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Comparing Balance Abilities in Different Sports

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Abstract

It is known that balance ability has an importance in terms of sportive performance. Balance ability also showed an important relationship between insufficiencies and performance and sports injuries. **Object:** The aim of this study is to examine balance ability in several sports. **Materials and Methods:** Totally 48 male and female athletes consisting of Wrestling (W, n: 13), Futsal (F, n: 10), Taekwondo (T, n: 15), and Cross-Country Skiing (CCS, n: 10) whose mean ages were 20.2 ± 0.57 , 24.4 ± 1.54 , 20.4 ± 0.49 and 16.9 ± 0.09 respectively, participated voluntarily to this study. Participants' height (cm) was measured with a stadiometer, body weight (kg) was measured with TANITA BC-418 and leg lengths were measured with a measuring tape. Y-Balance test (cm) was used in the application of balance tests. **Findings:** The data were statistically evaluated in the SPSS 23 program and the Kruskal Wallis test was applied to determine the relationship between the groups. Tukey test was applied to determine which group caused the difference and the level of significance was chosen as 0.05. In the evaluation, statistically significant difference in the balance parameters was found between Right anterior and WT, FT, F-CCS, T-CCS sports branches, between Right medial and W-F, F-T, F-CCS sports branches, between Left anterior and W-T, W-CCS, F-T, F - CCS, T-CCS sports branches and between Left medial and W-F, F-T, F-CCS sports branches ($p < 0.05$). **Result:** The balance parameter differs according to sports branches. When these differences are evaluated, it can be said that the best results for all balance parameters are for Cross Country Skiing, Taekwondo, Wrestling and Futsal athletes, respectively.

Keywords: Balance, Taekwondo, Cross Country Skiing, Futsal, Wrestling

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INTRODUCTION

The body balance must be at a sufficient level for individuals to continue their daily activities effectively. In order to continue our daily life normally, we frequently need balance ability (Muratlı, 2003). Advanced balance ability is an important component not only for the routine activities of individuals in daily life, but also for the continuity of dynamic and fluid movements which are common in sports activities. Sports exercises force branch-specific the postural control systems of the body and develop postural adaptations in order to complete the sportive movements effectively. Studies suggest that improved balance in experienced athletes may be the result of repetitive exercises that affect motor responses or may be due to training experiences. Accordingly, balance ability is a skill that can be learned and developed. Therefore, balance is important for movements in all sports branches (Ateş et al., 2017).

In sedentary and athletes, a rapid adaptation occurs by the neuromuscular system to changes in the center of gravity during rest or movement. It can be defined as adaptation to body composition shown against gravity during balance, movement and rest (Sandrey, 2006). Balance has an important place in games, sports, dance and gymnastic activities. We need balance in our lives to be protected from accidents and injuries or to maintain our works efficiently (Gökmen, 2013). It is an integral part of most movement practices to maintain a stable posture (Carr and Shepherd, 1998). Balance control is a complex motor skill that includes the integration of sensory inputs, as well as the planning and implementation of flexible movement patterns (Ferdjallah et al., 2002). Balance is the basis for good performance and, muscle is described as a conductor within the nervous system. Human ability to maintain balance can be defined as a determining factor in the development of other motor systems (Aksu, 1994).

Although balance ability is specified as an extremely necessary parameter to perform well and improve performance, it is also known that impairment in balance performance is a risk factor for injuries (Ateş et al., 2017). Balance ability which can be learned and developed, also varies between sports branches (Hewett, 2009). The aim of this study is to compare balance ability in several sports.

MATERIALS and METHODS

Totally 48 male and female athletes consisting of Wrestling (W, n: 13), Futsal (F, n: 10), Taekwondo (T, n: 15), and Cross-Country Skiing (CCS, n: 10) whose mean ages were 20.2 ± 0.57 , 24.4 ± 1.54 , 20.4 ± 0.49 and 16.9 ± 0.09 respectively, participated voluntarily to this study. Participants' height (cm) was measured with a stadiometer, body weight (kg) was measured with TANITA BC-418 and leg lengths were measured with a measuring tape. Y-Balance test (cm) was used in the application of balance tests.

Y-Balance Test: Each participant's leg length was recorded in centimeters in the supine position, bilaterally, by measuring from the anterior superior iliac point to the medialmalleolundistal part. Measurements were tested with bare feet, in 3 directions, in the ANT reach position, as the distance between the participant's center toe tip, and PL and PM from the farthest point from the heel of the foot. Participants were asked to keep their hands on the iliac crest, keep their heels on the ground, and make a light touch on the farthest point with the toe of the outstretched foot. Participants were asked to make 3 reaches in each direction. During the measurement, participants transferring their body weight to the reclining foot, separating the heel of the standing foot from the ground, or separating their hands from the hip were considered errors, and the measurement was repeated after the participant was verbally informed. All reaches were recorded in centimeters. After the data were obtained, the scores

obtained by using the formula "Best Reach / Leg Length x 100 = Maximum Reach" for each direction were normalized to eliminate the leg length advantage (Robinson & Gribble, 2008).

