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Evaluation of Physical Activities of Physically Disabled Athletes

Mine Gul
Kocaeli University, Turkey
https://orcid.org/0000-0003-2763-0697

Canan G. Eskiyecek
Mardin Artuklu University, Turkey
https://orcid.org/0000-0001-6987-3609

Abstract
The aim of this study is to determine the 7-day exercise and physical activity levels of physically disabled athletes located in all geographical regions of Turkey and to examine the factors affecting this. The Physical Activity Scale for Individuals with a Physical Disability was applied as an online survey. The study group consisted of 224 physically disabled athletes, including orthopedic standing, orthopedic wheelchair, visually and hearing impaired athletes. In the analyses, Mann-Whitney U test for independent groups in binary categorical variables; the Kruskal-Wallis test was used for triple categorical variables. One-Way Analysis of Variance for the Obstacle Type variable, Post-Hoc multiple comparison test was applied for significant differences and Tamhane's T2 Test was used, one of the non-homogeneous Post-Hoc tests. When the 7-day physical activity status of physically disabled individuals is examined; It was determined that they participated in the activity situations in the questions in 3 subcategories for less than 1 hour. It was determined that social media had the highest score in the orientation variables and there was a significant difference between the school/physical education teacher and social media. In the analysis made on the variables of disability types, it was found that there was a significant difference between hearing and orthopedic wheelchair disabled people in repair and gardening work.
As a result, it is thought that more licensed athletes should be trained and their participation in sports competitions should be supported in order to enable physically disabled athletes to participate in sports activities in their daily lives, and that individuals can lead a healthy life by increasing their physical activities.
Keywords: Physically-Disabled Athletes, Sports Activities, 7-Day Exercise, Mobility.

Introduction

Exercise and physical activities in daily life have positive effects on human health, can protect from chronic diseases, some measures should be taken to minimize health problems caused by inactivity due to rapid urbanization, air pollution, increase in technology and demanding working life, and contribute to the improvement of health by making activities a lifestyle with appropriate programs is supported by researchers (Diaz-Benito et al., 2022).

Parents who exercise should support their children to participate in activities because their physical activity levels and quality of life are beter, and the importance of being in environments that can improve their physical skills and competencies as well as providing a successful and healthy life has been emphasized (Karakaş & Yaman, 2017; Kissow, 2015; Canikli, 2021; Şahin, 2021). Individuals who engage in physical activities can express themselves comfortably, exercise contributes as a tool that supports all physical and psychological development (Demir & İlhan, 2019), physical health and physical competence obtained as a result of exercises are vital in developing skills, coordinating body movements and maintaining the correct body position, and the importance of high participation in physical activities to raise a healthier generation and shape lifestyles has been emphasized (Karakaş & Yaman, 2017; Garcia-Remeseiro et al., 2023; Zhang et al., 2022; Ayhan et al., 2021).

Musculoskeletal disorders are an important issue in terms of the health problems they cause on individuals and their impact on their quality of work and life. Therefore, important steps need be taken to improve the quality of life of disabled people, to improve their health status and to be productive in their working lives (Çelikkalp et al., 2022; Lee et al., 2023). Participation in sports and physical activity programs for all children, taking into account the needs of children with disabilities, emotional and social well-being, as well as the promotion of individual activity participation preferences, safety precautions, and use of personalized training and materials (Murphy et al., 2008). In addition to physical health, it is believed that mental health and coping skills are also important for the rehabilitation and reintegration of disabled people into society. To help remove barriers to participation in sports and recreational activities in order to provide resources and support in this regard, whether it's physical education and sports classes, whether recreative sports schools opened during certain periods, whether disabled people to be self-sufficient, to be healthy and happy individuals for numerous sports organizations can be created that deals with promotion of social interaction and participation in (Pepper & Willick, 2009; Koparan, 2003; Esatbeyoğlu & Karahan, 2014; Ginis et al., 2016).

