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RESEARCHING OPPORTUNITIES OF NATURE SPORTS FOR RECREATION PURPOSES (AN EXAMPLE: FETHİYE-ÖLÜDENİZ)

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Abstract

Fethiye (Ölüdeniz) is one of the world-famous tourism localities having national and international importance. In this region, sport tourism should be offered for those who want to do sport besides benefiting from the sea. This research was carried out between the years 2013 and 2014 in order to put forward appropriateness of alternative nature sports of Ölüdeniz and its surrounding. This region is convenient for doing sports such as Paragliding, Underwater sports, Mountaineering, Trekking, Equestrian touring (Horseback Riding), Orienteering (Direction Finding sport), Mountain Biking, Mountain Bike Orienteering (MTB-O). Further development of the region by relieving it from beach pressure is possible through improving such sport branches and bringing them in region.

1. INTRODUCTION

The intense work pressure, the crowd and the urban sprawl, the environment and the noise pollution of today's world have been orienting the people to nature sports as a recreation activity. Recently, people in our country have been increasingly interesting in nature sports in order to relax by being alone with nature and feel pleasure. There is a relationship between human and natural environment being lived in terms of both economy and continuation of life and recreational values in which there are various activities such as tourism and sport (Karaküçük, 2008).

Rural recreation areas are the ones which offer natural environment to the urban people in the best way. People prefer such places for the reasons such as clean weather, quietness, visual appeal of nature, etc. Especially forestry areas, woodland areas, watersides and beaches which are intensely used for activities like mountaineering, water sports, swimming, nature-searching; can be offered to the urban community usually troubled in terms of economy as cost-free recreational activities (Erdoğan, 1999).

Ölüdeniz is situated at an air distance of 8 km south of Fethiye at the Mediterranean coastline. Today's landscape of the region emerged as a result of the fact that a valley mouth transformed into a bay after remaining under water, then the front of this bay was closed by a

spit that was formed by accumulation of sand and gravel drifted to the here. Ölüdeniz lagoon has been primarily recognized by foreign yachtsmen, since it was one of the few bays among the bays where yachts can anchor in the western Mediterranean coast between Fethiye and Antalya (Doğaner, 2000).

Ölüdeniz is among the current 10 Natural Parks in Turkey, since it has interesting geologic, geomorphologic formation, a rich flora and fauna and is convenient for recreational activities of the community (entertainment and resting). It was established in 1983 with an area of 950 hectares within the borders of Fethiye Directorate of Forest Management.

Fethiye and Ölüdeniz have approximately 85,000 bed capacity and 750,000 tourists arriving each year from England with 60%, Italy with 10%, Turkey with 20% and other countries with 10%. The fact that the region has been intensified only in sea and beach tourism raises concerns in the near future in terms of its beautiful nature. In order to reduce the pressure of the intensified tourist activities particularly during the summer sessions, it must be urgently directed to the alternative tourisms. The regions can offer many options in terms of compliance with doing nature sports as well as its natural beauty.

Ölüdeniz and its surrounding are convenient to do nature sports such as Paragliding, Underwater sports, Mountaineering, Trekking, Equestrian touring (Horseback Riding), Orienteering (Direction Finding), Mountain Biking, Mountain Bike Orienteering (MTB-O).

One of the nature sports performed in Ölüdeniz is world-renowned paragliding. Underwater sports are quite common as well, though they are allowed in certain areas. Trekking is not developed at the extent desired, but it is very rich in terms of racetrack potential. Moreover, attention has been tried to be attracted with bike tours. Apart from these, some sporting activities conducted in this region cover mostly sea-beach tourism (Ölüdeniz 2015).

Both protection of Ölüdeniz and its surrounding and opportunity of a variety of nature sports to be performed by local and foreign tourists will be ensured thanks to the nature sports, which have been performed in Ölüdeniz and its surrounding in line with tourism concept of world or offered by us, and have been tried to be summarized above.

2. MATERIAL AND METHOD

The sport branches, which have been seen favorable to be performed in the Fethiye (Ölüdeniz) and its region have been taken as basis, even if they are widely performed or little-known in our country and abroad. In this respect, it has been benefited from every kind of public corporation and institution together with business fields in the private sector especially in the tourism sector, before starting to work in the region. Hence, the tourism businesses operating in the so-called region and the nature tourism activities offered to the tourists by them have been benefited from.

During this study (2013-2014), observations and investigations have been made in the summer period when the tourism activities are intensified especially in the Mediterranean region. In Ölüdeniz, even if they are not intense, the nature sports that attract both local and

foreign tourists have been also performed, besides intensively benefiting from the sea. The so-called nature sports have been demonstrated in a very detailed way in the findings section. However, although some of these sports have advanced very much in this region, some of them are new sport activities to be performed and improved both in the Ölüdeniz region and our country (Ölüdeniz 2015).

3. FINDINGS

The studies, which have been performed in Ölüdeniz region, aim to perform or further improve nature sports targeting sportive recreation (entertainment– resting up) that has been tried to be explained below.

Land structure, vegetation and climate of the region are found suitable for recently popular nature sports. The reason for not caring and conducting studies about these sports is thought to be emanated from the fact that these sports are new and yet to be known.

3.1. Paragliding

Mankind has dreamed of flying over the centuries. Over time, though these dreams have been achieved, some specially selected, highly skilled and well-educated people have experienced the joy of flying much more. Aviation has developed in the last century extraordinarily and in line with that sportive aviation has brought the joy of flying to everyone's feet. Paragliding stands before us as the easiest as well as the shortest and the cheapest way to dance with the birds in the sky. Being quite a high-tech product, paragliding is the world's lightest and most practical air tool due to its weight of 7-8 kg and fitting comfortably into a backpack when folded. Paragliding is the most effective and cheapest non-hazardous way to fly alone provided that it is performed consciously. There are also certain risks in this sport as in any extreme sport. However, the risks can be reduced to the minimum level through proper training, conscious movement, complying with safety requirements, knowing her/his own level as a pilot and acting according to this level.

Paragliding began in the early 1980s by a number of innovative airmen ran up the slopes with a free parachute. Over time, the performance of parachutes increased with the development in their aerodynamics. It has been separated from free parachute and has become a tool like glider, delta wing used for flying purpose. Today, depending on the experience of the pilot, one can start flying from a small hill with paragliding, can rise up to hundreds of meters and fly away for kilometers by staying in the air for several hours (Yamaç Paraşütü 2015),

Turkey actively met with paragliding in the early 1990s and showed a slight improvement in a short time due to its climate and the nature that are very favorable for this sport. Turkey is a country having Ölüdeniz (Babadağ) which can be considered as the world's best flying destination. Each flight here took about an hour and carried out and monitored by thousands of local and foreign tourists throughout the season. However, a small part of sportive aviation of our country, which has a huge potential, has been used in area or generally, since this sport has not been recognized so much and supported. There are many tourism companies being active in paragliding in Fethiye.

3.2. Underwater Sports

Although we live in a country which is surrounded by sea on three sides and is so rich in terms of natural archaeological beauties, I am sure that many of us know very little about the diving. Whereas, we have so clean and deep blue seas that only few people in the world are bestowed on.

