

Comparison of Balance, Reaction Time, Attention and Bmi Values in Individual and Team Sports

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Abstract

In this study, we aimed to investigate static and dynamic balance, reaction time, attention and BMI values at the athletes being in the individual and team sport. 78 individual athletes (karate 17, judo 15, Gymnastics 14, table tennis 12, wrestling 20) and 58 team athletes (handball 23, basketball 13, volleyball 10, football 12) with formal licensed and average ages 13.08 ± 1.36 years were participated as voluntarily. For demographic characteristics, participants have filled in questionnaires and Bass Stick static balance, Y dynamic balance, Nelson hand reaction time and D2 attention test were applied. First, we have applied the Kolmogorov-Smirnov test for normality of the data, the normal distribution is observed and then independent t test was used. In order to see the relationship between data, Pearson's correlation test was applied. The average sporting age of participants was 4.32 ± 1.87 years, height 1.59 ± 0.11 m, body weight 50.18 ± 12.74 kg and per week training time 10.33 ± 4.41 hours. In addition, their BMI values were 19.49 ± 3.10 kg/m² which is in the normal range, i.e., no difference between individual and team athletes was observed. It has been observed that for individual athletes, total number of items is 525.42 ± 108.29 , total number of errors is 454.04 ± 105.86 , concentration performance is 182.14 ± 62.53 , reaction time is 0.29 ± 0.06 sec, static balance is 7.10 ± 4.49 sec, dynamic balance is 208.37 ± 32.20 cm. On the other hand, for team athletes, these values were 500.59 ± 79.70 , 382.31 ± 93.60 , 168.35 ± 56.51 , 0.26 ± 0.05 sec, 5.68 ± 2.67 sec and 187.15 ± 29.99 cm, respectively.

We have found that while age increased the static and dynamic balance increased, but training time increased solely the dynamic balance increased. In addition, when taking into account the static and dynamic balance, it has been observed that the individual athletes were better than the team athletes but for the reaction time was contrary, i.e., team athletes were better than the individual ones.

Keywords: individual and team sports, D2 attention test, Nelson hand reaction test, Y dynamic balance test, Bass stick static balance test

1. Introduction

Sports can be done individually or in teams. It is specialized activities like athletic, technical, psychological, physical and physiological, based on competitive, exhibiting visible results, bringing together communities for general purpose.

There are also many different meanings. Sports is a scientific phenomenon, cooperates with many disciplines that enables the individual to compete his/her physical, cognitive and affective characteristics in the definite rules including performance-based competitive. Sports are divided into subsections in many respects. One of these distinctions is individual and team sports. Individual sports are sports such as athletics and swimming, exhibiting performance which cannot be prevented by the other competitor, and sports such as wrestling, karate and table tennis where the individual tries to beat his opponent according to the rules determined by using the techniques of the sport that is being performed together with the perceptual, cognitive and motor characteristics of the individual. Team sports; these are the sports in which two different teams or groups try to beat the opponent team with the winning conditions (goals, points, etc.) created according to certain rules by using perceptual, cognitive, motor characteristics and techniques of the sports branch being performed. We think that there is a need for publications in which individual attention, balance and reaction properties are investigated

together in the sports of individual and team sports. When these characteristics, everyone has a particular importance, is evaluated together, will be beneficial for individual sports or team sports, especially for training planning.

Because team sports branches have sports competitions involving more than one person, athletes show their performance in certain positions with their task distribution. Although everyone has a common goal in team sports, each team member has a separate task. According to this task, it is inevitable to have different characteristics in the person. Therefore, while some characteristics of team athletes are different from other members of the team (which can shoot better, etc.), some features are expected to be close together (all together fast offense etc.). Individually the fact that a member of the team is very good is not a sufficient factor for success.

