergraduate education were at a higher level than those who received primary education and associate degree education. It is thought that as the level of education increases, mental endurance in sports will increase. It can be expected that the mental endurance levels of the football players at the undergraduate and graduate level will be higher than the football players at the high school level. There is no significant difference in the control sub-dimension ($p>.05$). In the literature review, there are similar results as well as different results in studies investigating the mental resilience levels of the participants.

In the study of examining the mental endurance of the athletes according to various variables, a significant difference was found in the levels of mental endurance in sports according to the variable of educational status (29). It is seen that the findings of the research have similarities with this research.

Mental endurance in sports: In a study of taekwondo athletes, it is seen that there is no semantic difference when sports mental endurance levels are examined according to the variable of educational status (30). The findings in the study are not similar to the present study. In the literature review, the findings found by examining various studies are similar to this research, as well as studies that do not show similarities.

It is seen that there is a statistically significant difference in all sub-dimensions of the mental toughness scale in sports according to the variable of how many years have you been a licensed athlete of the football players participating in the study ($p<.05$).

According to the result of how many years you have been a licensed athlete in the sports branch, the self-confidence levels of football players licensed for 8 years or more are higher than those licensed for less than 1 year, 2 years, 3 - 5 years. Considering the continuity sub-dimension, the level of football players who have been licensed for 8 years or more is higher than those who have been licensed for 3-5 years. It can be said that our mental endurance in sports increases every year when we start playing football in a team and continue regularly. When continued as a licensed football player for many years, it can be said that they increase their self-confidence, self-control, ability to dominate their environment and increase their continuity by doing difficult trainings and competitions every year, and in this case, they increase their mental endurance levels every year. It is thought that experienced football players encounter different situations more than once and can resist the same positions more easily. In the literature review, there were similar results in studies investigating the mental endurance levels of various participants in sports, as well as various results. In the study examining the relationship between the levels of mental toughness in sports and alienation from morality in sports, it is seen that there is a statistically significant difference in favor of the students who are in the 8 or higher group of mental toughness confidence (31). In the study, it was determined that there is a significant difference between the mental endurance in sports and the experience of how many years you have been a licensed athlete (32). It has been determined that experience (sports age) is a major factor in increasing mental endurance levels in sports. In a different study, he reported that the level of experience is an important factor that increases the level of mental resilience in sports (27). These results support the research findings.

In the study examining the mental endurance of the athletes according to various variables, it was determined that there was no semantic difference in the mental endurance levels in sports according to the variable of how many years have you been a licensed athlete (30). This result does not support the research

findings. In the literature review, the findings obtained by examining various studies are in parallel with the research, as well as studies that do not have similarity.

In the study, it is seen that there is a statistically significant difference according to the variable of your playing level in the sub-dimension of mental endurance continuity in sports ($p<.05$). In the continuity sub-dimension, the continuity levels of amateur football players are higher than professional football players. It is thought that the level of attendance of amateur football players is at a higher level, since male football players participate in all levels of amateur football, they train under more difficult conditions than female football players, and their physical structures are more durable than women. No semantic differences were found in the sub-dimension of trust and control in sports ($p>.05$). In the literature review, similar results were not found in studies investigating the mental endurance levels of various participants in sports.

In a study conducted with the students of the faculty of sports sciences, it was determined that the mental training characteristics of the professional athlete group were higher than the amateur athlete group (33). In another study, it is stated that professional athletes are more motivated by experiencing mental skills in sports, improving their performance in sports and learning methods and techniques compared to amateur athletes (34). When the literature is examined, the findings obtained do not coincide with the findings of the study.

As a result; It has been concluded that male football players have higher mental endurance levels than female football players playing in the super league, despite playing at an amateur level. It shows that the level of education on the mental toughness levels of the football players has an effect on the increase in the mental toughness levels as the education level increases. It has been determined that the most important sub-dimension of mental toughness in sports is the sub-dimension of trust. The total mean score of the mental toughness scale in sports was determined as 3.04. It can be said that the mental endurance levels of the football players in sports are at a high level when the total score is considered. It is thought that these results will be a source in directing male and female football players to mental training as well as physical training.

The following suggestions are included in the research.

- Football clubs can organize informative programs and activities related to mental endurance in sports during pre-season and mid-season periods in order to be more successful and increase the performance of their football players.
- Congress papers and studies on mental endurance in sports can be examined.
- Studies in different countries on mental endurance in sports can be examined.
- It is possible to meet with experts who will teach the benefits of mental endurance in sports by coaches and football players, and training on mental endurance in sports can be taken.

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Examining of Impression Management of Academicians in Higher Education Institutions Providing Sports Education

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Abstract

This research was conducted in order to determine the impression management of Acaemicians working in the sample of higher education institutions providing sports education, to examine whether the impression management tactics of Acaemicians differ according to demographic variables. A research using a descriptive scanning method aimed at revealing the current situation; 51 Faculties of Sports Sciences participating in the data collection process[n=426], 13 School of Physical Education and Sports[n=72] and 2 at the Department of Physical Education and Sports Teaching Affiliated to the Faculties of Education[n=5] a total of 503 who served[male=404, female=99; professor=44, associate professor=99, dr.teachmember=122, teaching.see=133, Res.see=105] it was carried out on the sample of Acaemicians. The "Impression Management Scale" developed by Bolino and Turnley (1999) and its adaptation to Turkish/validity study conducted by Basım and his friends(2006) and the "Personal Information Form" developed by the researcher were used as data collection tools in the research. The normality test of the data obtained in the study was tested by Kolmogorov-Smirnov and Shapiro-Wilk tests; Mann-Whitney U Test was used for paired comparisons and Kruskal-Wallis Variance Analysis was used for multiple comparisons because the data did not show normal distribution as a result of the test. In the statistical calculations, the basic significance level was accepted as 0.05. As a result of the research; Acaemicians in higher education institutions providing sports education, trying to pity themselves, trying to show themselves as an exemplary staff member, trying to make them realize their own importance by force the dimensions of impression management tacticsand general impression management tactics which they never use, trying to make themselves liked by promoting their qualification the dimension of impression management tactics they are rarely used, trying to own their business the size of impression management tactics is which they use from time to time it is determined. Acaemicians' general impression management tactics and the dimensions of impression management tactics (trying to pity yourself, trying to make themselves liked by promoting their qualification, trying to show themselves as an exemplary staff member, trying to make them realize their own importance by force, trying to own their business) while it was found that there was no significant difference according to the gender variable; trying to show themselves as an exemplary staff member the dimension of impression management tactics depends on the variable of the department in which they work, trying to make them realize their own importance by force, trying to own their business and trying to own their business the effect of the dimensions of impression management tactics on the age and professional seniority variable, trying to make themselves liked by promoting their qualification, trying to own their business the dimensions of impression management tactics and general impression management tactics it has been found that it differs significantly according to the title variable.

Keywords: Academician, Impression management, Impression management tactics, Sports

INTRODUCTION

People cannot live independently of social systems and they want to establish meaningful social relationships in order not to be excluded from social ties (122). The individual socializes by being in various social environments, exhibits himself and uses his impressions (53). In the structuring of social relations, the behavior of individuals is influenced by their own personality as well as by the others. In such a situation, individuals not only shape their own impressions of the individuals around them, but also try to manage the impressions of other individuals they are in a relationship with about themselves (40). Impressions are self-images that an individual projects on those around him. With the idea that there is more than one self, the individual tends to manage his impressions (53).

Impression management, which is expressed as an individual's behavior aimed at influencing other individuals' perceptions of him/her (17), (47),(18)), the individual establishes healthy and compatible social relationships with the people he is in a relationship with by caring about the impressions of other people. Especially individuals who want to be successful in their interactions both in social life and in business life, to be approved and accepted by other people, make a conscious and unconscious number of efforts to create an impression for these purposes. Individuals begin to manage their impressions as soon as they enter into these efforts (2).

(9) while emphasizing that impression management is one of the basic processes of interpersonal relationships;(27), He refers to the importance of the same process in organizational environments. In organizational environments, the objective informations that managers have about individuals, as well as their impressions about them, can be effective in the evaluation and decision-making processes. Therefore, following the impressions of the individual about himself and making attempts to influence him comes across as a behavior that should be considered natural (21),(28),(5). From this point of view, it can be said that impression management is a purposeful, strategic and dynamic process that affects human life (41).

Studies on impression management have started independently of each other in the fields of sociology and psychology, but at the same time (29). In fact, the studies conducted on this subject until today based on(18)'s book that he wrote which named "The Presentation of Self in Everyday Life"(18) impression management; that people create certain patterns to impress each other when they first meet face-to-face, and that these patterns are important for making sense of the person opposite them, and from here, "a self-presentation technique that focuses on making a person's image in the eyes of others more efficient, more effective" he defined it as.(18) in his work, he considered the concept of impression management within the scope of Dramaturgy Theory and reported that everyday life is almost a theatrical stage; individuals are actors who act in front of the audience on this stage of life. Goffman suggests that an individual's self-identification involves two radically different types of signs; the way he presents himself (give) and the way he gives himself away (give off). According to Goffman, an individual not only expresses his inner feelings, while expressing information about himself, but also spreads some information. In order for the claim to be a certain type of person to be real, messages that are consistent with what is conveyed must be reflected. However, in this way, it can be distinctive how the individual behaves as well as what kind of messages he spreads (19).

The issue of impression management is being discussed very intensively, especially in professional fields. It is believed that it is the most important core for increasing cooperation and communication of both individuals working within their own institutions and their stakeholders outside the institution (37). Impression management theorists claim that the reason for the efforts of people working in an institution to create impression management is to avoid being negatively evaluated (31).(29) while expressing impression management as the stage of keeping under control the impressions formed about themselves by individuals, other individuals with whom they are in contact,; (16) they interpreted it as reflecting the beautifully and carefully selected extracted data related to the individual himself to other individuals.

Actors in the social interaction game try to create certain impressions about themselves in other individuals around them in order to achieve desirable social, psychological and material results on the stage of life. Goffman believed that an individual can take control of his own impressions and fulfill the roles, rules and behaviors expected of him. When these roles take the form of behaviors "impression management" it is

called as. In other words, it is that the actor influences the information and thoughts of the people around him about himself (25).

Although it was stated that impression management was a concept that was generally and normally applied in interactions, very few researchers accepted this point of view at that time. For example, social psychologists have stated that impression management is an extreme type of behavior (15). In laboratory research in the 1960s, it became necessary to eliminate or control impression management behaviors in order to observe data related to real relationships (19). in the 1970s, with the augmentation of information about impression management, its importance on behavior was recognized. During this period, impression management was widely investigated in laboratory-based, experimental social psychology studies. in the mid-1980s, impression management gained importance in research related to organizations and social communities. In these years, impression management has been adopted as a natural behavior that is intensively used in organizational life and social interactions, and even considered as the basis for effective communication. this view, which started in the middle of the 1980s, is still acceptable today. Today, the perspective of impression management regarding individuals' being seen as actions of controlling other individuals and deceiving the audience (target group), usually for negative reasons, is extremely limited. In the literature, the theory and research of impression management consists of three parts. In the first stage, there are studies by Goffman and Jones. The second stage consists only of studies centered on social psychology, in which the initial studies are expanded and deepened. The last stage includes studies in which the theory of impression management has been transformed into a meaningful and acceptable social concept (24).

In accordance with these traces followed in the body of literature, “What is the level of frequency of individuals using impression management and impression management tactics? Whether the frequency of using impression management and impression management tactics differ according to demographic variables. Etc.the questions have enabled the formation of this study. According to this, the participants in the study; “what is the level of impression management and the frequency of using impression management tactics?” and “do impression management and the levels of using impression management tactics differ according to demographic characteristics?” answers have been looked for this questions.

In this context, the study is based on participants belonging to the academic profession, which, in addition to high stress factors, has an excessive administrative and academic workload, a lifestyle with high performance expectations, as well as a profession that covers an important part of life and leaves little room for private life in this aspect, is prone to work-family conflict, wages and rewards are insufficient, staffing problems are growing; who determine the future of the country and are defined as people who guide society in a developed society and get their respectability from the definition. In the study designed as a empirical research, the screening model was preferred from the quantitative research patterns and the survey method was used as a data collection tool.

It is seen that there are studies on impression management by Acaemicians in the related body literature. However, there has been no research specifically aimed at determining the impression management of Acaemicians at higher education institutions providing sports education. In this context, it is thought that the research will contribute to the relevant body literature. As part of this information, the research was conducted in order to determine the impression management of Acaemicians working in the sample of higher education institutions providing sports education, to examine whether the impression management tactics of Acaemicians differ according to demographic variables.

MATERIALS AND METHODS

Population and Sample

The universe of research, 2021 Higher Education Institutions Exam (YKS) Higher Education Programs and Quotas Guide (35), Table 4 (Higher Education Undergraduate Programs That Accept Students With Central Placement) and Table 5’e (Higher Education Programs that Accept Students According to the Results of the Special Aptitude Test) affiliated to public universities in Turkey that receive students 60 Faculty of Sports Sciences, 19 School of Physical Education and Sports, 5 In the Department of Physical Education and

Sports Teaching Affiliated to the Faculties of EducationAcaemicians who have served (faculty members, lecturers, lecturers, experts and research assistants) created.

In order to obtain reliable data, the sampling method was not taken, the whole universe was studied on the basis of voluntary participation, "the universe that exemplifies itself" (11) has been accepted as the working universe of the research.

One of the survey application forms in the research is face-to-face interview, mail survey application and internet survey application (the scales created on the digital platform by providing access to the e-mail accounts allocated to them by the universities where the Acaemicians work, from the web addresses of the units where they work, were sent to the Acaemicians on a voluntary basis with the request to be answered) methods (6),(33) by using it, scales have been tried to be applied to all Acaemicians working in units located in the universe. Questionnaires were not applied to Acaemicians who were not present at the time of application, did not want to participate in the survey and did not return.

At the end of this process, 51 Faculty of Sports Sciences (n=426), 13 School of Physical Education and Sports (n=72) and 2 In the Department of Physical Education and Sports Teaching Affiliated to the Faculties of Education (n=5) it has been determined that the Acaemicians who served participated in the data collection process of the research. In this way, the sample group of the research consisted of a total of 503 Acaemicians.

Table 1. Percentage and Frequency Distributions of Acaemicians in Higher Education Institutions Providing Sports Education Participating in the Research According to the Units They work in

The Unit On Duty	**n**	**%**
Faculty of Sports Sciences	426	84.7
High School of Physical Education and Sports	72	14.3
Department of Physical Education and Sports Teaching Affiliated to the Faculty of Education	5	1.0
Total	**503**	**100.0**

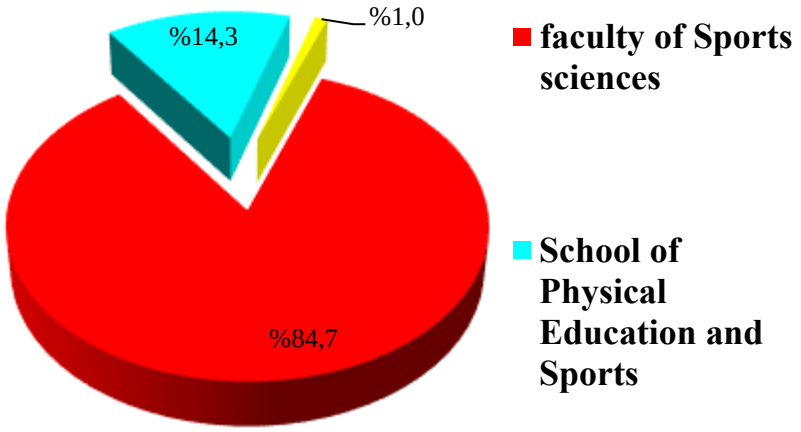

Figure 1. Percentage and Frequency Distributions of Acaemicians in Higher Education Institutions Providing Sports Education who Participated in the Research According to the Units They work in.

As shown in Table and Figure 1, it was observed that 84.7% (n=426) of the Acaemicians who made up the sample group of the research worked at the Faculty of Sports Sciences, 14.3% (n=72) at the School of Physical Education and Sports, and 1% (n=5) at the Department of Physical Education and Sports Teaching affiliated to the Faculties of Education.

Table 2. Distribution of Demographic Characteristics of Acaemicians in Higher Education Institutions Providing Sports Education

Variables	Subcategories	n	%	Total
Gender	Male	404	80.3	503 - %100,0
	Female	99	19.7	
Department	Physical Education and Sports Teaching	184	36.6	503 - %100,0
	Sports Management	113	22.5	
	Coaching Education	152	30.2	
	Recreation	54	10.7	
Age	25 years and younger	14	2.8	503 - %100,0
	26-30 years	58	11.5	
	31-35 years	100	19.9	
	36-40 years	77	15.3	
	41-45 years old	98	19.5	
	46-50 years	83	16.5	
	51 years and over	73	14.5	
Title	Professor	44	8.7	503 - %100,0
	Associate professor	99	19.7	
	Assistant Professor	122	24.3	
	Lecturer	133	26.4	
	Research Assistant	105	20.9	
Professional Seniority	1-5 years	142	28.2	503 - %100,0
	6-10 years	98	19.5	
	11-15 years	53	10.5	
	16-20 years	59	11.7	
	21-25 years	57	11.3	
	26 years and over	94	18.7	

80.3% (n=404) of the Acaemicians participating in the study are male, 19.7% (n=99) are female;36.6% (n=184) are Physical Education and Sports Teachers, 22.5% (n=113) are Sports Managers, 30.2% (n= 152) are Coaching Education, 10.7% (n=54) are working in the Recreation department. In the examination of Acaemicians by age groups, 2.8% (n=14) of them were 25 years and under, 11.5% (n=58) of them were in the 26-30 age range, 19.9% (n=100) of them were in the 31-35 age range, 15.3% (n=77) of them were in the 36-40 age range, 19.5% (n=98) of them were in the 41-45 age range, 16.5% (n=83) of them were in 46-50 age range, 14.5% of them (n=73) were in the age range of 51 and over. 8.7% (n=44) of the Acaemicians participating in the research had the title of professor, 19.7% (n=99) associate professor, 24.3% (n=122) assistant professor, 26.4% (n=133) lecturer and 20.9% (n=105) research assistant; it was found that 28.2% (n= 142) 1-5 years, 19.5% (n=98) 6-10 years, 10.5% (n=53) 11-15 years, 11.7% (n=59) 16-20 years, 11.3% (n=57) 21-25 years, and 18.7% (n=94) 26 and over years were in service.

Data Collection Tools

As a data collection tool in research,(7) adaptation to Turkish and validity study developed by (5) the "Impression Management Scale (IMS)" made by the researcher and the "Personal Information Form" developed by the researcher were used.

(5) in the validity study and adaptation of the scale into Turkish, it was found that the scale shows a factor structure that is not very different from the original factor structure. The 5 factors that emerged, "trying to pity themselves", "trying to make themselves liked by promoting their qualification", "trying to show themselves as an exemplary staff member", "trying to make them realize their own importance by force" and "trying to own their business" it is named as. In the validity-oriented analyses, the differential validity of the scale was determined by the criterion variables (satisfaction with the impression on the others, the level of achievement of one's professional goals, self-perception) it was determined that their correlations were satisfying Cronbach alpha reliability values for the entire scale (based on standardized items).82; also for factor subscales .With 57 (Number of items=2) .It has been found that it varies between 74 (Number of items=5). The results showed that the Turkish version of the Impression Management Scale is a valid and reliable scale that can be used to

measure impression management behaviors in working life in Turkey. Within the scope of this study the values related to the reliability analysis performed on the general and factors of the scale are given in Table 3.

Table 3. Reliability analysis of the Impression Management Scale.

Factors of the Impression Management Scale	Cronbach Alpha	Number of Items
Trying to pity themselves	0.837	5
Trying to make themselves liked by promoting their qualification	0.830	8
Trying to show themselves as an exemplary staff member	0.778	4
Trying to make them realize their own importance by force	0.789	3
Trying to Own Your Business	0.610	2
Impression Management Scale	0.905	22

The evaluation criterion used in the evaluation of Cronbach's alpha coefficient is; If $0.00 \leq \alpha < 0.40$, the scale is not reliable, if $0.40 \leq \alpha < 0.60$, the scale has low reliability, if $0.60 \leq \alpha < 0.80$, the scale is quite reliable, if $0.80 \leq \alpha < 1.00$, the scale is a highly reliable scale (34).