SCUBA was formed from the initial of the words Self Contained Underwater Breathing Apparatus. In Turkish it is called "Kendinden Yeterli Sualtı Soluma Aygıtı" and is translated simply as Scuba Diving (Aletli Dalış). In 1943, an underwater explorer and scientist Captain Jacques Cousteau developed the SCUBA diving system. With this system, the diver meets air need through the air tank carried by himself/herself. The compressed air contained in the tank (tube) is regulated and set the level of high-pressure air for our lungs with help of device called regulator. Thus, divers have more opportunity for maneuverability underwater (Sualtı 2015)

Fethiye being one of the largest centers of underwater tourism has numerous diving locations. The region where most of diving activities are performed is the line remaining between Şahin Ness and Dökükbaşı (İblis) Ness where prohibition starts at the eastern exit of the gulf. There are geographically well-suited locations for the wall diving in Kelebekler Valley and its surrounding. The underwater world of Ölüdeniz vicinity is very rich (Sualtı 2015).

There are certain types of diving still being performed such as Free (with breath), Open Circuit (Scuba), Helium-Oxygen and Closed Circuit Diving. Tünel, Resif, Afkule, Balaban Island, and İblis Ness are the important diving points where underwater sport is performed widely.

3.3. Mountaineering

Mountaineering has been referred by many popular terms today. Nature walks, camp walks are gathered under the umbrella of mountaineering sport. In fact, these types of activities are small part of mountaineering. Because mountaineering requires serious training and it is a branch of sport divided into types including rock, snow and ice climbing.

The real meaning of mountaineering passing in various publications is that: "Sport aiming to climb mountainous regions, climb or reach the heights that are difficult to climb." Broader definition of mountaineering is as follows: "Walking, climbing, skiing and all of the other activities performed by the climber in any field and climate condition not in a war with nature but rather in harmony with nature integrating his/her knowledge and experience with all safety rules through a sportive approach and a team mentality in mountainous areas which are the only geographical area of the nature yet accessible by mankind without any exploitation. (Dağcılık 2015)

Mount Babadağ and Mount Mendosare, which can be considered as high mountains situated in and around Ölüdeniz are quite suitable for mountaineering. Just around Ölüdeniz there are Mount Karadağ (238 meters) and Mount Geymene (624 meters). These mountains can be reached with daily climbs starting from the beach and also display the beauty of Ölüdeniz (Ölüdeniz 2015).

3.4. Trekking

Recently, trekking has been the most popular activity within the alternative tourism activities. Human beings yearn for the nature and ancient civilizations in order to get away from the stresses of both work life and social life. Ölüdeniz and its surrounding are among the few places that can provide opportunity to see ancient civilizations while walking within the natural beauty. Lycian Way route, along which both yearnings can be fulfilled, longs up to 500 km. Lycian Way is a wonderful discovery walking route ranging from Fethiye to Antalya.

Walking on the Lycian Way; is one of the best sorts of holiday recommended for those who want to know the rich flora of Fethiye. In ancient times, the chain of paths that connected the Lycian city has been called as "Lycian Way". The starting point of the "Lycian Walking Way" is the small village at the foot of Mount Babadağ. Only standard walking materials are needed for this activity. You can obtain the necessary information about your walking route by following the direction finding signs encountered in every 100 meters. By stopping at small mountain villages on your way, you can meet with warm and friendly people and their semi-nomadic lifestyles. The walking path, which can be extended between Fethiye and Kaş and even up to the Antalya, constitutes the first part of the Lycian Way. Faralya (Uzunyurt) Village, Dodurga, Pınara-Letoon Xanthos ancient cities and Patara are among the haunt places. Walking on the natural environment of Lycian Way will be spectacular. (Doğa yürüyüşü 2015)

Just within Fethiye and its surrounding, there are 8 separate Lycian racetracks, and about 40 different types of trekking can be performed. Trekking is performed by conservationist guiders who have a good knowledge of the region. Activities can be performed daily, weekly or for a few days. During walking, some portion of the load is carried with the tractors or minibuses and gathered at certain points. Villages are especially selected as resting and stopover locations. There are tourism companies organizing mountaineering and trekking activities in Fethiye.

3.5. Equestrian Tour (Horseback Riding)

This is an activity performed in a few race tracks with horses in Ovacık and Kayaköy towns near Ölüdeniz. This activity, which has been declining in recent years, is tried to be revived by the contributions of organizing agencies. Tourists are taken to sightsee in the route between and around Kayaköy-Ölüdeniz, Kayaköy-Ovacık, Ovacık-Ölüdeniz.

Horseback riding around Kayaköy and Ovacık towns tastes indeed another thrill. Enjoyable trip on the horseback can be continued across the seaside and river within the forest. An enjoyable trip starting from Ovacık to Kayaköy can be made on the horseback on the paths inside the forest.

Although the region is in a pretty good location for this activity, it has not developed. Horseback riding activities can be mostly included into cultural touring or archaeological activities. Also, the activity can be enhanced by supporting it with different social activities.

3.6. Bike Tours

The bike riding is a cultural and sportive activity ranging from short trips to countrywide and worldwide trips. The reason why people ride bike differs and varies very

much. Cycling saves space and energy, neither causes the noise nor air pollution. It contributes to the sustainable transport and the public welfare, is active and healthy. Lycian Way bike tours are organized in the Fethiye region. There are racetracks in Fethiye and its surrounding which can be accessed by bikes by tasting natural beauties and archaeological views. Several agencies organize tours among which the most important one is the Lycian tours. These tours can be daily, weekly and quarterly. Ölüdeniz and its surrounding with its unique natural beauties charms people during bike tours to be done within its pine forests.

A breathtaking sport can be done with bike tour in Lycia along the southern coast. Beauties can be seen during the bike touring. One can ride a distance of about 60 kilometers by bike from Antalya to Fethiye, and then a tour can be completed by following Dalyan, Patara, Kekova, Olympos and Adrasan route.

3.7. Orienteering –Direction Finding Sport

Direction finding is a sport in which the direction finders aim to reach a certain point in the field by using a detailed map and compass. This sport is done in the form of walking in a wooded area or of competition ambient. Standard direction finding area; is composed of starting point, marked direction control points surrounded by rings, areas which are numbered and connected with roads and are needed to be found, and end point. Control flags are erected in order to mark these points. Orienteering is an endurance sports usually performed individually or as a team in the forest. Orienteering includes control points (red and white orienteering targets which are sealed) whose locations are displayed on the map and found in previously given sequence. Orienteering, which is the brief expression of both physical and mental study, is not just a straight run but also a game in which we do not understand how the time passes while searching control points. As an outdoor sport that appeals people from every age, orienteering is also a family sport in which whole family can do (Orienting 2015).

Ölüdeniz and its surrounding are quite favorable in terms of both natural beauties and natural conditions which enable orienteering.

3.8. Mountain Bike Sport

Especially mountain biking is an ideal sport where one can compete with himself/herself as well as nature and others. It is the combination of factors such as force, balance and endurance. January-February is dead season for mountain bikers. In this season, athletes perform daily long straight road trainings for fitness. They perform technical training on nature in the spring. Mountain biking has not yet been a popular sport in our country. However, it can become a public sport through studies to be carried out in our country.

Ölüdeniz is one of the world's outstanding regions with its natural beauties and culture. It has an extremely suitable terrain for performing the mountain bike sport. Moreover, different beauties can be seen from the beach to the top of the mountain. Forest roads are very suitable for mountain biking.

