INTERNATİONAL JOURNAL OF DİSABİLİTİES SPORTS AND HEALTH SCİENCES

AUTHOR GUİDELİNES

Instructions for Authors

The following article types apply in this journal: Review articles; original articles, reports,discussions, works, editorial materials All research articles in this journal will besubject to a rigorous peer review based ondouble blind equilibrium by at least two expert referees passing through the chief editor's scrutiny. The final publication decision is the responsibility of the chief editors. Find out what happens during peer review and read our publication ethics.

Preparing Your Paper Structure

Your editor is compiled in the following order: title page; summary, keywords, introduction, materials and methods, results, discussion; thanks, References International Journal of Disabilities Sports and Health Sciences (IJDSHS) is a wellestablished, open-access journal covering a wide range of academic disciplines. Please read and follow these instructions carefully before submitting the article; it will ensure that your manuscripts are published as quickly and efficiently as possible.

Submit Articles

IJDSHS can now accept manuscripts in Microsoft Word (2003 or later) format with Online Writing Tracking System.

Article Template

Authors can do wnload a MS Word template by clicking here. Click here to download the template. Format of the pages: Page Setup: Top: 2.5 sm, Bottom: 2.5 sm, Left: 2.5 sm, Right: 2.5 sm Line Spacing: 1 lines; First Line: 1,5 см; Paper Size: A4.

1. General Conditions

1.1 Language and Numbers

Please write your text in appropriate English; US or British use is accepted, but the mixture of the two is not acceptable. We only accept manuscripts written in English.

1.2 Paper Length

Articles between 4,000 and 10,000 words
are preferred.

2. Title Page

Every effort should be made to ensure the completeness of the peer review process and to ensure that the authors know each other's identities. When you upload a submission file, the author IDs must be removed from it. You need to upload the title page as an additional file for editorial review.

2.1 Title

The title should be concise and informative. Headings are mostly used in information access systems. Avoid abbreviations and formulas where possible. If you select a subtitle, it must be in italics and should be centered directly under the main title. Times New Roman; Title Size: 16 pt

2.2 Author's Names and Resources

The preferred form of the author's name is first name, middle initial (s) and surname; this form reduces the likelihood of false identity. Use the same form in your publication throughout your career to help researchers; ie, do not use the full name on letters and then letters on a manuscript. Demirci N. Toptaş P. N. Demirci, P. Toptaş Determining whether or not the same person is difficult can be difficult, especially when quotations are based on a few years and institutional ties. Eliminate all books (eg, Dr., Professor) and degrees

(eg PhD, PsyD, EdD). Authors' membership usually indicates the location of the author (s) on the date the research was conducted. If only two organizations have contributed significantly to the work, include a dual membership. Include no more than two members per author. Times New Roman; 10 pt

Sample:

Nevzat Demirci1
Erdal Demirci2
Nevzat Demirci1 and Erdal Demirci2
1 Mersin University, School of Physical Education and Sport, Turkey
2 Sarıkamış School of Physical Education and Sport Sciences, Kafkas University, Turkey Contact Information: Mersin University, School of Physical Education and Sport, Turkey, Ciftlikkoy Campus, 33343, Yenisehir-Mersin, Turkey

3. Preparing Articles

The order of the posts is as follows: Hood; Key; key words (indexing terms, normally three to six items); Login; material, area descriptions, methods and / or techniques studied; Results; discussion; Result; thank; References. (Times New Roman; 12 pt)

3.1. General Rules for Screw

Please use the following rules for the entire text, including abstract, keywords, headings, and references.
Font: Times New Roman; Title Size: 16 pt.
Paragraph Range: The above paragraph – 0 pt .; the following paragraph - 4 pt.
Line range: constant, 12 pt.
Heading 1: Times New Roman; 12 pt .; thick; For example, the 1st Level Heading
Heading 2: Times New Roman; 10 pt .; Italic; For example, 1.1 Second level title
Heading 3: Times New Roman; 10 pt .; For example, 1.1.1 Third Level Header

3.2 Summary

A concise and concise summary is required (maximum 250 words). The summary should briefly indicate the purpose of the study, the material method, its main results and its major results. The summary is often presented separately from the article, so you need to be able to stand alone. For this reason references should not be used. Times New Roman); 10 pt

3.3 Keyword

Shortly after the summary, provide up to 4- 6 keywords avoiding general and plural terms and multiple concepts (eg "and" "). Protected with abbreviations: Strictly used abbreviations may be appropriate.

3.4. İntroduction

The intention is to persuade readers that the published research is innovative and feasible. Calibri (Body); 12 pt. The main text should include: the aims and objectives of the research. The aims and objectives of the work should be understood and justified. After that, the authors should state: The reason for the n publication should be explained why it is original.

3.5. Applied methodology and methods

The author should specify the basic methods used in the article in a separate title. The methodology must be proven to be sound and appropriate to achieve the objectives. The author is expected to focus on the main theme by pointing out the main stages of the article, explaining research methods and influences, why specific examples and others are discussing what they choose.

3. 6. Conclusion

The general rule is that the result does not only include a summary of the research. If asked at the beginning of the publication questions, they should give answers and submit suggestions for further

research. It will be better to apply the results in practice and determine the constraints in this context. It should specify how this research can be implemented and expanded in future studies. As a result, we must emphasize what is different in the research results, what is obvious in the design or what is unexpected.

Match number tables according to their appearance in the text. Place the head of a table on the table and under the description. Avoid vertical rules. Be indifferent to the use of tables and ensure that the results presented in the tables do not reproduce the results described elsewhere in the article. For example:

3.7. Tables

Table 4.3. Physical characteristics of the participating athletes

		N	x	SS	P
Age (Years)	**Control**	14	13,21	,975	,089
	Experiment	14	13,86	,949	,089
Height (cm)	**Control**	14	56,64	8,01	,666
	Experiment	14	58,54	10,11	,665
Weight (kg)	**Control**	14	1,65	,057	,923
	Experiment	14	1,66	,093	,923
Body mass index BMI (kg/m)	**Control**	14	20,45	2,38	,702
	Experiment	14	20,90	3,62	,702

3.8. Shapes:

All drawings, photographs, radiological graphs are collected under this title. Shapes should be given as a separate document from the main text of the article. All figure titles must be in the figure, have a sequence number, and all letters except the first letter of the title must be small. . Figure numbers and labels should be placed one line under the figure, hanging by 12.5 mm, and left and right-aligned. Number figures consecutively in the order in which each reference is made. Place figures after and close to where they are first referenced. Please do not compress the figure.

3.9. Graphs:

Turkish sources in the book.

For example;

Demirci N., Toptaşdemirci P. (2014). (1), 25-34. The purpose of this study was to

Graphs should be given as a separate document from the article main text. All graphic headings must be located under the graphic, include the sequence number, and all letters except the first letter of the head must be small

4. Resources

The bibliography should start from a new page. Both the text and the source should be based on the rules of writing set forth in the book published by the American Psychological Association (APA) (6th edition), published by the American Psychological Association. The name of the work should be written in brackets after the names of the works such as book / article / declaration of the

investigate the effects of gestational age and gestational age on gestational age and gestational age. Cited authors should be presented in any of the following ways:
Surname of the author and the year it was published (Demirci, 2018) When both

authors are surname of both authors and publication year (Demirci and Toptaş, 2018) When there are more than three authors, the first author's surname and publication year (Demirci et al., 2018) At the end of the workshop, a reference list should be given alphabetically.