In the individual sports branches, the athlete may succeed in the competition with the characteristics he has born and developed further and with the will to exhibit these characteristics. What is expected from the athlete here is that he exhibits his innate abilities and technical characteristics of the sport in the best way. The athlete competes in with himself. To exhibit all the features needed by the sport branches sufficiently and without mistake, and it is the individual athlete's responsibility and the success or failure is directly his own. Many characteristics of individual and team athletes were compared (Ozer & Kılınc, 2011; Salar, Hekim, & Tokgöz, 2012). The comparison of basic motor skills is generally the first studies that come to mind. However, other cognitive and perceptual skills need to be compared. In some studies; it has been stated that there is no doubt that performance in sport is related to cognitive and perceptual skills as well as motor and physical ability, and the importance of the subject has been emphasized (Barlow, Woodman, Gorgulu, & Voyzey, 2016; Schwab & Memmert, 2012). Measuring one's the state of attention is one of them. Attention, dynamic and static balance, reaction speed and the relationship between all sport skills such as individual and team sports to know the differences will also provide us with important information.

Attention includes the process of filtering our perceptions, balancing our various perceptions and adding emotional importance to our perceptions. Attention is the key element of the ability to control thought processes and the ability to concentrate on a task for effective performance in sport (Nideffer, 1993). Attention has a very important role in the performance display in sport. During all sporting activities (regardless of competition or training), attention needs to be maintained to a sufficient level.

Balance is a necessary condition to be able to movement, and is a trait that can be achieved through highly complex processes intertwined (Sirmen, 2008; Tetik, 2013). Balance has been described as "an important factor in the combination of sporting performance and physical fitness in everyday life" (Aksu, 1994). The balance is examined under two headings as static and dynamic. Static balance is defined as the ability to maintain the support base with minimal move, while dynamic balance is the ability to perform a movement while maintaining a position (Cerrah, 2016). Another important issue for balance is the adequacy of proprioceptive senses. Balance is an immutable part of many daily life skills and covers many neuromuscular stages. Balance is achieved by interpreting the stimulation obtained from vestibular, proprioceptive, and visual receivers in the central nervous system, by the harmony of muscles and their sudden responses, and by the arrangement of the body's center of gravity (Brosseau et al., 2005; Hinman, Bennell, Metcalf, & Crossley, 2002). Our body and the position of the extremities are important in maintaining the static-dynamic balance. The position of our body and extremities are important in maintaining static-dynamic balance. Especially during the movement of the body possible wobbles or loss of balance can be prevented with the participation of extremities in the movement.

Reaction time is the time that passes until the first response to these stimuli after a stimulus reaches the body (Karagöz, 2008). It is the time between the first reaction that occurs after the appearance of a sensory, visual or tactile stimulus. Reaction time can be improved by repetitive well-constructed studies. Reaction time is a factor that can affect the result in many aspects of sport.

BMI is the ratio of body weight to height. Its purpose is to inform the person with the most appropriate body weight that should be. It is found by dividing the body weight into the square of the height (kg/m^2). Obesity classification is evaluated according to BMI classification table. Body mass index (BMI), adopted by the World Health Organization in obesity studies, obtained from anthropometric measurements, body weight and height measurements, is a valid standard height-weight index that is easily accessible, applicable to all persons regardless of gender (Ergün, & Erten, 2004; Turkeri, 2014). After the BMI is calculated, it is generally classified as weak, normal weight, overweight and obese.

In our study, no comparison literature was found in which the parameters we measured were taken and evaluated in the same way at once. However, there are studies with some parameters of team athletes or individual athletes

and have been used in comparisons.

2. Method

2.1 Participants

The universe of research is composed of athletes who participate in individual and team sports branches licensed in Adana province. The sample included total 136 athletes 78 individual athletes (karate 17, judo 15, gymnastics 14, table tennis, 12, wrestling 20) and 58 team athletes (handball 23, basketball 13, volleyball 10, football 12) with formal licensed and average ages 13.08 ± 1.36 years were participated as voluntarily. In addition, the participants were height: 1.59 ± 10 m and body weight: 50.17 ± 12.74 kg. Volunteer forms were signed before starting the study. Cukurova University received approval from the Ethics Committee for non-interventional clinical research with decision number 04.09.19/91-68.