3.9. Mountain Bike Orienteering (MTB-O)

Mountain bike orienteering (MTB-O) is an endurance sport in which orienteering and mountain biking enthusiasts can perform both sports together. The necessary and important skills for the orienteering sport are the route selection and map memory. Full bicycle control and techniques of driving up and down at steep slopes are inevitable needs for MTB-O devices (Dağ bisikleti 2015).

MTB-O can be operated in many terrains. In this sport, there must be many paths, walkways or car ways which give chance of navigation for the athlete. Navigation between control points must be made at high speed by using the right path routes. For security reasons, athletes must not leave the path routes. MTB-O is the newest orienteering discipline started to be implemented by International Orienteering Federation (IOF). It started in the country where mountain biking sport was widespread in the 1980s and the races has been organized in 12 different countries in 1997.

Ölüdeniz-Fethiye region has an ideal landform for mountain bike orienteering.

4. CONCLUSIONS AND RECOMMENDATIONS

In this study relating to the nature sports for the purposes of recreation, the resources of Fethiye (Ölüdeniz) region have been demonstrated and the following results have been revealed:

- 1- The region can offer many options in terms of compliance with the nature sports in addition to its natural beauties. However, the nature sports are not performed at adequate level.
- 2- The fact that the region has been intensified only in sea and beach tourism raises concerns in terms of its beautiful nature. The intense use and destruction of sea and beaches of Ölüdeniz should be especially avoided in order to develop nature sport tourism.
- 3- Paragliding sport, which is one of the nature sports performed in Fethiye (Ölüdeniz) region, is quite common and the world-famous. This sport can be developed and performed at an advanced level in the region.
- 4- The region is very suitable for underwater sport, although this sport is permitted in certain areas.
- 5- Ölüdeniz region is very rich in terms of Trekking racetrack potential.
- 6- Potential of bike touring is very high, although it does not receive enough attention.
- 7- Although nature sports such as Mountaineering and Horseback Riding have been known for a long time in this region, they are not at desired level but are convenient to be developed.

- 8- Orienteering, Mountain biking sport and Mountain bike orienteering (MTB-O) are the sport branches recently recognized in both region and our country. The region offers incomparable opportunities for these sports.

Recommendations,

- 1- Nature sport services are provided by certain tourism companies in the region. In this respect, the institutions and organizations relevant to the nature sports should collaborate with these tourism companies for the development of these sports.
- 2- Actions should be carried out to inform the visitors of Ölüdeniz and its surrounding about not affecting the environment adversely by their activities during the period of their stay (for instance, in these educations people should be informed in basis for the issues that to be taken into consideration while performing activities such as entering into the sea, doing sport etc.).
- 3- Ölüdeniz has national and international importance owing to its location and natural beauties. It is a necessity to ensure the effective participation of non-governmental organizations and municipalities into the activities which will be held to provide the protection of Ölüdeniz by leaving to the future generations in healthy state.

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ANALYZING OF CONSTANT ANXIETY STATE OF THE STUDENTS STUDYING AT SCHOOL OF PHYSICAL EDUCATION AND SPORTS

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Abstract:

This study is prepared for analyzing constant anxiety state of the students studying at School of Physical Education and Sports. Research sample created by purposeful sampling method which is used in quantitative research methods. SPSS for Windows Version 22 package software used for statistical analysis. t-test used in comparison of two independent groups having variables with normal distribution, ANOVA and Tukey multiple comparison tests used for comparing more than two independent groups having variables with normal distribution. As a result of the study, it is found that gender and income status are the factors making difference on constant anxiety state of the students participating in the study while the variables of family support about doing sport and their birth place are not the factors making difference on constant anxiety state of the students.

Keywords: Physical Education, Student, Anxiety.

INTRODUCTION

Nowadays, it is the fact that the people's living conditions are full of uncertainty. Anxiety in people's daily life affects almost everybody somehow. Desire to be successful through life depending on anxiety and other various psychological factors makes people worried. Therefore, There are positive or negative effects on people's academical and sportive success. It can be stated that the satisfaction people get from life is becoming more different.

The origin of anxiety is "anxietas" in the ancient Greek word. It means such as worry, fear and curiosity (Koknel, 1980). According to the Dictionary of Psychology Terms of Turkish Language Association anxiety is disturbing feeling that comes out when it seems that a strong desire or impulse can not reach its purpose (Enc, 1988). Anxiety is a subjective feeling such as fear and worry and it shows up in any case the integrity of the person is threatened. (Kozacioglu, 1986). In other words, anxiety is the feeling of tension, fear, nervousness, unpleasant thoughts and emotive reactions containing of a combination of physiological variables (Caglar, 1996, Martens, Burton and Vealey, 1990).

Anxiety is one of the basic emotions shared in all living species (Morgan, 1979) and it is the cognitive dimension or the emotional effect of stimulation (Horn, 1992). It tells emotional situation about the feelings of nervousness, worry and distress of body stimulation (Weinberg and Gould, 1995). It is a illness till death and it is an evitable part of life (Kierkegaard, 2004).

Anxiety is categorized in two sections: the normal anxiety and neurotic anxiety according to anxiety resource. Normal anxiety is formed against the objective dangers and external stimulus and the neurotic anxiety consists of internal dangers resulting from person's suppressed sexual and aggressive impulses (Kuru, 2000). The resource of anxiety can be defined as the withdrawal of support, expecting a negative result, internal contradiction and uncertainties (Cuceloglu, 1992).

The individual anxiety is the susceptibility of person's anxiety life. It is the person's tendency to interpret his situations as perceiving stressful or a stress. Regardless of environmental conditions, continuous anxiety is person's restlessness, worry, pessimism, hypersensitivity and intense emotional reaction (Oner ve Le Compte, 1983).

The severity of anxiety or state-continuity changes in every age level. The most intense period of anxiety is two years after birth and puberty years. The anxiety increases related to age because of realizing the reality better and the increase of responsibility (Dong, Yang and Ollendick, 1994).

The evaluation of anxiety of people doing sports is obtained by measuring state and continuous anxiety. Continuous anxiety is considered as a personality feature and it is more permanent emotional state (Gauron, 1982). Various studies about anxiety are considered in sports psychology. In recent times, researches have revealed that sportive success is related to not only biomechanical factors but also psychological factors like anxiety (Konter, 1998).

The aim of the study: All people feel anxiety throughout their lives. It can be said that feeling anxiety affects people's lives positively or negatively. This research was done for determining continuous anxiety levels of students studying in Physical Education Sports High School.

METHOD

Universe and Sample

The universe of this research consists of 1100 students studying in the University of Gaziantep, Physical Education and Sports High School. After determining the size of universe representing, the research sample size is another important factor. In this study, purposeful sampling method of unlikely sampling methods is used. The reason of choosing this method is reflecting the universe in general terms and allowing to determine people to be rich sources. (Balci, 2011). In this context, the sample size of the study according to universe was calculated as 204 utilizing Ryan's formula (1995).

$$n = \frac{Npq}{\frac{(N-1)B^2 + Pq}{Z^2}}$$

$$n = \frac{1100 \cdot (.5) \cdot (.5)}{\frac{(1100-1) \cdot (.05)^2 + (.5) \cdot (.5)}{1.96}}$$

$$n = 204$$

In the formula, the symbols are as follows:

n: number of sample

N: people of research subject

P: people rate or estimate

q: 1-p

B: commensurable error rate (5%)

Z2: reliability interval (%95)

Data Collection Method

This study covers University of Gaziantep Physical Education Sports High School students. Data was collected by questionnaire with 355 students in face to face. Survey questions were evaluated with multiple choice questions and likert type scale. The questionnaire paper consists two parts in accordance with the aim of the study. First section consists of personal information form developed by the researcher to show demographics of participants.