As can be seen in Table 3, the Impression Management Scale has shown that, “trying to pity themselves" obtained in the size 0.837, “trying to make themselves liked by promoting their qualification” obtained in the size of 0.830 and from the overall scale the results of the cronbach alpha coefficient of 0.905 obtained indicate that the overall scale and the two sub-dimensions that it has a high degree of reliability; “trying to show themselves as an exemplary staff member” obtained in the size of 0.778, “don't try to make them realize their own importance by force” obtained in the size of 0.789 and “trying to make them realize their own importance by force” the results of the cronbach alpha coefficient of 0.610 obtained in the dimension of the three sub-dimensions of the scale are quite reliable

In order to determine the impression management tactics that can possibly be used by employees in an organization after its adaptation to Turkish, a 5-digit Likert type (1=never, 5=always), consisting of 22 questions and 5 factors the scale of (Basım and ark 2006) The averages of the items in the sub-dimension give the scores related to each dimension and the evaluations are made on the basis of each sub-dimension. A high score from the scale indicates that impression management tactics are used more (50).

Analysis of the Data

The data collected by the Acaemicians participating in the research through the Personal Information Form and the Impression Management Scale were analyzed with the SPSS 23.0 program. The collected data were checked by Exploratory Data Analysis (EDA) whether they were within the limits determined before the analyses were started, whether they were too incomplete or contained errors to be used in statistical analyses. Afterwards, the normality distributions of the scale scores were examined in order to determine the impression management of Acaemicians in higher education institutions providing sports education and to decide which statistical techniques to use in order to determine whether impression management differs according to demographic variables. Normality distributions were tested by Kolmogorov-Smirnov and Shapiro-Wilk tests. The results were significant in all variables ($P<0.05$). In other words, it has been observed that not all variables show a normal distribution. For this reason, whether the impression management of Acaemicians differs according to demographic variables has been tested by non-parametric tests. Mann-Whitney U Test was used for paired comparisons and Kruskal-Wallis Variance Analysis was used for multiple comparisons. In cases where a significant difference was found as a result of Kruskal Wallis Variance Analysis in multiple comparisons, the Mann Whitney U Test was applied to determine which groups this difference was due to. In all statistical calculations, the basic significance level was accepted as 0.05.

RESULTS

Table 4. Descriptive Statistics of the Impression Management Scale.

Scale/Sub-Dimensions	Number of Items	Min-Max	?±SS
Trying to pity themselves	5	1-5	1,27±0,51
Trying to make themselves liked by promoting their qualification	8	1-5	2,14±0,74
Trying to show themselves as an exemplary staff member	4	1-5	1,40±0,63
Trying to make them realize their own importance by force	3	1-5	1,21±0,54
Trying to Own Your Business	2	1-5	2,72±1,12
Impression Management Scale Total	22	1-5	1,73±0,54

As shown in Table 4, the average scores of the sub-dimensions of the Impression management Scale of Acaemicians were as follows: "Trying to Pity Yourself" 1.27±0.51, "Trying to Make Yourself Liked by Introducing Your Qualifications" 2.14±0.74, "Trying to Present Yourself as an Exemplary Staff" 1.40±0.63, "Trying to Force Yourself to Realize Your Importance" 1.21±0.54, "Trying to Own TheirBusiness" 2.72±1.12 and the average score of the total scale 1.73±0.54 it has been found.

In order to interpret the average scores of the Acaemicians participating in the study from the sub-dimensions and the sum of the Impression management Scale; Gap width (a) = Array width / Number of groups to be made (46) the formula is used. The observation frequency and limit values formed accordingly are given in Table 5 below.

Table 5. Impression Management Scale observation frequency and limit values.

Weight	Options	Limit
1	Never	1,00-1,80
2	Rarely	1,81-2,60
3	Sometimes	2,61-3,40
4	Usually	3,41-4,20
5	Always	4,21-5,00

When the results obtained according to the frequency of observation and limit values in Table 5 are evaluated; Acaemicians"Trying to pity themselves", "Trying to Present Yourself as an Exemplary Staff", "Trying to make them realize their own importance by force" and "General Impression Management" tactics which they never use; "Trying to Make Yourself Liked by Introducing Your Qualifications" impression management tactics they are rarely used, "Trying to own their business" impression management tactics are which they use Decently from time to time it is determined.

Table 6. Mann Whitney U test results showing the comparison of impression management tactics of Acaemicians in higher education institutions providing sports education according to gender variable.

	Gender	n	Rank Average	Sequence Sum	U	P
Trying to pity themselves	Male	404	251.36	101548.00	19738.000	0.818
	Female	99	254.63	25208.00		
Trying to make themselves liked by promoting their qualification	Male	404	254.80	102940.50	18865.500	0.381
	Female	99	240.56	23815.50		
Trying to show themselves as an exemplary staff member	Male	404	253.65	102474.50	19331.500	0.578
	Female	99	245.27	24281.50		
Trying to make them realize their own importance by force	Male	404	255.89	103379.00	18427.000	0.109
	Female	99	236.13	23377.00		
Trying to Own Your Business	Male	404	254.41	102781.50	19024.500	0.448
	Female	99	242.17	23974.50		
Impression Management Scale Total	Male	404	255.73	103314.00	18492.000	0.245
	Female	99	236.79	23442.00		

Table 7. Kruskal Wallis-H test results shows the comparison of impression management tactics of Acaemicians in higher education institutions providing sports education according to the department variable they work in.

		Department	n	?	Order Avg	Sd	X^2	P	Significant Difference
Trying to pity themselves	A	Physical Education and Sports Teaching	184	1.31	261.79	3	2.223	0.527	---
	B	Sports Management	113	1.32	252.59				
	C	Coaching Education	152	1.21	244.39				
	D	Recreation	54	1.19	238.81				
Trying to make themselves liked by promoting their qualification	A	Physical Education and Sports Teaching	184	2.23	269.02	3	6.904	0.075	---
	B	Sports Management	113	2.16	259.85				
	C	Coaching Education	152	2.04	235.86				
	D	Recreation	54	1.99	223.01				
Trying to show themselves as an exemplary staff member	A	Physical Education and Sports Teaching	184	1.45	261.51	3	7.911	**0,048***	**A>C D>C**
	B	Sports Management	113	1.46	256.96				
	C	Coaching Education	152	1.28	227.84				
	D	Recreation	54	1.38	277.22				
Trying to make them realize their own importance by force	A	Physical Education and Sports Teaching	184	1.22	250.66	3	5.373	0.146	---
	B	Sports Management	113	1.30	270.54				
	C	Coaching Education	152	1.18	246.97				
	D	Recreation	54	1.11	231.93				
Trying to Own Your Business	A	Physical Education and Sports Teaching	184	2.85	269.35	3	4.340	0.227	---
	B	Sports Management	113	2.63	239.50				
	C	Coaching Education	152	2.65	244.85				
	D	Recreation	54	2.62	239.17				
Impression Management Scale Total	A	Physical Education and Sports Teaching	184	1.80	269.40	3	5.699	0.127	---
	B	Sports Management	113	1.77	255.43				
	C	Coaching Education	152	1.65	233.54				
	D	Recreation	54	1.64	237.51				

*p<0.05

Table 8. Kruskal Wallis-H test results shows the comparison of impression management tactics of Acaemicians in higher education institutions providing sports education according to age variable.

		Age	n	?	Order Avg	Sd	X^2	P	Significant Difference
Trying to pity themselves	A	25 years and younger	14	1.30	286.07	6	5.237	0.514	---
	B	26-30 years	58	1.39	274.53				
	C	31-35 years	100	1.19	243.64				
	D	36-40 years	77	1.28	236.36				
	E	41-45 years old	98	1.25	249.23				
	F	46-50 years	83	1.32	263.04				
	G	51 years and over	73	1.23	246.68				
Trying to make themselves liked by promoting their qualification	A	25 years and younger	14	2.11	238.54	6	10.293	0.113	---
	B	26-30 years	58	2.44	293.77				
	C	31-35 years	100	2.04	235.87				
	D	36-40 years	77	2.06	229.59				
	E	41-45 years old	98	2.09	246.27				
	F	46-50 years	83	2.21	275.05				
	G	51 years and over	73	2.09	248.62				
Trying to show themselves as an exemplary staff member	A	25 years and younger	14	1.21	225.96	6	7.014	0.320	---
	B	26-30 years	58	1.54	284.27				
	C	31-35 years	100	1.37	256.87				
	D	36-40 years	77	1.40	240.03				
	E	41-45 years old	98	1.36	238.76				
	F	46-50 years	83	1.43	265.44				
	G	51 years and over	73	1.34	239.81				
Trying to make them realize their own importance by force	A	25 years and younger	14	1.38	266.93	6	13.036	**0,042***	**B>D** **B>F** **B>G** **C>G** **E>G**
	B	26-30 years	58	1.44	287.39				
	C	31-35 years	100	1.18	257.04				
	D	36-40 years	77	1.22	243.28				
	E	41-45 years old	98	1.23	259.03				
	F	46-50 years	83	1.17	244.42				
	G	51 years and over	73	1.07	222.51				
Trying to Own Your Business	A	25 years and younger	14	2.35	210.71	6	13.956	**0,030***	**E>C** **F>C**
	B	26-30 years	58	2.68	239.97				
	C	31-35 years	100	2.51	223.88				
	D	36-40 years	77	2.63	239.89				
	E	41-45 years old	98	2.92	277.74				
	F	46-50 years	83	2.94	286.52				
	G	51 years and over	73	2.68	246.96				
Impression Management Scale Total	A	25 years and younger	14	1.68	231.75	6	10.184	0.117	---
	B	26-30 years	58	1.92	286.66				
	C	31-35 years	100	1.65	238.53				
	D	36-40 years	77	1.70	223.89				
	E	41-45 years old	98	1.72	253.16				
	F	46-50 years	83	1.79	278.16				
	G	51 years and over	73	1.67	245.15				

*p<0.05

Table 9. Kruskal Wallis-H test results shows the comparison of impression management tactics of Acaemicians in higher education institutions providing sports education according to the title variable.

		Title	n	?	Order Avg	Sd	X^2	P	Significant Difference
Trying to pity themselves	A	Professor	44	1.40	277.50	4	4.236	0.375	---
	B	Associate professor	99	1.30	255.67				
	C	Asst. Prof.	122	1.22	235.83				
	D	Lecturer	133	1.24	249.78				
	E	Research Asst.	105	1.28	259.45				
Trying to make themselves liked by promoting their qualification	A	Professor	44	2.40	314.10	4	21.411	**0,000***	**A>C** **A>D** **B>C** **B>D** **E>C** **E>D**
	B	Associate professor	99	2.22	275.01				
	C	Asst. Prof.	122	2.03	224.65				
	D	Lecturer	133	2.01	224.58				
	E	Research Asst.	105	2.22	270.80				
Trying to show themselves as an exemplary staff member	A	Professor	44	1.57	294.33	4	8.875	0.064	---
	B	Associate professor	99	1.44	259.16				
	C	Asst. Prof.	122	1.34	234.36				
	D	Lecturer	133	1.34	239.13				
	E	Research Asst.	105	1.42	264.31				
Trying to make them realize their own importance by force	A	Professor	44	1.26	270.42	4	6.133	0.189	---
	B	Associate professor	99	1.18	251.78				
	C	Asst. Prof.	122	1.25	255.51				
	D	Lecturer	133	1.15	233.84				
	E	Research Asst.	105	1.26	263.41				
Trying to Own Your Business	A	Professor	44	2.67	245.22	4	19.588	**0,001***	**B>A** **B>C** **B>D** **B>E**
	B	Associate professor	99	3.11	308.18				
	C	Asst. Prof.	122	2.62	238.55				
	D	Lecturer	133	2.65	243.38				
	E	Research Asst.	105	2.57	228.42				
Impression Management Scale Total	A	Professor	44	1.89	306.43	4	19.837	**0,001***	**A>C** **A>D** **B>C** **B>D** **E>D**
	B	Associate professor	99	1.81	283.58				
	C	Asst. Prof.	122	1.66	229.22				
	D	Lecturer	133	1.65	222.79				
	E	Research Asst.	105	1.76	262.89				

*p<0.05

Table 10. Kruskal Wallis-H test results shows the comparison of impression management tactics of Acaemicians in higher education institutions providing sports education according to the professional seniority variable.

		Professional Seniority	n	?	Order Avg	Sd	X^2	P	Significant Difference
Trying to pity themselves	A	1-5 years	142	1.27	254.75	5	3.886	0.566	---
	B	6-10 years	98	1.25	243.53				
	C	11-15 years	53	1.27	248.48				
	D	16-20 years	59	1.25	244.33				
	E	21-25 years	57	1.40	280.75				
	F	26 years and over	94	1.21	246.04				
Trying to make themselves liked by promoting their qualification	A	1-5 years	142	2.10	244.54	5	4.153	0.528	---
	B	6-10 years	98	2.11	238.42				
	C	11-15 years	53	2.17	248.36				
	D	16-20 years	59	2.19	266.75				
	E	21-25 years	57	2.24	280.96				
	F	26 years and over	94	2.09	252.65				
Trying to show themselves as an exemplary staff member	A	1-5 years	142	1.41	256.51	5	3.194	0.670	---
	B	6-10 years	98	1.36	254.64				
	C	11-15 years	53	1.38	230.99				
	D	16-20 years	59	1.38	250.29				
	E	21-25 years	57	1.50	272.11				
	F	26 years and over	94	1.35	243.16				
Trying to make them realize their own importance by force	A	1-5 years	142	1.23	254.71	5	15.494	**0,008***	**A>F B>F C>F D>F E>F**
	B	6-10 years	98	1.30	268.18				
	C	11-15 years	53	1.30	266.93				
	D	16-20 years	59	1.20	248.64				
	E	21-25 years	57	1.23	268.74				
	F	26 years and over	94	1.05	214.57				
Trying to Own Your Business	A	1-5 years	142	2.54	229.37	5	15.690	**0,008***	**C>A C>B E>A E>B**
	B	6-10 years	98	2.55	228.68				
	C	11-15 years	53	3.05	297.10				
	D	16-20 years	59	2.76	252.40				
	E	21-25 years	57	2.99	289.73				
	F	26 years and over	94	2.78	261.93				
Impression Management Scale Total	A	1-5 years	142	1.71	243.88	5	5.895	0.317	---
	B	6-10 years	98	1.71	236.91				
	C	11-15 years	53	1.78	251.25				
	D	16-20 years	59	1.75	258.74				
	E	21-25 years	57	1.84	291.72				
	F	26 years and over	94	1.68	252.11				

*p<0.05

DISCUSSION

The average scores obtained by Acaemicians in higher education institutions providing sports education from the sub-dimensions of the Impression Management Scale, "Trying to pity themselves" size 1.27±0.51; "Trying to make themselves liked by promoting their qualification" 2.14±0.74; "Trying to show themselves as an exemplary staff member." 1.40±0.63; "Trying to make them realize their own importance by force" 1.21±0.54; "Trying to own their business" 2.72±1.12 and across the scale It was found as 1.73±0.54 (Table 4).

In the analysis conducted in order to interpret the average scores obtained from the sub-dimensions of the Impression Management Scale and in general; Acaemicians"Trying to pity themselves", "Trying to show themselves as an exemplary staff member", "Trying to make them realize their own importance by force" and "General Impression Management" tactics which they never use; "Trying to make themselves liked by promoting their qualification" impression management tactics they are rarely used, "Trying to own their"

impression management tactics are which they use Decently from time to time it has been determined (Table 5).

In the interpretation of the average scores obtained by Acaemicians in higher education institutions providing sports education from the general scale It has been identified that they have never used impression management tactics. Acaemicians who train people who are needed in every field that shapes the future of society, they have never used general impression management tactics reaching the conclusion is important for the relevant body of literature. It is possible to say that the research result is in parallel with the relevant literature when the definition of the profession is taken into account. In short, academicism, which we can define as gaining specialization by doing postgraduate education and engaging in research activities, is one of the most respected professions of our day. Acaemicians are the people who determine the future of the country and guide society in a developed society.

Higher education institutions, which are considered as the top step of the education system of our country, are social institutions where scientific knowledge is produced and the next generation is shaped. The people who produce scientific knowledge in higher education institutions and educate future generations are Acaemicians (53). In addition, in organizations where hierarchical distance is high, individuals are expected to use impression management tactics with the desire to engage in remarkable behavior (32). Considering the research result, it can be said that participants belonging to the academic profession, who derive their respectability from their definition, do not need to use various tactics to achieve their goals in the process of their duties, to change or manage the thoughts and impressions of the people around them.

The other result of the research is “I pretend to know less than I really know to get people to help me finish my job, I try to get people's help or compassion by appearing needy in some places, I can pretend not to understand the subject so that I can get someone else's help, I can pretend that I need help from others to help me finish my job, I can pretend to know less than I really know to avoid a task that I don't like.” consisting of statements Trying to pity themselves; “I make it clear that I am a hard worker by staying at work after hours, I try to look busy even when things are not busy, I go to work before time to look dedicated to work, I go to work at night/weekends to look dedicated to work.” consisting of statements Trying to show themselves as an exemplary staff member; “I intimidate my colleagues if it will help me to do my duty, I make my colleagues feel that if they are not close to me, their work will become difficult, I can threaten my colleagues to make them behave in the desired way.” from their statement(5) consisting of Trying to make them realize their own importance by force the dimensions of impression management tactics by Acaemiciansthat it has never been used and “I strongly fight with colleagues when they prevent me from doing my duty, I fight violently and aggressively with colleagues who prevent me from doing my job” from their statements (5) consisting of Trying to own their business the dimension of impression management tactics that it is used occasionally detection of, it shows parallelism with the result obtained from the overall scale. Although Trying Own Their Business although the scale items included in the impression management tactic create a negative image, they contain statements that may mean that the employee is in conflict with colleagues in cases necessary to perform the assigned task. Individuals who use this tactic bear a high responsibility for the task assigned to them, and the achievement of the assigned tasks is a priority for individuals who use this tactic (Çetin and Basım 2010). Considering that the academician profession, which educates people for society, requires high responsibility, it can be considered normal that this tactic is the most commonly used tactic by Acaemicians.

The other result of the research is “I proudly mention my work experience or education, compliment colleagues to appear friendly, announce my talents or qualifications to people, show interest in my colleagues' private lives to show that I am friendly, tell others that I am an important person at work, praise colleagues for their achievements to make them think I am a good person, make people aware of my achievements, make special assistance to colleagues to show that I am a friend (I do favor)” from their statements (10) consisting of Trying to make themselves liked by promoting their qualification the dimension of impression management tactics are rarely used by academician it is a detection.

It is inevitable that a person who wants to be successful in directing their complex relationships in business life will use impression management tactics (2). The title in Acaemicianship; in addition to different working conditions, it also brings with it a complex social environment and an excessive workload (13). In this context, it can be expected that Acaemicians belonging to higher education institutions where hierarchical

distance is too high will use impression management tactics. The positive and negative effects of interpersonal relationships in these organizations where mutual interaction and communication are high, as well as the conscious or unconscious behavior of Acaemicians in these complex social relationships, will include impression management tactics. Whether they have the same status or not, Acaemicians in interconnected Acaemicians relationships will more or less resort to these tactics (53). In fact (2) they also argued that Acaemicians resort to impression management tactics in order to be successful in their professions.

Acaemicianship is a way of life in which, in addition to having high stress elements, administrative and academic workload is high, and there is an expectation of high performance. Due to the fact that Acaemicianship is a profession that covers an important part of life and leaves little room for private life in this aspect, is prone to work-family conflict, wages and rewards are insufficient, staff problems are growing (14), this dimension of impression management tactics (Trying To Make Themselves Liked By Promoting Their Qualification)although rarely, it is thought to be the reason for its use by Acaemicians participating in research.

