Comparison between lateralization levels of athletes who do exercises actively and their dynamic and static balance and some physical features

[1]Dr. Ahmet Gökhan YAZICI, [2]Dr. Hüseyin EROĞLU
1.Department of Physical Education and Sport Science, Faculty of Kazım Karabekir, Ataturk University, Erzurum, Turkey, agokhanyazici@hotmail.com
2.Department of Physical Education and Sport Science, Sütçü İmam University, Kahramanmaraş, Turkey
eroglu1@gmail.com

Abstract: Aim: It is intended to search whether hemispheric differences of athletes who are active in sports lead to difference between dynamic, static balance levels which are sensorial and physical factors and some anthropometric features. **Material and Method:** 98 athletes doing exercises at least two hours at least for four days were included in study. 44 of them are right handed, 41 are left handed, and 12 are both handed. Dynamic and static balance levels, anthropometric features, anaerobic powers are evaluated before and after a thirty second Anaerobic Test of Wingate Cycle Ergometer. Collected data were analysed by SPSS 20 for Windows package. **Results:** No important difference was found between lateralization levels of right handed, left handed, both handed athletes doing exercises actively and dynamic and static levels and some anthropometric features. **Conclusion:** It was concluded that both handed are advantageous in balance, fatigue is not effective as it is accustomed, fatigue affects static balance, there is no difference between left handed athletes and right handed athletes.
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1. Introduction

The word preferred is subjected to one thing is better than other one, superior or an important thing, predilection, dominant and high potential (as an adjective), independent, penetrative, better than another one (as a noun), the independence of something and or achieving the element of thinking in this regard. In one hand, the meaning of the preference can be related to laterality, too. It is obvious that to achieve a specific function such as handedness, bipedality, wearing glass a particular function is defined. The hemispheric laterality reflects the diagnosis of public tools such as bipedality, wearing glasses and hearing aid.

There are anatomical or functional differences between the two hemispheres of the brain in terms of claw, cerebral lateralization; there is also lateralization of some of the limbs in our body and organs and the brain is more complex dominant in compare to the dominance of hemispheres and can be expressed as the level of the anatomical and functional lateralization in this regard. People often using hands or feet are susceptible to prefer one over other. The predisposition fundamental of the anatomy and social infrastructure is still in question. The most societies come to choose the right hand and foot and the average 85-90% of the world population are right-handed people and about 30% of them are two-handed; this percentage goes to 65% while the left-handed people are only about 5% in this regard. In humans oral (verbal) function is subjected to the left hemisphere of the brain, non-verbal and spatial functions are related to the sphere of the right half of the brain as the most dominant factors. The left hemisphere is strongly centralized on the features of oratory; literature etc. but the capabilities of the right hemisphere is decisive for the visual capabilities such as geometry images. The dominant hemisphere is related to the directed-hand but the other hand applying the above-mentioned functions that provide superior skill. Balance and posture are closely related concepts but they are not the same things; these are encompassing together.

Balance is mainly related to the coordination of muscle activity. The different parts of the body and the frequent effective movements give information in the sensory system but there exist body awareness (proprioception) system in this regard. The sense of proprioception and neuromuscular systems are to coordinate the movement due to the feeling and again it makes the balance with foot control and coordination skills as well as body's ability for handling the dynamic and static cases in this case. This feature of sport athletes such as performance is roughly concerned; the center of gravity of the body in the face of changing circumstances and to maintain the current developmental effects in terms of minimizing the risk of fall and injuries are also important factors. Also, it contains a unique equilibrium level of each branch of sport. The opposite effects of dynamic and static movements are the most essential achievements of many athletes in order to maintain the proper body position and their skill scale as well; and this scale, balance and athletic ability can also lead to discrepancies among athletes in terms of performance and skill. The main purpose of the study is to keep athletes active at sport life; hemispheric differences and durability, left-handedness and two-handedness levels, achievements, performance, capability and skills are important factors in sensory and physical levels and some anthropometric characteristics of dynamic and static balance were to investigate whether caused by a difference or no?.