Continuous anxiety scale was used in the second section. The data for determining continuous anxiety conditions was collected by Continuous Anxiety Scale developed by Spielberger (1970). Turkish version of the scale was done by Oner and Le Compte (1998) and the reliability and validity was done again by the same people.

The Analysis of Data

The statistical analysis of data was done by SPSS 22.0 program. “KMO” analysis was done to test the size of sample size. Accordingly, in the study KMO (Kaiser-Meyer-Olkin) is greater than 60 (.757) and Bartlett test was observed as significant ($p < .01$). Thus, in the study the sample is sufficient and presence of a structure is determinable.

The reliability coefficients of the anxiety scale was examined and Cronbach’s alpha value was obtained as .67. These results are given in Table 1.

Table 1. KMO and Barlett’s tests results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.757
	Approx. Chi-Square	1.226 E3
Bartlett's Test of Sphericity	df	190
	Sig.	.000

KMO value of the research was calculated as .757. If KMO value is lower than 50, the factor analysis can not be continued. And the number of subjects should be increased to be able to continue the analysis (Akdağ, 2011). Thus in the research, the sample size is sufficient.

Kolmogorov Smirnov Test was used to analyze data for testing continuous variables accordance with normal distribution. In the study t test was used for variables with normal distribution of comparison of two independent groups. ANOVA and Tukey’s multiple comparison tests and descriptive statistics as frequency, percentage and average values were used for the comparison of more than two groups. In the statistical analysis done in the study $p < .05$ was considered as significant.

Limitations of The Research

The research is limited to University of Gaziantep Physical Education Spots High School students’ thoughts. In addition, the subject of the research has not been done before in any studies and it can be said as a limitation of the research.

RESULTS

In this part there are results and comments on the problems of our research.

Table 2: The personal information of sample group

Variable	Groups	N	Percentage (%)
Gender	Female	137	38.6
	Male	218	61.4
Place of Birth	Gaziantep	136	38.3
	Southern East Anatolia Region	86	24.2
	Other cities	133	37.5
Families' Sports Support	Yes	279	78.6
	No	76	21.4
Families' Income Level	1000-1500 TL	161	45.4
	1501-2000 TL	119	33.5
	2001-2500 TL	75	21.1

n=355

When table 2 is examined, 38.6 % of the participants are female (137 people), 61.4% of participants are male (218). Participants' places of birth mostly are Gaziantep 38.3 % (136 people). Participants have families' sports support 78.6 % (279 people). Participants have at most 1000-15000 TL as monthly income (161 people).

Table 3. The comparison of continuous anxiety scores according to gender

		N	Avg.	Ss	sd	t	p
Continuous Anxiety	Female	137	2.54	.36	353	2.37	.01*
	Male	218	2.44	.37			

When table 3 is examined, the average total score of female students' continuous anxiety is average =2.54, the average total score of male students' continuous anxiety =2.44.

Total scores of students' genders from the scale have statistically significant difference [t(353)=2.37, p<.05].

In this case, the total scores of female students' continuous anxiety are higher than the total scores of male students' continuous anxiety.

Table 4. Comparison of continuous anxiety scores and families' sports supports

		N	Avg.	Ss	sd	t	p
Conitnuous Anxiety	Yes	279	2.46	.37	353	.91	.51
	No	76	2.55	.34			

When table 4 is examined, according to families' sports support variation, students marking yes proposition have total average score from the continuous anxiety scale as average = 2.46, students marking no proposition have total average score from the continuous anxiety scale as average = 2.55. It is found that there is no statistically significant difference between students' scores from the scale and families' sports support variation [t(353)=1.91, p>.05].

In this case, it is seen that families' sports support does not have effects to make significant difference on students' total continuous anxiety scores.

Table 5. Descriptive statistics values of continuous anxiety scores according to place of birth

	Place of Birth	N	Avg.	Ss	Sh
Total anxiety	(x) Gaziantep Province	135	2.45	.364	.031
	(y) Southern East Anatolia Region	87	2.51	.354	.033
	(z) Other provinces	133	2.48	.388	.038

When table 5 is examined, it is seen that continuous anxiety average scores have no significant difference according to place of birth. The results are given to Table 6 by doing the analysis of the difference between scores.

Table 6. The results of analysis of one way variance between continuous anxiety scores and place of birth

	Variation	Total of	sd	Mean of	F	p
	Resource	Squares		Squares		
Total Anxiety	Inter groups	.249	2	.124	.902	40
	In groups	48.518	352	.138		
	Total	48.767	354			

When table 6 is examined, it is seen that continuous anxiety average scores have no significant difference according to place of birth [$F(2,352)=902, p>.05$].

Table 7. Descriptive statistics values of continuous anxiety scores according to families' income level

	Families' Income Level	N	Avg.	Ss	Sh
Total Anxiety	(x) 1001-1500 TL	161	2.39	.359	.028
	(y) 1501-2000 TL	119	2.49	.387	.035
	(z) 2001 TL and above	75	2.65	.312	.036

When table 7 is examined, it is seen that continuous anxiety average scores have no significant difference according to families' income level. The results are given to Table 8 by doing the analysis of the difference between scores.

Table 8. The results of analysis of one way variance between continuous anxiety scores and families' income level

	Variation Resource	Total of Squares	sd	Mean of Squares	F	p	Results of Tukey Test
Total Anxiety	Inter groups	3.18	2	1.579			
	In groups	45.609	352	.130	12.1	.00*	x-z, y-z
	Total	48.767	354				

When table 8 is examined, it is seen that continuous anxiety average scores have no significant difference according to families' income level [$F(2,352)=12.1, p>.05$].

According to Tukey test done for determining which groups have determined differences, it is seen that students that have 2001 TL and above income significantly feel more anxiety than students that have 1501-2000 TL and 1001-1500 TL income. It is observed when income level increases, continuous anxiety level increases too.

DISCUSSION AND RESULT

It is seen that continuous anxiety levels have no significant difference according to students' genders. According to this result, female students have more continuous anxiety than male students. In literature, there are studies related to this result in similar and different aspects.

In a similar direction with this study, it was found that female athletes have higher anxiety level than male athletes in the study of "The Relationship Between Anxiety Level and Sportive Success of Athletes Studying in High School" done by Vurgun (1998). It was concluded that female athletes have higher anxiety than male athletes in the study of "Sportive Success and Anxiety Level of Athletes Having Experiences and Different Sport Age in Secondary School" done by Gunduz (1995). It was found that female athletes have higher anxiety level than male athletes in the study done on 18 male and 34 female athletes who are doing individual sports by Camliyer (1984). It was observed that anxiety causes significant change on females' learning and school success; however, anxiety causes significantly blocking on males' learning and school success in the study done by Sarason and his friends (1964). It was noticed that female football players have higher anxiety level than male football players in the study of "The Comparison of Anxiety Level of Footballers Pre-Competition and The Effect of Some Variables" done by Amen (2008). It was found that there is a significant relationship between exam anxiety and gender for 8th Grade Primary School Students Preparing for High Schools Students Selection and Placement Exam done by Kayapinar (2006). It was concluded that male basketball players have lower anxiety level than female basketball players in the study of "Anxiety Level of Basketball Players" done by Gould and his friends (1987). It was noticed that women have more anxiety than men in the study of "Adaptation, Validity and Reliability of State Continuous Anxiety Inventory for Children" done by Ozusta (1993). It was found that there is a significant relationship between gender and depression levels in the study of "Depression Levels of High School Students in terms of Grade and Gender Variables" done by Oren and Gencdogan (2007).