For books: Last name, Initials (year), Book name, Publisher, Place of publication.

For example:

Diken, H.İ. (2010), Students and Special Education with Special Needs Education,
Pegem Yayınevi. For book chapters: Last name, Initials (year), Title of chapter, Name of editor, Initials, Title, Publisher, Place of publication, Pages.

For example:

Ulrich, DA. (2000). Test of Gross Motor Development II. Austin. TX: Pro-Ed. s. 15-20

International Journal of Disabilities Sports &Health Sciences

AİMS AND SCOPE

International Journal of Disabilities Sports and Health Sciences (IJDSHS) is an internationally recognized multidisciplinary scientific journal. It aims to showcase a wide range of scientific publications in the field of sports sciences from all over the world and provide an open view of the results of research and an opportunity to deepen knowledge in the field of sports and health sciences for the disabled. The content of IJDSHS reflects different subjects, disciplines, research methods and cultural perspectives. It has a truly international perspective with the contribution of developed and developing countries. The editor invites you to publish articles on all aspects of theory, research and practice in the fields of sports, special needs individuals and health sciences free of charge in this magazine.

About The Journal

International Journal of Disabilities Sports and Health Sciences (IJDSHS) is an internationally recognized multidisciplinary scientific journal. It aims to showcase a wide range of scientific publications in the field of sports sciences from all over the world and provide an open view of the results of research and an opportunity to deepen knowledge in the

Policies

Peer Review Policy

All research articles in this journal will be subject to a rigorous peer review

field of sports and health sciences for the disabled.

IJDSHS has open access and will publish research and articles in the following areas:

Public Health
Aging and Health
Disability and Health
Sports and Health
Quality in Healthcare
Sports Training in Disabilities
Physical Education and Sports in Disabilities
Individuals with Special Education Needs
Sports And Health Sciences
Physical Activity
Health And Fitness
Physical therapy and rehabilitation
Physical Therapy
Exercise Physiology
Sports for all

IJDSHS is committed to publishing best research and review articles on all aspects. The content of IJDSHS reflects different subjects, disciplines, research methods and cultural perspectives. It has a truly international perspective with the contribution of developed and developing countries. The editor invites you to publish articles on all aspects of theory, research and practice in the fields of sports, special needs individuals and health sciences in this magazine. IJDSHS does not charge for any article submission or processing. The publication is free.

based on double blind equilibrium by at least two expert referees passing through the chief editor's scrutiny. The final publication decision is the responsibility of the chief editors.

PUBLICATION ETHICS

Our publication ethics and publication malpractice statement is mainly based on the Code of Conduct and Best-Practice Guidelines for Journal Editors. Committee on Publication Ethics (COPE). (2011, March 7). Code of Conduct and Best-Practice Guidelines for Journal Editors. Retrieved from http://publicationethics.org/files/Code%20of%20Conduct_2.pdf

PUBLICATION FREQUENCY

The IJDSHS accepts the articles in English and is being published 2 times (July and December) a year.

CORRESPONDENCE ADDRESS

Journal Contact: ijdshs@gmail.com

CONTENTS
Volume 2 – Issue 1

ARTICLES

International Journal of
Disabilities Sports & Health Science

RESEARCH ARTICLE

The Prosocial-Antisocial Behavior and Empathic Skill Levels of Wheelchair Basketball Players in Sports

Gülfem SEZEN BALÇIKANLI*, Ekrem Levent İLHAN*, Oğuz Kaan ESENTÜRK*, Okan Burçak ÇELİK*

Faculty of Sports Sciences, Gazi University, Turkey
*Corresponding author: esenturk954@gmail.com

Abstract

This study aims to find out the prosocial and antisocial behavior as well as the empathic skills of wheelchair basketball players in sports. A total of 230 wheelchair basketball players (216 males and 14 females) participated in this study which uses relational screening model. The Prosocial and Antisocial Behavior in Sport Scale (PABSS) and the Interpersonal Reactivity Index (IRI) were used as data collection tools. Independent t-test, Cronbach Alpha, One-Way Anova, Pearson correlation and multiple regression analysis were used for the analysis of data. The data obtained shows that there is a low level, meaningful and positive correlation between the empathic skills of wheelchair basketball players and their tendency for prosocial behavior in sports. In addition, a medium-level, meaningful and negative correlation between their empathic skills and tendency for antisocial behavior was found. It has been concluded that perspective taking, empathic concern and fantasy which are dimensions of empathy do not show a difference in the variable being a national athlete or non-national athlete. It was seen that personal distress is higher in athletes who are not national athletes. As a result of the analysis it was found out that as the antisocial behavior of wheelchair basketball players towards their teammates and opponents increase, their fantasy levels decrease. In light of these findings, it may be said that while emphatic skills promote prosocial behavior in wheelchair basketball players, they decrease antisocial behavior. Based on these results, the empathy training which will be given to athletes to promote prosocial behavior in sports is of great importance.

Keywords

Wheelchair Basketball, Empathy, Prosocial-Antisocial Behavior in Sports

INTRODUCTION

Prosocial behavior represents a broad category of actions defined as beneficial to other people by a majority of the population or a social group. (Penner, Dovidio, Piliavin and Schroeder, 2005) Prosocial behavior which includes behavior such as helping, sharing, comforting and cooperation is also named as 'positive social behavior' (Üzmen and Mağden, 2002). Prosocial behavior in sports means behavior that is intended to benefit or help others. (Eisenberg and Fabes 1998) such as helping an opponent who has fallen down, sending the ball out if the opponents is injured or lending his equipment to the opponent if the opponent has forgotten his (Kavussanu, 2006). On the other hand, antisocial behavior includes behavior such as harming another on purpose or taking advantage of the other's disadvantage. For instance, behavior such as committing a foul on purpose, injuring the opponent, deceiving the referee are types of antisocial behavior in sports (Kavussanu, Stranger and Boardley 2013). Prosocial and antisocial behavior in sports is also related to the emphatic skills of the athletes. Hoffman (2011) defines empathy as the vicarious affective response to another person's feelings, and the integrator of social life. Empathy means having the ability to interact with the thoughts of others

and to sense their reaction (Assman and Detmers, 2016).

Empathy which is the predecessor of prosocial behavior and plays an important role in the daily life of individuals is a kind of communication which athletes communicate to each other and experience sharing. Davis (1983) who focuses on the affective and cognitive aspects of empathy, defines empathy as the 'reactions of one individual to the observed experiences of another'. Hogan states that there are five dimensions of moral development: moral knowledge, socialization, empathy, autonomy and ethical attitudes, and that similarly moral behavior can be explained using these dimensions (Greif, Hogan 1973).