It is stated that parents may be more likely to provide physical activity opportunities to their children in line with the results of potential benefits such as encouraging disabled people to play sports at an early age in line with their interests and skills (Bastık et al., 2021; Yılmaz et al., 2020), they may also be more predisposed to the development of skills such as aerobic capacity and gross motor skills (Johnson, 2009). It is believed that when making recommendations on participation in sports, it depends not only on age, type of disability and activity level, but also environmental and social barriers should be taken into account. It is believed that finding the optimal sport can increase the chances of people with physical disabilities not only to be active, but also to stay active (Jaarsma et al., 2014; Boslaugh & Andersen, 2006; Rimmer et al., 2004). Sport, physical education and physical activity for children and young people with disabilities in settings with limited, although most of the research teachers, school leaders, coaches, assistants and support from the perspective of special education coordinator education have contributed with knowledge about a rich, although the views and experiences of children and young people with disabilities in planning, it is believed will be of benefit to be taken into account (Maher & Haegele, 2022).

It is ability to determine the level of sports level, age and applicability to specific groups through research methods such as surveys with the property of pedometer and accelerometer error rate can be minimized and overcome the limitations of subjective and objective measurement tools to be a combination of methods to be preferred, it is believed that it can be compared with (Can, 2019; Tümtürk et al., 2021). The last 7-day assessment questionnaires (7-d PAAQ) are applied to determine the physical activity status of individuals with disabilities, and questionnaires are applied to determine their exercise status.

The purpose of this study is to examine the physical activity status of physically disabled individuals aged 18 and over who are actively engaged in sports in 2022, in the study which they practiced 7 days before their participation. The objectives of the study are as follows: (i) investigate the sporting activities in the last 7 days; (ii) to investigate the participation of the household in the last 7 days duration; (iii) in the last 7 days to investigate the duration of their participation in repairs and yard work; (iv) investigate the amount of time you devote to maintenance in the last 7 days; (v) demographic characteristics, if any (licensed status / national status / disability status, etc.) to determine the relationship with the sub-dimensions.

Materials and Methods

Research Group

In the research, a descriptive survey was administered to evaluate the physical activity status of physically disabled athletes. The population of the research consists of 4,158 licensed disabled (orthopedically dedicated athletes, visual and auditory) athletes and non-licensed disabled athletes living in 7 geographical regions of Turkey. The license is the document that is given with the approval of the sports federations so that individuals

can participate in national and international official competitions. The sample group consists of 224 volunteer athletes aged 18 years and older living in Turkey, licensed and non-licensed orthopedic standing, orthopedic wheelchair, visually and hearing disabled. For the athletes that participated in the research some demographic features of age, gender and region of participating in research, marital status, level of education, sport inspired items, age, training, license, licensing branch, national status disability status (congenital-post-natal), disability category (orthopedic standing, orthopedic wheelchair, visually and hearing disabled) and disability status (40-60%, 61-80% and 81-100%) their answers were recorded. It has been shown that 7-d PAAQ, each part and sum of PAAQ are reliable and valid, and can be applied to determine the activity levels of individuals between the ages of 18-65 (Karaca & Turnagöl, 2007). The research working group consisted of 167 (74.6%) male and 57 (25.4%) female athletes in the 18-64 age range, 125 (55.8%) orthopedic wheelchairs, 70 (31,3%) a total of 224 physically disabled athletes consist of 31.3% orthopedic standing, 23 (10.3%) visually impaired and 6 (2.7%) hearing impaired. 206 (92%) licensed, 18 (8%) non-licensed, 88 (39.3%) national and 136 (60%) 7 non-national participants filled out the items in the form as they saw fit. MET value can enable the calculation of the amount of energy spent during physical activity (FA) and exercise and the classification of the intensity of the activity performed (Ainsworth et al., 2011). The sub-dimension category MET score averages of the athletes participating in the research were detected as 3.622 points in the sports activity sub-dimension, 0.803 points in the household chores category, and 0.413 points in the repair and gardening category.

Data Collection Tool

7-day Physical Activity Assessment Questionnaire (7-d PAAQ): The information needed for the research was obtained by the questionnaire method. 'The Physical Activity Scale for Individuals with a Physical Disability (PASIPD)' developed by Washburn et al. (2002) and adapted to Turkish by Ulaş et al. (2019). This scale consists of a Personal Information Form and 13 items aiming to determine the current exercise and physical activity level of the participants in 7 days. However, 1 item (1st question) is not calculated in the 13-item scale. The scale was evaluated over 5 factors, As a result of the validity and reliability analysis Cronbach Alpha values were measured with one item each, such as sportive activities (0.75), housework (0.71), repair and gardening (0.69), voluntary work and care giving work. In the calculation of physical activity levels, the product value of each item and the average calculation value (day/hour) of each frequency option taken according to the individual's marking are calculated. The resulting total score gives the person's MET value (Washburn et al., 2002). The google form prepared by the online digital method of the survey in the computer environment was sent to the subgroups in the universe and the stratified sampling technique was used.