In Table 1, The average age of the participants was 13.08 ± 1.36 years, sports age was 4.32 ± 1.87 years, body weight was 50.18 ± 12.74 kg, their height was 1.59 ± 0.11 m and they practiced 10.33 ± 4.41 hours per week. When the BMI values were taken into consideration, the participants were in the 19.49 ± 3.10 kg/m² normal range.

Table 1. Demographic characteristics of individual and team athletes

	Individual athletes (n = 78) $\bar{x} \pm sd$	Team athletes (n = 58) $\bar{x} \pm sd$	All athletes (n = 136) $\bar{x} \pm sd$
Age (year)	12.95 ± 1.57	13.26 ± 1.00	13.08 ± 1.36
Height (m)	1.56 ± 0.11	1.64 ± 0.08	1.59 ± 0.11
Body Weight (kg)	47.71 ± 13.14	53.50 ± 11.47	50.18 ± 12.74
BMI	19.41 ± 3.38	19.60 ± 2.70	19.49 ± 3.10
Sport Age (year)	4.02 ± 1.78	4.72 ± 1.93	4.32 ± 1.87
Weekly Training Time	11.06 ± 4.92	9.36 ± 3.41	10.33 ± 4.41

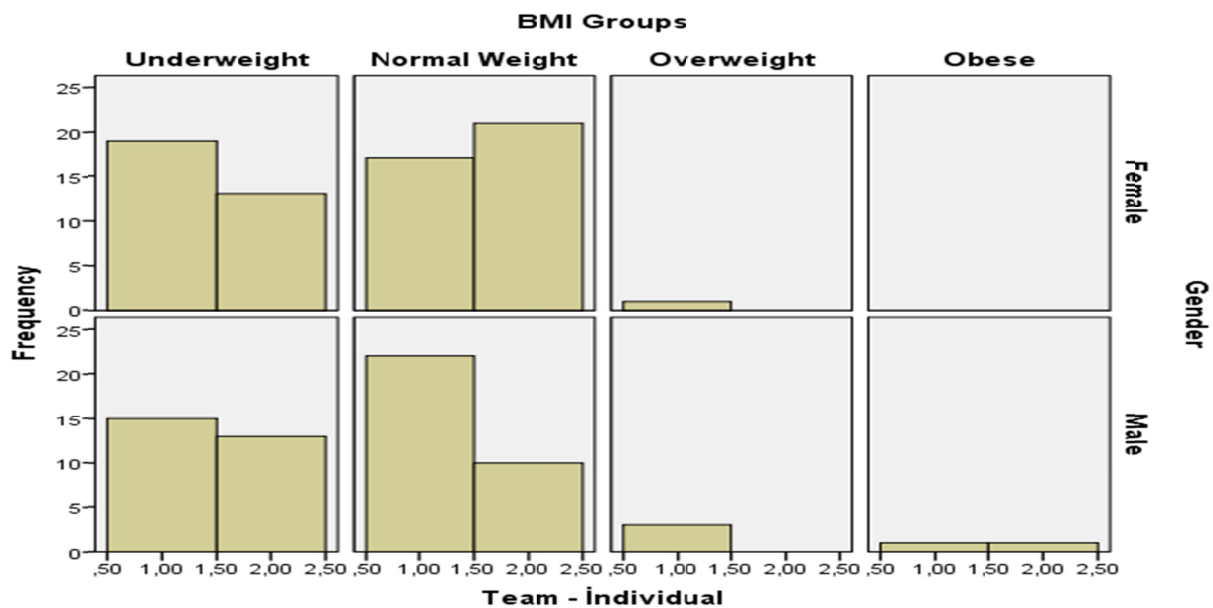


Figure 1. Graph of BMI grouping and individual and team by gender of athletes

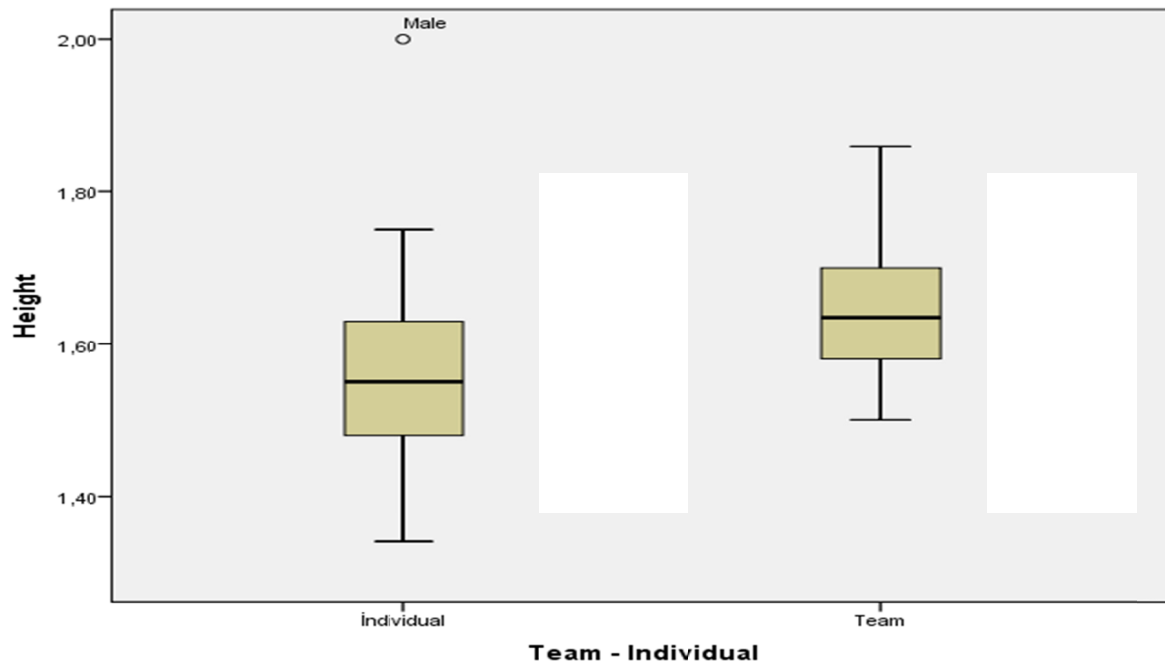


Figure 2. Graph of height and individual-team

2.2 Demographic Characteristics

A questionnaire form was used to determine demographic characteristics (gender, age, height, weight, sports branch, sports year, how many hours of training per week).

2.3 Data Collection Tools

Bass Stick Static Balance Test, Nelson Hand Reaction Test, Y Dynamic Balance Test, D2 Attention Test, BMI (Body Mass Index) and Personal Information Form were used in the study in order to collect data.

2.3.1 Bass Stick Static Balance Test

Static balance measurements were performed by Bass Stick Lengthwise Test method (2.5*2.5*30.5cm) using wooden stick. The subjects were instructed to stand hands free on the bare foot for a long time on the dominant feet and to touch the fixed leg with the leg of the unstable leg and the subjects were allowed to perform two trials. The stopwatch is activated as soon as the balance position is taken, and the stopwatch is stopped when the subject loses his or her balance or touches the ground with his or her bent foot (Turkeri, 2014).