According to Hoffman, there is harmony between moral principles and empathy, and in the decision-making process empathic skills play an important role right after the development of moral principles. By saying that empathy is directly related to moral principles, Hoffman means that the use of empathy activates moral principles. (Shields, Bredemeir, 1994) Kohlberg states that the ability to put yourself in someone else's shoes starts to develop after the age of six and that the development of this ability is a turning point in the development of moral judgement. As moral judgement protects the rights of the individual against the rights of others, this situation also requires the ability to act (Akkoyun, 1987).While in light of the studies on empathy in sports ,a negative correlation between aggressiveness and empathy is observed (Marcus Telleen, Rcke 1979; Kalliopuska 1983, Peters 2000). There is a positive correlation between fairplay and empathy (Sezen, Yıldıran 2011; Sezen, Yıldıran 2012). In addition, empathy plays an important role in displaying prosocial behavior (Duquin, Schroeder-Braun 1996; Kavussanu, 2006). On the other hand, antisocial behavior is more frequently observed in individuals with limited empathy skills (Kavussanu 2006; Kavussanu, Boardley 2009; Kavussanu, Stamp, Slade, Ring, 2009). It is also known that systematic training of fairplay in sports also increases empathic skills (Sezen , 2009).

Disability is a disadvantage which negatively affects an individual's adaptation to daily life. Adaptation is linked to what extent social roles are displayed. One of the effective mechanisms that helps an individual fulfil his social roles is sports. In today's world, disabled individuals can successfully do most types of sports done by able-bodied individuals. Disabled athletes are accepted more than ever and frequently participate in sports competitions. Disabled individuals who use wheelchairs are affected by different disabilities such as spinal injuries, lower extremity amputations, poliomyelitis, plegia, multiple sclerosis, rheumatoid arthritis, sipina bifida, hip fracture, neuromuscular diseases, muscular dystrophy and organ deficiency (Yost and Schmoll 1995; Hudson and Brown 2003; Finley and Rodgers 2004). The disabled group with the highest population in society is the individuals with physical disabilities. One of the most popular sports among this group is the wheelchair basketball, which is a paralympic sport. The fact that sports clubs have allocated high budgets to this sport in recent years, professionalism, the increase in the transfer prices of national and foreign players has led to a meaningful competition among sports clubs. Due to all these, wheelchair basketball has created its own fans and appears in the media more than before.

Wheelchair basketball players have different stress factors (Shearer and Bressan 2010) There may be several factors that affect these stress factors. One also has to consider the emotional aspect of physically disabled individuals' feeling physically different from the norm group. According to Kasum et al. (2012), wheelchair basketball players are generally emotional athletes. These characteristics may have contributions to being a team, and cooperation. Skordilis, Koutsouki, Asonitou, Evans and Jensen (2002) state that wheelchair basketball players have a competitive spirit. When the research on healthy athletes is studied,it is seen that antisocial behavior is frequently observed in sports (Kavussanu et al.2006; Sage, Kavussanu, Duda 2006; Kavussanu, Stamp, Slade, Ring 2009) Kavussanu, Ring and Kavanagh found lower frequency of antisocial sport behavior among disabled athletes compared to able-bodied athletes in the studies which were made comparisons between disabled and able-bodied athletes.

Research on wheelchair basketball players is usually about physical, physiological aspects and calcification (Brasile and Hedrick 1996; Hutzler, Vanlandewijck and Van Vlierberghe, 2000; Vanlandewijck et al. 2004). On the other hand, research on the psycho-social characteristics of

wheelchair basketball players is quite limited. When the related literature is studied, it is behavior and empathy in disabled athletes is very few. The fact that there is insufficient research on prosocial and antisocial behavior and empathy in sports arouses interest about this condition in disabled athletes. In the light of this, the aim of this study is to determine the prosocial and antisocial behavior as well as the empathy of wheelchair basketball players; to find the relationship between these types of behavior and empathy; to find the effect of being a national or non-national athlete and the position of the athlete in the court on these types of behavior. For this purpose, answers to the following questions were sought:

  1) Is the prosocial and antisocial behavior of wheelchair basketball players (prosocial to teammates, antisocial to teammates, prosocial to opponent and antisocial to opponent) a meaningful predictor of the dimension fantasy?

  2) Is the prosocial and antisocial behavior of wheelchair basketball players (prosocial to teammates, antisocial to teammates, prosocial to opponent and antisocial to opponent) a meaningful predictor of the dimension empathic concern?

3) Is the prosocial and antisocial behavior of wheelchair basketball players (prosocial to teammates, antisocial to teammates, prosocial to opponent and antisocial to opponent) a meaningful predictor of the dimension perspective taking?

  4) Is the prosocial and antisocial behavior of wheelchair basketball players (prosocial to teammates, antisocial to teammates, prosocial to opponent and antisocial to opponent) a meaningful predictor of the dimension personal distress?

METHODS

Research Model

Relational Screening Model was used in this study to study the prosocial and antisocial behavior and empathic skills of wheelchair basketball players. Screening models are research models aiming to describe a condition in the past or present as it is. (Karasar,2005)

Participants

The study group of the research consist of 230 wheelchair basketball players who compete in different types of leagues. Purposive Sampling Method was used to determine the study group.

observed that research on the prosocial/antisocial

Purposive Sampling Method is a sampling method which is not contingent and random (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz and Demirel, 2011). In this research, the researcher focuses on the sampling which is most available and which will provide maximum efficiency (Ravid, 1994). Table 1 presents the demographic information of the study group.

Measures

Prosocial and Anti-social Behavior in Sport Scale (PABSS)

Prosocial and Anti-Social Behavior in Sport Scale (PABSS) is a five-point Likert scale developed by Kavussanu and Boardley (2009) and has 20 items and five dimensions. The Turkish adaptation of the scale was made by Sezen (2013). The dimensions of the scale are as follows:

1- Anti-social opponent (e.g. Deliberately fouled an opponent)

2- Prosocial opponent (e.g. Helped an injured opponent)

3- Anti-social teammate (e.g. Argued with a teammate)

4- Prosocial teammate (e.g. encouraged a teammate)

In the process of translating the scale to Turkish, the translation –back-translation method was used. The validity and the reliability of the items were tested on a total of 222 athletes of different fields who participated in the study as volunteers and work for different clubs in Ankara: football (53.6%), basketball (10.8%), handball (13.1%) and field hockey (22.5%). The study group consists of 77 females (34.7%) and 145 males (65.3%) with an age average of 22.57(SD=4.31) and the age range is 17-37. In order to test the structure reliability of the scale, the Principal Component Analysis (PCA), which has the most widespread use in determining factors, was used. In the first stage of the factor analysis, the Barlett Test and KMO Test were used to determine whether the data set was suitable for factor analysis. The reliability of the scale was tested with Cronbach Alpha reliability coefficient. In this study, the KMO test value was found as 0.817(very good) and the Barlett Test was found to be meaningful. The Turkish version of Prosocial and Anti-social Behavior Scale in Sports has a four

factor structure and 20 items as in the original version (Sezen, 2013). Cronbach Alpha internal consistency coefficient was used to study the reliability of the measurement tool. As a result of the analysis, the reliability coefficient of the dimensions 'anti-social behavior towards opponent', 'prosocial behavior towards opponent', 'anti-social behavior towards teammate' and 'prosocial behavior towards teammate' were found to be 0.74, 0.76, 0.71 and 0.77 respectively. When the fact that the Alpha value must be at least 0.70 in reliability analysis (Anderson, 1998; Kline, 1994; Peers, 1996) is kept in mind, it may be said that the present Alpha values are sufficient.