2. Materials and methods

Ataturk university graduate institute of health dated in 31-12-2010; it is dated in 06-01-20 with the approval of at least 4 days a week, 98 male athletes who exercise at least 2hr a day have been taken up in this research. Athletes participating in the study were to determine hand preference by the index Oldfield (Edinburg Handedness Inventory) with laterality test. After the test the dominant right hand of 44 athletes participating in the study were carried out as following: age= 21.4±3.4 years, sport experience= 8.8±3.6 years, body weight= 70.8±10.4kg, height= 176.9±5.4cm; 41 of these athletes were left handed dominantly: age= 21.1±2.8 year, sport experience= 8.3±3.8 years, body weight= 68.4±9.5kg, height= 176.1±6.2 cm and 12 of them were also two-handed: age= 22.1±2.9year, sport experience= 6.6±5.1 year, body weight= 70.1±16.1kg, height= 173.6±7.1cm.

Anthropometric characteristics of the study group, anaerobic power, 30 second Wingate anaerobic cycle ergo meter test were measured before and after the dynamic and static balance.

The following measurements were found in the research:

Length measurements of Holtain floating with caliper 1 mm accuracy have been read. Values of height and weight were obtained according to the length of the body weight distribution describing the "Body Mass Index" (BMI). BMI = body weight (kg)/ height (m) 2 Harpooned skin fold measurements, Large and Holtain types, with the help of a skin fold caliper is called the triceps, sub scapular, Supraspinale, Femur, including five regions. Environmental measurements with a tape measure extended Biceps, strained biceps, calf circumference was measured in the three regions. Diameter of the humorous with a set of anthropometric measurements Holtain brand Epicondyle, Epicondyle diameter of the femur was measured in the two regions. According to Sloan and Weir formula for men, body fat percentage, body density (gm / ml) = 1.1043 - (0.00133 x femur skinfold) - (0.00131 x sub scapular skinfold), Body Fat Percentage (in %) = (4.57/density - 4.142) x 100. Formulas were used to determine the regression equation are as following: **Endomorphs** = -0.7182 +0.1451 (X) - 0.00068 (X^2) + 0.0000014 (X^3), X = Triceps + Sub scapular skinfold. + Supra spinal skinfold. Endomorphic for height correction 170.18/height coefficient of total skin fold thickness multiplied by the act is performed. **Mesomorphic** = [(0.858 x humorous epicondyle diameter)+(0.601 x femur epicondyle diameter)+(0.188 x (biceps circumference-triceps skinfold)) + (0.161 x (calf circumference-calf skinfold))] - (L x 0.131) + 4.50, **Ectomorph** = HWR x 0.732 to 28.58, Height Weight Ratio (HWR) = Length (mm)/3 √ body weight, Pondera index 40.75 from the small, 38.25 is greater than the following formula is used : (HWR x 0.463)-17.63 Pondera index 38.25 is equal to or smaller than the result value 0.1 is added (HWR 0.463) - 17.63+0.1.

Monark 894E Wingate anaerobic power and anaerobic power test on a cycle ergo meter was done on legs. Stability tests were performed before and after a 30-second Wingate anaerobic power test. Balance means of testing a new version of stabilometer CAT 2000 (OEM Medical, Carlsbad, California, USA) was performed using the balance system. First, when the balance rested athletes were measured, then after 30 seconds was Wingate anaerobic power test was achieved. The test protocol was performed using CAT 2000 User guide. The obtained data were analyzed by SPSS 20 for Windows package. All the data obtained from the minimum, maximum and standard deviation values were calculated. Skewness test was used to test data is normality. Normally distributed data, the difference between groups was determined by one way ANOVAs test. Kruskal-Wallis test for normal distribution data were compared with the difference between the two groups. Equilibrium values obtained before and after exercise normally distributed were compared with the Wilcoxon Signed Ranks test. At the relationship between the data measured by the Pearson correlation, the significance level of 0.01 and 0:05 were obtained.