Statistical Analysis: The data were statistically evaluated in the SPSS 23 program and the Kruskal Wallis test was used to determine the relationship between the groups. Tukey Test was applied to determine which group caused the difference and the significance level was chosen as 0.05.

FINDINGS

Table 1. Y-Balance Rates of Cross-Country Skiing, Wrestling, Taekwondo and Futsal Athletes

Parameters	Group	Ort.±SS	p	Differences
Right Anterior (cm)	Wrestling (13)	77.9±1.29	0.00*	Wrestling-Taekwondo Futsal-Taekwondo Futsal- Cross Country Skiing Taekwondo- Cross Country Skiing
	Futsal (10)	74.7±2.01		
	Taekwondo (15)	64.3±1.12		
	Cross Country Skiing (10)	82.6±2.03		
Right Medial (cm)	Wrestling (13)	105.6±2.54	0.00*	Wrestling-Futsal Futsal-Taekwondo Futsal- Cross Country Skiing
	Futsal (10)	89.3±2		
	Taekwondo (15)	102.7±1.89		
	Cross Country Skiing (10)	106.3±2.05		
Right Lateral (cm)	Wrestling (13)	99.6±2.49	0.61	-
	Futsal (10)	96.7±1.79		
	Taekwondo (15)	101.6±2.08		
	Cross Country Skiing (10)	100±3.54		
Left Anterior (cm)	Wrestling (13)	75.5±1.63	0.00*	Wrestling-Taekwondo Wrestling-Ski Futsal-Taekwondo Futsal- Cross Country Skiing Taekwondo- Cross Country Skiing
	Futsal (10)	75.2±1.64		
	Taekwondo (15)	65.5±1.44		
	Cross Country Skiing (10)	85.7±2.71		
Left Medial (cm)	Wrestling (13)	105.6±1.98	0.00*	Wrestling-Futsal Futsal-Taekwondo Futsal-Cross Country Skiing
	Futsal (10)	89.8±2.25		
	Taekwondo (15)	105.7±2.33		
	Cross Country Skiing (10)	103±2.45		
Left Lateral (cm)	Wrestling (13)	101.4±2.5	0.17	-
	Futsal (10)	97.2±1.99		
	Taekwondo (15)	104.1±2.07		
	Cross Country Skiing (10)	102.1±97.2		

*p<0.05

In the evaluation, statistically significant difference was found in the balance parameters between Right anterior and WT, FT, F-CCS, T-CCS sports branches, between Right posteromedial and WF, FT, F-CCS sports branches, between Left anterior and WT, W-CCS, FT, F-CCS, T-CCS sports branches and between Left posteromedial and WF, FT, F-CCS sports branches (p<0.05). However, in the evaluation, no significant difference was found between the branches in the Right posterolateral and Left posterolateral measurements (p <0.05).

When we evaluate balance ability among these branches, the branches with the best balance are CCS, W, F, T in the Right Trainer, CCS, W, T, F in the Right Posteromedial, and T, CCS, W, F in the Right Posterolateral, respectively. It was found as CCS, W, F, T in the Left Anterior, as T, W, CCS, F in the Left Posteromedial, and as T, CCS, W, F in the Left Posterolateral.

DISCUSSION and RESULT

In this study, it is aimed to compare the balance parameters of skiing race, wrestling, taekwondo and futsal athletes who actively participate in professional sports.

Erkmen et al. (2007) mutually evaluated the balance performances of different branch athletes. When the balance scores are examined, it is seen that there are differences between the branches and they found that the best performance in the difference between the branches was in gymnasts and football players, and the lowest in basketball players (Erkmen et al., 2007). Bressel (2007) evaluated the dynamic and static balances of university athletes dealing with football, basketball and gymnastics, and as a result, it was found that while there was no difference in the values of gymnasts and football players, basketball players had lower dynamic balance scores. This can be said as a feature of balance performance that can be improved with balance or branch-specific training (Bressel et al., 2007).