2.3.2 Nelson Hand Reaction Test

While the subject is sitting on the chair, the forearm and hand rests on the table in a comfortable way. The person is asked to prepare 8–10 cm thumb and index finger tips on the outside of the table so that the upper parts of the thumb and index finger are parallel to each other. The Test manager held the ruler so that it was between the subject's head and forefingers. The subject was asked to look directly at the midpoint of the ruler and was told to grab the ruler with the thumb and forefingers as soon as the ruler was released. When the ruler was left, the line of the ruler on the upper edge of the thumb, where the subject captured the ruler, was read and recorded. Measurements were repeated 20 times with the best 5 and worst 5 measurement degrees removed, with the average of the remaining 10 degrees recorded in cm (Tamer, 2000).

$$\text{Reaction Time} = \sqrt{2 * \text{ruler struck distance (cm)} / \text{gravity connected speed (sec)}}$$

2.3.3 Y Dynamic Balance Test

Dynamic balance measurements were made using Y dynamic balance test. The validity and reliability of the test were determined by Plisky et al., The ICC range was 0.85–0.01 and the interrater range 0.99–1.00. The subjects are in a stable balance with their feet naked in their sportswear and their feet in the center point of the Y balance test assembly, with the dominant foot in the center point. The other toe then pushes the blocks with the toe (rotating the foot to the stationary stop point each time without touching the floor), maintaining its fixed position

in the anterior (0°), posteromedial (45°) and posterolateral (45°) directions. The test is repeated 3 times in all three directions (anterior, posteromedial, posterolateral) and averaged and recorded in centimeter.

2.3.4 D2 Attention Test

D2 attention test was used to determine the attention levels of the participants. This test was developed by Brickenkamp (1962). The D2 test consists of 14 lines and 47 marked letters. To evaluate mental concentration and selective attention (Yayci, 2013). Validity and reliability of D2 test on athletes and sedentary has been studied in Turkey (Yayci, 2013; Bektaş, 2013). As a result of the study on athletes; It was emphasized that Cronbach's Alpha value was determined as Total Item (0.95), total item-error (0.96) and concentration score (0.96). According to the study results of Yayci (2013), the D2 attention test on sedentary was reported to have Cronbach's Alpha value as total substance (0.831), total item-error (0.831), concentration score (0.877). It is reported that the D2 test can be applied to people aged 9-60 years, individually or in groups (Çağlar & Koruç, 2006; Yayci, 2013; Bektas, 2013).



Figure 3. D2 test example

D2 Attention Test Application Protocol: The test, which consists of 14 lines, has the letters “p” and “d” on each line. However, there are 16 different signed letters with a different number of comma marks above or below them. The participant is asked to mark (/) on the correct letter during the application by considering the following sample letters. Other letters and signs should be ignored. For each row, the participant is allowed 20 seconds. It is expected to make both fastly and accurately marking within 20 seconds. In our study, the test was conducted in small groups of 6 persons, at the same time of day and in a quiet environment.

2.3.5 BMI (Body Mass Index)

Body Mass Index (BMI) is calculated by dividing body weight by the square of the height (kg/m²). body mass index assessment was performed according to the abbreviated evaluation table given in Table 2 published by the Turkish Ministry of Health.

Table 2. BMI evaluation table

<18.5	kg/m ² below	Underweight
18.5–24.9	kg/m ² between	Normal Weight
25–29.9	kg/m ² between	Overweight
30–39.9	kg/m ² between	Obese

2.4 Statistical Analysis

The statistical analysis SPSS 22.0 software package was used. For descriptive statistics, mean ± standard deviation values were calculated. Kolmogorov-Smirnow test was performed for homogeneity of variances. Parametric tests were used because of the normal distribution of variances. For the differences between individual and team athletes as well as comparisons between male and female athletes, independent sample t test was used. Pearson correlation test was used to determine the relationships between some parameters.

3. Results

The results of the statistical analysis of the obtained data are shown in Tables 3, 4, 5, 6, 7, 8 and 9. In Table 3 shows the distribution of sports branches according to the genders of individual and team athletes. It was observed that individual athletes (78 people 57.4%) and team athletes (58 people 42.6%). When gender was examined, it was found that female (71 people 52.2%) and male (65 people 47.8%).