3. Results

Table 1: ANOVA and Mean Values of Normally Distributed Working Groups

		X	SS		Sum of Squares	df	Mean Square	F	P
Age	Right handed n:44	21.39	3.37	Between group	9.644	2	4.822	.506	.605
	Left handed n:41	21.07	2.80	Within group	896.129	94	9.533		
	Two handed n:12	22.08	2.94	Total	905.773	96			
HRBE (atım/min)	Right handed n:44	70.72	8.25	Between group	281.502	2	140.751	1.855	.162
	Left handed n:41	73.83	9.86	Within group	7055.456	93	75.865		
	Two handed n:12	69.50	5.32	Total	7336.958	95			
HRAE (atım/ min)	Right handed n:44	185.35	10.93	Between group	24.036	2	12.018	.109	.897
	Left handed n:41	186.39	8.91	Within group	9678.997	88	109.989		
	Two handed n:12	185.33	13.49	Total	9703.033	90			
Height (cm)	Right handed n:44	176.93	5.39	Between group	106.188	2	53.094	1.501	.228
	Left handed n:41	176.07	6.17	Within group	3324.493	94	35.367		
	Two handed n:12	173.58	7.08	Total	3430.680	96			
Meso	Right handed n:44	3.04	1.22	Between group	3.105	2	1.552	.998	.372
	Left handed n:41	2.92	1.35	Within group	146.137	94	1.555		
	Two handed n:12	3.50	.96	Total	149.242	96			
Ecto	Right handed n:44	2.89	1.24	Between group	2.881	2	1.441	1.147	.322
	Left handed n:41	3.07	.99	Within group	118.064	94	1.256		
	Two handed n:12	2.52	1.04	Total	120.945	96			
MAP	Right handed n:44	696.18	135.31	Between group	16877.083	2	8438.542	.521	.596
	Left handed n:41	685.47	100.28	Within group	1458302.287	90	16203.359		
	Two handed n:12	728.20	174.19	Total	1475179.370	92			
A	Right handed n:44	515.91	104.43	Between group	6959.109	2	3479.555	.378	.687
	Left handed n:41	500.72	73.90	Within group	829096.080	90	9212.179		
	Two handed n:12	523.19	127.87	Total	836055.189	92			
MAP	Right handed n:44	262.87	99.10	Between group	11503.887	2	5751.944	.576	.564
	Left handed n:41	239.86	104.13	Within group	838876.282	84	9986.622		
	Two handed n:12	239.33	84.67	Total	850380.169	86			
PR	Right handed n:44	447.44	129.95	Between group	64598.732	2	32299.366	1.707	.187
	Left handed n:41	459.48	128.83	Within group	1702660.245	90	18918.447		
	Two handed n:12	530.20	185.84	Total	1767258.977	92			

HRBE = heart rate before exercise, HRAE = heart rate after exercise, Meso = Mesomorph, Ecto = Ectomorph, MAP = Maximum anaerobic power, AP=anaerobic power, A = Average, MAP = Minimum anaerobic power, PR = power reduction.

Table 1: From a right-handed, left-handed, two-handed users, have not found any significant differences between the values ($p > 0.05$)

Table 2: ANOVA and Mean Values of Normally Distributed Dynamic Stability differences of working group

		X	SS		KT	SD	KO	F	P
CDED	Right handed n:44	25.10	370.13	Between group	170977.344	2	85488.672	.506	.605
	Left handed n:41	-61.85	461.63	Within group	1.487E7	88	169028.964		
	Two handed n:12	-62.70	346.99	total	1.505E7	90			
ACDED	Right handed n:44	90.53	521.27	Between group	126388.032	2	63194.016	.227	.797
	Left handed n:41	10.92	553.20	Within group	2.390E7	86	277857.940		
	Two handed n:12	39.30	430.68	total	2.402E7	88			

* p <0.05, ** p <0.01 CDED = Clockwise dynamic equilibrium difference, ACDED = anti-clockwise dynamic equilibrium difference

There is no significant difference between groups and dynamic balance (P> 0.05). However, the balance of fatigue negatively found in CDED unchanged and both hands are adversely affected. Negative values appear to have been modified the values of all groups in ACDED balance. The affect of the dynamic balance of action can be due to the results of fatigue.