The limitations of the study consist of registered in the Turkish Physically Disabled Sports Federation in 2022, active disabled athletes, disabled athletes over the age of 18, visually, hearing and physically disabled athletes, orthopedic ambulatory and orthopedic wheelchair disabled individuals, licensed and unlicensed disabled athletes, female and male disabled athletes. Study design It was aimed to obtain more participants and data in a shorter time by uploading the survey data to the system in Google form as an online survey. The study was approved by the Non-Interventional Clinical Research Ethics Committee dated 10/06/2022 and numbered 'E-76272411-900-56268'. Also to research Necessary explanations were made and consent forms were obtained from the participating individuals.

Analysis Method

SPSS 24.0 statistical program was used in the analysis of the data obtained in the study and the percentage and frequency values of the participants were taken. For determine with which tests the obtained data will be analyzed, first of all, the skewness and kurtosis values of the scores were tested. In this context, was detected that the skewness and kurtosis values of the scores obtained from the 3 sub-dimensions (sportive activities, housework, and repairs, and gardening) in the scale employed were not between -1.5 and +1.5, and it were used non-parametric tests. The skewness and kurtosis values

of the other 2 sub-dimensions (voluntary work and care giving) were also detected, but Cronbach Alpha (a). These two sub-dimensions are due to the very low was excluded from evaluation. In analysis, the Mann-Whitney U test for independent groups when it comes to binary categorical variables such as gender (female-male); Kruskal-Wallis test was used for at least triple categorical variables such as age. In order to understand whether the variances are homogeneous, data were determined using the Levene's test and detected that the variances were not homogeneous. Since it is thought that the disability types of the disabled athletes participating in the study are of primary importance in terms of determining their physical activity levels; One-Way Analysis of Variance (ANOVA) test was used for the Disability Type variable. Post-Hoc multiple comparison test was used to understand between which groups there were significant differences as a result of the ANOVA test. Tamhane's T2 test from the non-homogeneous Post-Hoc test was used.

Results

Table 1 Descriptive Statistics on Demographic Characteristics of Participating Athletes

Variables	Categories	F	%
Age	18-24	53	23,7
	25-34	73	32,6
	35-44	64	28,6
	45-54	29	12,9
	55-60	5	2,2
Gender	Female	57	25,4
	Male	167	74,6
Marital Status	Single	140	62,5
	Married	84	37,5
Educational	Literate	3	1,3
	Primary School	28	12,5
	High School	87	38,8
	Associate Degree	28	12,5
	Licence	74	33,0
	Master	4	1,8
Licensed	Yes	206	92,0
	No	18	8,0
Sports Branch	Team Sports	142	63,4
	Individual Sports	82	36,6
Training Age	1 Month-2 Year	42	18,8
	3-5 Year	51	22,8
	6-9 Year	35	15,6
	10 Year and above	96	42,9
National Athlete	Yes	88	39,3
	No	136	60,7
Disability	Congenital	90	40,2
	Later	134	59,8
Disability Type	Visual Disability	23	10,3
	Hearing Disability	6	2,7
	Orthopedic Standing	70	31,3
	Orthopedic Wheelchair	125	55,8
Percentage of Disability	40-60%	108	48,2
	61-80%	51	22,8
	81-100%	65	29,0
Guidance	Family	37	16,5
	Friend/Environment	113	50,4
	Coach	44	19,6
	School/Physical Education Teacher	18	8,0
	Social Media	12	5,4

The frequency and percentage values of the demographic characteristics of the research group were examined and according to age categories, 32.6% (n=73) were in the 25-34 age range, 74% (n=167) were male and 25,4 (n=57) were female, 62.5% (n=140) single and 37,5% (n=84) married. It was determined that the highest educational level was 38.8% (n=87) high school graduate and 33% (n=74) undergraduate degree, 92% (n=206) licensed and 8% (n=18) non-licensed athlete. It was detected that 63,4% (n=142) team sports and 36,6% (n=82) individual sports, at the highest rate 42,9% (n=96) trainee for more than 10 years, 39,3% (n=88) national and 60,7% (n=136) were not national. It was found that disability situation 40,2% (n=90) were congenital and 59,8% (n=134) were later, the highest percentage 55,8% (n=125) with orthopaedic wheelchair athlete, 48,2% (n=108) disabled situation percent was 40-60% , 29% (n=65) disabled situation percent was 81-100% and 22.8% (n=51) disabled situation percent 61-80%, as a result of the findings directed by friends and environment with a maximum rate of 50.4% (n=113) in terms of participation in sports.