Table 1: Demographic Data

	Group	Frequency	Percent
Gender	Man	216	93,9
	Woman	14	6,1
	Total	230	100,0
Education level	Secondary	16	7,0
	High School	161	70,0
	Undergraduate	41	17,8
	Post Graduate	12	5,2
	Total	230	100,0
League Type	Super League	106	46,1
	1st L	124	53,9
	Total	230	100,0
Status of Being a National Sportsperson	Yes	85	37,0
	No	145	63,0
	Total	230	100,0
Type of Disability	Congenital	95	41,3
	Acquired	135	58,7
	Total	230	100,0
Type of Disability	Amputee	78	33,9
	Minimal disability	15	6,5
	Paraplegia	75	32,6
	Polio	62	27,0
	Total	230	100,0
Position in the Field	Gard	61	26,5
	Forward	103	44,8
	Pivot	66	28,7
	Total	230	100,0

Interpersonal Reactivity Index (IRI)

The Interpersonal Reactivity Index (IRI) developed by Davis, 1983 as a data collection tool was used in the study to determine the empathy levels of wheelchair basketball players. The IRI dimensions consist of four dimensions and 28 items which are relatively independent of each other and determine the characteristics of individuals (Davis, 1983). Interpersonal Reactivity Index is a five-point Likert-type scale (0=does not define me at all, 4=defines me quite well). The dimension perspective taking determines the level of accepting other people's psychological point of view (e.g. I sometimes try to understand my friends better by imagining how things look from their perspective) whereas Empathic Concern determines feelings such as friendliness and interest as well as the concern towards someone

who is in a difficult situation. (e.g. I often have tender, concerned feelingsfor people less fortunate individual in a stressful situation and in situations with personal relationships (e.g. Being in a situation with tense feelings scare me). The dimension 'fantasy' determines the individual's tendency to put themselves in place of imaginary characters in books, movies and plays (e.g. I really get involved with the feelings of the characters in a novel) (Davis, 1983; Engeler, 2005; Davis, 1996). The reliability of the Turkish version of IRI and its psychometric features were done by Engeler (2005).

The psychometric quality of the dimensions is really good. The internal consistency for fantasy, empathic concern and perspective taking are quite close to the internal consistency (Engeler, 2005) reported by Davis (1983). As a result, it was found out that the IRI dimensions have very good internal consistency, test-retest correlation and psychometric values (Engeler, 2005). The

than I.). The dimension 'personal distress' measures the worry and distress level of the Cronbach Alpha values in the study for the dimensions fantasy, emphatic concern, perspective taking and personal distress are 0.72, 0.74, 0.72 and 0.76 respectively. When we keep in mind that the Alpha value must be at least 0.70 (Anderson, 1988; Kline, 1994; Peers, 1996) it may be said that the present Alpha value is sufficient.

Data Analysis

The relationship between prosocial and anti-social behavior and the dimensions of interpersonal reactivity index was studied in the study using the Pearson Moments Multiplication Correlation. Multiple Linear Regression Analysis was conducted to study the effects of prosocial and anti-social behavior of wheelchair basketball players on their emphatic concern. The relevance level was found as 0.05.

RESULTS

Table 2: t-test Values of Wheelchair Basketball Players in terms of their Being a National Team Sportsperson

	National Team Sportsperson	N	X	Ss	sd	t	P
Prosocial Teammate	Yes	85	14,7412	2,36620	228	-3,976	**0,000***
	No	145	13,4345	2,42903			
Prosocial Opponent	Yes	85	8,3294	2,08959	228	3,418	**0,001***
	No	145	7,3448	2,11929			
Antisocial Teammate	Yes	85	10,8118	2,82208	228	-5,216	**0,000***
	No	145	12,8069	2,78711			
Antisocial Opponent	Yes	85	24,8118	7,17053	228	-2,263	**0,025***
	No	145	26,7931	4,84610			
Fantasy	Yes	85	15,4941	7,31864	228	2,073	0,040
	No	145	13,6138	5,28650			
Empathic Concern	Yes	85	15,8941	4,73091	228	-,275	0,0783
	No	145	16,0759	4,89342			
Perspective Taking	Yes	85	14,9059	3,77215	228	-1,337	0,183
	No	145	15,5931	3,75924			
Personal Distress	Yes	85	10,4353	3,59711	228	-3,101	**0,002***
	No	145	12,1586	4,31997			

In Table 2, it is seen that there is a statistically meaningful difference between the prosocial and anti-social behavior of wheelchair basketball players (p < 0.000; 0.001; 0.000; 0.025 respectively) and the Personal Distress dimension of empathy (0.002) related to being a national athlete or non-national athlete.

According to the data in Table 3, athletes who were disabled at birth display a higher level of prosocial behavior and lower level of anti-social behavior compared to those who became disabled later in life (p < O.OOO). When their empathic skills are studied, it is observed that the athletes who were disabled at birth have higher skills in the other dimensions (p < 0.000; 0.000;0.001 respectively) except for empathic concern (0.068).

Table 3: t-test Results of Wheelchair Basketball Players in terms of Having Whether a Congenital Disability or Not.

Sub-dimensions	Disabled	N	x	Ss	sd	t	P
Prosocial Teammate	Congenital	95	15,1053	2,77709	228	6,201	**0,000***
	Acquired	135	13,0815	1,84897			
Prosocial Opponent	Congenital	95	8,2211	2,88864	228	2,746	**0,000***
	Acquired	135	7,3481	1,33449			
Antisocial Teammate	Congenital	95	10,8105	3,39052	228	-5,402	**0,000***
	Acquired	135	12,9556	2,22559			
Antisocial Opponent	Congenital	95	22,3368	6,34238	228	-8,734	**0,000***
	Acquired	135	28,6815	3,75092			
Fantasy	Congenital	95	16,2211	5,67971	228	4,076	**0,000***
	Acquired	135	12,9630	6,16249			
Empathic Concern	Congenital	95	16,7158	5,15641	228	1,833	0,068
	Acquired	135	15,5111	4,52994			
Perspective Taking	Congenital	95	16,6737	3,96914	228	4,706	**0,000***
	Acquired	135	14,4000	3,33055			
Personal Distress	Congenital	95	12,5789	4,13490	228	3,315	**0,001***

0.005*

Table 4: ANOVA Analysis Results of Wheelchair Basketball Players in terms of the Field They Play

Sub-dimensions	Group	n	X	Sd	F	p	Tukey
Prosocial to Teammate	Guard	61	14.44	2.13	15.559	**.000***	Forward-Gard Forward-Pivot
	Forward	103	12.98	2.04			
	Pivot	66	14.89	2.88			
Prosocial to Opponent	Guard	61	7.52	1.45	6.184	**.002***	Pivot-Gard Pivot-Forward
	Forward	103	7.33	1.35			
	Pivot	66	8.46	3.27			
Anti-social to Teammate	Forward	103	12.54	2.36	2.435	.090	-
	Guard	61	11.65	2.78			
	Pivot	66	11.71	3.74			
Anti-social to Opponent	Guard	61	23.49	3.22	5.057	**.007**	Gard-pivot, Forward-pivot
	Pivot	66	23.98	4.50			
	Forward	103	21.72	4.73			
Emphatic Thought	Gard	61	16.44	5.09	1.922	.149	-
	Pivot	66	16.37	4.94			
	Forward	103	15.03	4.28			
Getting Perspective	Gard	61	15.39	3.33	.389	678	-
	Pivot	66	15.11	3.99			
	Forward	103	15.63	3.82			
Fantasy	Gard	61	15.34	7.23	2.207	.112	-
	Pivot	66	14.47	6.01			
	Forward	103	13.09	5.13			
Personal Trouble	Gard	61	9.75	3.41	14.970	**0.00**	Forward-guard Pivot-guard Pivot-Forward
	Pivot	66	11.29	3.49			
	Forward	103	13.51	4.84			

0.005*

When the data in Table 4 is studied; it is seen that the position in which the athletes play is effective on prosocial behavior (p < .000; .002). The same situation is observed in the personal distress dimension of empathy (p < .000).