Table 3: Kruskal-Wallis and Mean Values of the Working Group with a normal distribution

		X	SS	X^2
SE (yrs)	Right handed n:44	8.8409	3.62128	4.087
	Left handed n:41	8.2683	3.84724	
	Two handed n:12	6.5833	5.05350	
BW (kg)	Right handed n:44	70.7955	10.42934	2.226
	Left handed n:41	68.4146	9.48940	
	Two handed n:12	70.0833	16.12710	
Endo	Right handed n:44	3.1302	1.62409	0.849
	Left handed n:41	2.9400	1.07733	
	Two handed n:12	2.7848	1.47089	
BW%	Right handed n:44	11.1520	4.29839	1.762
	Left handed n:41	11.2197	3.76402	
	Two handed n:12	10.4343	5.44125	
BMI	Right handed n:44	22.4930	2.83863	1.412
	Left handed n:41	21.9778	2.18476	
	Two handed n:12	23.0083	3.33643	

* p <0.05, ** p <0:01 SE=Sport experience, BW=Body weight, Endo = endomorph, BF% = body fat percentage, BMI=body mass index.

When we look at Table 3, it shows no any difference significantly (p> 0.05).

Table 4: Values of the Working Group Balance, Kruskal-Wallis and the average normal distribution

		X	SS	X^2
SEBE	Right handed n:44	1011.4878	349.09856	3.877
	Left handed n:41	923.8500	500.14708	
	Two handed n:12	841.4000	281.92245	
SEAE	Right handed n:44	1300.2500	461.62765	5.580
	Left handed n:41	1334.8500	449.42787	
	Two handed n:12	1007.7000	347.14008	
ESECBE	Right handed n:44	2436.5122	591.79055	1.663
	Left handed n:41	2563.9000	577.99937	
	Two handed n:12	2420.5455	849.49578	
DEACBE	Right handed n:44	2326.7000	600.25833	2.935
	Left handed n:41	2522.3000	685.20561	
	Two handed n:12	2231.9000	745.53492	
DECAE	Right handed n:44	2411.4146	600.88339	2.613
	Left handed n:41	2613.9756	669.24732	
	Two handed n:12	2367.2000	828.16488	
DEACAE	Right handed n:44	2236.1750	606.95498	3.736
	Left handed n:41	2505.3500	636.35559	
	Two handed n:12	2394.0000	812.50058	
DSE	Right handed n:44	-285.1500	401.72880	5.140
	Left handed n:41	-411.0000	406.72602	
	Two-handed n:12	-166.3000	316.20213	

* $p < 0.05$, ** $p < 0.01$ SEBE=static equilibrium before exercise, SEAE=static equilibrium after exercise, ESECBE= static equilibrium clockwise before exercise, DEACBE=dynamic equilibrium anti-clockwise direction before exercise, DECAE=dynamic equilibrium clockwise after exercise, DEACAE= dynamic equilibrium anti-clockwise direction after exercise, DSE=difference in static equilibrium.

Table 4 shows that no significant difference found between Referring to equilibrium values ($p > 0.05$). However, users of both hands show the balance in terms of mean score averages; right-handed and left-handed with a mean score appears to be lower than the equilibrium. This is both are better than others indicating the balance of the users hand. According to this result, the following can be said: The balance of right-handed and left-handed users is better than in terms of both hands are balanced. Looking at the average of the values of right-handed and left-handed balance, in terms of SEBE is better than left-handed, so it can be said that it is better than others in terms of the right-handed. When we look at the values of the DSE, all three groups negatively were affected by fatigue and static balance is more affected by left-handed people.

Table 5: The Participation of pure right-handed people in Compare to Balance Before and After Exercise in the study

N=44		X	SS	z
SD	Post exercise	1011.4878	349.09856	3.938**
	Pre exercise	1300.2500	461.62765	
CDB	Post exercise	2436.5122	591.79055	0.473
	Post exercise	2411.4146	600.88339	
ACDE	Pre exercise	2326.7000	600.25833	0.935
	Post exercise	2236.1750	606.95498	

* $p < 0.05$, ** $p < 0.01$, SD=static balance, CDB=clockwise dynamic balance, ACDE=anti-clockwise dynamic balance equilibrium.