Table 2 The Highest (F - %) Response Table of the Participants for the Scale Items

Sub-Dimensions	Scale Items			F	%
Sports Activities	1. In the last 7 days, how often have you been busy with sedentary activities such as reading, watching TV, playing computer games or doing crafts?	Quite often		77	34,4
		What are these activities	TV	96	42,9
		On average, how many hours a day do you devote to these stagnant activities	1-2 Hour	70	31,3
	2. In the last 7 days, how often have you walked, used a wheelchair , or been taken out for non-exercise purposes? (Ex. going to school or work, walking the dog, shopping etc.)	Quite often		102	45,5
		On average, how many hours a day do you devote to activities outside the house, using a wheelchair or going out with someone else's help?	Less than 1 hour	76	33,9
	3. In the last 7 days, how often have you participated in recreational or similar activities such as light sports or bowling, driving golf, hunting, fishing, darts, billiards, pool, theraneutic exercises (physical or occupational therapy, stretching exercises)?	None		96	42,9
		What are these activities	Training	137	61,2
		On average, how many hours day do you devote to these light sports or recreational activities	Less than 1 hour	101	45,1
	4. In the last 7 days, how often have you participated in moderate sports or recreational activities such as double tennis, softball, self-driving golf, ballroom dancing, using a wheelchair, or similar activities?	None		124	55,4
		What are these activities	Training	161	71,9
		On average, how many hours a day do you devote to these medium-intensity sports or recreational activities	Less than 1 hour	110	49,1
	5. In the last 7 days, how often did you engage in strenuous sports or light jogging, wheelchair racing (traning), cases country pushing, swimming, aerobic dance, arm swing exercise, cycling (hand or leg), singles tennis rugby basketball, crutches Have you participated in recreational activities such as walking or similar activities?	None		86	38,4
		What are these activities	Training	157	70,1
		On average, how many hours a day do you devote to these challenging sports or recreational activities	Less than 1 Hour	118	52,7
	6. In the last 7 days, how often have you participated in exercise such as weight lifting, push-ups, sit-ups, or wheelchair push-ups to increase your muscle strength and endurance?	Slightly		62	27,7
		What are these activities	Training	92	41,1
		On average, how many hours a day do you devote to these exercise to increase your muscle strength and endurance?	Less than 1 hour	99	44,2

House Working	7. In the last 7 days, how often have you done light household chores such as dusting, vacuuming or washing dishes?	None		113	50,4
		On average, how many hours a day do you devote to these light household chores?	Less than 1 hour	146	65,2
	8. In the last 7 days, how often have you done heavy household chores such as vacuuming mopping floors, cleaning windows or walls?	None		132	58,9
		On average, how many hours a day do you devote to these heavy household chores?	Less than 1 hour	170	75,9
Repairs and Gardening	9. In the last 7 days, how often have you done repair work such as carpentry, painting, furniture repair or electrical work?	None		176	78,6
		On average, how many hours per day to you devote to these repairs?	Less than 1 hour	185	82,6
	10. In the last 7 days, how often have you done garden or yard work such as mowing, clearing leaves or snow, trimming trees or bushes, chopping wood?	None		190	84,8
		On average, how many hours a day to you devote to this gardening?	Less than 1 hour	204	91,1
	11. In the last 7 days, how often have you done outdoor gardening	None		171	76,3
		On average, how many hours a day to you spend outdoor gardening?	Less than 1 hour	191	85,3

As a result of the examination on the answers given at the highest rate of the scale questions, 42.9% watched TV for 1-2 hours in the last 7 days, and used a wheelchair for less than 1 hour in 33.9% in the sportive activities subcategory. It has been found that they go out without the purpose of exercise or exercise. In addition, 61.2% of them did light sports for less than 1 hour, 71.9% of them did less than 1 hour of moderate intensity training, 70.1% of them did less than 1 hour of hard training, and 41.1% of them did less than 1 hour of muscle training. It has been found that training to improve strength and endurance is done housework was found. In the category of repairs and gardening, 82.6% repair works less than 1 hour, 91.1% garden works less than 1 hour and 85% (Table 2).