One of the most important assumptions in regression analysis is the multiple connection problem. The multiple connection problem states that there are high level relationships (r > 0.90) between independent variables (Çokluk, Şekercioğlu and Büyüköztürk, 2010). Several

methods have been suggested to test the multiple connection problem which is observed among independent variables due to high correlation (Büyüköztürk,2011; Çokluk et al., 2010). One of these methods is the study of the correlation between the independent variables (Çokluk et al., 2010; Büyüköztürk 2010). As a result of the correlation analysis conducted to find the level of relationship between independent variables, the highest relationship was found to be 0. 735.This finding might be used to express that a multiple connection problem does not exist between the independent variables.

Table 6. Regression Analysis Results in terms of Fantasy Sub-Dimension

Variable	B	SH	Beta	t	p	Dual Correlation	Partly Correlation
(Constant)	28,576	6,026		4,742	,000		
Team Prosocial	,283	,231	,114	1,223	,223	,081	,071
Opponent Prosocial	-,444	,248	-,155	-1,794	,074	-,119	-,104
Team Anti-Social	-,567	,186	-,272	-3,053	**,003**	-,199	-,177
Opponent Anti-Social	-,304	,094	-,290	-3,252	**,001**	-,212	-,189

R=0.49 R^2=0.24 F= 18.134 p=0.00

Table 6 shows a negative, medium-level and meaningful relationship between antisocial behavior towards teammates and opponents, and fantasy levels. In other words, it may be said that as antisocial behavior towards teammates and opponents increases, the fantasy levels decrease. A meaningful relationship between prosocial-antisocial behavior of wheelchair basketball players and fantasy skills was found. (R=.49,R^2=.24, p < .000).

Table 7. Regression Analysis Results in terms of Emphatic Concern Sub-Dimension

Variable	B	SH	ß	T	P	Dual Correlation	Partly Correlation
(Constant)	35,555	5,071		7,012	,000		
Team Prosocial	-,352	,195	-,181	-1,807	,072	-,120	-,113
Opponent Prosocial	-,405	,208	-,181	-1,944	,053	-,128	-,121
Team Anti-Social	-,759	,156	-,465	-4,854	**,000**	-,308	-,303
Opponent Anti-Social	-,091	,079	-,111	-1,156	,249	-,077	-,072

As can be seen in Table 7, when the bilateral and partial relationship between the prosocial-antisocial behavior of wheelchair basketball players and the dimension emphatic concern is studied, a negative medium-level and meaningful correlation between antisocial behavior towards teammates and emphatic levels was found. A meaningful correlation was found between prosocial –antisocial behavior of wheelchair basketball players and empathic concern (R=.353,R=.109,p< .000).

Table 8. Regression Analysis Results in terms of Perspective Taking Sub-Dimension

Variable	B	SH	ß	T	P	Dual Correlation	Partly Correlation
(Constant)	29,167	3,804		7,667	,000		
Team Prosocial	,057	,146	,037	,388	,699	,026	,023
Opponent Prosocial	,362	,156	,207	2,312	**,022**	,152	,138
Team Anti-Social	-,508	,117	-,398	-4,332	**,000**	-,277	-,259
Opponent Anti-Social	-,158	,059	-,247	-2,677	**,008**	-,176	-,160

R= .44 R^2= .18 F= 13.48 p= 0.00

When Table 8 is studied, a negative medium-level meaningful correlation between antisocial behavior towards teammates and opponent, and perspective taking can be seen.

Table 9. Regression Analysis Results in terms of Personal Distress Sub-Dimension

Personal Distress	B	SH	ß	t	P	Dual Correlation	Partly Correlation
(Constant)	-11,328	4,160		-2,723	,007		
Team Prosocial	,917	,160	,550	5,748	**,000**	,358	,342
Opponent Prosocial	,294	,171	,153	1,716	,087	,114	,102
Team Anti-social	,705	,e128	-,503	-5,497	**,000**	-,344	-,327
Opponent Anti-social	-,026	,065	-,037	-,409	,683	-,027	-,024

R= .449 R^2= .19 F= 14.20 p= .000

As can be seen in Table 9, when the bilateral and partial relationship between prosocial-antisocial behavior of wheelchair basketball players and the dimension personal distress is studied, a negative, medium-level and meaningful correlation between antisocial behavior towards teammates and personal distress levels was found. In addition, a positive, medium-level meaningful correlation was found between the prosocial behavior of wheelchair basketball players and personal distress levels. A meaningful correlation was found between prosocial-antisocial behavior of wheelchair basketball players and personal distress levels (R=.45, R2=.19, p < .000).

DISCUSSION

In this study, the correlation between the empathy and fair-play behavior of wheelchair basketball players was studied and the effect of empathy on prosocial and antisocial behavior in sports was tried to be found. It is seen that wheelchair basketball players who are national athletes have higher fantasy and personal distress levels and prosocial behavior towards teammates and opponents when compared to athletes who are not national athletes. It is seen that antisocial behavior is more frequent with athletes who are not national athletes (Table 1). Wheelchair basketball players who were born with disabilities have higher empathic skills and prosocial behavior when compared to athletes who became disabled later in life. It is observed that athletes who became disabled later in life display antisocial behavior more frequently (Table 2). This may be interpreted as the fact that athletes who were disabled at birth are more willing to understand and help others. The research shows that athletes in the guard and striker positions have a higher tendency of displaying prosocial behavior towards teammates compared to players in the forward position. In addition, players positioned as strikers have a higher tendency of displaying antisocial behavior towards their opponents. Strikers are usually players who try to get the ball during defense and attack, get tough treatment from opponents and similarly play tough themselves. This may be interpreted as that this condition emerges with the role and character of the player in the game.

The basic role of athletes who are in the guard position is to take the ball to the opponent court and organize the game. Taken from this point of view, the fact that the athletes in the guard position build the game and have higher prosocial points compared to their teammates is an expected result. It was found out that athletes in the forward and striker position have higher averages in perspective taking when compared to forward players. (Table 3). As a result of the regression analysis it was found that wheelchair basketball players with lower fantasy skills displayed higher antisocial behavior towards their teammates and opponents. The fantasy skill which is a dimension of empathy includes the ability to interpret events from other people's point of view, making objective decisions and putting yourself in place of a character in a play, film or book. The variable antisocial and prosocial behavior in sports explains 23% of the total variance in fantasy skills of wheelchair basketball players. On the other hand, according to standard regression coefficients (Beta) the order of importance for independent variables on fantasy skills is as follows: opponent antisocial, team antisocial, opponent prosocial and

opponent antisocial. When the t-test results on the significance of regression coefficients is studied, it is seen that antisocial behavior towards teammates and antisocial behavior towards opponent are a meaningful predictor of fantasy skills. (Table 5)Another dimension of empathy is empathic concern. Empathic concern is showing a reaction to the sadness and distress of another person when witnessing such a situation. The 4 variables in the model account for 11%of the total variance related to the empathic concern skills of wheelchair basketball players. The order of importance for the effect of prosocial and antisocial behavior on empathic concern skills is as follows: team antisocial, team prosocial, opponent prosocial and opponent antisocial (Table 6). When the perspective taking skill is studied, it is seen that athletes who are low in this dimension have higher antisocial behavior towards opponents as well as teammates. A meaningful relationship was found between the prosocial-antisocial behavior of wheelchair basketball players in sports and their perspective taking levels. (R=.44, R2=.18, p< .0009.)