There is a significant difference in equilibrium values before and after exercise in the study of pure right-handed people in static balance ($p < 0.01$), while no significant difference was observed in dynamic equilibrium values. According to the results of acute fatigue, the pure right handed people significantly affect on the values of static equilibrium, but it can be said that it does not affect the values of dynamic equilibrium.

Table 6: Participation of pure left-handed in compare to Balance Before and After Exercise

N=41		X	SS	z
SD	Pre exercise	923.8500	500.14708	4.577**
	Post exercise	1334.8500	449.42787	
CDB	Pre exercise	2563.9000	577.99937	1.102
	Post exercise	2613.9756	669.24732	
ACDE	Pre exercise	2522.3000	685.20561	0.209
	Post exercise	2505.3500	636.35559	

* p <0.05, ** p <0.01, SD=static balance, CDB=clockwise dynamic balance, ACDE=anti-clockwise dynamic equilibrium

Equilibrium values before and after exercise in the study of pure left-handed people show significant difference in static balance (p <0.01), while no significant difference was observed in dynamic equilibrium values. According to the results of acute fatigue, the pure left handed people significantly affect on the values of static equilibrium, but it can be said it that does not affect on the values of dynamic equilibrium.

Table 7: Participation of people who use both hands in Compare to Balance before and after Exercise

N=12		X	SS	z
SD	Pre exercise	841.4000	281.92245	1.580
	Post exercise	1007.7000	347.14008	
CDB	Pre exercise	2420.5455	849.49578	0.459
	Post exercise	2367.2000	828.16488	
ACDE	Pre exercise	2231.9000	745.53492	0.051
	Post exercise	2394.0000	812.50058	

ACDE = anti-clockwise dynamic equilibrium, CDB=clockwise dynamic balance, ACDE=anti-clockwise dynamic equilibrium

Athletes participating in the study are those using both hands before and after exercise that did not show difference in equilibrium values but statistically were significant. According to this result, although the difference between the mean acute fatigues was found, equilibrium values can be found but no significant effect observed. The lack of a statistically significant difference is due to the small number of users of both hands and athletes participated in the study.

Table 8. Equilibrium values and age of the participants in the study, age and sport experience, showing the relationship between height and somatotype values

		Years	SE	BW	H	Endo	Meso	Ecto
SB	r	.188	-.004	.575**	.371**	.300**	.283**	-.332**
	p	.075	.968	.000	.000	.004	.007	.001
CDB	r	.342**	.182	.470**	.228*	.276**	.300**	-.334**
	p	.001	.082	.000	.028	.008	.004	.001
ACDE	r	.215*	.165	.335**	.195	.208*	.227*	-.159
	p	.042	.120	.001	.065	.050	.031	.135

* p <0.05, ** p <0.01 SE=Sport experience, BW=body weight, Endo=Endomorph,

Meso=Mesomorph, Ecto=Ectomorph, SB=static balance, CDB=clockwise dynamic balance, ACDE= anti-clockwise dynamic balance.

Looking at Table 8 with SD, Weight, height, and somatotype (Endo, Meso, and Ecto) the correlated values significantly (p <0.01) were observed. So VA, height, and somatotype values increase with increasing static equilibrium points. It can be said that the results of this movement is impaired in static balance negatively. CDB with age, somatotype values of VA and p <0.01, height values of p <0.05 the same time, age, weight, endomorph and mesomorph values of dynamic equilibrium score increases with increasing anti-clockwise direction. are significance level, there is a relationship in ACDE between the values of VA and p <0.01, age, endomorph and mesomorph of p <0.05 significance level was observed to be in a relationship. According to these results, age, weight, Height, endomorph, and Mesomorph value increases and the ectomorph dynamic equilibrium point's clockwise increases when the value decreases. From here, we can say that the corruption is negatively in clockwise dynamic equilibrium. However, at

Here, it can be said that anti-clockwise direction is impaired in dynamic balance negatively.