It was found that women have higher cognitive anxiety significantly than men in the study of "High Level Volleyball Players' Skill Performance and Competition Anxiety" done by Edis (1994). It was concluded that female athletes have higher anxiety than male athletes in the study of "Anxiety Level of Athletes in the Competition Environment" done by Arseven and Guven (1992).

In a different direction with this research, it was seen that female students have lower anxiety level than male students in the study of "The Relationship between Academical Success and State-Continuous Anxiety of Students of Manisa Celal Bayar University Physical Education Sports High School Teachership Programme" done by Ozturk (2008).

It is seen that families' sports support variation does not have effects to make significant difference on students' continuous anxiety level. In literature there are studies in different direction with this result.

It was concluded that upbringing and behaviours of parents and family playing as active role in upbringing are primarily effective for having anxiety in the study of "The Effects of Anxiety on Learning and Memory" done by Oktem (1981). It was seen that parents' jobs have

significant difference in the study of “ Factors Affecting Anxiety of High School Senior Students” done by Varol (1990). It was determined that students of families having negative behaviours and attitudes towards students to take the exam have high anxiety level in the study of “ 13-15 Age Group High School Students’ Anxiety Level” done by Ok (1990). It was found that parents’ and siblings’ guidance to volleyball sports has the important role in the study of “ The Factors Affecting Starting Sports of Elite Women and Men Volleyballers and Sports Expectations” done by Sunay and Saracoglu (1996).

It is seen that continuous anxiety average scores have no significant difference according to families’ income level. It was seen that wrestlers have no difference with continuous anxiety level to income level in the study of “ Describing Continuous Anxiety Levels of Athletes Participating in Wrestling Championship of Turkey in terms of Different Variables” done by Turkcapar (2012). It was found that there is significant difference with anxiety level to income level in the study done by Ozturk (2008). It was observed when income level increases, continuous anxiety level decreases in parallel in the study of “The Comparison of Athletes State-Continuous Anxiety Participating in Individual and Team Sports Before and After Competitions” done by Ozturk (2008).

According to the results of the study, Continuous Anxiety Level of Students Studying in Physical Education Sports High School was examined. The study was realized with 355 students studying in The University of Gaziantep in 2014-2015 academic year by using quantitative research method. Quantitative data was collected by “ Continuous Anxiety Scale”.

According to the result of the study, it is seen that female students have significantly higher anxiety level than female students. Girls’ function of family in Anatolia and point of view of society towards girls (not be the same with boys) affecting anxiety girls’ participation in sports was thought as a result of this result.

It is seen that families sports support variation has no significant difference with continuous anxiety level. It is thought that university students are mature mentally, physiologically and socially and also they gained experiences from many exams, which increases university students’ self-confidence and decreases families effects.

It is seen that students’ place of birth has no significant difference with continuous anxiety total scores. It is thought that Students entering exams at the same conditions and getting into university, taking courses at the same conditions have effects on students’ having the same continuous anxiety.

Students’ income levels have significant difference with continuous anxiety total scores. When economical level increases, anxiety level increases too. It is thought that students having high economical level have high risks to lose and that affects students’ high anxiety level.

SUGGESTIONS

As a result of the research it is found that the female students have more anxiety than male students studying in Physical Education Sports High School. It is recommended to work on reducing female anxiety by finding reasons of continuous anxiety of female students with the help of research results.

It is found that continuous anxiety total scores of students have significant difference with families' income level. According to this result, the continuous anxiety level increases when income level is high. It is recommended to work on decreasing or eradicating the reasons making anxiety by increase of persons' economical situation. It is recommended to have new researches to decrease not only the students' anxiety levels but also other all job groups' anxiety levels

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TRAINING AND SUBSTANCE UTILIZATION

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Abstract: The main purpose of this paper was to review substance utilization through exercise. Training is found to important modulator for substance utilization. It is very effective strategy for fat utilization. High fat feeding is found to be negative factor for protein synthesis while gender and rare have similar substance utilization responses. Training also cause changes in many factors such as GH, insulin and fatty acid concentrations.

Key words: protein synthesis, fat oxidization, and training

INTRODUCTION

Proper feeding habits and augmented bodily activity are important factors on improving metabolic risk factors on body composition and fat distribution. Fat oxidation through work out is augmented by endurance exercise, and data recommends that fat oxidation through work out is negatively affected by obesity. Thus, the main purpose of this paper to review substance utilization through exercise. It was reported that there might sex-specific variations in substrate utilization through work out, usually such that women have higher percentage of fat than men. This review also aimed to clarify whether gender differs in substance utilization through exercise.

LITERATURE REVIEW

Goto, Ishii, Sugihara, Yoshioko & Takamatsu (2007) study investigated effects of past resistance training on fat metabolism during subsequent submaximal training with diverse recovery durations among work out sessions. Increase of fat oxidation was seen just in the testing with shorter break between resistance work out and submaximal training sessions.

Knechtle, Baumann, Wirth, Knechtle & Rosemann (2010) inspected if Ironman triathlon athletes drop body mass in the type of fat mass or skeletal muscle mass. The hydration condition of 27 subjects was determined. Body mass was reduced by 1.8 kg ($p < 0.05$), skeletal muscle had reduction by 1.0 kg ($p < 0.05$) whereas fat amount did not change. It was concluded that that Ironman triathlon athletes drop 1.8 kg of body mass and 1 kg of skeletal muscle mass, most probably because of reduction of intramyocellular stored glycogen and lipids.

In another study, Kostek, Pescatello, Seip, Angelopoulos, Clarkson & Gordon (2007) compared subcutaneous fat assessment prior to and subsequent to resistance training among 104 participants. A 12 weeks of supervised resistance exercise was carried out with nondominant arm. Subcutaneous fat in both dominant and nondominant arms prior to and subsequent to resistance exercise were assessed. Subcutaneous fat, calculated by skinfold measurement reduced only in the trained arm while there was no changes subcutaneous fat difference between arms after MRI assessment. The findings of study suggested that subcutaneous fat alterations resultant from resistance exercise diverged by sex and assessment strategy. It was proposed that superior distinction in resistance training responses would prevent major differences depending of training status of arms.

It was proposed that fat oxidation throughout work out is impaired in obesity. Thus, Melanson, Gozanky, Barry, Maclean & Grunwald (2009) compared the acute impacts of training on 24-h fat oxidation and fat balance in lean sedentary, lean endurance-trained, and obese sedentary men and women. Energy spending and substrate oxidation were calculated throughout 24 hours under sedentary and exercise environments while sustaining energy balance. Exercise group completed stationary cycling at 55% of aerobic ability for an hour. There was no difference on fat oxidation during 24 hours between the groups. Yet, more positive 24-h fat balance was determined on exercise group compared with control group. Glucose, insulin, and free fatty acid (FFA) profiles were comparable on the exercise and control group for 24 hours.