In parallel with the research results (48) by an employee of the Ministry of Youth and Sports "Investigation of Impression Management Behaviors of Youth Leaders" in the study titled, the average scores of youth leaders belonging to the sub-dimensions of the Impression Management Scale; "Trying to pity themselves[1,58±/never]", "Trying to show themselves as an exemplary staff member[1,67/never]", "Trying to make them realize their own importance by force[1,53/never]", "Trying To Make Themselves Liked By Promoting Their Qualification[(2,20/Rarely]", "Trying to Own Their Business[2,28)/Rarely]" and in the sum of the scale[1,80/never]" it was found in the form of. (48) this result was found by the participants, "Trying to pity themselves", "Trying to show themselves as an exemplary staff member" and "Trying to make them realize their own importance by force" in the sub-factors very low at the level of, "Trying To Make Themselves Liked By Promoting Their Qualification" and "Trying to Own Their Business" in the sub-factors at a low level it has been interpreted as exhibiting impression management behavior.

Again made by (53) in the study "The Mediating Role of Individual-Organization Harmony in the Effect of Acaemicians' Impression Management Tactics on Their Loneliness in Their Work Life" the average value of the impression management perceptions of the research assistants participating in the study was identified as low.

Similar results have been achieved in studies that are parallel to the research results and conducted with different sample groups. As follows;

In the study conducted by (50) the nurses, the average score of the sub-dimensions of the Impression Management Scale; "Trying to pity themselves[1,26±0,55/never]", "Trying to show themselves as an exemplary staff member[1,28±0,57/never]", "Trying to make them realize their own importance by force[1,28±0,61/never]", "Trying To Make Themselves Liked By Promoting Their Qualification[1,91±0,62/Rarely]", "Trying to Own their Business[1,97±0,93/Rarely]" and in the sum of the scale[1,54±0,52/never]" it was found in the form. in the study conducted by (45) the averages of the Impression Management Scale sub-dimension score of the officers serving in the ground forces; "Trying to pity themselves[1,32±2,07/never]", "Trying to show themselves as an exemplary staff member[1,28±1,60/never]", "Trying to make them realize their own importance by force[1,56±1,76/never]", "Trying To Make Themselves Liked By Promoting Their Qualification[2,33±4,90/Rarely]", "Trying to Own their Business[2,75±1,99/sometimes]" it was found in the form. In the study conducted by (55) the Impression Management Scale of hospital employees, the sub-dimension score averages were; "Trying to pity themselves[1,57±1,00/never]", "Trying to show themselves as an exemplary staff member[1,56±1,08/never]", "Trying to make them realize their own importance by force[1,52±1,06/never]", "Trying To Make Themselves Liked By Promoting Their Qualification[2,60±1,13/Rarely]", "Trying to Own their Business[2,69±1,48±1,11/sometimes]" it was found in the form.(52) in the study conducted by the defense industry employees Impression Management Scale sub-dimension score averages; "Trying to pity themselves[1,52±0,66/never]", "Trying to show themselves as an exemplary staff member[1,49±0,67/never]", "Trying to make them realize their own importance by force[1,56±0,70/never]", "Trying To Make Themselves Liked By Promoting Their Qualification[2,46±0,84/Rarely]", "Trying to Own Their Business[2,56±1,11/Rarely]" it was found in the form.

Acaemicians at higher education institutions providing sports education, general impression management tactics andthe dimensions of impression management tactics (trying to pity yourself, trying to make themselves liked by promoting their qualification, trying to show themselves as an exemplary staff member, trying to make them realize their own importance by force, trying to own their business) gender it was found that there was no significant differentiation according to the variable (Table 6).

The impression management tactics followed by individuals in organizations differ according to the personality characteristics of individuals and various variables. These variables are gender, time and being realistic (30). In male-dominated societies and organizations, women cannot join some groups in the business environment because they are in the background, and they have to apply a different tactic than the impression management tactic that men would apply in the face of the same situation. It has been determined that women tend to use impression management tactics more than men because they think that men are more inclined to impression management behaviors. (44). "Investigation of the Quality of Work Life and Impression Management Behaviors of Employees of Sports Organizations"made by (23) in the study, the total scores of the impression management scale and the sub-dimensions of impression management of women; trying to make themselves liked by promoting their qualification, trying to make themselves liked by glorifying the other person, trying to show themselves as an exemplary staff member and trying to pity yourself their scores were found as significantly higher than the scores of men. Again, in a similar way (50) and (49) in their studies with different sample groups, they determined that the impression management scores of female employees were higher than those of male employees.(50),(48),(44), (43) in the studies conducted by them, it was also concluded that impression management tactics differ according to gender variable. Although the results in the body of literature article are as follows, it has been stated that the type of activity of the organization and, accordingly, the level of education of employees are also effective in impression management tactics (8). In an organization consisting of employees with a high level of education, it is believed that employees will not be in an effort to perform beyond the role in order to leave an impression on their superiors due to the knowledge that their performance is important. The result that whether the Acaemicians are male or female does not affect the impression management tactics can be explained by the difference in the type of activity of the organization and the high level of education of the research group. As a matter of fact, it supports our research result and in the study on the Acaemicians conducted by (53) , the gender variable did not create a significant difference in the use of impression management tactics. Again, in the study conducted by (2)"Impression Management Tactics: An Application Aimed at Determining the Impression Management Tactics of Acaemicians Working at Erciyes University" , there was no Deciency between the use of impression management tactics according to the gender of the Acaemicians. Again in a similar way (54)'s in the study he discussed impression management in the security organization, (8)'s in the study on public employees, (55) and (3) in the studies conducted them, it was not possible to obtain a significant difference between the gender variable and the use of impression management tactics.

Acaemicians at higher education institutions providing sports education, general impression management tactics and trying to pity yourself, trying to make themselves liked by promoting their qualification, trying to make them realize their own importance by force and trying to own their businessthe section where the dimensions of impression management tactics are assigned does not differ significantly according to the variable; trying to show themselves as an exemplary staff member the dimension of impression management tactics in the department in which they work it was found that it differed significantly according to the variable (Table 7).

Trying to show themselves as an exemplary staff member in the dimension of impression management tactics as a result of the analysis conducted through the dual combination of the department variable, the Acaemicians working in the Department of Physical Education and Sports Teaching and Recreation, compared to to the Acaemicians working in the department of Coaching Education Trying to show themselves as an exemplary staff member it has been determined that they use impression management tactics at a significantly high level. In the relevant body of literature, "Trying to show themselves as an exemplary staff member" and "Trying to make them realize their own importance by force" it is stated that their behavior is used as the positive perceptions of the person about themselves decrease. In other words, as the use of these two tactics increases, self-perception becomes negative. Those who use these tactics want to be seen as someone who work a lot for their business, are identical to what they do (38). Again, in the relevant body of literature, there

are findings that in the following years, individuals use less impression management tactics as a result of the development of their relationships with their environment and being sufficiently recognized by other individuals (3). In higher education institutions providing sports education, the first department established is the Department of Physical Education and Sports Teaching. In higher education institutions providing sports education, where there are 4 departments (physical education and sports teaching, coaching education, sports management, recreation), they are usually the most recently established Recreation Departments. In other words, the graduation of the Acaemicians who worked in these four departments until a certain period are mostly physical education and sports teaching department.

In the light of these informations, considering the department variable assigned from demographic variables,, trying to show themselves as an exemplary staff member in the use of impression management tactics, a significant level of difference was found between Acaemicians working in the department of Physical Education and Sports Teaching, the first department established in higher education institutions providing sports education, and Acaemicians working in the department of Coaching Education; Although it was expected in favor of Acaemicians working in the department of Coaching Education, the result was realized in the opposite way; Acaemicians working in the department of Physical Education and Sports Teaching, compared to Acaemicians working in the department of Coaching Education trying to show themselves as an exemplary staff member it has been determined that they use impression management tactics at a significantly high level. When the research result is evaluated according to the related body of literature, it is quite thought-provoking. Acaemicians working in the Department of Physical Education and Sports Teaching who have reached a certain professional experience, trying to show themselves as an exemplary staff member compared to the Acaemicians working in the Department of Coaching Education, the reason for their high use of impression management tactics may be their efforts to increase their interpersonal relationships in an even more positive way.

According to the research, Acaemicians who work in the Recreation department, which is usually the most recently established department in higher education institutions providing sports education, where there are 4 departments (physical education and sports teaching, coaching education, sports management, recreation), compared to Acaemicians who work in the Coaching Education department trying to show themselves as an exemplary staff member the other conclusion reached that they used impression management tactics at a significantly high level is in parallel with the findings in the relevant body of literature.

In parallel with our research results and in the studies conducted by (4),(20) significant differences were found in the general impression management tactics and the dimensions of impression management tactics according to the departments in which the participants worked.

Acaemicians at higher education institutions providing sports education, general impression management tactics and trying to pity yourself, trying to make themselves liked by promoting their qualification, trying to show themselves as an exemplary staff memberthe age of the dimensions of impression management tactics does not differ significantly according to the variable; trying to make them realize their own importance by force and trying to own their business the dimensions of impression management tactics if age it was found that it differed significantly according to the variable (Table 8).

Trying to make them realize their own importance by force and trying to own their businessin the dimensions of impression management tactics as a result of the analysis performed on the binary combination of the age variable;

The Acaemicians who are in the age range of 26-30, compared the Acaemicians who are in the age range of 36-40, 46-50, 51 and over, and the Acaemicians who are in the age range of 31-35 and 41-45, compared to the Acaemicians who are in the age range of 51 and over, trying to make them realize their own importance by force they use impression management tactics at a significantly high level,

The Acaemicianss in the age range of 41-45 and 46-50, compared to the Acaemicians in the age range of 31-35 trying to own their business it has been determined that they use impression management tactics at a significantly high level.

According to these results,,younger Acaemicianscompared to Acaemicians who are older, trying to make them realize their own importance by force that they used the impression management tactic at a significantly high level, older Acaemicianscompared to Acaemicians who are younger trying to own their business it is possible to say that they use the impression management tactic at a significant high level. These results indicate that individuals who want to be perceived as individuals who have taken on the goals of the organization young the impression management tactics of Acaemicians (trying to make them realize their own importance by force) based on the expectation that they will be used as a tool for organizational purposes (38), Kan (22) and in later years it can be explained by the fact that an individual has reached the point he wants as a career and is more recognized by the people around him. As a result, as the individual's relationships develop with his environment, the individual aims less to make them realize their own importance by force

Trying to own their businessalthough the scale items included in the impression management tactic create a negative image, they contain statements that may mean that the employee is in conflict with colleagues in cases necessary to perform the assigned task. Individuals who use this tactic bear a high responsibility for the task assigned to them, and the achievement of the assigned tasks is a priority for individuals who use this tactic (10). With the increase of the time spent by Acaemicians in the profession and in the institution in parallel with the progression of their age, their identification with their work, their better understanding of the purpose and importance of work, the increase of their level of commitment to their work and the institution; they try to own their business more it is qualified to explain the result.

There are studies in the relevant body of literature that are parallel to our research findings and find that some dimensions of impression management tactics differ significantly according to the age variable, as well as studies that determine that impression management tactics do not differ according to the age variable of the participants. In these studies;

(1), while one of the impression management tactics of physical education teachers according to age variable does not have significant difference in trying to make themselves liked by promoting their qualification, trying to show themselves as an exemplary staff member, trying to pity themselves, they found a significant difference according to the age variable in trying to make them realize their own importance by force, trying to own their business (1), 21-30 age participants trying to make them realize their own importance by force he informed that their preference for the tactic more; since they are new to educational institutions and the profession, efforts to make themselves noticed and show themselves to colleagues and others may be the reason.(23), with age variables of employees of sports organizations and total score of the impression management scale, trying to show themselves as an exemplary staff member and trying to pity themselves he has reached the conclusion that there are significant relationships between the sub-dimensions in a negative way.(23) as a result, sports organizations increase the age of their employees trying to show themselves as an exemplary staff member, trying to pity themselves the dimensions of impression management tactics and general impression management tactics he interpreted it as a decrease in using behaviors. (2), in the analysis of the age of the Acaemicians participating in the study and the use of impression management tactics, introducing their qualifications they determined that the frequency of using the tactic differs according to the ages of the Acaemicians. Introducing their qualifications in the analysis conducted in terms of the tactic, it was found that Acaemicians aged 40 and over use this tactic more than younger Acaemicians. (8), they have determined that public employees aged 36 and over more tend to trying to make themselves liked by promoting their qualification than under 30 and 31-35 years Again(3), in the research of a private bank that has been operating in Turkey for many years, consisting of employees involved in the sale of private pensions; asking for help, apologetic and repudiation that the use of tactics increases depending on age, introducing their qualifications and intimidation it has been determined that the frequency of use of tactics decreases depending on age.(26), in the study titled,"The Effect of Impression Management Tactics on Career Success: The Regulatory Role of Self-Efficacy" the participants making themselves liked, threaten, pity themselves and impression management tactics total score while we did not observe a significant difference in their averages depending on age groups; introducing their qualifications he observed a significant difference in the average score depending on the age groups.Pparticipants in the 18-24 age group introducing their qualifications the average score was found to be significantly higher than that of the participants in the age group of 36 and over.(50), one of the sub-dimensions of nurses' impression management scale "trying to pity themselves", "trying to make themselves liked by promoting their qualification", "trying to show themselves as an

exemplary staff member", "trying to make them realize their own importance by force." and there was no statistically significant difference between the sum of the scales the scores and the age groups. The nurses' impression management scale "trying to own their business" he found a statistically significant difference between the sub-dimension score and the age groups. Nurses who are in the 35-39 age group trying to own their business the sub-dimension score was found to be statistically significantly higher compared to nurses between the ages of 20-24.

In a different way from our study results;(48) according to the ages of the youth leaders included in the research, the general impression management scale shows that the sub-dimensions of "trying to make them realize their own importance by force", "trying to make themselves liked by promoting their qualification", "trying to show themselves as an exemplary staff member", "trying to make them realize their own importance by force" and "trying to own their business" do not show a significant difference;(53) in the study conducted by Acaemicians, it was found that there was no significant difference in the use of impression management tactics in the context of the age variable; (20)'s in his study conducted on a sample of doctors, it was found that impression management tactics did not show a significant difference in terms of age variable and (4)'s in the study conducted with nurses, it was found that there was no statistical difference between the age groups of nurses and the total and sub-dimension scores of the impression management scale. This situation can be explained by the difference of the groups that make up the sample of the studies.

Acaemicians at higher education institutions providing sports education, trying to pity themselves, trying to show themselves as an exemplary staff member and trying to make them realize their own importance by force the title of the dimensions of impression management tactics does not differ significantly according to the variable; trying to make themselves liked by promoting their qualification, trying to own their business the dimensions of impression management tactics and general impression management tacticsaccording totitle it was found that it differed significantly according to the variable (Table 9).

Trying to make themselves liked by promoting their qualification, trying to own their business in the dimensions of impression management tactics and in general impression management tactics, as a result of the analysis performed on the binary combination of the title variable;

The Acaemicians who are professor, associate professor and research assistant use trying to make themselves liked by promoting their qualification impression management tactics at a significantly high level compared to the Acaemicians who are assistant professor.

The Acaemicians who are associate professor use trying to own their business impression management tactics at a significantly high level compared to the Acaemicians who are professor, associate professor and research assistant.

It was determined that the Acaemicians who are professor and associate professor use general impression management tactics significantly high level compared to the Acaemicians who are assistant professor and lecturer, the Acaemicians who are research associate use it significantly high level compared to the Acaemicians who are lecturer.

The impression management perspective claims that the individual tries to be perceived positively by others both inside and outside the organization and to prevent negative perception (39). Indeed, when the classifications of impression management tactics are examined, it is seen that they are usually divided into two groups: positive impression creation behaviors and negative impression avoidance behaviors, even if they are under fundamentally different names (17), (12). Based on these views (31) it has been widely adopted and formed the basis for other classifications, using the classification of tactics aimed at self-promotion and self-defense (2). In the research, it was found that there is a significant difference according to the title variable trying to make themselves liked by promoting their qualification and trying to own their business the dimensions of impression management tactics are included in the classification for self-promotion.

When table 9 evaluated in general, both in the dimensions of impression management tactics, which were found to differ significantly according to the title variable, and in the dimensions of impression management tactics, which were found not to differ significantly according to the title variable. Academically, it is observed that Acaemicians who are professors and associate professors with the top title have the highest average score.

Achieving professional goals in an organizational environment, increasing effectiveness in interpersonal relationships, and which impression management tactics are more effective to use in creating certain positive impressions can be better understood as you rise to the top titles. Again, in the relevant body of literature, it was reported that employees use these tactics more by realizing the impact of impression management on their career with the increase in their experience gained as they rise to the top titles. Which is included in the classification for self-promotion trying to make themselves liked by promoting their qualification and trying to own theirrbusiness the research results, in which a significant level of differentiation in impression management tactics was found in favor of Acaemicians with a top title, can be explained within these informations.

In the study which do not coincide with our research results conducted by (42) using a different scale in which 21 Lecturers, 40 Research Assistants, 54 Assistant Professors, 12 Acaemicians with the title of Associate Professor participated "The Level of Instructors' Use of Impression Management Tactics: The Example of Abant Izzet Baysal University-Sakarya University" in the study; It has been determined that the frequency of using impression management tactics of teaching staff does not show a significant difference according to their titles.

It was found that Acaemicians at higher education institutions providing sports education, general impression management tactics and trying to pity themselves, trying to make themselves liked by promoting their qualification, trying to show themselves as an exemplary staff memberprofessional seniority of the dimensions of impression management tactics does not differ significantly according to the variable; trying to make them realize their own importance by force and trying to own their business the dimensions of impression management tacticsdiffer from significantly professional seniority variable (Table 10).

Trying to make them realize their own importance by force and trying to own their business in the dimensions of impression management tactics as a result of the analysis carried out on the binary combination of the professional seniority variable;

the Acaemicians who have professional seniority between 1-5, 6-10, 11-15, 16-20 and 21-25 years use trying to make them realize their own importance by force impression management tactics at a significantly high level compared to Acaemicians who have professional seniority between 26 years and over.

It has been determined that the Acaemicians who have professional seniority between 11-15 and 21-25 years use trying own their business impression management tactics at a significantly high level compared to the Acaemicians who have professional seniority between 1-5 and 6-10 years.

According to these results, it is possible to say that the Acaemicianswith less professional seniority usetrying to make them realize their own importance by force who have more professional seniority. Acaemicianswho have more professional seniority usetrying to own their business impression management tactic at a significantly high level compared to the Acaemicians who have less working time as professional seniority

Acaemicians, with the increase of the time they spend in the profession and in the institution, their identification with their work, their better understanding of the purpose and importance of work, their increased level of commitment to their work and the institution; they try to own their business more it is qualified to explain the result. Again from a different point of view it can be explained that Acaemicians with high professional seniority "trying to own their business" the result found that they use the impression management tactic higher; with the increase in the time spent by Acaemicians in the profession and in the institution, they want to stay/maintain their positions they have targeted/reached based on the experience and experience they have gained and/or to be able to quickly rise to the top from the position they have targeted/reached

There are studies in the relevant body of literature that are parallel to our research findings and find that some dimensions of impression management tactics differ significantly according to the professional seniority variable, as well as studies that determine that the impression management tactics of participants do not differ according to the professional seniority variable. In these studies;

In the study conducted by (1) , in the impression management tactics according to the professional seniority variable of physical education teachers, there is no significant difference in , trying to make themselves liked by promoting their qualification, trying to show themselves as an exemplary staff member, trying to pity themselves, trying to own their business but trying to make them realize their own importance by force it has been determined that there is a significant difference. It has been found that the significant difference between 1-5 years and 11-15 years employees is in favor of 1-5 years employees.(53) according to the seniority of the Acaemicians, generally as a result of the use of impression management tactics and impression management tactics showing themselves as an exemplary staff member he has reached the conclusion that the average values related to his tactics differ significantly from statistical point of view.(53) Acaemicians whose seniorities are between 2 and 5 years general as an impression management tactic, they use it more often than other Acaemicianss (1 year and below, 6 years and over), again, Acaemicians with 6 years and over seniority, use it more often than other Acaemicians (1 year and under, 6 years and over showing themselves as an exemplary staff member it was determined that they used the impression management tactic less frequently than other Acaemicians (1 year and under, 2-5 years). In the study conducted by(36) , according to the seniority variable of impression management tactics used by elementary school administrators, handicapping it was concluded that there was no significant difference in the tactic sub-dimension in the other sub-dimensions, where there was a significant difference in meaning. Again in the study conducted by (50) , nurses' impression management scale, trying to own their business it has been concluded that the score averages of the sub-dimension differ significantly according to the professional seniority variable. In the research where a significant level of differentiation was not detected for the general and other sub-dimensions of the impression management scale, trying to own their business the source of the differentiation in the sub-dimension of nurses 1 year or under and 2-5 years professional work, was determined in favor of nurses who have 2-5 years of professional work In other words, it has been determined that nurses who have higher professional seniority , use trying to own their business impression management tactic at a significantly high level compared to nurses who have less working time as a professional seniority .