Gorman et al. (2012) compared using the Y-Balance Test the dynamic balance performances of athletes who competed in only one sports branch or competed in several different sports branches, and no significant difference was found between the two groups (Gorman et al., 2012). While Ateş et al. found significant differences in medial, posteromedial and posterior dynamic balance performance after fatigue in non-athletes' women; they could not detect a significant difference in the athlete group (Ateş et al., 2017). Hüge, R et al., in their study to examine the balance and reaction time of alpine and northern skiers in national teams, found that the significant difference between balance ability was in favor of northern skiers (İri et al., 2017).

Davlin (2004), in his study, stated that gymnasts have better values than athletes in other branches by comparing the dynamic balances of top-level female and male athletes, swimmers, football players and individual sportsmen, and that football players and swimmers have better balance compared to those who do individual sports (control group). It was also found that balance ability differs according to gender (Davlin, 2004, Çetin et al., 2018). When the studies are examined, it is seen that there is a consensus on the issues that balance ability is an indicator of sportive performance, that it is different for those who do sports and those who do not sports that require static or dynamic performance, that different methods and evaluation protocols are used in the evaluation of balance, and that it is sensitive and effective to make a distinction between athletes according to branches (Ateş et al., 2017).

The balance parameter differs according to the sports branches. When these differences are evaluated, it can be said that the best results for all balance parameters are for Cross Country Skiing, Taekwondo, and Wrestling and Futsal athletes, respectively. Therefore, the importance of balance training should be emphasized in sports branches where balance ability is a determining parameter.

REFERENCES

- Aksu, S. (1994). Evaluation of effects of balance training with postural stress test. Hacettepe University Faculty of Health Sciences, Science Specialization Thesis, Ankara.
- Ateş, B., Çetin, E., Yarım, İ. (2017). Balance ability and balance training in female athletes. *Gaziantep University Journal of Sport Science*, 2(2), 66-79. Retrieved from <https://dergipark.org.tr/en/pub/gaunjss/issue/29859/321612>.

- Bressel, E.,Yonker, J.C., Kras, J., Heath, E.M. (2007). Comparison of static and dynamic balance in female collegiate soccer, basketball, and gymnastics athletes. *Journal Athl Train.* 42(1): 42-46.
- Carr, J.H.,and Shepherd, R. (1998). *Neurological rehabilitation: Optimizing Motor Performance*, Oxford: Butterworth-Heineman.
- Çetin, E., Özcan, N., and Yılmaz, U. (2018). Evaluation of physical, physiological and motoric features of boys aged 10-12 years according to body mass index. *Journal of Physical Education and Sport Sciences*, 20(1), 60-70.
- Davlin, C.D. (2004). Dynamic balance in high level athletes.*Percept.Motor Skills.*98:3, 1171-1176.
- Erkmen, N., Suveren, S., Göktepe, A.S., Yazıcıoğlu, K. (2007). The comparison of balance performance of the athletes who are in different branches. *Spormetre The Journal of Physical Education and Sport Sciences*, 3: 116-122.
- Ferdjallah, M., Harris, G.F., Smith, P., Wertsch, J.J. (2002). Analysis of postural control synergies during quiet standing in healthy children and children with cerebral palsy, *Clinical Biomechanics*, 17, 203-210.
- Gökmen, B. (2013). The effect of special balance developer training applications on 11 years old male students' static and dynamical balance performance. Master Thesis, Ondokuz Mayıs University, Samsun.
- Gorman, P.P., Butler, R.J., Rauh, M.J., Kiesel, K., Plisky, P.J. (2012). Differences in dynamic balance scores in one sport versus multiple sport high school athletes. *International Journal of Sports Physical Therapy.* 7(2): 148-153.
- Hewett, T.E., Torg J.S., Boden B.P. (2009). Video analysis of trunk and knee motion during non-contact anterior cruciate ligament injury in female athletes: Lateral Trunk and Knee Abduction Motionare Combined Components of the Injury Mechanism. *Br J Sports Med.* 43(6):417- 422.
- İri, R.,İlçin, T., İlçin, M.M. (2017). Investigation of the balance and reaction time characteristics of alp and nordic disciplinary skiers of national teams. *Muş Alparslan University International Journal of Sports Science*,1(1).
- Muratlı, S. (2003). *With an approach to the science of children and sports training*. Nobel Publishing Distribution, 197–219. Ankara.
- Robinson, R., & Gribble, P. (2008). Kinematic predictors of performance on the Star Excursion Balance Test. *Journal of sport rehabilitation*, 17(4), 347-357.
- Sandrey, M.A. (2006). The Comparative Effects Of A Six-Week Balance Training Program, Gluteus Medius Strength training Program, and Combined Balance Training/Gluteus Medius Strength Training Program on Dynamic Postural Control, Master of Science in Athletic Training, School of Physical Education, Morgantown, West Virginia.