Leanne R, Leonie K, Heilbronn CK, Alfonso MA & Smith SR (2007) compared by diet only or diet plus exercise for 6 months on body composition and fat distribution. Both whole-body and abdominal fat distribution were not changed by the interference. In another study, Soltow, Betters, Sellman, Lira, & Long (2006) aimed to inspect if cyclooxygenase (COX) activity is required for overload-induced growth of adult rat skeletal muscle. Ibuprofen care repressed plantaris hypertrophy by around 50% subsequent 14 d of OL. At 14 days, on the other hand, L-NAME caused a 30-fold augmentation in plantaris COX-1 mRNA expression. It was found that L-NAME treatment notably repressed OL-induced expression of COX-2 mRNA.

Watts, Hanson, Delmonico, Yao & Wang, et al., (2008) study inspected the impact of

gender and race on the influence of strength training (ST) on body composition. The results indicated that strength exercise caused augmentation in absolute MV in men than in women, although both genders augmented muscle volume (MV) significantly with ST, and the relative (%) improvements were similar. There were no considerable differences between races. It was indicated that strength exercise does not change subcutaneous or intermuscular fat, no matter what sex or racial classification. Even men show a superior muscle hypertrophic response to strength exercise than do women, the variation is minor and race does not cause any difference. Similar to this study, Zender, Ith, Kreis, Saris & Bouteller (2005) investigated sex-specific variations in substrate utilization during exercise. The participants exercised at 50% of total intensity for 3 hours. The findings of the study indicated that, throughout this 3-hours of work out, energy stores from fat and CHO were comparable in both genders, both genders decreased their IMCL supplies notably. It was suggested that the superior donation of IMCL throughout work out in males compared with females could either be a consequence of sex-specific substrate selection, or different long-term work out routine.

Pederson (2010) reviewed the interaction between muscle and fat. He reviewed and reported a study by Sitnick et al., (2009). He enlightened the interactions between muscle and fat in lifestyle-associated illnesses. The study suggested that chronic high fat feeding impairs the capacity of murine skeletal muscle to hypertrophy in reaction to a mechanical load. By the other words, it means that the outcome of a high fat diet is not just a raise in fat mass, but a reduction in muscle mass. It was speculated (Kennedy et al. 2009) saturated fatty acids may straightforwardly bring about inflammation and insulin resistance in muscle.

DISCUSSION & CONCLUSIONS

Training caused various outcomes on the issue of substance utilization. For example, the result of this examination suggests that when training is performed with energy substitution, 24-hours fat oxidation may be to some extent reduced. High fat feeding is considered to be not a positive factor in substance utilization. It was speculated this would be because inflammation caused by fatty acids that inhibits protein synthesis (Kennedy et al. 2009). Zender et al., (2005) study found that energy stores from fat and CHO were comparable in both genders. It was indicated that strength exercise does not change subcutaneous or intermuscular fat, no matter what gender or ethnic classification. Even men show a superior muscle hypertrophic response to strength exercise than do women, the variation is small and race does not induce this reaction (Watts et al., 2008). Another important issue related substance utilization with exercise is that COX action is significant for in vivo muscle hypertrophy (Soltow et al., 2006). It was proposed that fat oxidation throughout work out is impaired in obesity. Thus, Melanson et al., (2009) found was no difference on fat oxidation during 24 hours between the different exercise training groups.. Kostek et al., (2007) study suggested that subcutaneous fat alterations resultant from resistance training diverged by gender and measurement method.

Redman et al. (2007) study compared subjects who underwent a six-month 25% caloric restriction with those who had a 12.5% caloric restriction plus a 12.5% increase in exercise resulting in a 25% caloric deficit' lost the same amount of weight. Normally, when subjects engage in exercise they add some muscle weight which would make the gross or absolute

amount of weight loss somewhat lower though the change in body composition would be greater, i.e., decrease in fat with an increase in muscle as many studies show. Not only that but muscle is metabolically more active than fat and thus results in a greater caloric expenditure even when resting.

Kostek et al. (2007) study conclusion was the result of MRI assessment of the upper arms in subjects. Since different regions of the body differ in their ability to store and mobilize subcutaneous fat, as well as a difference between men and women (mostly due to gender-specific hormones) - it would be interesting to see a full-body resistance exercise workout to note if any particular areas of the body have a propensity to mobilize and lose fat mass. Bjorntorp, P. (1997) investigated hormonal control of regional fat distribution. In brief, regional fat distribution is regulated by hormones. Not only are the sex steroid hormones important as demonstrated by the differences in fat distribution between men and women but also the adrenal corticosteroids and the peptide hormones such as insulin and GH. Cortisol in the presence of insulin exerts powerful lipid accumulation effects by expressing LPL. These effects are most pronounced in visceral fat due to its high density of glucocorticoid receptors (followed by abdominal subcutaneous and then femoral subcutaneous). T regulates lipid mobilization in a powerful and multifaceted manner and has a synergistic effect with GH since effects are much less pronounced with each hormone alone. The density of the androgen receptor appears to be greater in visceral than subcutaneous fat. The net effect would be to decrease visceral fat mass. And so on.

The research performed by Soltow, Betters, Sellman, Lira, Long, & Criswell (2006) demonstrated that ibuprofen significantly decreases muscle hypertrophy in rats. This should be further investigated in human subjects to determine if the same results apply, especially given the widespread use of non-steroidal anti-inflammatory drugs (NSAID). Athletes often take NSAID's during sport seasons to help recover from injuries, to continue competing without having to sit out, or to reduce possible activity-related inflammation. If ibuprofen truly inhibits the pathways of protein synthesis by inhibiting COX, which is a necessary component to interact with NO, it may be contraindicated to take such drugs because they could actually impede the recovery process from an injury instead of helping. In sports where muscle mass needs are high for optimal performance, it may be that drugs like acetaminophen could be better options because they might not block COX to the same extent as ibuprofen, thus reducing the influence on muscle hypertrophy and recovery from activity.

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DOMINANT HAND GRIP STRENGTH EXAMINATION IN UNIVERSITY STUDENTS

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ABSTRACT

Examination of dominant hand grip strength in university students according to gender and some other variables. After determining gender, age, height and weight of 3912 students consist of 1345 female and 2567 male studying at different departments in university, their hand grip strength determined by Takkei brand hand dynamometer. As a result of two sample t-test, dominant hand grip strength found significant on behalf of males ($p=0.000$). There is not a significance between dominant hand grip strength and gender in itself. As a result of the Pearson Correlation, there is significant relation between left hand grip strength and age, weight and height of both females ($p=0.000$) and males ($p=0.000$) while there is a significant relation between right hand grip strength and age of men ($P=0.141$), weight of women ($P=0.006$), weight of men ($p=0.006$), height of women ($P=0.000$), height of men ($p=0.000$) with the exception of age of women ($P=0.612$). According to Multilinear Regression Analysis, girls' left hand grip strength is affected by height ($p=0.000$), right hand is affected by age and height ($p=0.000$), boys' left hand grip strength is affected by weight ($P=0.000$) and height ($P=0.002$), right hand is affected by both age ($P=0.007$), weight ($P=0.000$) and height ($P=0.000$). Benefited from Step-Wise Regression method in determining important variables. As a result of this study, it can be said that hand grip strength related to anthropometric measurements in line with literature.