In a different way from our study results; (42), that the frequency of teachers' use of impression management tactics does not show a significant difference according to the professional experience variable;(2), according to the professional seniority of the Acaemicians, there is no difference in the use of impression management tactics; (3) The relationship between impression management tactics and professional experience of the participants involved in the private pension sales of a private bank operating in the sector in Turkey for many years was not statistically significant.(26), the perceptions of impression management tactics of the white-collar participants of the enterprises engaged in activities aimed at the service sector, whose professional experience periods differ, are at a similar level;(23), sports organizations have determined that there is no significant relationship between the working time of their employees and the total score of the impression management scale and the scores of the sub-dimension. This situation can be explained by the difference between the groups that make up the sample of the studies and the fact that the professional experience periods of the participants who make up the sample of the said studies are close to each other.

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Acute Effects of Hip Mobility Exercises in Addition to Dynamic Warm-up on Vertical Jump, Maximal and Isometric Strength Parameters

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Abstract

This study aims to investigate the acute effects of hip mobility exercises applied before anaerobic activities on vertical jump, 1 repetition maximum (1RM), and isometric strength performances. For this purpose, 12 male athletes with a high level of training (age = 21 ± 1.2 years; height = 180 ± 0.05 m; body weight = 88.08 ± 9.17 kg) voluntarily participated in the study. Before starting the study, an approval report was obtained from the Sakarya University of Applied Sciences Ethics Committee and all athletes signed a voluntary consent form before the study. All participants were asked to perform a standard 15-minute dynamic warm-up procedure (dynamic stretching exercises related to cycling and tests) on the first measurement day. Then, in order to avoid fatigue in the athletes, 1 RM (1 Repetition Maximum) strength tests were applied. On the second measurement day, the subjects performed 8 different hip mobility exercises (2 sets x 20 seconds for each exercise) with the same 15-minute dynamic warm-up protocol and re-applied the tests applied on the first measurement day. When the findings were examined, it was found that there was no significant difference in the 1RM strength values of the deadlift exercise in the 1st and 2nd measurement sessions ($p = 0.596$). However, a significant difference was found between the 1RM strength, Isometric back-leg strength, Counter Movement Jump (CMJ), and Squat Jump (SJ) values of the squat exercise ($p = 0.003$, $p = 0.002$, $p = 0.002$, $p = 0.002$). In conclusion, this study shows that a dynamic warm-up protocol that includes hip mobility positively affects vertical jump, maximal, and isometric strength parameters.

Keywords: Hip mobility, Strength, Vertical jump, Warm-up.

Dinamik Isınmaya Ek Kalça Hareket Egzersizlerinin Dikey Sıçrama, Maksimal ve İzometrik Güç Parametreleri Üzerindeki Akut Etkileri

Bu çalışmanın amacı anaerobik aktiviteler öncesinde uygulanan kalça hareketliliği egzersizlerinin dikey sıçrama, 1 tekrar maksimum (1TM) ve izometrik kuvvet performansları üzerindeki akut etkilerini araştırmaktır. Bu amaç için 12 antrenman geçmişi düzeyi yüksek erkek sporcu (yaş = 21 ± 1.2 yıl; boy = 180 ± 0.05 m; vücut ağırlığı = 88.08 ± 9.17 kg) gönüllü olarak çalışmaya katılmıştır. Araştırmaya başlanılmadan önce Sakarya Uygulamalı Bilimler Üniversitesi Etik Kurulundan onay raporu alındı ve tüm sporculara çalışma öncesinde gönüllü onam formu imzalatılmıştır. Tüm katılımcılardan ilk ölçüm gününde 15 dakikalık standart bir dinamik ısınma prosedürü (bisiklet ve testler ile ilgili dinamik esneme egzersizleri) uygulamaları istenmiş ve daha sonra sporcularda yorgunluk meydana gelmemesi için sırasıyla dikey sıçrama, izometrik sırt bacak kuvveti ve alt ekstremiteye yönelik iki temel egzersizde 1TM (1 Tekrar Maksimum) kuvvet testleri uygulatılmıştır. İkinci ölçüm gününde ise denekler aynı 15 dakikalık dinamik ısınma protokolü ile 8 farklı kalça hareketliliği egzersizini (her egzersiz için 2 set x 20 saniye) gerçekleştirmişler ve ilk ölçüm gününde uygulanan testleri tekrar uygulamışlardır. Bulgular incelendiğinde 1. ve 2. ölçüm seanslarında deadlift egzersizinin 1TM kuvvet değerlerinde anlamlı bir fark olmadığı bulunmuştur ($p = 0.596$). Bununla birlikte squat egzersizinin 1TM kuvvet, İzometrik sırt-bacak kuvveti, Counter Movement Jump (CMJ) ve Squat Jump (SJ) değerleri arasında anlamlı bir fark olduğu bulunmuştur ($p = 0.003$, $p = 0.002$, $p = 0.002$, $p = 0.002$). Sonuç olarak, bu çalışma kalça hareketliliği içeren bir dinamik ısınma protokolünün dikey sıçrama, maksimal ve izometrik kuvvet parametreleri üzerinde olumlu bir etkiye sahip olduğunu göstermektedir.

Anahtar Kelimeler: Kalça hareketliliği, Kuvvet, Dikey sıçrama, Isınma

INTRODUCTION

The general aim of warm-up protocols applied before exercise is to maximize athletic performance (4). Athletes and trainers often apply stretching exercise protocols such as submaximal aerobic activity and static stretching (SG), dynamic stretching (DG), ballistic stretching (BG), and proprioceptive neuromuscular facilitation (PNF) before competitions and trainings to improve athletic performance (25, 16). Studies show that static stretching exercises can prevent the performance by reducing power and speed production instead of gaining athletes (12, 26, 21). However, dynamic stretching warm-up before training or physical competition improves neuromuscular performance, increases motor unit excitability, recruitment, and synchronization, reduces presynaptic inhibition, and improves motor neuron central activation (6). Dynamic stretching exercises, which have become popular in pre-training warm-up activities, are also called mobility exercises and include functional-based stretching exercise method that uses sport-specific movements to prepare the human body for activity (7). Especially in terms of performance, it is necessary to use dynamic form warm-up protocols to ensure a high level of strength and power production in the main part of the training (14). This warm-up method also improves hip mobility, which plays a very important role in the transfer of power from the lower to the upper extremity and for most athletes is one of the most important points for a good performance (5).

When we examine the literature in detail, no studies were found in which dynamic stretching exercises were applied in combination with regional mobility exercises. However, there are studies that examine the acute effects of various dynamic stretching exercise protocols on vertical jump (16) and maximal and isometric strength (27) parameters where the hip region is active. For example, in a study that examined the effects of acutely performed active, passive, and dynamic stretching exercises on vertical jump performance, a group of 16 young male tennis players who actively do sports were randomly assigned at different times by applying passive stretching, active stretching, and dynamic stretching exercises without stretching exercises. observed vertical jump performances applied in a way (6). It has been revealed that the measurements taken with DG have a more positive effect on vertical jump performance compared to other methods. In another study that compared the effects of dynamic stretching exercises and foam roller exercises, dynamic stretching exercises in the vertical and horizontal jump data, 37 meters sprint test data, and indirectly measured 1 RM (1 Repetition

Maximum) bench press data were observed higher performance (23). Ford et al. (13) reported that activation of the hip muscles during dynamic activity may be an important factor in the control of lower extremity movements.

According to this thought, adding exercises that improve the mobility and neuromuscular activation of the hip joint to the training programs can help improve the athletic characteristics of the athletes. In this context, the aim of our study is to investigate the acute effects of hip mobility exercises applied before anaerobic activities on vertical jump, 1 repetition maximum and isometric strength performances.

MATERIAL AND METHOD

Participants

Twelve male athletes with a high level of training history (age = 21 ± 1.2 years; height = 180 ± 0.05 m; body weight = 88.08 ± 9.17 kg) voluntarily participated in this study. There were 4 wrestlers, 3 weightlifters, 2 powerlifters and 3 bodybuilders at the national and international level in the participant group. These athletes have been regularly trained at least five days a week and an average of 1.5 hours. All athletes were informed about the experimental aims, risks, and benefits of the study. All participants voluntarily signed the informed consent form. This research was conducted in accordance with the Declaration of Helsinki (1975) used for studies with human subjects. Before starting the study, an approval report was obtained from the Sakarya University of Applied Sciences Ethics Committee and all athletes signed a voluntary consent form before the study.

Experimental Design

All participants were asked to perform a standard 15-minute dynamic warm-up procedure (dynamic stretching exercises related to cycling and tests) on the first measurement day, and then, to avoid fatigue in the athletes, 1 RM (Repetition Maximum) strength tests were performed. On the second measurement day, the subjects performed 8 different hip mobility exercises (2 sets x 20 seconds for each exercise) with the same 15-minute dynamic warm-up protocol and re-applied the tests applied on the first measurement day. (Figure 1) After all dynamic warm-up and hip mobility procedures were performed, subjects performed 5 minutes of passive rest between tests. All measurements were made during the hours when the athletes were training in their daily routine.

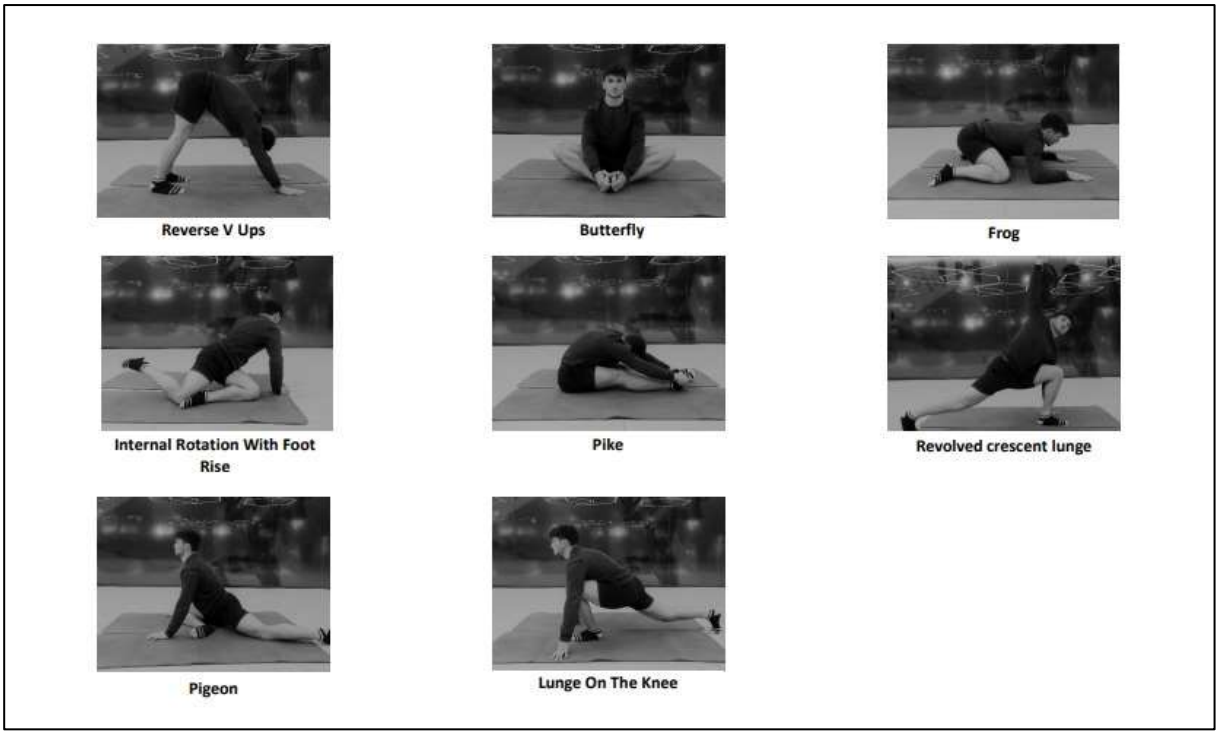

Figure 1. Hip mobility exercises performed in the study

Measurement Procedure

1RM Strength Test;

In the research, 1RM strength measurements were made in squat and deadlift exercises. Before the 1RM strength tests, the athletes performed a standard 10-minute warm-up protocol on the bicycle ergometer. While performing 1RM strength measurements, 1 retest protocol recommended by the American College of Sports Medicine (ACSM) was applied. Firstly, 2 warm-up sets of light-medium were applied. After the first set was done with 5-10 repetitions, 1-minute rest was given. The second set was done with 2-5 repetitions and rested for 2 minutes. With the third set, 1 repetition was started and 2-4 minutes of rest was given. In the following sets, 5-10% load increase was continued for each successful lift and a rest period of 2-4 minutes was given. When an unsuccessful lifting occurred, the load was reduced by 2.5-5% and the lifting was performed again (1).

Vertical Jump Tests;

Counter Movement Jump and Squat Jump tests were used to determine the vertical jump performance of the participants. The My Jump 2 app (app) accessed from the iPhone Apple Store was used to determine vertical jump performance (ICC = 0.97-0.99) (15). The My Jump 2 application was developed to calculate the jump height from the airtime using the high-speed video recording feature on the iPhone 11 (2). Before testing, subjects were asked to try SJ and CMJ activities. Each participant performed 3 maximum SJs and CMJs, starting from a standing position and keeping their hands on their hips. The best of these three attempts was recorded.

Isometric Leg and Back Dynamometer Test;

Measurements were made using a (Takkei) brand dynamometer to determine isometric back and leg strength. After the participants completed the warm-up protocols, they positioned their feet on the dynamometer platform with their knees stretched. Then, with the arms tense, the back straight, and the body leaning slightly forward, they pulled the dynamometer bar they were grasping with their hands vertically upwards at maximum intensity. All participants performed 3 trials and the best score value was recorded in these trials (8,20).

Statistical analysis

Windows IBM SPSS Statistics program was used to analyze all data. The normality of the data was checked using the Shapiro-Wilk test. Since the data did not show normal distribution, the Wilcoxcon test, one of the nonparametric tests, was used to compare and analyze the differences between each trial and various performance parameters. Statistical significance was set at $p < 0.05$.

RESULTS

Table 1 shows the values obtained at two different data collection stages and the differences between them. When Table 1 was examined, it was found that there was no significant difference in the 1RM strength values of the deadlift exercise in the 1st and 2nd measurement sessions ($p = 0.596$). However, a significant difference was found between the 1RM strength, Isometric back-leg strength, CMJ and SJ values of the squat exercise ($p = 0.003$, $p = 0.002$, $p = 0.002$, $p = 0.002$).

Table1. Comparison of Athletes' 1st and 2nd Measurement Squat, Deadlift, Vertical Jump and Force measurements

Variables	Trials	Mean ± SD	p
Squat (kg)	1^{st} Trial	139.58±24.72	0.003*
	2^{nd} Trial	151.24±24.27	
Deadlift (kg)	1^{st} Trial	182.08±24.72	0.596
	2^{nd} Trial	182.71±25.62	
Countermovemnt jump (cm)	1^{st} Trial	41.39±7.11	0.002*
	2^{nd} Trial	43.39±6.49	
Squat Jump (cm)	1^{st} Trial	37.02±4.86	0.002*
	2^{nd} Trial	40.53±5.36	
Leg Dynamometer (kg)	1^{st} Trial	193.30±26.71	0.002*
	2^{nd} Trial	215.78±25.74	

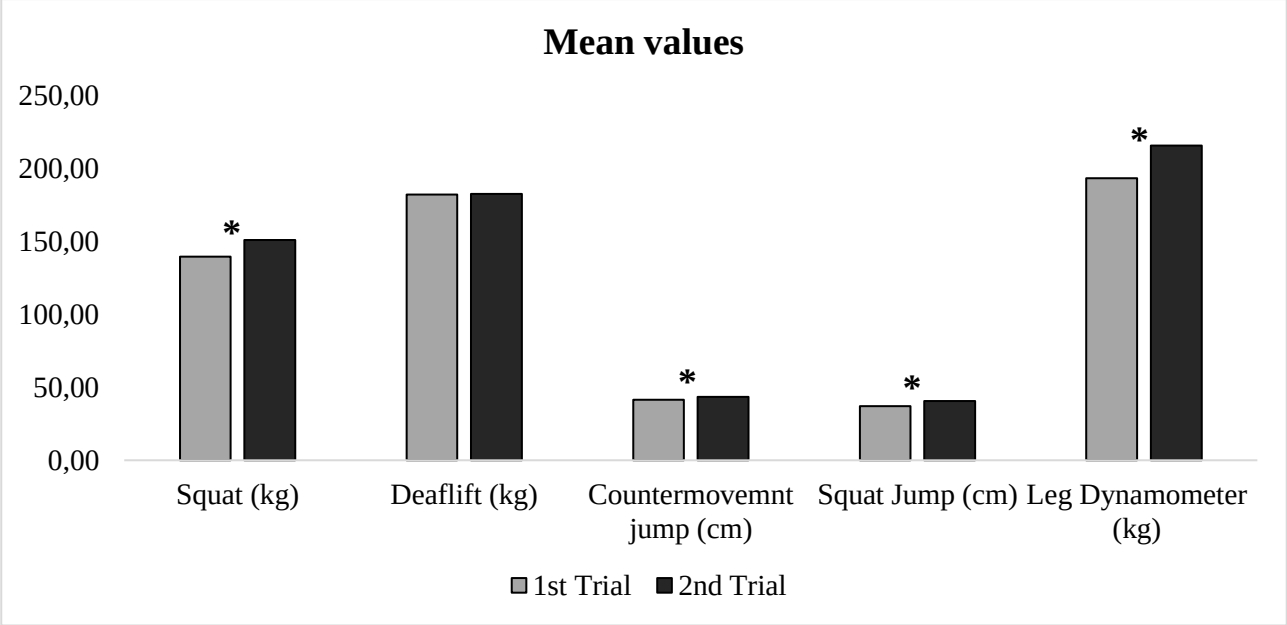

Figure 2. Average values of 1st and 2nd measurement squat, deadlift, countermovement jump, squat Jump and leg dynamometer of the athletes

* Indicates the significant difference between the 1st and 2nd measurements.

DISCUSSION

This study aimed to examine the acute effects of a dynamic warm-up including hip mobility exercises on vertical jump, 1RM, and Isometric strength performance. The results of the study showed that specific hip mobility exercises added to dynamic warm-up caused a significant increase in squat exercise 1RM strength, Isometric strength and vertical jump performance ($p < 0.05$), but deadlift exercise did not significantly increase 1RM strength values ($p > 0.05$).

When the previous studies are examined, it is seen that the dynamic warm-up protocols applied before the training reveal different results on performance. (6,4,14,22) stated that, as in our study, dynamic warming has positive effects on vertical jump performance. However, (19,11) stated in their study that dynamic warming did not reveal any positive effect on vertical jump performance. In addition to these studies (23,18), their studies show that applying dynamic mobility exercises in addition to dynamic warm-up results in more positive results than the dynamic warm-up protocol applied alone. The different results in the studies related to the subject in the literature may be due to many different factors. The training history and training level of the participant group, method differences in the applied dynamic warm-up protocols, intensity and amount of the content of the protocols, total duration, and rest intervals can be given as examples of these factors. (9).