Table 3. Distribution of Sport Branches by Gender of Individual and Team Athletes

Branches	Individual sports (n = 78) 57.4%					Team sports (n = 58) 42.6%				
	Judo 11.0%	Gymnastic 10.3%	Karate 12.5%	Wrestling 14.7%	Table Tennis 8.8%	Basketball 9.6%	Football 8.8%	Volleyball 7.4%	Handball 16.9%	Total
Female 52.2%	7	14	13	0	3	1	0	10	23	71
Male 47.8%	8	0	4	20	9	12	12	0	0	65
Total	15	14	17	20	12	13	12	10	23	136

In Table 4, the BMI values of individual and team athletes showed that individual athletes (43.6%) were weak and (50.0%) were normal weight values, while team athletes (44.8%) were weak and (53.4%) were normal weight values. Overall, overweight (2.9%) and obese (1.5%) were found to be very low in all participants.

Table 4. BMI values classification of individual and team athletes

	Individual Athletes		Team Athletes		All Athletes	
	n	%	n	%	n	%
Underweight	34	43.6	26	44.8	60	44.1
Normal Weight	39	50.0	31	53.4	70	51.5
Overweight	4	5.1	-	-	4	2.9
Obese	1	1.3	1	1.7	2	1.5
Total	78	100.0	58	100.0	136	100.0

Table 5 shows the comparison of static balance, dynamic balance and reaction time values of individual and team athletes. Static balance values ($p = 0.02$) and dynamic balance values ($p = 0.00$) of individual athletes were higher than team athletes. Reaction time values ($p = 0.00$) of team athletes were found to be better than individual athletes.

Table 5. Comparison of static balance, dynamic balance and reaction time values of individual and team athletes

Parameters	Group	n	\bar{x}	sd	t	p
Static Balance (sec)	Individual	72	7.10	4.49	2.25	0.02*
	Team	58	5.68	2.67		
Dynamic Balance (cm)	Individual	78	208.37	32.20	3.91	0.00*
	Team	58	187.15	29.99		
Reaction Time	Individual	72	0.29	0.06	3.19	0.00*
	Team	57	0.26	0.05		

Note. * $p \leq 0.05$.

Table 6 shows the comparison of static balance, dynamic balance and reaction time values according to the gender of the participants. While there was no difference between male and female in static balance values, significant difference was found between dynamic balance values ($p = 0.00$) and reaction time values ($p = 0.00$) in favor of male athletes.

Table 6. Comparison of participants Bass stick static balance, Y dynamic balance, reaction and BMI values by gender

Parameters	Group	n	\bar{x}	sd	t	p
Static Balance(sec)	Female	67	6.71	4.19	0.74	0.46
	Male	63	6.21	3.44		
Dynamic Balance(cm)	Female	71	190.40	24.01	-3.44	0.00*
	Male	65	209.06	38.31		
Reaction Time (sec)	Female	66	0.29	0.06	3.50	0.00*
	Male	63	0.26	0.05		

Note. * $p \leq 0.05$.

Table 7 shows the comparison of D2 attention test measurement parameters according to individual and team athletes. The total item-error values of individual athletes were significantly higher ($p = 0.00$) than team athletes. The lower total item error means that athletes have a better attention. Total item values ($p = 0.13$) and concentration score values ($p = 0.19$) were similar in individual and team athletes.

Table 7. Comparison of total item, total item-error and concentration score values of D2 attention test of individual and team athletes

Parameters	Group	n	\bar{x}	sd	t	p
Total Item	Individual	78	525.42	108.29	1.54	0.13
	Team	58	500.59	79.70		
Total Item Error	Individual	78	454.04	105.86	4.10	0.00*
	Team	58	382.31	93.60		
Concentration Score	Individual	78	182.14	62.53	1.32	0.19
	Team	58	168.35	56.51		

Note. * $p \leq 0.05$.