Table 3 Mann Whitney-U Analysis Table of Participants' Scale Sub-Dimensions (MET)

Sub-Dimensions	Gender	x̄	SD	p
Sports Activities	Female	3,917	3,872	0,387
	Male	3,521	3,599	
House Work	Female	0,895	1,645	0,341
	Male	0,772	1,828	
Repairs and Gardening	Female	0,286	0,777	0,945
	Male	0,456	1,255	
Marital Status				
Sports Activities	Single	3,786	3,828	0,621
	Married	3,348	3,381	
House Work	Single	0,809	1,886	0,309
	Married	0,793	1,599	
Repairs and Gardening	Single	0,4	0,942	0,435
	Married	0,434	1,443	
Licensed				
Sports Activities	Yes	3,778	3,738	*0,025**
	No	1,833	2,025	
House Work	Yes	0,845	1,845	0,481
	No	0,328	0,499	
Repairs and Gardening	Yes	0,427	1,182	0,173
	No	0,246	0,75	
National Athlete				
Sports Activities	Yes	3,394	3,345	0,855
	No	3,769	3,864	
House Work	Yes	0,981	2,218	0,838
	No	0,688	1,425	
Repairs and Gardening	Yes	0,466	1,258	0,85
	No	0,378	1,083	
Disability Status				
Sports Activities	Congenital	3,65	3,506	0,718

Sports Activities	Later	3,602	3,781	0,718
House Work	Congenital	0,919	1,661	0,074
	Later	0,726	1,858	
Repairs and Gardening	Congenital	0,306	0,873	0,148
	Later	0,484	1,306	

When the sub-dimension categories are examined according to their demographic characteristics, there is no difference in gender, marital status, nationality, disability status, there is difference in favor of those who have a license in the sportive activities category only according to the status of being licensed (Table 3).

Table 4 Kruskal Wallis Analysis Table According to the Orientation Status of the Scale Sub-Dimensions of the Participants

Routing Variable	Sub-Dimensions	X	SD
Family	Sports Activities	3,392	3,217
	House Work	0,962	2,152
	Repairs and Gardening	0,566	1,516
Friend/ Environment	Sports Activities	3,198	3,318
	House Work	0,693	1,469
	Repairs and Gardening	0,426	1,23
Coach	Sports Activities	4,265	3,911
	House Work	0,82	1,963
	Repairs and Gardening	0,287	0,656
School/Physical Education Teacher	Sports Activities	3,022	3,528
	House Work	1,095	2,488
	Repairs and Gardening	0,247	0,605
Social Media	Sports Activities	6,862	5,624
	House Work	0,851	1,453
	Repairs and Gardening	0,524	1,25
P = A significant difference was found between School and Social Media in Sporting Activities (P=0.047)			

When the referral variable was tested, was found that the sportive activity sub-dimension had the highest MET value with a score of 6,862 in the referral variables, and there was also a significant difference between the School/Physical Education teacher referral category of social media ($p<0.05$) (Table 4).

Table 5 Descriptive Statistics, One-Way Analysis of Variance (ANOVA) and Post-Hoc Test Results in Terms of the Disability Type Variable of the Participants

Sub-Dimensions	Disability Type	Source of Variance	Sum of Squares	df	squares average	F	p	Difference Tamhane's T2
Sports Activities	Visual Disability Hearing Disability	Between Groups	15,289	3	5,096			A difference was found between the Hearing Disability and the Orthopedic Wheelchair Disability
	Orthopedic Standing Orthopedic Wheelchair	Within Groups	2980,739	220	13,549	0,376	0,77	
		Total	2996,029	223				
House Work	Visual Disability Hearing Disability	Between Groups	4,164	3	1,388			
	Orthopedic Standing Orthopedic Wheelchair	Within Groups	702,475	220	3,193	0,435	0,728	
		Total	706,64	223				
Repairs and Gardening	Visual Disability Hearing Disability	Between Groups	11,025	3	3,675			
	Orthopedic Standing Orthopedic Wheelchair	Within Groups	285,289	220	1,297	2,834	0,039*	
		Total	296,314	223				

As a result of the analysis between the disability type variable and the sub-dimensions, a significant difference was found between the hearing impaired and the orthopedic wheelchair disabled in the repair and gardening sub-dimension (p=0.039) (Table 5).