The results of this study show that regional hip mobility exercises performed in addition to dynamic warm-up have a positive effect on maximal and isometric strength parameters. When studies on the subject are examined, (10) stated that static stretching protocols performed before exercise impair maximal force production. (24,17), on the other hand, supports the results of our research and states that dynamic warming protocols are more beneficial in improving strength, peak power generation and explosive power characteristics than static warming. Furthermore, (27) revealed that the regional mobility-improving warm-up protocol was more effective in increasing muscle strength than static and dynamic warm-ups. For this reason, it is thought that specific hip mobility exercises added to dynamic warm-up have a positive effect on the participants' maximal and isometric strength performance. It has been found that static, dynamic, ballistic, and PNF stretching procedures had detrimental effects on maximal dynamic force performance, which is

contrary to the findings of our research (3). This distinction may be based on the participants' training age and level as well as the length, volume, and intensity of the protocols used.

In conclusion, the findings of this study show that a dynamic warm-up protocol including hip mobility has a positive effect on vertical jump, maximal and isometric strength parameters. Exercises that increase hip mobility can be incorporated into warm-up routines to enhance the hip joint's range of motion. However, the hip joint, which is one of the central regions of the body, plays an important role in maximizing performance in vertical jump, maximal and isometric strength parameters. For this reason, wider joint angle may result in higher performance. In addition to these results, there is a need for more studies investigating the effects of mobility exercises applied to the same region or different regions.

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Pre-Service Physical Education Teachers' Acceptance of Mobile Learning Tools and Attitude Levels for Mobile Learning

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Abstract

The development and advancement of technology, new opportunities, and effective environments are being created in education, and the role of technology in education, delivered to students through computers, smartphones, or mobile devices, mainly through the Internet, is gaining momentum. With the opportunities provided by technology, students can offer differentiated learning activities according to their learning needs, preferences, and styles. In contrast, students can personalize their technological tools with the application and content they want and participate in this process in line with their learning preferences. The purpose of this study was to examine the acceptance of mobile learning tools and mobile learning attitudes of physical education teacher candidates in Turkey. A random stratified sampling method was used. According to the findings of the research; Physical education teacher candidates' attitude levels towards mobile learning are seen to be relatively higher than their acceptance levels of mobile devices. It has been observed that motivation and satisfaction variables, which are sub-factors of Attitude Towards Mobile Learning, have a high level of correlation with each other. On the other hand, it can be said that the willingness to use mobile devices mostly affects the acceptance of mobile learning tools. In general, students perceive mobile learning positively in educational environments. In this context, with the support of educational institutions, it is possible to include mobile devices in learning-teaching processes because of their advantages such as motivating, interesting and easy-to-use physical education teacher candidates, as well as supporting learning and being independent of time and space.

Keywords: Physical education, Pre-service teachers, Mobile learning, Technology.

Beden Eğitimi Öğretmen Adaylarının Mobil Öğrenme Araçlarını Kabul ve Mobil Öğrenmeye Yönelik Tutum Seviyelerinin İncelenmesi

Özet

Teknolojinin gelişimi ve ilerlemesi ile birlikte eğitimde yeni fırsatlar, verimli ve etkili ortamlar oluşmakta, özellikle İnternet aracılığıyla öğrencilere bilgisayarları, akıllı telefonları veya mobil cihazları aracılığıyla sunulan teknolojinin eğitimdeki rolü giderek hız kazanmaktadır. Teknolojinin sunduğu fırsatlar ile, öğrencilerin öğrenme ihtiyaç, tercih ve biçimlerine göre farklılaştırılmış öğrenme etkinlikleri sunabilmekte, öğrenciler ise teknolojik araçlarını istedikleri yönde uygulama ve içerikle kişiselleştirerek, öğrenme tercihleri doğrultusunda bu sürece katılabilmektedirler. Bu araştırma ile, Türkiye'deki eğitim gören beden eğitimi öğretmen adaylarının mobil öğrenme araçlarını kabul ve mobil öğrenme tutumları incelenmek istenildiğinden, seçkisiz tabakalı örnekleme yöntemi kullanılmıştır. Araştırmanın bulgularına göre; Beden eğitimi öğretmen adaylarının mobil öğrenmeye yönelik tutum seviyeleri, mobil araçları kabul seviyelerine oranla görece olarak daha yüksek görülmektedir. Mobil Öğrenmeye Yönelik Tutum'un alt faktörlerinden motivasyon ve memnuniyet değişkenlerinin birbirleri ile yüksek seviyede korelasyona sahip olduğu görülmüştür. Öte yandan, Mobil Öğrenme Araçlarını Kabul seviyelerini genel olarak en çok Mobil Araç Kullanımına İsteklilik değişkeninin etkilediği söylenebilir. Genel olarak öğrenciler eğitim ortamlarında mobil öğrenmeyi olumlu algılamaktadırlar. Bu bağlamda mobil araçlarının eğitim kurumlarının da desteğiyle beden eğitimi öğretmen adaylarını motive edici, ilgi çekici ve kullanım kolaylığı sunması, ayrıca öğrenmeyi desteklemesi, zaman ve mekân bağımsızlığı gibi avantajları nedeniyle öğrenme-öğretme süreçlerine dahil edilmesi mümkündür.

Anahtar Kelimeler: Beden eğitimi, Öğretmen adayları, Mobil öğrenme, Teknoloji.

INTRODUCTION

The students, described as "Digital Natives" by Prensky, tend to use Information and Communication Technologies (ICT) in all areas of their lives. In solving daily problems, the internet and social networks are used as primary sources. Common components are emphasized, such as obtaining the needed information by searching the internet, meeting some of its needs via the internet, using online environments to communicate, and similar features (1). Technology should be considered as a learning tool rather than being evaluated in terms of innovations. Being able to access information at any time or communicate whenever desired gives learners more control and flexibility (2). Students' own mobile devices and the application of innovative approaches allow them to conduct research in and out of school (3). They can work with their peers during classroom activities and continue to work outside the classroom after the lesson (4). Educational institutions are now using mobile technologies and adapting their curricula to this new system by offering better learning environments and teaching methods to their students (5).

With the inclusion of mobile technologies in teaching, there is an increasing interest in the use of technology among educators and students in the field of physical education and sports, as in other disciplines (6, 7). It is argued that mobile learning in physical education and sports environments has increased in the last few years, especially the recent distance education practices during Covid-19 pandemic and studies in this area will guide teachers (8). The purpose of this research was to examine the attitudes towards mobile technologies and the level of inclusion (acceptance) of mobile technologies in the lives of undergraduate students studying in physical education teaching departments in Turkey.

METHOD

A survey research design, which is one of the quantitative research methods that examine the abilities, skills, and attitudes of certain populations, was selected (9). Survey research provides the opportunity to measure the perceptions and attitudes of individuals in a short time and with a low budget. It was aimed to describe a certain situation as it exists in a certain time period (10).

Participants

Considering the high generalizability, the random stratified sampling method was used. This method aims to represent subgroups in the population in proportion to their weight. A total of 7 different geographical

regions in Turkey were considered as 7 different strata, a total of 780 (313 females, 467 males) physical education teacher candidates studying in the Physical Education and Sports Teaching departments of 21 universities voluntarily participated in the study.

Data Collection Tools & Data Analysis

Demographic information questions such as grades (1st-4th), age, gender and using wearable technology were included in the beginning of the survey. A 5-point Likert-type "Attitude Scale Towards Mobile Learning" consisting of 45 items and four factors, was used to measure prospective teachers' attitudes towards mobile learning (11). The scale consists of 1-satisfaction, 2-effect on learning, 3-motivation, and 4-usability sub-dimensions. The second instrument was a 5-point Likert-type "Mobile Learning Tools Acceptance Scale" consisting of 19 items and four factors as 1-perceived usefulness, 2-contribution to foreign language learning, 3-negative perception, and 4-willingness to use mobile tools (12). The permission from authors of the scales were taken before the study. The Cronbach's Alpha reliability coefficient for the whole scale was calculated as .95, the reliability of the four sub-dimensions of the Acceptance of Mobile Learning Tools Scale as 0.78, 0.75, 0.74 and 0.76, respectively, and the Cronbach's Alpha value for the whole scale was 0.83. Descriptive statistics were used for demographic variables, attitudes toward mobile learning, and acceptance levels for mobile devices. With the Shapiro-Wilk test, it was checked whether the data distribution was normal. Since there was no normal distribution, Mann-Whitney U and Kruskal-Wallis H tests and Sperman's RHO correlation coefficient analyzes were used.

Results

Physical education teacher candidates' attitude levels towards mobile learning ($\bar{x}$=3.59, sd=0.56) seem relatively higher than their acceptance levels of mobile devices ($\bar{x}$ = 3.34, sd= 0.58). Attitude levels toward mobile learning affected learning with the highest score among the sub-dimensions (factors). The usability factor level was the lowest. Among the factors of Acceptance of Mobile Learning Tools, Perceived Usefulness was seen at the highest score, while Negative Perception was at the lowest level.

Looking for the relationship between physical education teacher candidates' attitudes towards mobile learning and their acceptance levels of mobile learning tools Sperman's RHO correlation coefficient and their significance were investigated. It was seen that Motivation and Satisfaction variables (.81), which are sub-factors of Attitude Towards Mobile Learning, have a high level of correlation with each other. It is also revealed that the sub-factors of Satisfaction (.94) and Motivation (.88) are important factors in determining the Attitude Level towards Mobile Learning. As a result, it can be said that the Willingness to Use Mobile Tool (.84) has the highest correlation. Physical education teacher candidates' attitudes towards mobile learning and acceptance levels of mobile learning tools; The effect of class and gender, the effect of university, the effect of using wearable technology, the effect of having a blog and a website, the effect of having a dual career were examined.

The Shapiro-Wilk test was used to determine whether the attitude scores of Satisfaction, Impact on Learning, Motivation, and Usefulness, which make up the 4 factors, have a normal distribution in the categories of the independent variable "Student Grade" and it was determined that both the attitude scores and their 4 sub-factor scores were found to be the highest in the "Grades of the Students" variable. It was determined that it did not fit the normal distribution in at least one category ($p<0.05$). After this stage, whether the Attitude Scores towards Mobile Learning and the 4 factors of Satisfaction, Impact on Learning, Motivation and Usefulness, which are the four factors, are affected by the "Grades of the Students" variable, and the "Normal Distribution" assumption, which is the assumption of the parametric tests, is not met. It was investigated by the Kruskal-Wallis H non-parametric test. When the values in the table are examined, the Attitude Scores towards Mobile Learning of students studying in different classes are significantly different ($p<0.05$). Similarly, the Satisfaction, Impact on Learning and Motivation Attitude Scores of the students studying in different classes are significantly different at the 5% significance level ($p<0.05$). However, the Usefulness Attitude Scores of the students studying in different classes are not significantly different ($p>0.197$).

Determining which grades show significant differences regarding the attitude scores of students studying in different classes can be made with the Mann-Whitney U non-parametric test, which is performed separately since the assumption of Normal Distribution is not provided.

Table 1. Mann Whitney U Test Grade Variable Findings

Grade		N	Mean	SE	p
Satisfaction	1	292	3.65	.738	**0.001**
	2	243	3.49	.719	
	3	135	3.60	.750	
	4	110	3.86	.774	
Impact on Learning	1	780	3.62	.747	**0.001**
	2	292	3.99	.711	
	3	243	3.87	.685	
	4	135	3.90	.637	
Motivation	1	110	4.16	.707	**0.001**
	2	780	3.96	.695	
	3	292	3.63	.777	
	4	243	3.48	.743	
Usefulness	1	135	3.68	.703	0.197
	2	110	3.83	.805	
	3	780	3.62	.765	
	4	292	2.84	.767	
Total	1	243	2.82	.689	**<0.001**
	2	135	2.89	.743	
	3	110	2.67	.872	
	4	780	2.82	.757	

It was observed that 2nd and 4th grade students and 3rd and 4th grade students showed significant differences ($p<0.016$, $p<0.001$, $p<0.006$) in terms of Attitude Scores towards Mobile Learning, the Attitude Scores towards Mobile Learning of other classes; On the other hand, in terms of Satisfaction and Impact on Learning Attitude Scores, 1st and 3rd and 2nd and 3rd grade students did not differ at the 5% significance level ($p>0.05$); In terms of Motivation Attitude Scores, it can be said that the students in the 1st and 3rd and 2nd and 3rd grades did not differ at the 5% significance level ($p>0.05$) (Table 2).

Table 2. Attitude differences towards mobile learning according to grade variable

	Grade		Mean	SE	p
Satisfaction	1	2	.161	.064	**0.028**
		3	.050	.077	0.935
		4	-.203	.082	**0.011**
	2	3	-.110	.079	0.088
		4	-.364*	.085	**<0.001**
	3	4	-.253*	.095	**0.017**
Impact on Learning	1	2	.112	.059	**0.045**
		3	.083	.071	0.095
		4	-.173	.077	**0.015**
	2	3	-.029	.074	0.898
		4	-.286*	.079	**<0.001**
	3	4	-.256*	.088	**<0.001**
Motivation	1	2	.152	.065	**0.028**
		3	-.044	.078	0.440
		4	-.201	.084	**0.032**
	2	3	-.196	.081	**0.011**
		4	-.353*	.087	**<0.001**
	3	4	-.157	.097	0.158
Usefulness	1	2	.029	.065	0.919
		3	-.044	.078	0.455
		4	.174	.084	0.096
	2	3	-.074	.081	0.477
		4	.144	.086	0.076
	3	4	.218	.097	0.044
Total	1	2	.127*	.047	**0.016**
		3	.029	.057	0.546
		4	-.137	.061	0.008
	2	3	-.098	.059	0.170
		4	-.264*	.063	**<0.001**
	3	4	-.166	.070	**0.006**

The Mann-Whitney U non-parametric test, which is used to compare the means of two independent groups, was used to determine whether the attitude scores of Satisfaction, Impact on Learning, Motivation and Usefulness, which constitute the 4 factors, were affected by the variable "Using Wearable Technology", was investigated because the assumption of "Normal Distribution", which is the assumption of parametric tests, was not met. When Table 3 is examined, It can be said that the Attitudes Towards Mobile Learning Scores of the Students Using and Not Using Wearable Technology are significantly different at the 5% significance level ($p<0.021$). Similarly, it can be said that the Satisfaction Attitude Scores and Motivation Attitude Scores of the students using and not using Wearable Technology are significantly different at the 5% significance level ($p<0.001$, $p<0.033$). On the other hand, it can be said that the Impact on Learning and Usability Attitude Scores of the Students Using and Not Using Wearable Technology are not significantly different ($p>0.05$).

Table 3. Mann-Whitney U Test Wearable Technology Variable Findings

Wearable Tech.		N	Mean	SE	p
F1	No	614	3.58	.736	**0.001**
	Yes	166	3.77	.772	
F2	No	614	3.96	.663	0.388
	Yes	166	3.97	.805	
F3	No	614	3.59	.745	**0.033**
	Yes	166	3.72	.832	
F4	No	614	2.82	.720	0.528
	Yes	166	2.81	.882	
Total	No	614	3.56	.538	**0.021**
	Yes	166	3.66	.613	

DISCUSSION

The purpose of this study was to investigate the physical education teacher candidates' attitudes towards mobile learning and their acceptance levels of mobile learning tools. According to the findings, the Attitude levels towards Mobile Learning and Acceptance of Mobile Learning Tools are generally preferred at a moderate level. Attitude levels towards mobile learning sub-items (factors) had the highest score on learning. The usability factor level was the lowest. Considering the reflection of mobile learning in the literature, in parallel with the findings of this study; a research with 214 university students stated that although the students gave positive feedback on motivation, they found the course materials created for mobile learning complex (13). Although the mobile phone is reported as the most educational tool by university students, it has been revealed that mobile phones are not used in the curriculum and for academic purposes, and most of them use general mobile phone applications (14). Students also want to experience by providing a safe environment, as long as education in accordance with the mobile learning model and overcoming existing difficulties.

Looking at the literature, the use of mobile learning in educational environments is generally perceived positively by students. It was reported that the most important advantages of mobile learning are to access the desired information directly, instead of spending time to extract the necessary information from the data pollution found on the internet, that mobile learning devices are seen as an integral part of the learning process, and that the mobile learning method is preferred in lessons because it supports inquiry-based experiences (15). In a study conducted with 80 university students, it was found that academic success expectations are an important factor in accepting and using mobile learning in higher education (16).

According to recent studies on the subject, the opportunities that mobile learning will offer were seen as the most important findings (17). University students have a high level of satisfaction and readiness for mobile learning, and mobile devices have become a necessity in their daily lives. The subject of willingness to use mobile devices is similar to this study. While there was no significant difference in a study on the effects of students' gender, age and class on their attitudes towards mobile learning, a significant difference was found in the attitude towards mobile learning of the department (18). In another study, which did not find a significant difference in the effect of age and gender variables on mobile learning, it is consistent with the study conducted with 30 graduate students studying at Konya Necmettin Erbakan University in the 2016-2017 academic year (19). On the other hand, in a study examining the effect of pre-service teachers' grades on their attitude to use technology, a statistically significant difference was found between the first and third grades in favor of the third grade. In the same study, a statistically significant difference was found between the first grade and the fourth grade in favor of the fourth grade. As a result of the research, pre-service teachers in 3rd and 4th grades stated that they were more positive about the use of technology (20).

The "Attitudes Towards Mobile Learning" of Tourism and Education Faculty students at Selçuk and Necmettin Erbakan Universities was investigated with a survey model (21). There was no significant

difference in students' attitudes towards mobile learning in terms of gender and faculty type variables, and students' attitudes towards mobile learning in terms of graduated high school type and faculty type variables. According to the studies examined, the use of wearable technologies for educational purposes is at the forefront of; fitness practices based on gamified physical activities (22), physical education-based games (23) based on learning by doing applications (24). The striking point in these studies was the use of wearable technologies in learning activities. Another important point is the acceptance of wearable technologies as assistive technologies. Considering the results of this study, the educational effect of wearable technologies is thought to increase in terms of the use of wearable technologies, which have become widespread in education.

In a study on the effect of having a personal website (blog) on learning, they concluded that students generally need peer assessment and that they find working with a group more effective. Only a small group of students think positively about the use of blogs in group work (25). According to another research result with different findings on the same subject, it was found that students who use blogs have higher success. However, it has been revealed that students who have a positive perception of technology use in education and training see the benefits of blogging (26).

CONCLUSION AND RECOMMENDATIONS

Changes in information and communication technologies provide students and academics with global opportunities in education, especially with the advantages of the online environment provided by internet access. In recent studies, it can be said that while the educational environments are enriched with technology, the resulting environment gains quality with cooperation and interaction between stakeholders (27). Growing with mobile phones, tablets and social media (Instagram, Facebook, Twitter, etc.) (28; 29), these students use such technologies better than previous generations and even think differently than others. According to Prensky, the most important focus of educational technology studies is; it should be to find the answer to the question of how to provide educational environments specific to the newborn generation and growing in this new century. Individuals who will teach children of this age should include information and communication technologies in the classroom along with the methods and techniques they will prefer (30). At the same time, individuals who will teach digital natives should develop competencies according to the needs of the students and be open to development, and lastly, they should have the habit of lifelong learning.

Students who can benefit from mobile education services without time and place restrictions continue their education without interruption. However, this situation also creates an educational environment away from the teacher and other students. In this case, students using mobile learning applications should determine their education according to their needs. In this case, while designing mobile learning, attention should be given to presenting content tailored to individual learning. In today's conjuncture, it should be questioned whether direct narration and presentation methods and strategies are suitable for the era. Students generally perceive mobile learning positively in educational environments. In this context, it is possible to include mobile devices in the learning-teaching processes because of their advantages such as motivating, interesting, and easy-to-use physical education teacher candidates, and being independent of time and place. It is recommended to consider these features in new studies on mobile learning.