Table 9. Anaerobic power balance values and values of the participants in the study, showing the relationship between body mass index and BF% values

		BF%	BMI	MAP	AP	MP	PR
SE	**r**	.402**	.477**	.232*	.274*	.059	.132
	p	.000	.000	.031	.010	.596	.225
CDB	**r**	.385**	.431**	.240*	.275**	-.081	.287**
	p	.000	.000	.024	.010	.465	.007
ACDE	**r**	.359**	.269*	.110	.124	-.188	.260*
	p	.001	.011	.315	.256	.093	.015

* p <0.05, ** p <0.01, MAP = Maximum anaerobic power, AP= Average anaerobic power, MP = Minimum anaerobic power, PR = power reduction, BMI = body mass index, body fat percentage BF% = SE = static equilibrium, CDB = clockwise dynamic balance, ACDE: anti-clockwise dynamic equilibrium.

By looking at Table 12, SD and BF% and BMI values of p <0.01are significance level, there is relationship between MAP and AP values of p <0.05 significantly; BF%'s and increase in BMI could be called static balance deteriorates. CDB with the BF%, BMI, AP and PR values of p <0.01are significant level, the MAP values of p <0.05 is significance level, and the relationship appears there. ACDE BF% values with p <0.01is in significance level but there is a relationship between BMI, and P values, and p <0.05 is significance level.

Discussion and Conclusion

The purpose of this study: to investigate the relationship between lateralization of the static and dynamic balance. In addition, the balance of fatigue in athletes differs according to lateralization. To find the laterality score and balance, some of the physical characteristics should be investigated whether there is any relationship between performance values. They are made of Uzbek and friend, Annette, and hemispheric dominance hand in hand with the choice of tests used in the control group, while there is an agreement between tests, athletes, this adjustment has been decreased. This decrease of athletes gives us unwittingly acquired ability to run both hands and hemisphere that can reveal the outcome. As a result, team sports, and the levels of both hemispheres of the cerebral hemisphere was not different from provided by the user. In this study, right-handed and left-handed users are more complex than the both hands determined to be balanced who are similar to those in the literature. Hemisphere is dominant and the other on the left and right brain hemispheres, there are studies that exercise reduces sympathetic activation. In a study conducted on human beings, the right brain membrane electrical stimuli makes higher blood pressure, tachycardia, and by stimulation of the left prefrontal cortex decreases. Right-handed in the study group is subjected to pre-dominant arm and hand grip exercise is continuously throughout the non-dominant arm in compared with people who have the muscle sympathetic nerve activity. So by using the right hand for left-handed is greater than the muscle nerve activity. These results are in line with the findings of our study. In another study, we wanted strenuous muscle sympathetic nerve activity during rhythmic hand grip exercise in the non-dominant arm, there was a slight increase in the dominant arm. But there is a significant difference between the dominant and non-dominant arms, rhythmic hand grip exercise or ongoing fatigue, muscle sympathetic nerve activity during the response. Table 1 shows the results similar to the literature. In one study, when compared to the right arm with your left arm exercise large muscle sympathetic nerve activity and heart rate were lower in the dominant arm exercise with the non-dominant arm, but no significant difference between hand preference rather than sympathetic activation reduction found. Exercise identifies the brain hemisphere function differences. In one study, the lack of significant differences in muscle sympathetic nerve activity, responsiveness, maximum voluntary effort of the dominant and non-dominant arms tiring for the hand grip exercise, grip strength, static and rhythmic exercise were related to previous observations. Yet, in contrast the non-dominant arm, compared with the dominant arm during the strenuous exercise, rhythmic hand grip reported a higher muscle sympathetic nerve activity.