Discussion

In this study, demographic characteristics and current (7 days) physical activity levels of physically

disabled athletes over the age of 18 were investigated. The results obtained were discussed with literature.

In the study, participating in team sports is higher and met the students of the value of transportation as a reason for sports, not to find leisure time and other factors as a result of increasing physical activity levels of students with disabilities for guidance, motivation, and other psychological processes and shed light on future research it is advisable to draw attention to. According to the findings obtained as a result of the literature search, it was found to be supportive with activities of less than 1 hour at an intermediate level (Topsaç & Bişğin, 2014). Gender differences found in disabled athletes' leisure time management and attitudes, category, education level, parent education level and sport background, sport and education level of year increases were thought to develop time management free. In the literature research, it was found that other categories besides gender difference support the research (Fişekçioğlu & Özsarı, 2017). Although the level of physical activity of disabled individuals and caregivers is low, differences have been found according to disability groups; ıt is thought that the awareness of physical activity is lacking in disabled individuals and caregivers. In the literature research, as the percentage of disabled increased, it was found to be supported by the determination that it was higher than the average values in the category of household chores and repairs and gardening (Tahmaz et al., 2019). In the study on the attitudes and life satisfaction levels of physically disabled sedentary and athletic individuals, it was determined that as the level of participation in sports and physical activities, education level and monthly income levels increase, life satisfaction levels increase and were positively affected in physically disabled individuals who do and do not do sports. has been done (Hazar & Koç, 2020). People who do high levels of physical activity and have movement disorders, they think that participation in social activities may be higher than those who are less active, their health status may be higher, and the participation of disabled individuals in society can be expanded by providing exercise programs in societies that focus on increasing their physical activity of people with movement disorders and limitations. Literature research supports the research in terms of participation in sports activities (Crawford et al., 2008).

In wheelchair disabled athletes, It was thought that they can benefit from the support of federations and municipalities in order to achieve success in sports activities in evaluating their leisure time and improving their personal skills. It is believed that wheelchair basketball players were able to behave more sociely in sports competitions in order to fight with opponents and achieve their personal goals and also their potential differences in sports-achievement orientation may occur (Skordilis et al., 2002). Athletes with lower extremity disorders, it was found that have a longer upper extremity motor reaction time to visual stimuli than non-athletes,different sports activities such as basketball and swimming can have positive effects on people with disabilities and for this reason, it is thought that the application of outdoor skill sports may facilitate the development of motor skills in physically disabled person (Di Russo et al., 2010). When the physical activity level and health-related quality of life results of wheelchair basketball players were examined, it was found that basketball players had higher activity and health-related quality of life compared to wheelchair dancers and handball players (Feter et al., 2018), by evaluating wheelchair basketball as a high-intensity (such as 3 and more a week) sports activity, it was concluded that individuals with disabilities can improve their total quality of life and personal, physical, emotional, psychological, social sub-areas (Chatzilelecas et al., 2015). In the study comparing the activities of daily living between children with and without physical disabilities, it was found that children with physical disabilities were severely deficient in exercise participation and PA (physical activity) levels, not having a chance to engage in healthy exercises and daily activities, people with physical disabilities were neglected or disadvantage (Rosly, 2022).

As a result, it is thought that physical activities can be increased and socialization can be provided in parallel with the training of these disabled individuals as licensed athletes and their participation as players in amateur/professional sports competitions so that they can participate in various sports activities while maintaining their daily lives. Within the frame work of the research, it can be recommended that disabled individuals should increase their weekly training hours and participate in different physical activities in their free time by planning according to their age

differences. It is thought that physically disabled individuals should participate in sportive activities, games and voluntary physical exercises, and that communication and socialization with individuals with athlete identity have an important place in the lives of disabled individuals by supporting their participation in more competitions.

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Author Details

Mine Gul, *Kocaeli University, Turkey,* ***Email ID****: minegul7@gmail.com*

Canan G. Eskiyecek, *Mardin Artuklu University, Turkey*