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A Review Study of Physical Education Pedagogy in Turkey

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Abstract

Pedagogy is defined as a concept based on transferring the teacher's knowledge and skills to the learner. A similar definition of pedagogy has been detected in the physical education field. Physical education pedagogy is examined in three sub-dimensions which are teaching physical education, physical education teacher education, and curriculum. In this study, articles about physical education pedagogy published in scientific journals scanned in TR Index were examined using document review and descriptive content analysis methods. Totally 2157 studies from six journals published in TR Index were accessed, and 18 articles were selected. The first and second authors of the study examined and analyzed the studies. Inter-researcher consistency was 93.4 % which indicated high consistency. Results showed that five studies for teaching physical education, six studies for physical education teacher education, and seven studies for curriculum sub-domains of pedagogy were published in TR Index. Teaching physical education studies focused on the effectiveness of models, materials and instructional design. In the physical education teacher education sub-domain, studies examined the effectiveness of the peer teaching model, teaching practice, and scale development. Results also indicated that all seven curriculum studies focused on examining renewed or updated physical education and sports curriculum. As a conclusion, the number of articles on physical education pedagogy published in the TR Index was not sufficient considering the total number of published studies. Curriculum studies were generally carried out shortly after the curriculum updates in Turkey. There is a need for longitudinal studies that examine the long-term effects of curricula and evaluate the curricula in terms of all stakeholders affected by the program.

Key Words: Pedagogy, Teaching Physical Education, Physical Education Teacher Education, Curriculum

Türkiye'de Beden Eğitimi Pedagojisine İlişkin Bir İnceleme Çalışması

Pedagoji, öğretenin bilgi ve becerilerini öğrenen kişiye aktarması esasına dayanan bir kavram olarak tanımlanmaktadır. Benzer bir tanımlama, beden eğitimi öğretiminde de görülmektedir. Beden eğitimi pedagojisi; beden eğitimi öğretimi, beden eğitimi öğretmen eğitimi ve öğretim programı olmak üzere üç alt boyutta incelenmektedir. Bu çalışmada, TR Dizinde taranan beden eğitimi ve spor alanında bilimsel yayın yapan ulusal

dergilerde beden eğitimi pedagojisi üzerine yayınlanan çalışmalar, doküman incelemesi ve betimsel içerik analizi yöntemleri kullanılarak incelenmiştir. TR dizinde taranan altı dergide yayınlanan toplam 2157 makale incelenmiş ve beden eğitimi pedagojisi ile ilgili olan 18 makale belirlenmiştir. Çalışmada yer alan ilk ve ikinci yazarlar bir araya gelerek tüm çalışmaları incelemiş ve analizi gerçekleştirmiştir. Araştırmacılar arası tutarlılık değeri % 93.4 ile yüksek bulunmuştur. Bulgular TR dizinde taranan ve bu çalışmada incelenen makalelerin pedagojinin alt boyutlarına göre beş çalışmanın beden eğitimi öğretimi, altı çalışmanın beden eğitimi öğretmen eğitimi ve yedi çalışmanın öğretim programları ile ilgili olduğunu göstermektedir. Beden eğitimi öğretimi çalışmaları beden eğitiminde kullanılan modellerin, materyallerin ve öğretim tasarımlarının etkisini incelemişlerdir. Beden eğitimi öğretmen eğitimi çalışmaları ise akran öğretim modelinin etkilerini, öğretmenlik uygulamasını ve ölçek geliştirme çalışmalarına odaklanmıştır. Çalışma bulguları ayrıca tüm öğretim programı çalışmalarının yenilenen ya da güncellenen beden eğitimi ve spor öğretim programlarını incelemişlerdir.

Sonuç olarak, TR Dizinde yayınlanan beden eğitimi pedagojisi üzerine makale sayısının, yayınlanan toplam çalışma sayısı dikkate alındığında yeterli olmadığı söylenebilir. Beden eğitimi ve spor öğretim programları üzerine incelenen çalışmalar, genellikle Türkiye'de beden eğitimi ve spor öğretim programı güncellemelerinden kısa süre sonra gerçekleştirilmiştir.

Öğretim programlarının uzun vadede etkisini inceleyen ve programın etkilediği tüm paydaşlar açısından programların değerlendirildiği boylamsal çalışmalara gereksinim bulunmaktadır.

Anahtar Kelimeler: Pedagoji, Beden Eğitimi Öğretimi, Beden Eğitimi Öğretmen Eğitimi, Öğretim Programı

INTRODUCTION

Pedagogy is defined as a concept based on the transfer of teacher's knowledge and skills to the learner (21). Pedagogy is frequently used interchangeably with the concept of teaching in literature (10). A similar definition of pedagogy has been detected in the physical education field (46). Physical education pedagogy is examined in three sub-dimensions which are teaching physical education, physical education teacher education, and curriculum (45).

Although these three concepts, which are seen as sub-dimensions of pedagogy, seem to be intertwined with each other, they have different research focuses (45, 46). Sub-dimensions of physical education pedagogy are: a) Teaching physical education: This dimension focuses on students' learning process and level, social and environmental factors affecting the teaching process. b) Physical education teacher education: It focuses on the subjects, which are physical education teachers' professional development through in-service practices and career development from their candidate to retirement process. c) Curriculum: This sub-dimension focuses on the subjects and contents that should be taught in the physical education subject matter field and the factors affecting the teaching.

In recent years, it has been seen that some review studies focus on physical education pedagogy in international literature. These studies are interested in general subject fields such as content, type, method, subject matter, and data analysis (22, 28, 29, 30, 41, 47, 46, 55). For example, Silverman and Skonie (46) examined 179 studies focusing on teaching physical education published dates between 1980-1984. The findings of the study revealed that the majority of teaching physical education studies were quantitative studies and focused on teacher effectiveness. Silverman and Manson (47) analyzed 201 doctoral dissertations focusing on teaching physical education. Findings indicated that most of the studies which they reviewed focused on teacher effectiveness. Half of the analyzed theses examined teaching methods, a few studies focused on developing assessment tools and students' decision-making levels. In another study, Uysal and Atay (52) examined 26 doctoral dissertations which focused on physical education and teaching studied in Turkey dates between 2007-2020. Results of this study showed that dissertations themed on physical education and teaching used qualitative methods. Due to its multi-disciplinary structure, comprehensive dissertations from education science to sports management were carried out.

Research published in Journal of Teaching in Physical Education (JTPE), which is one of the most important journals publishing studies of physical education pedagogy, are examined at different time intervals and by different researchers (22, 30, 41, 55). For instance, Hemphill et al. (22) conducted content

analyses of qualitative research published in the JTPE journal between 1998 and 2008. The study included a total of 209 articles. Results showed that studies focused on physical education teachers (36.4 %), students (31.8 %), physical education teacher education (24.5 %), and both physical education teachers and students (7.3 %).

In the literature, it has been studied important review researches related to physical education pedagogy since last decade (28, 30). One of them was Li et al. (30) study which reviewed the articles using an experimental research design for school physical education lessons. The study examined 71 qualitative experimental studies published in JTPE and Research Quarterly for Exercise and Sport. Findings showed that 60 (85 %) of 71 studies used a theoretical/conceptual framework. Majority of the analyzed studies measured dependent variables, which were motivation and psychomotor skills. As a result of the study, it was stated that the number of experimental studies published in two scientific journals was not sufficient.

Review studies of physical education pedagogy were made by searching citation indexes such as Google Academic, ERIC, EBSCO, SCOPUS and Web of Science (46). Citation index, which searching is done, is a systematic guide to scientific publications and their registered concepts, keywords, and location of researched topics (49). National and international indexes are databases that periodically deliver the studies published in the journals they scan according to the criteria they set (3). TR index (it has been carried out under the name of national databases until the end of 2013) is one of the most important databases developed by international standards in Turkey. It is a database created by the National Academic Network and Information Center (TR Index ULAKBIM) that scans/contains scientific articles in the fields of medicine, engineering and basic sciences, social and human sciences, life sciences, and law. National scientific journals scanned in the TR Index are periodically updated by commissions constituted of expert academics (3).

The aim of this study is to analyze the studies on physical education pedagogy in Turkey. In the study, it was aimed to examine the articles about physical education pedagogy, physical education teacher education, and curriculum, which are sub-dimensions of physical education pedagogy, in national journals that make scientific publications in the field of physical education and sports scanned in the TR Index.

METHOD

In this study, articles about physical education pedagogy published in scientific journals scanned in TR Index were examined using document review and descriptive content analysis methods. Document review is a systematic process by which documents of printed or electronic materials are reviewed and evaluated (6). It is expected to derive meaning from the data obtained in document analysis and to develop empirical knowledge (8). Descriptive content analysis is one of the content analysis methods (9, 48) and is a systematic analysis type that includes trends and descriptive evaluations in studies on a particular subject (19, 31, 42).

Literature Review and Inclusion/Exclusion Criteria

Journal of Sport Science (1990-2021), Spormetre (2003-2021), Journal of Sports and Performance Researches (2010-2021), Journal of Sports Sciences Researches (2016-2021), The Turkish Journal of Sport and Exercise (2012-2021) ve Turkiye Klinikleri Journal of Sports Sciences (2009-2021), which are the scientific journal publishing in the field of physical education and sport, and indexed in TR Index, were examined in this study. Totally 2157 studies from these six journals were accessed. Letter to the editor and editor's comments sections were not included. The first and second authors of the study examined and analyzed the keywords, title, abstract and method sections of the selected articles in terms of sub- domains of physical education pedagogy. After the examination, the researchers came together and checked their similarities and differences. Inter-researcher consistency was calculated by the formula: $Total\ Consistent\ Choices/\ Total\ Choices$. Inter-researcher consistency was 93.4 % which indicated that researchers had high consistency (53). Inconsistent choices were discussed again and included the study after the consensus was reached. A total of 18 articles covering teaching physical education, physical education teacher education and curriculum were selected for descriptive content analysis (45, 46).

Coding Procedure

The determined 18 articles were categorically coded according to teaching physical education, physical education teacher education and curriculum. At the beginning of the coding process, the first author created a coding template containing clear and explanatory information for each variable (i.e. curriculum) to be coded. The authors of the study met three times using face-to-face and video interviews, and discussed the template in meetings that lasted approximately two hours. After the interviews, 10 articles were randomly selected from the determined articles. The selected articles were coded by three researchers using the template.

Inter-coder consistency score was ranged from 90 % to 94 % (M=92.41). Results clearly indicated that there was a consensus among coders of this study (53). The remaining articles were coded by the first author of the study.

Data Analysis

Determined 18 articles were analyzed in terms of their research topic, methods and results. Microsoft Excel program was used in the analysis of the obtained data. The data, which were coded and categorized, were transferred to the Excel program and the researchers checked whether there were any mistakes during the transfer to the Microsoft Excel form. As a result of the descriptive content analysis, frequency and percentage (%) calculations were used for all coding categories.

RESULTS

The findings were presented according to three sub-domains of physical education pedagogy which were teaching physical education, physical education teacher education and curriculum.

Teaching Physical Education

Five articles about teaching physical education sub-dimension were published in journals indexed in the TR Index. One of these articles examined the use of models which were specific to teaching physical education and sports and the learning levels of students.

Two studies of them focused on teaching materials for increasing the learning level of the students in addition to the model application. Two other studies used document review and instructional design as pedagogical methods.

Table 1. Articles of Teaching Physical Education

Research	*Journal*	*Pedagogical Methods*	*Findings*
İlhan et al. (2005)	Spormetre	instructional design	No difference between the multiple intelligence curriculum and the traditional curriculum.
Keske Aksoy andGürsel (2015)	Spormetre	Action research and teaching model application	Teacher and expert collaboration, content selection and interaction with colleagues were identified as strengthening factors Lesson preparation, lack of time and changing teacher role were determined as slowing factors
Özçakır (2015)	Journal of Sport Science	Document review	Physical education and sports education has progressed cumulatively since the Republican era There is a transformation from teacher-centered to learner-centered.
Atlı et al. (2018)	Turkiye Klinikleri Journal of Sports Sciences	Teaching model and materials application	The peer teaching model is an effective model in terms of students' learning level, and the physical activity cards are an effective auxiliary material
Ediş and Gündüz (2019)	Spormetre	Teaching model and materials application	The model had a positive effect on students' development in the course. The model provided positive behavior and positive communication

Table 1 indicated that the physical education and sports-specific teaching models used by the majority of the studies (n=3) had a positive effect on the students' learning level, in-class behaviors and communication (5, 16, 27). One of the teaching physical education studies used action research besides the sports-specific

teaching model. As a result of the study, it was determined that the action research strengthened the effectiveness of the applied model (27). According to the findings of another study examining teaching physical education historically, teaching physical education has changed from teacher-centered to learner-centered (40). The other study showed that the instructional design applied for the theory of multiple intelligences was not significantly more effective than the traditional instructional design (25).

Physical Education Teacher Education

Six articles were determined by the physical education teacher education sub- dimension and these studies used different pedagogical methods (See Table 2). Two studies investigated the effect of the peer teaching model. In three studies, analysis methods for scale development, the effect of teaching practice, and academic learning time were used. In the other article, a review study was carried out on physical education teacher education programs.

According to the findings of the physical education teacher education sub-dimension, the peer teaching model (n=2) is an effective model for physical education teacher education students (20, 38). Other studies on Table 2 indicated that physical education teachers and preservice teachers are supposed to decrease time spending on classroom management, subject explanation, and waiting in line, while increasing time spending on physical activity (56). In one of the published studies, a valid and reliable knowledge test was developed to measure preservice physical education teachers' football knowledge level. According to the findings of this study, preservice physical education teachers', who have just completed the football lesson, had insufficient football common content knowledge levels (14).

Teaching practice course is so important for preservice physical education teachers. In one of the studies reviewed examined the effect of the teaching practice course on teacher efficacy. Findings showed that teaching practice course had no effect on preservice physical education teachers' teaching proficiency levels (2). In a recent study on physical education teacher education in Turkey, it was determined that the cooperation of institutions related to teacher education, the course contents that meet current needs and the right practices related to real life should be adapted (50).

Table 2. Physical Eduction Teacher Education Articles

Research	*Journal*	*Pedagogical Methods*	*Findings*
Yıldırım et al. (2007)	Journal of Sport Science	Behavior Analysis Analysis of Course Content Analysis of Academic Learning Time	Physical education teachers and preservice teachers spend more time on classroom management, subject explanation, and waiting in line, while spending less time on physical activity
Aktağ (2011)	Journal of Sport Science	Teaching Practice	Teaching practice course had no effect on preservice physical education teachers' teaching proficiency levels
Mirzeoğlu et al. (2014)	Journal of Sport Science	Teaching Model	Peer teaching model is effective on preservice teachers' learning level. Experienced preservice physical education teachers had higher academic learning time
Derven tet al. (2018)	Journal of Sport Science	Scale Development Measuring Knowledge Level	Valid and reliable scale for preservice physical education teachers was ensured Preservice physical education teachers', who have just completed the football lesson, had insufficient football common content knowledge levels
Gündüz et al. (2019)	Spormetre	Teaching Model	Preservice physical education teachers stated that peer teaching model is effective for teaching physical education in schools.
Şen et al. (2021)	Spormetre	Review Study	The cooperation of institutions related to teacher education, the course contents that meet current needs and the right practices related to real life should be adapted.

Curriculum

Seven articles focusing on curriculum sub-domain of physical education pedagogy were determined in this study. All studies evaluated the curriculum which was renewed or updated. In two studies evaluating the physical education and sports curriculum in the 1990s, it was determined that the behaviors and learning goals were consistent in the curriculum of the specific period, but the pedagogical courses for education were not sufficient, the necessary evaluation part of education process was not applied in the courses, and the education system and the philosophical approached required by the specific period did not match each other (1, 11).

Renewed physical education and sport curriculum was evaluated by three studies conduted in the 2010s. Studies showed that there was a moderate harmony among the objectives, achievements and learning-teaching processes. Results revealed that the emphasis on measurement and evaluation in the curriculum was medium and low (13, 15). Studies indicated that in-service training for promotion and presentation of renewed curriculum to physical education and sport teachers were not as it was supposed to be. Remarkable findings in these studies were that physical education teachers could not assimilate the renewed program and were not willing to learn the program (18).

In a study comparing the current physical education and sports curriculum in terms of international and Turkish gender equality standards, it was determined that while gender equality was emphasized in international standards, there was not enough emphasis in the renewed physical education and sports curriculum in Turkey (39).

Table 3. Curriculum Articles

Research	*Journal*	*Pedagogical Methods*	*Findings*
Demirhan (1992)	Journal of Sport Science	Evaluating curriculum	Behaviors and learning goals were consistent in the curriculum of the specific period, but the pedagogical courses for education were not sufficient,
Açıkada (1992)	Journal of Sport Science	Evaluating curriculum	Turkish education system and the philosophical approached required by the specific period did notmatch each other. Necessary evaluation part of education process was not applied in the courses,
Demirhanet al. (2008)	Journal of Sport Science	Evaluating curriculum	The proficiency level of the aims of the physical education curriculum is good, the level of reaching the targets is medium; realization of the objectives of the course content is moderate; course teaching and assessment level was determined as medium and good
Erdoğduand Öçalan (2010)	Spormetre	Evaluating curriculum	When the physical education and sport curriculum is examined in terms of applicability; it was determined that the general objectives, achievements and learning-teaching processes were partially managed; measurement-evaluation process was lower than expected.
Dalkıranet al. (2011)	Spormetre	Evaluating curriculum	In-service training for promotion and presentation of renewed curriculum to physical education and sport teachers were not sufficient.
Gülüm and Bilir (2011)	Spormetre	Evaluating curriculum	Physical education teachers could not assimilate the renewed program and were not willing to learn the program
Müftüler and Koca Arıtan (2020)	Journal of Sports Sciences Researches	Evaluating curriculum Document analysis	There was not enough emphasis in the renewed physical education and sports curriculum in Turkey

DISCUSSION

In the study, we aimed to examine the articles about physical education pedagogy, physical education teacher education and curriculum, which are sub-dimensions of physical education pedagogy, in national journals that make scientific publications in the field of physical education and sports scanned in the TR Index.

Totally 2157 articles, which were published in journals scanned by TR Index, were examined and 18 articles focusing on physical education pedagogy were determined for the analysis. Of the 18 physical education pedagogy studies examined and reviewed, six (33.33%) articles were related with physical education teaching, five (27.78%) of them focused on physical education teacher education, and seven (38.89%) articles were related with the curriculum. Our findings showed that the distribution of sub-dimensions focusing on pedagogy was very close in terms of their number.

The distribution of physical education pedagogy studies in the international literature is different. Some physical education pedagogy review studies showed that published scientific research mostly focused on physical education teacher education (46, 47, 55). For example, Silverman and Skonie (46) reviewed 179 studies and found that teacher effectiveness was the most focused issue. Similar findings were also found in the study reviewing doctoral theses (47). Some review studies in the literature found that publications on physical education pedagogy mostly focused on teaching physical education. For example, Kulinna et al. (28) determined that the majority of pedagogical studies (65.31%) between the years 1995-2004 were carried out on teaching physical education

Students' learning level in physical education and sports courses and the factors affecting teaching were expressed as teaching physical education in physical education pedagogy (45). As a result of the five articles examined in this study on teaching physical education, it was determined that the teaching models had a positive effect on students' learning level and improved positive student behavior and communication.

In this study, the effects of the teaching model, scale development, teaching practice and analyzes on academic learning time were evaluated in the physical education teacher education. The findings showed that the applied models were effective for preservice physical education teachers. Similar findings were found in review studies focusing on physical education pedagogy (46, 47).

The concept of pedagogy in general education gained importance towards the end of (17, 43, 44). In particular, pedagogical content knowledge, which was expressed in Shulman's

(44) study and put forward for the first time, was effective in increasing the quality of teacher education and teaching (7, 32, 37).

Pedagogical content knowledge was defined as the instructional arrangements and practices used by the teacher towards the subject area in order to increase students' learning level (43, 51).

Studies indicated that pedagogical content knowledge was an indispensable knowledge for effective teaching and increasing students' learning level (24, 26). Although it was stated that pedagogical content knowledge was important in physical education teaching (4, 54), no studies on physical education teaching and pedagogical content knowledge could be found in the journals scanned in TR Index

Curriculum is an important stakeholder that affects the teaching quality of physical education and sports lessons. All of the curriculum articles included in our study were based on the evaluation of the updated physical education and sports curriculum of the period.