The perspective taking skill which Hoffman (2001) states as the prerequisite to understand a person in need cognitively and emotionally and to give the appropriate response means looking at events from other people's eyes. The 4 variables in the model accounts for 18% of the total variance for the perspective taking levels of wheelchair basketball players. The order of importance for the independent variables on empathic concern is as follows: team antisocial, opponent antisocial, opponent prosocial and team prosocial. When the t-test results for the significance of regression coefficients is studied, it is seen that antisocial behavior towards teammates and opponent and prosocial behavior towards opponent are a meaningful predictor of perspective taking levels. (Table 7). Personal distress is the last dimension of empathy. The dimension personal distress includes the reaction to the situation the opposing side is in. According to the results of the study, as the antisocial behavior of wheelchair basketball players to their teammates increase, their level of personal distress decreases. As their antisocial behavior towards teammates increase, their interpersonal distress levels decrease. The 4 variables in the model account for 19% of the total variance for the personal distress levels of wheelchair basketball players. On the other hand,

according to standardized regression coefficients (Beta)the order of importance for the effect of independent variables on empathic concern skills is as follows: team prosocial, team antisocial, opponent antisocial and opponent prosocial. When the t-test results for the significance of regression coefficients is studied, prosocial and antisocial behavior towards teammates is a meaningful predictor of personal distress levels.

The fact that athletes in wheelchair basketball are classified according to their physical competence using various points means that the level of power among teams and competition is high. Participation in disabled sports has been increasing in recent years and it means more than medical and social rehabilitation. For this reason, wheelchair basketball is the most popular sport among disabled people. The interest of big sports clubs in wheelchair basketball is quite high and this promotes the economic dimension of this sport. In addition, national and international success stories add to the development of wheelchair basketball. Parallel to all these developments, wheelchair basketball players have become the main element of this sport. Wheelchair basketball players affected by different inabilities have different sources of motivation just like healthy athletes. With motivation, they display the highest performance and might have a tendency for prosocial and antisocial behavior with the feelings of success, winning and beating the opponent.

As a result, it may be said that while empathic skills promote prosocial behavior in wheelchair basketball players, it decreases antisocial behavior. This implies that empathy training which will be given to athletes to promote prosocial behavior is of great significance. Empathy training must be organized systematically according to the position of the athletes in the court and their ages. In addition, it is believed that prosocial behavior should be supported by trainers.

REFERENCES

Akkoyun, F (1987). Empatik eğilim ve ahlaki yargı. Psikoloji Dergisi, 6(21), 91-98.

Brasile F.M and Hedrick B.N (1996). The relationship of skills of elite wheelchair basketball competitors to the international functional classification system. Therapeutic Recreation Journal, 30(2), 114-127.

Davis HM (1983). Measuring Individual Differences in Empathy: Evidence for a Multidimensional Approach. Journal of Personality and Social Psychology; 44(1): 113-126.

Davis HM (1996). Empathy A Social Psychological Approach, 2nd. ed. USA: Westviewpress.

Duquin M.E and Schroeder-Braun K (1996). Power, empathy, and moral conflict in sport. Peace and Conflict: Journal of Peace Psychology, Vol 2(4), 351-367.

Engeler A (2005). Psikopati ve Antisosyal Kişilik Bozukluğu. Yayınlanmamış Doktora Tezi. İstanbul: İstanbul Üniversitesi.

Eisenberg N and Fabes R.A (1998). Prosocial development. In N. Eisenberg (Ed.), Handbook of child psychology. Vol 3: Social, emotional, and personality development (pp. 701–778). New York, NY: Wiley.

Finley M.A and Rodgers M.M (2004). Prevalence and identification of shoulder pathology in athletic and nonathletic wheelchair users with shoulder pain: a pilot study. Journal of Rehabilitation Research and Development, 41(3B), 395.

Greif BE, Hogan R (1973). The Theory and Measurement of Empathy. Journal of Counseling Psychology; 20(3): 280-284

Hoffman M.L (2001). Empathy and moral development: Implications for caring and justice. Cambridge University Press.

Hudson Z and Brown A (2003). Athletes with disability. Physical therapies in sport and exercise, 521-533.

Hutzler Y, Vanlandewijck Y and Van Vlierberghe M (2000). Anaerobic performance of older female and male wheelchair basketball players on a mobile wheelchair ergometer. Adapted Physical Activity Quarterly, 17(4), 450-465.

Kalliopuska M (1983). Empatia- tie ihmisyyteen. Helsinki. Kirjayhtyrna.

Kasum G, Lazarevic L, Jakovljevic S, Bacanac L and Eminovic F (2012). Personality characteristics of Serbian male wheelchair and professional basketball players. Acta Gymnica, 42(2), 41-47.

Kavussanu M (2006). Motivational predictors of prosocial and antisocial behaviour in football. Journal of Sports Sciences, 24(06), 575-588.

Kavussanu M, Seal A and Phillips D (2006). Observed prosocial and antisocial behaviors in male soccer teams: Age differences across adolescence and the role of motivational variables. Journal of Applied Sport Psychology, 18, 326–344.

Kavussanu M and Boardley I.D (2009). The prosocial and antisocial behavior in sport scale. Journal of Sport and Exercise Psychology, 31(1), 97-117.

Kavussanu M, Stamp R, Slade G and Ring C (2009). Observed prosocial and antisocial behaviors in male and female soccer players. Journal of Applied Sport Psychology, 21(S1), S62-S76.

Kavussanu M, Stanger N and Boardley I.D (2013). The Prosocial and Antisocial Behaviour in Sport Scale: Further evidence for construct validity and reliability. Journal of sports sciences, 31(11), 1208-1221.

Kavussanu M, Ring C and Kavanagh J (2015). Antisocial behavior, moral disengagement, empathy and negative emotion: A comparison between disabled and able-bodied athletes. Ethics and Behavior, 25(4), 297-306.

Marcus R.F, Telleen S and Rcke E.J (1979). Relation between cooperation and empathy in young children. Developmental Psychology, 15, 346-347.

Peters A.N (2000). Hegemonic masculinity and Kaufman's triad of violence: elite male athletes' attitudes regarding male/female relationships. National Library of Canada= Bibliothèque nationale du Canada.

Sage L, Kavussanu M and Duda J.L (2006). Goal orientations and moral identity as predictors of prosocial and antisocial functioning in male association football players. Journal of Sports Sciences, 24, 455–466.

Sezen-Balçıkanlı G (2009). Fair Play and Empathy: A Research Study with Student Teachers. Journal of US-China Public Administration, 6(4), 79-84.