Table 8 shows the comparison of the total item, total item-error and concentration score values of D2 attention test according to the gender of the participants. There was no gender difference between D2 caution test values.

Table 8. Individual and team athletes D2 attention test, total item, total item-error and the concentration score value comparison by gender

Parameters	Group	n	\bar{x}	sd	t	p
Total Item	Female	71	502.17	102.48	-1.59	0.11
	Male	65	528.66	90.70		
Total Item-Error	Female	71	407.85	110.35	-1.80	0.07
	Male	65	440.49	100.37		
Concentration Score	Female	71	178.01	65.05	0.35	0.72
	Male	65	174.34	54.88		

Table 9 shows the relationship between age, sport age, weekly training time, static balance, dynamic balance and reaction times of all participants. There was a significant but low negative relationship between age and reaction time ($p = 0.05$, $r = -0.17$), and a significant but low correlation between dynamic balance and static balance ($p = 0.00$, $r = 0.26$).

Table 9. The relationship between age, sport age and weekly training hours of all athletes and static balance, dynamic balance and reaction time values

n=136	Static Balance		Dynamic Balance		Reaction Time	
	r	p	r	p	r	p
Age	0.172*	0.05*	0.214*	0.01*	-0.168	0.06
Sport Age	-0.004	0.96	0.097	0.26	-0.073	0.41
Weekly Training Time	0.069	0.37	0.471*	0.00*	-0.144	0.16

Note. * $p \leq 0.05$.

4. Discussion and Conclusion

It has been demonstrated in many studies that individual and team athletes have different motoric characteristics (Ozer & Kilinc, 2011; Salar, Hekim, & Tokgöz, 2012). However, other cognitive and perceptual skills need to be examined together with motoric skills. There are studies indicating that sport performance is related to cognitive and perceptual skills as well as motor and physical ability (Barlow et al., 2016; Schwab & Memmert, 2012). The aim of this study is to investigate static balance, dynamic balance, reaction time, attention and BMI values of athletes competing in individual and team sports branches. We have investigated totally 136 persons in which 71 females (52.2%), 65 males (47.8%) and 78 athletes (57.4%) individual athletes (15 judo, 14 gymnastics, 20 wrestling, 12 table tennis, 17 karate) and 58 ones (42.6%) team sport (10 volleyball, 12 football, 13 basketball, 23 handball), between licensed athletes, actively participating in competition. The mean age and sport age of

athletes were found to be 13.08 ± 1.36 and 4.32 ± 1.87 years, respectively. The mean height and body weight of athletes were 1.59 ± 0.11 , and 50.18 ± 12.74 kg, respectively. In 2018, Ince and Yildirim has obtained the mean age and sport age of the handball and hockey athletes as 13.53 ± 0.59 and 2.85 ± 0.75 years, respectively, in agreement with the values observed in our study. In this study, the mean BMI values of the athletes were found as 19.49 ± 3.10 of kg/m^2 . In a study related to balance and flexibility, Hazar and Tasmektepligil (2008) has found the BMI value as 18.17 ± 2.91 kg/m^2 for the children at the age of 11.12 ± 0.96 years. In another study performed on the 13.8 ± 1.7 years old, Arabaci (2008) has found the BMI values as 19.6 ± 2.3 kg/m^2 which is in agreement with the values obtained in the frame work of this study.

When taking into account the relationship between age, sport age, weekly training time and static balance, dynamic balance, reaction time, it was found significant values between age and static balance as $r = 0.172$ and $p = 0.05$. On the other hand, it was found low but significant relationship between age and dynamic balance as $r = 0.214$ and $p = 0.01$. Additionally, moderate significant relationship was observed as $r = 0.471$ and $p = 0.00$, between weekly training time and dynamic balance. According to our findings, it can be argued that static and dynamic balance is better with increasing age, and dynamic balance is better with increasing weekly training hours.