About 90% of those who are right-handed dominant hand preference have better quality skills. This relationship is between right-handed and left-handed despite the full understanding prefer in more sporting pursuits. On the other hand, left-handed in compared to right-handed people have better reading, collections and activities such as cinema or going to the theater as preferred. Both hands are able to make music drawing and manual dexterity. However, in some branches of sports (basketball, cricket, and tennis) left handed people show better performance than right handed ones. This situation is more innate in left-handed and right-handed or left-handed neuropsychological advantage to have a strategic or tactical advantage as they have specific active sports. Equilibrium values are considered to have the best balance value of the users of both hands, and then, it can be said that right-handed and left-handed people have the better functions in this regard. Although visually there is a difference between the balance points but statistically significant difference was observed. This is due to the lack of sufficient number of subjects. Related to the participation in physical activity caused by hand preference, it should yet to be determined. However, the right-hand is dominant than left-handed plausible that they have to live in the world may be seen in disadvantaged. So the left handed people and hand preferences and qualifications are associated with social minority may experience physical activities. This left-handed is subjected to the ability of a specific environment and circumstances. It is more common that left-handed people using the common belief that they have low-skills. However, some of the branches of sport and art, for example, the ability to use the left feet in football players, tennis players, and the left hand people are more talented artists using their hands. They have been reported in a high proportion of left-handed dominance of elite athletes. In addition, left-handed are still dominant than right handed people and the engine has been found that they have successful capabilities. In a study conducted in1977, 8-15%percent of adult population have been proposed to be left-handed. In a study conducted in Turkey reported that a young left-handed is 5% dominant of the Turkish population.

A study carried out on the dominant left-handed shows the more successful dominance in right handed people, too. In this study, as shown in Table 1, the power of both tests is observed to be more successful. The reason for this may be due to the low number of study participants in both cases. Annett hand preference survey conducted by the hand indicating the ability of the nervous and muscular structure, genetic factors, and cerebral lateralization of functions and arguing that these are the most obvious subjects in this regard. Such people have the power of running on more muscle activity and nerve performance that it is a good way to work better movement of muscle activity depending on the balance nerve. Each joint, to the sense of motion and joint mechanoreceptor included the ability to neuromuscular athletes. Ashton et al showed a superior training experience due to the result of the ability of balance, proprioceptive and visual cues about the personal ability affect. Proprioception, static and dynamic component of the activity associated with working with athletes and body positions to remain in balance can indicate the ability to adapt. Balter et al presented that the elite athletes are capable of superior balance and greatly affects athletes in terms of motor responses. In their study of the performance of soccer players, Erikoglu Atalay and contrary to expectations equilibrium as a result of an increase in fatigue, the effect of learning has been posed efficiently. In this study, despite the fatigue, improving balance scores caused to a significant difference being observed. Adverse effects of acute exercise on the balance of static balance scores showed the difference to be statistically significant. These results are in line with the literature. A similar conclusion a MAP lies Erkmen and fellow athletes of different sports that compare the performance of the balance as a result of exercise protocol in a negative way affected the outcome of the study of soccer players' balance. Bryant and co-workers showed that tall people shifted the center of gravity forward and stated that the ankle angular change. As a result, the center of pressure of the foot has changed and it also increases the oscillations during the balance test. As shown in Table 8, it is seen that the balance significantly associated with the neck, so it can be said that it affects the balance. The results of the study can be expressed according to the type of body balance. Hansen and his colleagues presented the learning effect, especially as a result of the dynamic balance test, as well as the work of many researchers in line with this view, learning and aMAPlication of stability tests revealed that the effects are the main hypothesis of the acute phase of a research dynamic stretching exercises more positive impacting on the performance of static stretching exercises. In contrast the idea of dynamic equilibrium in both males and females can be related to stretching exercise that positively effect on the performance of dynamic equilibrium not superior to each other. Nordahl et al showed the shorter time is so much to be learnt. According to the results in Table 9, BF% and BMI values increase with increasing values of dynamic equilibrium. Here the increase in BF% and BMI values can be said that breaking the dynamic balance. Static balance, dynamic balance deterioration caused by the malfunction. As a result, equilibrium is more advantageous to both groups of athletes. A lot of inconvenience has no effect on the usual fatigue tests but the fatigue affect static balance in terms of balance between left-handed and right-handed people that it can be said there is a significant difference in this regard.

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