Sezen-Balçıkanlı G and Yıldıran İ (2011). Profesyonel Futbolcuların Sportmenlik Yönelimleri ve Empatik Eğilim Düzeyleri. Spormetre Beden Eğitimi ve Spor Bilimleri Dergisi, 9(2), 49-56

Sezen-Balcikanli G and Yildiran I (2012). Sportspersonship Orientation and Empathy:

a Study of Professional Football Players. Journal of Physical Education and Sport, 12(1), 18.

Sezen-Balçıkanlı G (2013). The Turkish Adaptation of the Prosocial and Antisocial Behavior in Sport Scale (PABSS). International Journal of Humanities and Social Science, 3 (18), 271-276.

Shearer D and Bressan E (2010). Psychological aspects of wheelchair sport. Wheelchair sport: A complete guide for athletes, coaches and teachers, Human Kinetics 99-115.

Shields LLD, Bredemeier LJB (1994). Chracter Development and Physical Activity. USA: Human Kinetics.

Skordilis E.K, Koutsouki D, Asonitou K, Evans E and Jensen B (2002). Comparison of sport achievement orientation between wheelchair and able-bodied basketball athletes. Perceptual and motor skills, 94(1), 214-218.

Penner L.A, Dovidio J.F, Piliavin J.A and Schroeder D.A (2005). Prosocial behavior: Multilevel perspectives. Annu. Rev. Psychol., 56, 365-392.

Vanlandewijck Y.C, Evaggelinou C, Daly D.D, Van Houtte S, Verellen J, Aspeslagh V and Zwakhoven B (2003). Proportionality in wheelchair basketball classification. Adapted Physical Activity Quarterly, 20(4), 369-380.

Vanlandewijck Y.C, Evaggelinou C, Daly D.J, Verellen J, Van Houtte S, Aspeslagh V and Zwakhoven B (2004). The relationship between functional potential and field performance in elite female wheelchair basketball players. Journal of Sports Sciences, 22(7), 668-675.

Yost G.J and Schmoll W.D (1995). Sport medicine and the physically disabled. The upper extremity in sport medicine. USA: Mosby-Year Book, 885-897.

International Journal of
Disabilities Sports & Health Science

RESEARCH ARTICLE

Investigation of Anthropometrıc and Phsycıal Fıtness Parameters af University Students Who Perform Sports as Licensed

Özge Nur ÖNAL[1]*, Pervin TOPTAŞ DEMİRCİ[2]

Faculty of Sports Sciences, Mersin University, Turkey
Erdemli Department of Tourism Animation, Mersin University, Turkey

*Corresponding author: ozgenuronal692@gmail.com

Abstract

The aim of this study is to examine some anthropometric and physical fitness parameters of the students who are studying at the School of Physical Education and Sports and who do not have any license with the students who are licensed in different sports branches. The mean age of this study was $20{,}3 \pm 0{,}76$ for females and $19{,}7 \pm 0{,}78$ for female, $22{,}0 \pm 0{,}71$ for male and $22{,}9 \pm 0{,}78$ for female students. . The age, height and body weight of the athletes were measured and body mass index (BMI) was calculated. The athletes were given 20 m speed, long jump, flexibility, flamingo balance and vertical jump test. After the data were entered into SPSS program, paired t-test was used to determine the differences between some anthropometric and physical fitness characteristics of licensed and unlicensed students. While anthropometric measurements showed a significant difference in height and body weight ($p < 0.05$; $p < 0.01$), BMI was not significantly different between groups ($p < 0.05$). Physical fitness parameters of 20 m speed, stop long jump, flexibility, flamingo balance, double arm push and vertical jump test results of the licensed groups were not significantly different than the unlicensed ($p < 0.05$, $p < 0.01$). As a result, some anthropometric and physical fitness parameters of the athletes who are licensed in different sports branches are determined. It can be argued that these differences are caused by the different physical characteristics and training programs of the students.

Keywords

Licensed, Physical Fitness, Anthropometry

INTRODUCTION

One of the most important factors affecting the success in sports is the fact that the athletes have the characteristics that are appropriate for that sports branch (Çolak and Kolukısa, 2017; Eler 2018). It is known that there are big differences in physical structure of athletes in different sports branches (Koç et al., 2011). It is not possible to reveal the performance exactly unless the feature of the bodily structure is suitable for the applied sports branch (Aydos, 1991). The physical structure affecting the performance, in other words the physical properties, affects the introduction of the physiological capacities. Physical structure; it is one of the basic elements of an athlete's ability to perform at a high level. Strength, strength,

flexibility, speed, endurance and speediness, such as the ability to combine with the engineer to affect the performance of the athlete (Ayan et al., 2011).

All sporting activities are activities that require different levels of skill during both the application and learning. People who have acquired the skill during these activities either transfer the other skills they have in the past to the time they are in, or learn the original movement patterns by creating a new structure (motor program) (Aydos and Kürkçü, 1997). Age, height, gender, body composition, conditional and coordinative characteristics are the individual

factors affecting skill acquisition (Ölçücü et al., 2010). For example, the development of some skills (coordinative) in time plays an important role in success. The acquisition of skills in the elderly is slower than in younger individuals. Every person has the ability to move, but the ability to develop this ability varies from person to person. The measure of this development determines the quality of the person's senso-motoric structure. It can be used synonymously with resourceful coordination. Conditional and coordinative features, strength, speed, durability, flexibility, agility, coordination, reaction time, orientation, movement sensitivity, rhythm, balance, fluency and movement of the movement (Güvel et al., 1997). Ideal body components vary in different sports branches. However, the main purpose is based on low fat and better performance. A high body fat ratio can also result in reduced strength, agility, speed and flexibility, as well as loss of energy. Body weight means the speed, durability and strength of the athletes; Whereas the body composition can affect the athlete's power, appearance and agility (Akın et al., 2004; Demirci and Toptaş Demirci, 2018).

Research shows that having certain body measurements in sports has an advantage in making certain skills and there is a close relationship between sportive performance and body type (Kurudirek, 1998; Taşucu, 2002). The aim of this study is to examine some anthropometric and physical fitness parameters of the students who are studying in the School of Physical Education and Sports and who do not have any license with the students who are licensed in different sports branches.

MATERIALS AND METHODS

Participants and Procedures

Undergraduate and unlicensed men and women athletes who are voluntarily selected from the students of Mersin University Physical Education and Sports College participated in the study. The measurements of the study were performed at Mersin University Physical Education and Sports College facilities. Before starting the study, the rules to be followed were explained to the individuals in detail and an informed consent form was signed. The mean age of this study was Licensed male 20,3 ± 0,76 and female 19,7 ± 0,78 years. and 47 women and 72

men, unlicensed (n = 60). Participants were selected among the licensed and unlicensed students.

Data Collection Tools
Height

Height measurements were made using a tape measure with a precision of 0.01 m. While measuring the height of the athlete, it was noted that the shorts and t-shirts were dressed, on a flat floor, their feet were in a bare and upright position and recorded in cm.

20 m Speed Test

The subjects were run at maximal velocity for 20 m with the exit sign on the starting line. The time between the start and end was determined by the photocell (New Test 2000). 2 attempts were made, adequate rest period between trials were given and the best result was recorded.