In our study, Bass Stick static balance values were found as 7.10 ± 4.48 sec in individual athletes and 5.67 ± 2.67 sec in team athletes. Reed et al. (2004) has found the static balance value as 28.12 ± 17.49 second for the experiment performed on the students of secondary school which is above our values. Turkeri (2014) has found the value of Bass Stick static balance as 18.93 ± 12.30 sec in his study on university students. It can be argued that the high mean values of student age (22.7 ± 2.10 years) may reveal the difference in measurements. When the Y dynamic balance total scores were examined, it was found that individual athletes had 208.37 ± 32.20 cm and 187.14 ± 29.98 cm for team athletes.

Vural (2016) in a study conducted on male basketball players aged 17.6 ± 0.5 years, Y total score of dynamic balance has found as 252.42 ± 6.89 cm. Shaffer et al. (2013) found that the Y dynamic balance total score was 239.3 ± 21.5 cm for athletes whose age was 25.2 ± 3.8 years. The reason for the low Y dynamic balance values obtained in our study may be due to the smaller age group.

Erkmen et al. (2007) compared the balance performances of athletes in different branches and found that the dynamic balance performance of gymnastics athletes was better than football players, and their static and dynamic balance performances were better than basketball athletes and its value was significant ($p \leq 0.05$). In the present study, when it is compared the values of $p = 0.02$ and 0.00 , for static and dynamic balances, respectively, significant difference was found in favor of individual athletes. The reason for the difference may be due to the athletes in the individual sports branches that we take measurements in our study, move by short steps without running in the competition and technical trainings; use of their bodies more steadily on the ground without much jumping and technical applications in very narrow area (distance is very short for the technical applications of karate, wrestling, table tennis, judo sports) and usage of different training floor (polyurethane and rubber cushion) comparison to team sports.

In the present study, in D2 attention test comparison between individual and team athletes, no significant difference was found in total item and concentration scores. In terms of total item error values, $p = 0.00$ significant difference was found in favor of team sports. This result shows that team athletes made fewer errors in the D2 attention test. In team sports, the reason of less mistakes in their attention made by athletes may be due to the continuously following of their team mates and competing athletes during offense and defense situations. Thus, we can say that the target of keeping team performance constantly high by increasing attention gain may have improved attention.

In our study, reaction time measurements were found as 0.29 ± 0.06 sec in individual athletes and 0.26 ± 0.05 sec in team athletes. Menevse (2011) found that the reaction time in handball athletes whose ages were 22.28 ± 2.05 years was 0.25 ± 0.01 . This result is close to our results obtained for team sports, the small difference may be due to the age difference of the measurements group. The findings were generally consistent with the reaction time findings with the results obtained in the frame work of this measurement. In our study, significant $p = 0.00$ difference was found in favor of team athletes in terms of reaction time between individual and team athletes, and a significant $p = 0.00$ difference was found in favor of male athletes between male and female.

Koc et al. (2006) found in their study performed on football and tennis athletes that football players have better reaction time than tennis ones ($p = 0.01$). In the same study, it was found that male had better right-hand reaction time than female athletes ($p = 0.05$), and team athletes had better reaction times than individual athletes, i.e., football players are better than wrestlers, handball players are better than athletics athletes ($p \leq 0.05$). Arabaci

(2008) found a significant difference in male and female athletes under the age of 15 (13.8 ± 1.7 years) in favor of male ($p = 0.00$). These findings coincide with the results obtained in our study. Accordingly, it can be said that male athletes have better reaction time than female athletes and team athletes have better reaction time than individual athletes.

As a result; it was found that dynamic balance increased with increasing training time, static and dynamic balance increased with increasing age, static and dynamic balance status of individual athletes were better than team athletes, and finally, reaction time and attention of team athletes were better than individual athletes.

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Note

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