Curriculum in Turkey has been renewed four times since 1980 (23); (a) focused on sports and physical fitness (33), (b) focused on active healthy living and movement competence according to constructivist learning principles (34), (c) Focused on wellness (35) ve (d) Focused on wellness and values education (36).

The findings showed that the behaviors and learning goals of the curriculum updated in 1988 were consistent, but the educational philosophy did not match and the measurement and evaluation process was insufficient (1, 11). Studies evaluating the program, which was updated in 2007, determined that the consistency of behaviors and learning goals was moderate, and the assessment and evaluation process was moderate and low (12, 13, 15, 18).

The curriculum of physical education and sports course was lastly updated in 2018 with an emphasis on values education. Studies examining the renewed curriculum stated that there was no emphasis on gender equality in the curriculum (39).

Conclusion and Future Directions

As of December 2021, there are a total of 207 universities in Turkey, including 174 state, 74 foundation universities and four foundation vocational schools (58). Totally 90 of these universities have physical education teacher education departments. In these universities, there are 79 master's and 52 doctorate programs on physical education and sports (58).

Although there are sufficient number of physical education teacher education master's and doctorate programs in Turkey, it could be said that the number of articles on physical education pedagogy published in the TR Index was not sufficient considering the total number of published studies. It is recommended to investigate the reasons for the low number of articles published in future studies.

As a result of the articles examined in this study, it was determined that there was no study on pedagogical content knowledge, the importance of which was emphasized in many studies in the international literature for physical education and teacher education in the journals scanned in the TR Index. In future studies, it is recommended to focus on pedagogical content knowledge in physical education and sports.

Another result of our study was that the use of physical education and sports-oriented teaching models was effective in physical education teacher education and the learning level of students who completed the school physical education course.

Although it was determined that teaching models were effective in teaching physical education, the number of studies published in TR Index journals was not sufficient. In order to emphasize the prevalence of the effect and its validity in different contexts, it is recommended to examine the effects of different models of physical education and sports in different school types, grade levels and different sports branches on the learning level of students attending physical education teacher education and school physical education classes.

As a result of the seven articles on physical education and sports education programs, it was determined that the published studies were generally carried out shortly after the curriculum updates in Turkey. There is a need for longitudinal studies that examine the long- term effects of curricula and evaluate the curricula in terms of all stakeholders affected by the program.

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The Impact of the Pandemic on Sports Companies: Comparative Rate Analysis of Champions League and Turkish Football Companies

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Ethical Statement: It is declared that scientific and ethical principles have been followed while carrying out and writing this study and that all the sources used have been properly cited.

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Abstract

Today, when sports have become a very important sector for the economy, football, which is one of the favorite elements of the sports sector, has a very large financial position among other sports branches. Many different organizations such as UEFA also contributed to this position. In this study, the effect of the Covid-19 epidemic, which was declared a pandemic by the World Health Organization on March 11, 2020, on football clubs was analyzed through the financial statements of football clubs. In the research, the ratio analysis method was applied through the financial statements of the three football clubs in the category of UEFA champions league leaders as of 5 May 2021 and the football companies traded in the BIST for the periods 2017, 2018, 2019, 2020, and 2021. As a result, it has been revealed that all clubs were affected negatively compared to the pre-pandemic period, but the three clubs, which are UEFA leaders, were less affected by the negative effects of the pandemic due to their strong financial resources and sporting successes. In the evaluation of the research, it has been revealed that Beşiktaş is the club with the best debt-paying power among the clubs in Turkey. It was evaluated that the net working capital of the other three clubs was negative. It is understood that the three clubs, which are the ranking leaders in 2021, have strong financial positions that do not differ much from each other. It is another result that the solvency and resource structures of Turkish football clubs and UEFA ranking leaders are far from each other. This situation is generally; It can be attributed to sportive success, the difference in the income balance and the increase in the exchange rate in our country.

Keywords: UEFA, Champions League, Turkish Football Companies, Ratio Analysis, Pandemic

Pandeminin Spor Şirketleri Üzerine Etkisi: Şampiyonlar Ligi ve Türk Futbol Şirketlerinin Karşılaştırmalı Oran Analizi

Özet

Sporun ekonomi için oldukça önemli bir sektör haline geldiği günümüzde, spor sektörünün favori unsurlarının başında gelen futbol diğer spor branşları arasında finansal açıdan oldukça büyük bir konuma sahiptir. UEFA gibi birçok farklı kuruluş da bu konuma katkı sağlamıştır. Bu çalışmada, Dünya Sağlık Örgütünün 11 Mart 2020 de pandemi olarak ilan ettiği Covid-19 salgının futbol kulüplerine etkisi, futbol kulüplerinin mali tabloları üzerinden analiz edilmiştir. Araştırmada 5 Mayıs 2021 yılı itibariyle UEFA şampiyonlar ligi liderleri kategorisinde yer alan

üç futbol kulübü ile BİST'de işlem gören futbol şirketlerinin 2017, 2018, 2019, 2020 ve 2021 dönemi mali tabloları aracılığıyla oran analizi yöntemi uygulanmıştır. Sonuç olarak bütün kulüplerin pandemi öncesine göre olumsuz yönde etkilendiği fakat UEFA lideri olan üç kulübün finansal kaynaklarının ve sportif başarılarının güçlü olması sebebiyle pandeminin olumsuzluğundan daha az etkilendiği ortaya konmuştur. Araştırmanın değerlendirmesinde Türkiye'deki kulüplerden en iyi borç ödeme gücüne sahip olan kulübün Beşiktaş olduğu ortaya çıkmıştır. Diğer üç kulübün ise net işletme sermayesinin negatif yönde seyrettiği değerlendirilmiştir. 2021 yılı sıralama lideri olan üç kulübün ise birbirlerine göre çok fark etmeyen güçlü finansal pozisyonlara sahip oldukları anlaşılmaktadır. Türk futbol kulüpleri ile UEFA sıralama liderleri arasında borç ödeme gücünün ve kaynak yapılarının birbirlerinden çok uzak olduğu da ortaya çıkan bir başka sonuçtur. Bu durum genel anlamda; sportif başarıya, gelirler dengesindeki farklılığa ve döviz kurunun ülkemizdeki artışına bağlanabilir.

Anahtar Kelimeler: UEFA, Şampiyonlar Ligi, Türk Futbol Şirketleri, Oran Analizi, Pandemi

INTRODUCTION

Technological innovations and tremendous progress in information processing provide significant benefits in predicting how fast, in what direction, in which periods and, in which sectors the economy will lead. The football sector, which is very closely related to the world economy, has also established itself as an economic power on its own. The fact that the football industry has become stronger financially among other sports branches has been effective because of the potential to be watched continuously since the past, transfer fees and the fact that the football branch has the highest number of spectators almost all over the world. Fans watch not only their own teams but also all teams with high viewing quality in many countries. This situation increases the income from the audience. The potential to create a strong financial source has made the existence of regulatory institutions a necessity in order to ensure the informal economy and justice in sports. Football clubs, whose financial structures have deteriorated for various reasons (applying to illegal sources in order to compete, taking on debt obligations that they cannot pay, etc.) have started to make losses by having difficulty in competition, and it has become necessary to take measures in the football sector in order to eliminate the negative effects of financial crises (20).

The European Football Association (UEFA), which was established for the football union and is one of the regulatory organizations, was established in 1952 (8). Since then, it has always put the financial regulations it has brought as a prerequisite for football clubs. One of these rules has been the Financial Fair Play (FFP) legislation. The main purpose of the legislation was to minimize the effect of financial sustainability on the financial structure of football clubs and to ensure that competition is harmonious and fair (18). The FFP legislation was adopted in 2010 and aimed to ensure that the clubs have a healthier economic structure and that the funds transferred to the football industry, which has become important as a sector, are made appropriate (17).

While all the rules for UEFA FFP legislation are progressing in line with the trend, the effect of the Covid-19 pandemic, which started on December 1, 2019, has begun to be felt, especially in economic terms. Clubs under the umbrella of UEFA have taken their share of these negativities. However, UEFA showed with analysis reports that the effect of the pandemic deeply affected the clubs in 2020 season for football clubs and saved an estimated 2 billion Euros in additional local TV contract penalties and reductions for clubs (7). In this study, the general financial performances of the 4 big football clubs that are publicly traded companies in our country and the top three football clubs in the UEFA ranking in 2021 were analyzed. The main purpose of the analysis is to observe the financial and sportive success difference between the pandemic and the clubs included in the research and to evaluate what it is based on as a result.

Literature Review

When the studies on ratio analysis are examined, it is seen that the ratio analysis method is made in different analyzes according to the needs by using the financial statements related to many different sectors, and the ratio analysis method gives effective results in the analysis of the financial situation of the companies. Among these sectors, it is seen that ratio analysis is not used much in research related to the sports sector.

In his study, Aslan (1) revealed the financial performances of the sports clubs traded in BIST by using the ratio analysis method by making use of the 2014-2016 financial statements. As a result, he observed that sports

companies generally have problems with their financial liabilities and are in a negative situation in generating profits. In their study, Kardeniz et al (12) measured the financial performance of sports companies traded in the BIST for the period 2011-2013 using the ratio analysis method and also determined the bankruptcy risks by calculating Altman Z values. In the research of Güngör and Uzun Kocamış (11) one of the public football clubs in England; They calculated the profitability and financial structure ratios by using the financial statements of Arsenal, Everton, Manchester United, Tottenham Hotspur clubs for the years 2012-2016. They then revealed their financial performance by analyzing them with the TOPSIS method.

In his study, Dayı (6) calculated the current ratio, leverage ratio, interest coverage power; and total asset variables of the clubs using the 2010-2018 financial table data of the four big football clubs in the super league. In the continuation of the study, it has been shown that financial risk levels increase by using panel data and the least squares method. In their research, Beyazgül and Karadeniz (3) analyzed the cash flow statements of 29 football clubs in the Turkish Spor Toto Super League and 10 national leagues in Europe for the period 2013-2018. As a method of analysis, they used the cash flow-generated operations method.

In his study, Ergül (9) analyzed the relationship between their financial success and their success in football by using the financial statements of sports clubs traded in BIST, with the TOPSIS method, and revealed that the research obtained positive data as a result. In their study, Kızıl and Aslan (14) analyzed the percentage changes and the possible reasons for the changes, using the 2016-2018 financial statements of Galatasaray A.Ş. In their study, Garcia-del-Barrio and Rossi (10) examined how some leagues in 2009-2010 and 2015-2016 UEFA leagues affect clubs according to UEFA FFP regulations, using a dataset consisting of 560 observations and made some suggestions.

In their study, Özdurak and Ulusoy (15)observed the reactions of the stocks of football clubs traded in BIST in Turkey according to the match results and the effects of the stocks according to the news and produced an evaluation. In their study, Taştan and Donuk (19) conducted an analysis revealing the importance of the sportive success and financial success of football clubs by applying the institutionalization principles and firm performance scale, which is a relational screening method, to 217 professional football club managers.

Ratio Analysis

Ratio analysis is used to establish mathematical relationships in the economic, financial structure, and profitability issues that the business attaches importance to within the account or account components (21). Although there are data that show the situation well in the financial statements of any business, it will not be a realistic approach to make the right decisions about its financial performance by using only this information. For this purpose, ratio analysis is used to analyze alternative and correct data by associating them with each other (4).

Apart from the ratio of items that are known to be related in a financial analysis, businesses can determine new ratios in line with their needs. The results obtained after the analysis of the enterprises are compared with the results of the previous years of the enterprise and the sector averages. In addition to determining the development of the performance of the enterprise, business managers also use ratio analysis to see how much they have achieved their goals (1).

According to the purpose and functions in ratio analysis; Liquidity ratios, ratios related to financial structure, activity ratios, profitability ratios and growth and capital market performance ratios are used (16).

Liquidity ratios aim to reveal the level of adequacy by revealing the ability of enterprises to meet their short-term liabilities while evaluating the liquidity risk at the same time. The explanations of the liquidity ratios calculated in the research are given in Table 1. (13).

Table 1. Liquidity Ratios

Liquidity Ratios	Calculation Formula	Purpose of Use
Current	Current Assets / Short-Term Liabilities	Indicates the firm's ability to pay its short-term obligations.
Acid-Test	(Current Assets – Inventories) / Short-Term Liabilities	Indicates the firm's ability to pay its short-term obligations in the event of a cessation of sales..
Cash	(Fixed Assets + Securities) / Short-Term Liabilities	It shows the extent to which the liquid assets in the firm's current meet the short-term liabilities..

Source: (13)

Ratios related to the financial structure are the ratios that measure the ability of the enterprise to meet its long-term obligations and are also based on the relationships between the foreign resources used by the enterprise and the equity components. The financial structure ratios and objectives used for the research are presented in Table 2. (2).

Table 2. Ratios Related to Financial Structure

Financial Structure Ratios	Calculation Formula	Purpose of Use
Leverage ratio	Total Debt / Total Liability	Shows the share of total liabilities in business assets
Total Liabilities/Equity Capital	Total Debt / Equity	Determines the financial risk of the business.
Short Term Liabilities/Total Liabilities	Short Term Liabilities / Total Liabilities	Measures the weight of the short-term debts of the business.
Long-Term Liabilities/Liabilities Total	Long Term Liabilities / Total Liabilities	Measures the weight of long-term debts of the business.
Interest Coverage	Profit / Before Interest and Taxes	It measures how many times the net profit of the business is the interest payable..
Financial Liabilities/ Total Debts	Financial Debts / Total Debts	It shows the share of financial debts in total debts.
Tangible Fixed Assets/Long-Term Liabilities	Tangible Fixed Asset / Long-Term Liabilities	It measures the long-term credibility of the business.

Source: (2)

DATA AND METHOD

In the research, the financial statements of the football clubs traded in BIST for the years 2017, 2018, 2019, 2020, and 2021 were used and ratio analysis was made. In the same way, the financial reports of the football clubs that are in the top three in the UEFA Champions League ranking of 2021 were obtained from their websites and the same period was included in the research and the ratio analysis method was applied to the financial statements. In this study, liquidity and financial structure ratios are used. While analyzing the financial structure ratios, tangible fixed assets are not included in the research as they do not allow comparison because they are not available as an item in all foreign clubs.

RESULTS

The financial performance of the football clubs within the scope of the research was calculated and interpreted by the ratio analysis method. The findings of the research are presented in the tables and graphs below. In the study, the data of the financial statements of Turkish football clubs were obtained from the Public Disclosure Platform (KAP) and the financial statements of other teams were obtained from the management reports published on their websites.

Table 3. Liquidity Ratios

Liquidity	Beşiktaş 2017 - 2018	Fenerbahçe 2017 - 2018	Galatasaray 2017 - 2018	Trabzonspor 2017 - 2018	Real Madrid 2017 - 2018	Barcelona 2017 - 2018	Juventus 2017 - 2018
Current	0,31 - 0,51	0,92 - 1,38	0,45 - 0,24	0,21 - 0,12	0,70 - 0,76	0,35 - 0,34	0,51 - 0,52
Acid Test	-0,10 - 0,10	0,56 - 1,23	-0,31 - -0,48	-0,93 - -0,54	-0,98 - -0,82	-0,57 - -1	-1,08 - -1,58
Liquidity	**Beşiktaş 2018 - 2019**	**Fenerbahçe 2018 - 2019**	**Galatasaray 2018 - 2019**	**Trabzonspor 2018 - 2019**	**Real Madrid 2018 - 2019**	**Barcelona 2018 - 2019**	**Juventus 2018 - 2019**
Current	0,51 - 0,47	1,38 - 1,27	0,24 - 0,28	0,12 - 0,12	0,76 - 0,87	0,34 - 0,58	0,52 - 0,45
Acid Test	0,10 - 0,23	1,23 - 1,17	-0,48 - -0,54	-0,54 - -0,68	-0,82 - -0,66	-1 - -0,80	-1,58 - -1,62
Liquidity	**Beşiktaş 2019 - 2020**	**Fenerbahçe 2019 - 2020**	**Galatasaray 2019 - 2020**	**Trabzonspor 2019 - 2020**	**Real Madrid 2019 - 2020**	**Barcelona 2019 - 2020**	**Juventus 2019 - 2020**
Current	0,47 - 0,83	1,27 - 0,95	0,28 - 0,41	0,12 - 0,40	0,87 - 0,76	0,58 - 0,37	0,45 - 0,64
Acid Test	0,23 - 0,54	1,17 - 0,85	-0,54 - -0,96	-0,68 - -0,84	-0,66 - -1,46	-0,80 - -0,75	-1,62 - -1,61
Liquidity	**Beşiktaş 2020 - 2021**	**Fenerbahçe 2020 - 2021**	**Galatasaray 2020 - 2021**	**Trabzonspor 2020 - 2021**	**Real Madrid 2020 - 2021**	**Barcelona 2020 - 2021**	**Juventus 2020 - 2021**
Current	0,83 - 1,30	0,95 - 2,99	0,41 - 0,55	0,40 - 0,50	0,76 - 1,20	0,37 - 0,31	0,64 - 1
Acid Test	0,54 - 1,02	0,85 - 2,68	-0,96 - -1,76	-0,84 - -1,33	-1,46 - -1,76	-0,75 - -0,63	-1,61 - -1,19

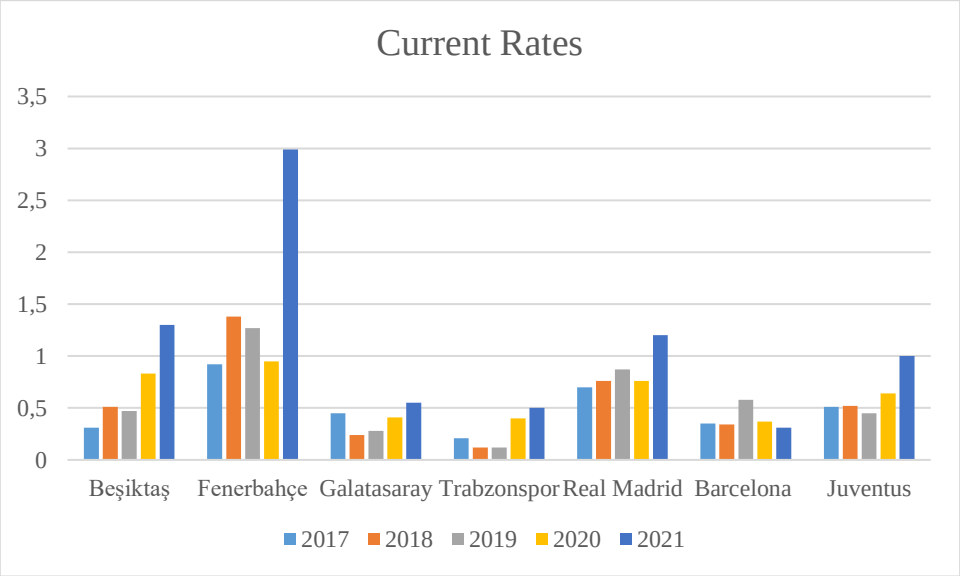

Figure 1. Current Ratios of Clubs by Years

The results of the liquidity ratios calculated in order to determine whether the enterprises can pay their short-term liabilities on time are given in Table 3. Looking at the data, it has been calculated that the current ratio is 0.67, the average for the relevant sports clubs. If this ratio is considered as the sector average, it can be seen from Chart 1 that there is a normal current ratio fluctuation for clubs. If it is accepted that the ratio of 0.67 shows that the solvency is sufficient, it can be said that the structure of the current assets and the distribution of the maturities of short-term foreign resources in 2021, together with the current ratio, for the Fenerbahçe club, which is outside this ratio and shows a sudden increase, is negatively affected by this ratio. When Graph 1 is analyzed based on the pandemic period, it can be seen that the current ratio is affected even in football clubs with a strong financial structure in 2020 and 2021. In other words, it can be said for clubs other than Galatasaray, Trabzonspor, and Barcelona, that the income of the audience decreased during the pandemic period, the matches were postponed and borrowed more, and the short-term liabilities turned into long-term and the current assets were financed with long-term foreign resources.