Key Words: University Students, Grip Strength, Anthropometric Measurements

INTRODUCTION

Hand grip strength determined to be a good indicator of general muscle (Ulrike et al., 2012; Shahida et al., 2015; Silva and Menexes, 2013; Syddall et al., 2003), general upper extremities performance [5] (Desrosiers et al., 1995) and functional integrity (Rufus et al., 2009) by using hand dynamometer. Hand grip strength is connected with ability of doing daily life activities and determined as an objective measurement in performance evaluation (Ke et al., 2010). Grip strength indicated to be a commonly used tool in evaluating hand functions (Nicolay and Walker, 2005) as well as muscle functions in clinical environments (Rufus et al., 2009; Sel et al., 2014). Grip strength is accepted as a strong determinant of health and vitality in both women and men (Andrew et al., 2007) as well as adverse health outcomes (Tieland et al., 2015). Hand grip strength measurements used in evaluating different wrist injuries, in determining treatment activities like hand exercises and as a standard after many different surgical operations (Joris et al., 2013). Attendantly hand grip strength was reported as an appropriate method to use in public health researches (Yumiko et al., 2013). It is emphasized that hand grip strength can change with specific anthropometric dimensions (Shahida et al., 2015).

Based on these informations, the purpose of this study is examining the university students' dominant hand grip strength according to gender and some variables.

METHOD

After getting necessary permissions from Gaziantep University Local Ethics Committee, total of 3912 students' data out of 5000 students were evaluated consisting 1345 female and 2567 male studying at different departments in university.

After determining gender, age, height and weight of the subjects participating in the study, their hand grip strength measurements determined by Takkei brand hand dynamometer.

Subjects' year of birth learned from their identity, their heights measured by stadiometer (SECA, Germany) having 0.001 degree of accuracy. Their height determined by measuring the distance between head vertex and foot while the head is in Frankfurt plane following a deep inspiration (Seidell et al., 2001).

Subjects' body weight measurement made by electronic scale (SECA, Germany) having 0,1 kg degree of accuracy.

Body weight (BW) measurements made according to standard techniques while subjects were in sportswear (short, t-shirt) and shoeless (Arroyo et al., 2004).

Hand grip strength measurements made by Takkei brand hand dynamometer. Measurements made after 5 minutes warming up while subject stands without bending his/her measuring arm (dominant hand) and without touching it to the body while arm making 45

degree angle to the body. These conditions repeated 3 times for dominant hand and maximum value was recorded (Özer, 2001).

Statistical Analysis

Two sample t-test used for determination of differences between genders in terms of right and left hand grip strength, Pearson Correlation Test used in examination of relation between subjects' physical features and right-left hand grip strength, Multilinear Regression Analysis used for determining the variables effecting right and left hand grip strength, Step-Wise Regression Method used for determining important variables.

RESULTS

Table 1. General Informative Statistics Concerning Determined Characteristics

Variables	N	Average	StandardError	Minimum	Maximum
Age	3912	21,40	0,04	13	46
Weight	3912	67,89	0,21	21	136
Height	3911	1,73	0,01	1,37	2
Right Hand	3187	35,80	0,18	9,9	64,3
Left Hand	710	36,72	0,37	13,7	63,2

Table 2. Informative Statistics According to Gender

Gender	Variables	N	Average	Standard Error	Minimum	Maximum
Female	Age	1345	20,62	0,06	14	38
	Weight	1345	58,24	0,23	32	105
	Height	1345	1,66	0,01	1,37	1,98
	Right Hand	1133	26,17	0,21	9,9	62,6
	Left Hand	208	25,99	0,48	13,7	49,3
Male	Age	2567	21,80	0,05	13	46
	Weight	2567	72,95	0,24	21	136
	Height	2566	1,76	0,01	1,45	2
	Right Hand	2054	41,11	0,17	17,1	64,3
	Left Hand	502	41,16	0,31	16,7	63,2

Male's both right hand ($p=0.000$) and left hand grip strength ($p=0.000$) determined to be higher than female's at important levels.

According to t-test results done in both females and males in themselves, there is not a significant difference between both dominant hands grip strength.

Table 3. Pearson-Moment Correlation Coefficients Between Weight, Age and Height Characteristics and Right Hand and Left Hand Characteristics of Females

Variables	Right Hand	Left Hand
Age	r=0,09 N=1133 P=0,004	r= -0,04 N=208 p=0,612
Weight	r=0,34 N=1133 p=0,000	r=0,19 N=208 p=0,006
Height	r=0,31 N=1133 p=0,000	r=0,30 N=208 p=0,000

As a result of the Pearson Correlation, there is significant relation between left hand grip strength and age, weight and height of both females ($p=0.000$) and males ($p=0.000$) while there is a significant relation between right hand grip strength and age of men ($P=0.141$), weight of women ($P=0.006$), weight of men ($p=0.006$), height of women ($P=0.000$), height of men ($p=0.000$) with the exception of age of women ($P=0.612$).

While the relation between left hand grip strength and age, weight and height ($p=0.000$) is statistically important, the relation between right hand grip strength and weight ($p=0.006$) and height ($P=0.000$) is statistically important with the exception of age ($P=0.612$). (Table 3)

Table 4. Pearson-Moment Correlation Coefficients Between Weight, Age and Height Characteristics and Right Hand and Left Hand Characteristics of Males

Variables	Right Hand	Left Hand
Age	r=0,10 N=2054 p=0,000	r=0,07 N=502 p=0,141
Weight	r=0,25 N=2054 p=0,00	r=0,37 N=502 p=0,000
Height	r=0,26 N=2053 p=0,00	r=0,26 N=502 p=0,000

There is a statistically important relation between left hand grip strength and age, weight and height ($p=0.000$) in men, while there is a statistically important relation between right hand grip strength and weight ($p=0.006$) and height ($P=0.000$) with the exception of age ($P=0.612$). (Table 4). Likewise, the linear relationship only between age and left hand

($P=0.141$) is not statistically important in males group and the relation between other characteristics is positively and statistically important.

Table 5. Multilinear Regression Analysis Results

Gender	Variables	β	SE	VIF	R^2	P	
Female	Age	-0.01	0.07	1.18	0.102	0.866	
	Weight	0.13	0.07	1.21		0.087	
	Height	0.26	0.07	1.18		0.000	
	Left Hand = -0.01 Age + 0.13 Weight + 0.26 Height						
	Age	0.03	0.02	1.04	0.154	0.255	
	Weight	0.25	0.03	1.23		0.000	
	Height	0.21	0.03	1.19		0.000	
	Right Hand = 0.03 Age + 0.25 Weight + 0.21 Weight						
	Male	Age	0.00	0.04	1.03	0.153	0.985
		Weight	0.32	0.05	1.19		0.000
Height		0.14	0.04	1.17	0.002		
Left Hand= 0.00 Age + 0.32 Weight + 0.14 Weight							
Age		0.06	0.02	1.04	0.092	0.007	
Weight		0.17	0.02	1.23		0.000	
Height		0.18	0.02	1.19		0.000	
Right Hand = 0.06 Age + 0.17 Weight + 0.18 Weight							

As seen in Table 5, female's left hand grip strength affected by height ($p=0.000$) and right hand affected by age and height ($p=0.000$). It is seen that the weight (0.25) is affecting right hand grip strength more than height (0.21) in females while left hand grip strength affected by weight ($P=0.000$) and height ($P=0.002$) and right hand grip strength affected by age ($P=0.007$), weight ($P=0.000$) and height ($P=0.000$) at important levels in males. Weight (0.32) in males seen to be affected left hand grip strength two and a half times more than height. (0.14) Height (0.18) and weight (0.17) in males seen to be affected right hand grip strength two times more than age (0.06).

Table 6. Step-Wise Regression Analysis Results Done Through Standardized Datas

Gender	Multi Regression Equation	R ²	P (Age)	P (Weight)	P (Height)
Female	Left Hand = 0.30 Height	8.77			0.000
	Right Hand = 0,26 Weight + 0.21 Height	15.28		0.000	0.000
Male	Left Hand = 0.32 Weight + 0.14 Height	15.30		0.000	0.002
	Right Hand = 0.06 Age + 0.17 Weight + 0.18 Height				

As seen in Table 6, female's left and right hand grip strength can be estimated by benefited from regression equations in order of left hand = 0.30 height and right hand = 0,26 weight + 0.21 height; male's left and right hand grip strength can be estimated by benefited from regression equations in order of left hand = 0.32 weight + 0.14 height and right hand = 0.06 age + 0.17 weight + 0.18 height.

DISCUSSION

In the study done for determination of dominant hand grip strength in university students, the relation between age, weight and height examined according to gender by using Takkei brand hand dynamometer.

According to -test results done both females and males, it is seen that there are statistically important differences between both right hand grip strength ($P=0.000$) and left hand grip strength ($P=0.000$) Male's both right hand ($p=0.000$) and left hand grip strength ($p=0.000$) determined to be higher than female's at important levels (Table 2).

According to t-test results done both females and males in themselves, there is not a significant difference between both dominant hands grip strength. This result can be explained as men have more muscles than women.

As a result of the many studies, it is reported that male's hand grip strength is higher than female's in adults (**Shahida et al., 2015**; Rufus et al., 2009; 2015; Su et al., 1995; Balogun et al., 1991). It is remarkable that our findings are similar with other declared findings in literature.

According to two sample t-test comparison results doneby using Takkei brand hand dynamometerseparatelyin both females' and males', it is determined that there is not a significant difference between dominant right and left hand grip strength (Table 2).

The study examining the age-related changes in hand grip strength in population consist of 199 people and used Jamar brand hand dynamometer in the study andit is determined that the least difference between right and left hand grip strength is in between young groups (Puh, 2010).

In a study evaluating the normative data in adults over the aged between 20-75, similarly minimal differences found between right and left hand grip strength. In the same study, Takkei hand dynamometer used on 7147 English children and similar results obtained between males and females (Mathiowetz et al., 1985). However, the study done by Balogun et al on 960 people aged between 7-84, it is emphasized that hand grip strength is more significant prominently in favor of right hand ($p < 0.0001$) in all age groups (Balogun et al., 1991).

Our findings indicated that Cohen et al used same brand dynamometer and similar results obtained while other researchers used Jamar brand dynamometer and obtained partly similar results to our findings.

We preferred adults who are between 18-25 age range for our study and it can be said that it is more homogeneous from the study done by Balogun et al. with the subjects who are between 7-84 age range. Besides measurement method and other factors thought to be effective.

In many reported studies in literature bodyweight and hand grip strength indicated positive correlation in children and adolescents (Silverman, 2011; Rauch et al., 2002) and also it is stated that there are anthropometric factors determining age, gender, height and bodyweight and hand grip strength in normal population (Shahida et al., 2015; Eksioğlu, 2016; Werle et al., 2009; Mohammed et al., 2015).

It is seen that the relation between left hand grip strength and age, weight and height of females ($p = 0.000$) is statistically important while the relation between right hand grip strength and weight ($P = 0.006$) and height ($p = 0.000$) is important with the exception of age of women ($P = 0.612$) (Table 3).

It is determined that there is a statistically important relation between left hand grip strength and age, weight and height ($p = 0.000$) in men, while there is a statistically important relation between right hand grip strength and weight ($p = 0.006$) and height ($P = 0.000$) with the exception of age ($P = 0.612$). Likewise, the linear relationship only between age and left hand ($P = 0.141$) is not statistically important in males group and the relation between other characteristics is positively and statistically important (Table 4). A significant relation reported between left-right hand and age groups for both genders in the study done on 553 male and 629 female sedentaries who are aged between 20-64 (Hanten et al., 1999).

In a similar study done by Mathiowetz et al. a high correlation indicated between hand grip strength and age (Mathiowetz et al., 1985) and between hand grip strength and weight, height and other anthropometric variables (Hanten et al., 1999). In the study examining reference values in 769 healthy Caucasian adult, fore arm circumference and length, hand size, body mass index, type of job and hand dominance indicated correlation between hand grip strength (Christian et al., 2008). In the study done by Balogun et al on 960 people aged between 7-84, it is emphasized that hand grip strength is relevant to body weight and height in all age groups (Balogun et al., 1991).

These results comply with significance value of the relation between left hand grip strength and age, weight and height but right hand grip strength can differ by geographical reasons, international distinctness or genetic distinctness (Rufus et al., 2009; Eksioglu, 2016).

Female's left hand grip strength only affected by height ($p=0.000$) while right hand affected by age ($P=0.000$) and height ($p=0.000$). It is seen that the weight (0.25) is affecting right hand grip strength more than height (0.21) in females while left hand grip strength affected by weight ($P=0.000$) and height ($P=0.002$) and right hand grip strength affected by age ($P=0.007$), weight ($P=0.000$) and height ($P=0.000$) at important levels in males. Rufus et al. found in their studies that body weight and height parameters in females are connected with hand grip strength (Rufus et al., 2009). Weight (0.32) in males seen to be affected left hand grip strength two and a half times more than height (0.14) Height (0.18) and weight (0.17) in males seen to be affected right hand grip strength two times more than age (0.06) (Table 5).

The regression equations in Multilinear Regression Analysis must be created only by variables having important effects and used for determining the variables effecting right and left hand grip strength, Step-Wise Regression Method used for determining important variables which will take part in equations. Female's left and right hand grip strength can be estimated by benefited from regression equations in order of left hand = 0.30 height and right hand = 0.26 weight + 0.21 height; male's left and right hand grip strength can be estimated by benefited from regression equations in order of left hand = 0.32 weight + 0.14 height and right hand = 0.06 age + 0.17 weight + 0.18 height (Table 6).

This study examining hand grip strength which is a good indicator of upper extremity performance and functional integrity between undergraduate adults aged between 18-25 and coming from different regions of Turkey and it is determined that male's left and right hand grip strength are statistically higher than female's generally but there is not a significant difference between both dominant hands grip strength of females and males in themselves.

It is found in our study that gender, age, height and body weight are related to hand grip strength like declared in literature. It is determined that there is significant relation between left hand grip strength and age, weight and height of both females and males while there is a significant relation between right hand grip strength and weight and height with the exception of age.

As a result of this study, it can be said that hand grip strength related to anthropometric measurements in line with literature.

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