When the acid-test ratio of football clubs is considered, it can be said that the ratio close to 1 indicates a significant situation for short-term debt solvency, and the highest level of compliance by years is in Real Madrid, Beşiktaş, Fenerbahçe, and Juventus clubs. In general, the fact that the odds data of the clubs are close to each other can be expressed as a general situation related to the structure of the sector. Only when compared

to football clubs in Turkey, it can be stated that Beşiktaş is ahead of other Turkish clubs in the 2021 UEFA rankings and that the debt balance enters 2021 stronger and reflects positively on its performance. The rates of Fenerbahçe, which is in the second place in the ranking, can be interpreted in a similar way. Of course, as in the ratio analysis, Fenerbahçe's sudden exit for 2021 and its ratio higher than 1 does not indicate the adequacy of its solvency, since it is a situation that cannot be determined only with this ratio. In clubs where the ratio is generally below 1; It can be stated that the solvency of Barcelona, Galatasaray, and Trabzonspor is weaker than other clubs.

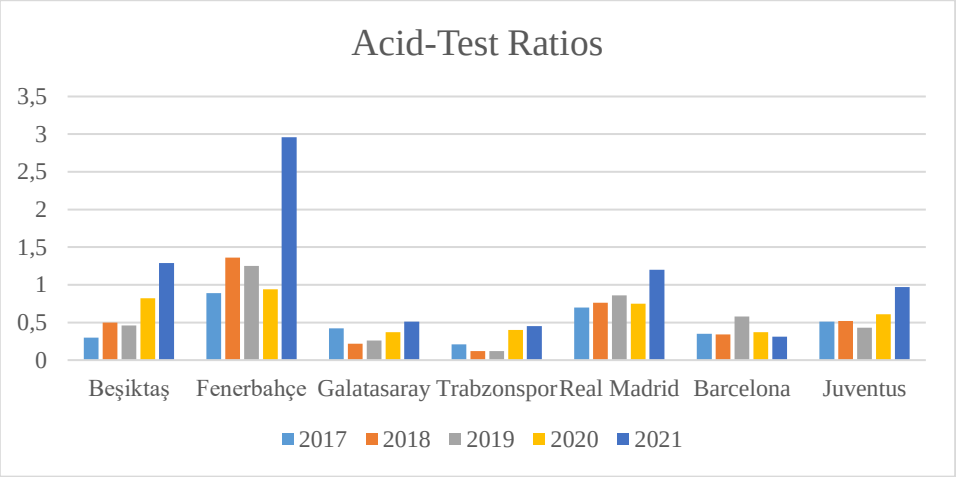

Figure 2. Acid-Test Ratios of Clubs by Years

Table 4. Financial Structure Ratios

Financial Structure	**Beşiktaş 2017-2018**	**Fenerbahçe 2017-2018**	**Galatasaray 2017-2018**	**Trabzonspor 2017-2018**	**Real Madrid 2017-2018**	**Barcelona 2017-2018**	**Juventus 2017-2018**
Lever	1,77 - 1,53	1,56 - 1,70	1,62 - 1,29	1,56 - 2,44	0,56 - 0,54	0,84 - 0,87	0,77 - 0,84
Foreign/ Equity	-2,28- -2,87	-2,75 - -2,41	-2,60 - -4,42	-2,77 - -1,69	1,31 - 1,20	5,59 - 6,92	4,70 - 9,04
Short Term Resource	1,34 - 1,08	0,77 - 0,65	0,81 - 1,03	0,73 - 1,25	0,41 - 0,42	0,77 - 0,67	0,46 - 0,37
Long Term Resource	0,43 - 0,45	0,79 - 1,05	0,81 - 0,25	0,83 - 1,19	0,15 - 0,12	0,07 - 0,20	0,31 - 0,47
Financial Structure	**Beşiktaş 2018-2019**	**Fenerbahçe 2018-2019**	**Galatasaray 2018-2019**	**Trabzonspor 2018-2019**	**Real Madrid 2018-2019**	**Barcelona 2018-2019**	**Juventus 2018-2019**
Lever	1,53 - 1,70	1,70 - 1,32	1,29 - 1,19	2,44 - 1,89	0,54 - 0,53	0,87 - 0,90	0,84 - 0,91
Foreign / Equity	-2,87 - -2,4	-2,41 - -4,05	-4,42 - -6,2	-1,69 - -2,1	1,20 - 1,13	6,92 - 9,24	9,04 - 27,5
Short Term Resource	1,08 - 1,39	0,65 - 0,72	1,03 - 0,89	1,25 - 1,07	0,42 - 0,41	0,67 - 0,50	0,37 - 0,38
Long Term Resource	0,45 - 0,31	1,05 - 0,60	0,25 - 0,29	1,19 - 0,81	0,12 - 0,11	0,20 - 0,39	0,47 - 0,53
Financial Structure	**Beşiktaş 2019-2020**	**Fenerbahçe 2019-2020**	**Galatasaray 2019-2020**	**Trabzonspor 2019-2020**	**Real Madrid 2019-2020**	**Barcelona 2019-2020**	**Juventus 2019-2020**
Lever	1,70 - 1,95	1,32 - 1,38	1,19 - 1,18	1,89 - 1,95	0,53 - 0,62	0,90 - 0,97	0,91 - 0,75
Foreign / Equity	-2,4 - -2,04	-4,05 - -3,6	-6,2 - -6,5	-2,1 - -2,4	1,13 - 1,69	9,24 - 40,8	27,5 - 3,72
Short Term Resource	1,39 - 0,88	0,72 - 0,94	0,89 - 0,56	1,07 - 0,60	0,41 - 0,33	0,50 - 0,65	0,38 - 0,34
Long Term Resource	0,31 - 1,06	0,60 - 0,44	0,29 - 0,62	0,81 - 1,35	0,11 - 0,29	0,39 - 0,31	0,53 - 0,41
Financial Structure	**Beşiktaş 2020-2021**	**Fenerbahçe 2020-2021**	**Galatasaray 2020-2021**	**Trabzonspor 2020-2021**	**Real Madrid 2020-2021**	**Barcelona 2020-2021**	**Juventus 2020-2021**

Lever	1,95 - 1,73	1,38 - 1,26	1,18 - 1,28	1,95 - 1,99	0,62 - 0,66	0,97 - 1,43	0,75 - 0,68
Foreign / Equity	-2,04 - -2,35	-3,6 - - 4,77	-6,5 - - 4,52	-2,4 - -2	1,69 - 1,96	40,8 - -3,28	3,72 - 2,19
Short Term Resource	0,88 - 0,63	0,94 - 0,30	0,56 - 0,34	0,60 - 0,42	0,33 - 0,23	0,65 - 0,78	0,34 - 0,31
Long Term Resource	1,06 - 1,1	0,44 - 0,96	0,62 - 0,93	1,35 - 1,56	0,29 - 0,42	0,31 - 0,64	0,41 - 0,37

When Table 4 and Figure 3 are examined, it is considered normal for the leverage ratio to be around 0.50; It can be said that the ratio of Real Madrid football club follows a normal course. In fact, the period when this rate is on the rise coincides with the beginning of the pandemic period. It can be stated that this trend, in which other football clubs, with the exception of Beşiktaş and Barcelona Football Club, have been financed with foreign resources since 2017, reversed with the effect of the pandemic in the period until 2021.

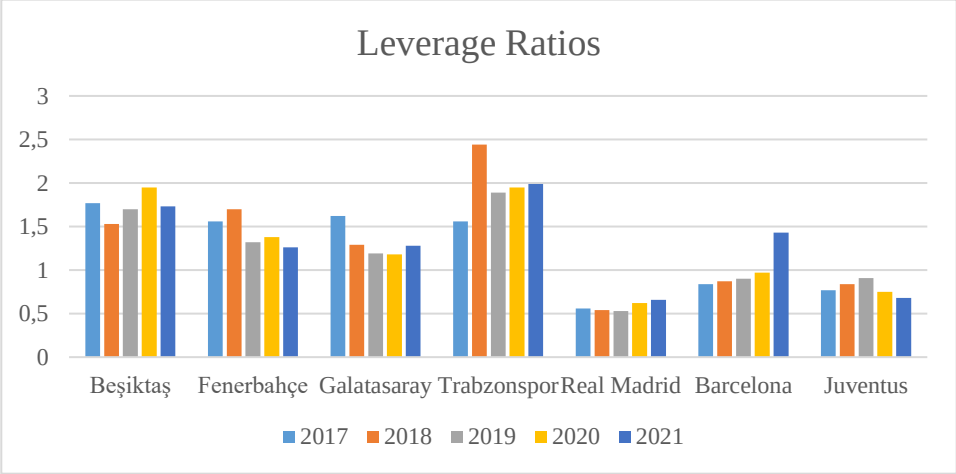

Figure 3. Leverage Ratios of Clubs by Years

When we look at the ratio of foreign resources to own resources in Figure 4, it is seen that the ratio is above 1 and 2 in the UEFA champions league trio. In Turkish football companies, on the other hand, it is seen that the relationship between the equity and foreign resources of the enterprise may be in a difficult situation in the face of the crisis. It is understood from the table that the club that gave the most meaningful result was Real Madrid. The fact that the pandemic period has been effective since 2020 has also affected the financial risk of clubs globally, and as it can be understood from the data in the table, a ratio below or above 1 indicates the presence of financial risk. We can explain this situation as it may cause risky factors in the face of a crisis. Because the ratio of 1 and less than 1 is accepted as an indication that the crisis can be overcome more easily and with less damage (5). We can say that Barcelona and Juventus Sports Clubs have increased to high levels instantly and that there are more funds from third parties than the funds of the partners during the pandemic period.

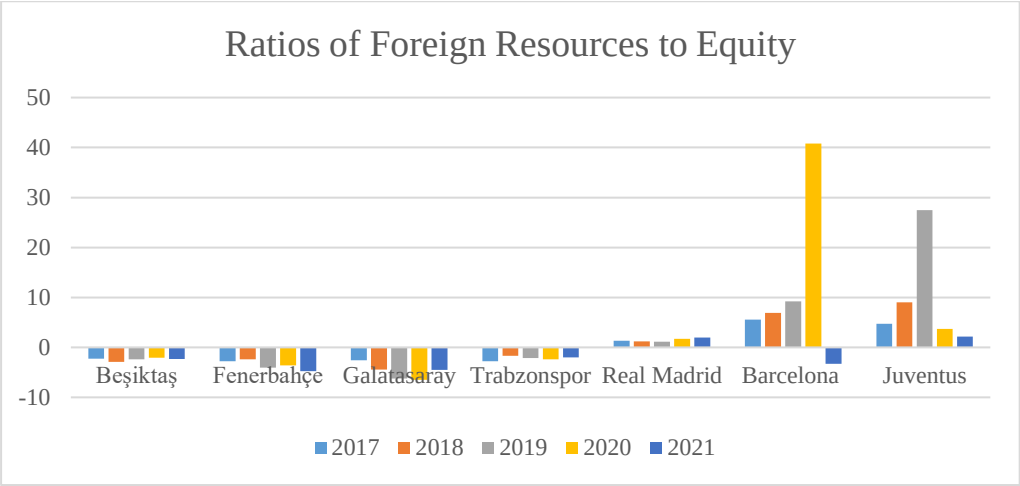

Figure 4. Ratios of Foreign Resources to Equity of Clubs by Years

When we examine the short-term liabilities ratio, the fact that this ratio generally exceeds the level of 0.33 means that a company has very high short-term debt and increases the risk of repayment (5). At the same time, the high level of the ratio is another indicator of negative net working capital. The clubs where this ratio is the best according to the years are Real Madrid and Juventus. In the period when the pandemic was declared in 2020, it is understood from the table that this rate of Turkish football clubs increased economically. However, it is seen from the table that in this process that is customary for 2020, these rates are tried to be reduced for the clubs in 2021 and successful rates are tried to be reached. However, there is a possibility that these short-term debts may also be translated into long-term debts.

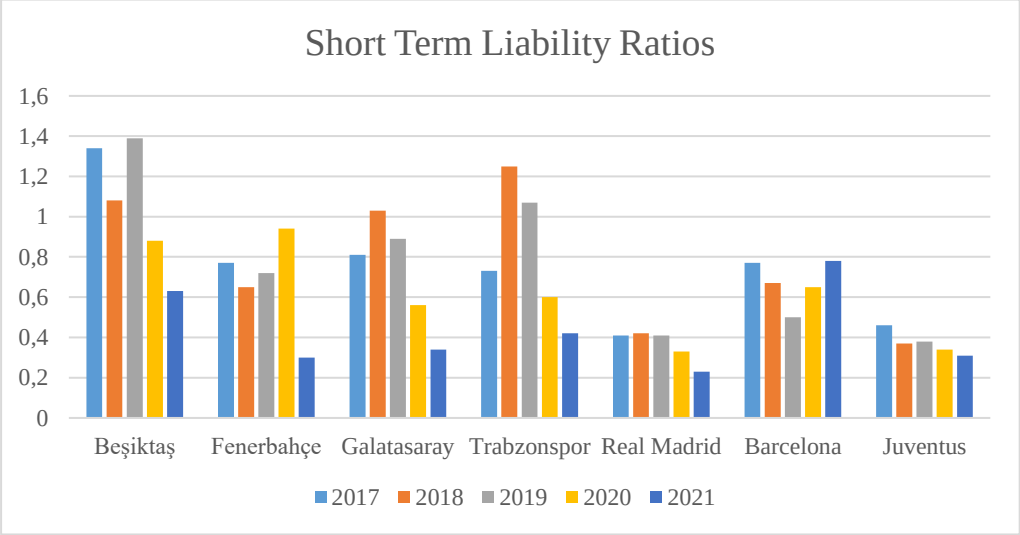

Figure 5. Short-Term Liability Ratios of Clubs by Years

As seen in Figure 6, it can be said for all clubs that there is a great increase in the ratio of long-term foreign resources to resources in all clubs except Juventus Football Club in 2021, and the effect of the pandemic also plays a role in this situation. Based on the data, it is possible to interpret that all of the clubs, except for foreign clubs, which remained low in short-term foreign resources in 2021, switched to long-term borrowing, and therefore, there was a decrease in the ratio of short-term debts. Another reason for the long-term borrowing of Turkish Football Clubs can be expressed as the increase in income losses due to the pandemic and the fact that foreign currency debts are affected by fluctuating exchange rates despite these losses.

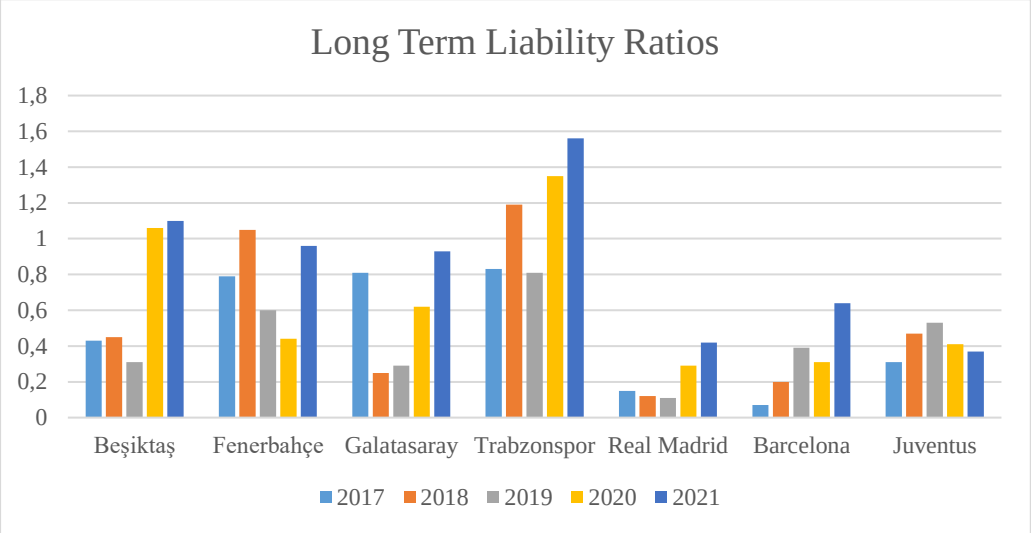

Figure 6. Long-Term Liability Ratios of Clubs by Years

In the long-term debt ratio, it is considered a good situation that the numerical value of the ratio does not exceed 0.16 under normal conditions. If it is above this rate, action can be taken to reduce the long-term foreign resource rate (5). The club that best provided this situation was Real Madrid in 2017, 2018, and 2019. Trabzonspor has the most difficult financial data in terms of long-term foreign resources. In general, the chart shows that the irreducible long-term debt capacity of all clubs has increased over the years and peaked in 2020 and 2021, the pandemic period.

When we look at the Turkish football clubs, it can be said that the economic assets are constantly financed by their own resources, since the ratio of foreign resources to equities is in minus digits according to the data of all years included in the research, and this situation causes loss. At the same time, long-term borrowing added to this situation seems to be a good tool for a temporary period, but it can be stated that it brings extra obligations to the clubs.

CONCLUSION

Looking at the dates of the study, 2017, 2018, and 2019 are years when there is no pandemic, but 2020 and 2021 are the years when there is a closure due to the pandemic both in Turkey and around the world, and there is an economic recession for the sports world. Stadium revenues, one of the revenues that football depends on, completely disappeared in 2020 due to the pandemic. This situation also led to a decrease in the liquidity ratios of the clubs. Except for Barcelona and Fenerbahçe, which are among the clubs included in the research, in 2020, the other clubs brought their current ratios to a balanced level compared to 2019.

The importance of including Turkish football club companies in the study; They are chosen because they have the best financial position for the football industry in Turkey, together with their effective investments by making their assets sustainable. The importance of the other included UEFA 2021 ranking leaders is to observe the ratios that separate the most successful clubs within UEFA, including Turkish football clubs, financially. Considering the financial structure ratios and liquidity ratios of these top 3 clubs that were successful in 2021, in the period of 2017, 2018, 2019, 2020, and 2021, it can be concluded according to the information and analyses obtained from the financial statements that physical success in 2021 brings financial success as well as financial success.

It has also been revealed in the results of the analysis that Real Madrid, which is in the best position in the financial structure ratios revealed and is also the leader of the UEFA 2021, has a financial performance integrated with the sports performance. In other ranking leaders, this ratio is not so bad. There seems to be a good financial performance that almost reflects the ranking. However, it is possible to say that the leverage ratio of the financial structure ratios of the four big football clubs in our country exceeds 1, due to the lack of capital and excessive borrowing for these clubs, and the effect of inflation on the passive structure by looking at the financial statements.

As a result, it can be evaluated that the clearest situation for the clubs included in the analysis should be financial strength for performance and good performance for financial strength. As a result of this comparison, it will be important for the beginning of the income-expenditure balance that Turkish football clubs continue their existence and strengthen the results obtained through ratio analysis, focusing on firm value, seeking solutions in a way that will be least affected by inflation and making sustainable innovations in transfer fees. At the same time, it is seen that the unpreparedness of Turkish Football Clubs during the pandemic period and the uncertainty of their foreign currency debts encourage them to choose long-term borrowing instead of short-term borrowing. However, it is seen from the data and rates that this is a step that reduces the net working capital to negative.

Looking at the general data, it is seen that Beşiktaş Sports Club has the best debt repayment power among Turkish Football Clubs. It is understood from the graphs that the payment difficulties of Fenerbahçe, Galatasaray, and Trabzonspor are close to each other. Since the ratios of these clubs are close to each other in the general graphs, testing different analysis techniques and examining the audit reports will give more accurate results for other clubs since it will not give a definite result about the level of payment difficulties. The most important difference from similar studies in the literature so far is the observation of the pandemic and the selection technique of the clubs involved in the research. Another comment is that Abdurrahim Albayrak, who served as the 2nd President of Galatasaray in the 2018-2021 period before the death of Mustafa Cengiz, the 37th president of Galatasaray, who lost his life on November 28, 2021, during the article study, said that he was happy to pay the debts of Galatasaray in TL. He stated that he had translated it too. As a result of the study, it is seen that Galatasaray differs from Fenerbahçe and Trabzonspor in terms of financial strength in converting its debts to TL. It can be said that the evaluation of Galatasaray's financial performance in the coming years will make a positive difference, as well as the foreign exchange burden in other clubs multiplying the debt.

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