Vertical Splash Test

Subjects were asked to jump upward vertically on the splash stand, and the best grades from the two trials were recorded in m. The spatial distances obtained were then determined by P = (m4.9 x Weight x PD) Lewis formula and the anaerobic power (P) values of each subject were determined in kgm / s (Mackenzie, 2005).

Sit-Down test

Resilience measurements of the subjects were performed by sit-reach test using the flexibility table. Subjects were asked to perform two trials and their best grades were recorded in cm (Mackenzie, 2005).

Long Jump

Test The athletes were taken to the jump line in order that the feet were open at the shoulder width and the toes did not cross the jump line. Participants were asked to bend their knees and take their arms backwards. After the athlete jump, the distance between the heel of the most back foot contacting the ground and the jump line was measured in cm. The test was applied to all subjects twice. The best grade was accepted as the score (Tamer, 2000).

Flamingo balance test

Volunteer, 50 cm. length, 4 cm. height and 3 cm. the balance tries to stay in balance for 1 minute, resting on the preferred foot of the platform, pulling the other foot bent from the knee, pulling it towards the hip and holding it with the hand on the same side. The time is stopped when the balance is broken (when the bent foot touches the ground or comes out of the balance platform).

When the subject re-enters the equilibrium platform, the balance is resumed. When the period balance is counted (after falling) and recorded as the participant's score (Tamer, 2000).

Double Arm Push

The test measures the force around the shoulder-chest muscles and flexor muscles. Subjects move the ball from the fixed distance to the front with two hands by moving the arms backwards from a fixed distance. Result in cm. is determined.

Statistical Analysis

All statistical analyzes were performed with SPSS version 20.0. P value of less than 0.05 was considered significant. Differences

is completed, the participant's attempt to achieve

betweenlicensed and unlicensed groups pretest and posttest were analyzed T test.

RESULTS

Tables 1 and 2 There was a significant difference ($p <0.01$; $p <0.05$) between age, height, vertical jump, double arm push, flamingo balance test and 20 meter sprint performance measurements when compared with licensed and unlicensed women students. However, no statistically significant difference was detected in the other parameters (Tables 1 and 2).

Table 1: Comparison of Performance Measurements Changes of Licensed and Unlicensed Physical Education and Sports College Women Students

Parametres	Group	N	X ± SS	F	Asymp. Sig
Age (Years)	Licensed Group	20	19,7 ±0,78	1,530	**.001**
	Unlicensed Group	27	22,9 ±0,78		
Body Height (cm)	Licensed Group	20	1,70 ±0,05	9,016	**.001**
	Unlicensed Group	27	1,64 ±0,02		
Body Weight (kg)	Licensed Group	20	57,4 ±6,30	1,123	.070
	Unlicensed Group	27	54,5 ±4,65		
Body Mass Indeks (BMI)	Licensed Group	20	21,8 ±1,8	0,257	.080
	Unlicensed Group	27	22,1 ±2,7		

*P<0.05, **P<0.01, ***p<0.001

Table 2: Comparison of Performance Measurements Changes of Licensed and Unlicensed Physical Education and Sports High School Women Students

Parametres	Group	N	X ± SS	F	Asymp. Sig
Long Jump	Licensed Group	20	1,87 ±0,18	5,414	.080
	Unlicensed Group	27	1,80 ±0,10		
Vertical Bounce	Licensed Group	20	36,7 ±6,07	0,005	**.001**
	Unlicensed Group	27	43,0 ±6,29		
Double Arm Push	Licensed Group	20	4,56 ±0,57	0,015	**.002**
	Unlicensed Group	27	3,86 ±0,48		
Sit Down Test	Licensed Group	20	38,3 ±9,84	18,518	.270
	Unlicensed Group	27	36,0 ±3,83		
Flamingo Balance Test	Licensed Group	20	11.35 ±3.2	3.470	**.001**
	Unlicensed Group	27	9.15 ±2.56		
20 M Speed Run	Licensed Group	20	3,56 ±0,24	0,066	**.004**
	Unlicensed Group	27	3,73 ±0,32		

*P<0.05, **P<0.01, ***p<0.001

When the age, weight, double arm push, flamingo balance test and 20 m sprint results of the licensed and unlicensed male students were compared (p <0.001; p <0.05), a significant difference was found. However, no statistical significance was found in other parameters (Tables 3 and 4).

Table 3: Comparison of Performance Measurements Changes of Licensed and Unlicensed Physical Education and Sports College Male Students

Parametres	Group	N	X ± SS	F	Asymp. Sig
Age (Years)	Licensed Group	39	20,3 ±0,76	34,907	**.001**
	Unlicensed Group	33	22,0 ±0,71		
Body Height (cm)	Licensed Group	39	1,81 ±0,71	5,767	.080
	Unlicensed Group	33	1,78 ±0,39		
Body Weight (kg)	Licensed Group	39	74,0 ±9,07	10,159	**.050**
	Unlicensed Group	33	74,8 ±5,53		
Body Mass Indeks (BMI)	Licensed Group	39	22,4 ±1,7	0,364	.070
	Unlicensed Group	33	23,1 ±2,1		

Table 4: Comparison of Performance Measurements Changes of Licensed and Unlicensed Physical Education and Sports High School Students

Parametres	Group	N	X ± SS	F	Asymp. Sig
Long Jump	Licensed Group	39	2,43 ±0,17	0,270	.081
	Unlicensed Group	33	2,42 ±0,21		
Vertical Bounce	Licensed Group	39	55,8 ±6,70	11,042	.960
	Unlicensed Group	33	55,7 ±10,5		
Double Arm Push	Licensed Group	39	4,97 ±0,61	0,757	**.002**
	Unlicensed Group	33	5,33 ±0,71		
Sit Down Test	Licensed Group	39	41,5 ±9,46	3,909	.760
	Unlicensed Group	33	42,0 ±5,99		
Flamingo Balance Test	Licensed Group	20	12.25 ±4.12	2.290	**.001**
	Unlicensed Group	27	10.50 ±3.20		
20 M Speed Run	Licensed Group	39	3,12 ±0,17	0,944	**.001**
	Unlicensed Group	33	3,10 ±0,22		

*P<0.05, **P<0.01, ***p<0.001

DISCUSSION AND CONCLUSION

One of the most effective criteria for determining the performance in sports is to have an athlete license. As in every sport, players with good conditional characteristics are more advantageous than their competitors. Some athletes move faster than their competitors, they can think faster, they recover faster, they get less tired and the risk of injury is less. In other words, the difference between winning and losing depends on the condition, strength, endurance, and speed (Ölçücü et al., 2010). In a study, the height and body weights of the athletes were 174,4 ± 5,1 cm and 67,1 ± 4,7 kg for the football group, 184,2 ± 7,22 cm for the basketball group and 76,8 ± 8,9 kg for the bocce. 171.8 ± 6.5 and 68.6 ± 11.9 in the handball group and 184.0 ± 4.5 cm and 77.1 ± 8.1 kg in the handball group, 177.9 ± 5.1 cm and 69.8 ± 5,0kg' in the table tennis group. The average of

the basketball and handball group is significantly higher than the other groups and there is no difference between the two groups (Reilly et al 1990).

Age, height, vertical jump, double arm push, flamingo balance test and 20 meter sprint performance measurements were compared between the undergraduate and the unlicensed students (p <0.001; p <0.05). No statistically significant difference was observed in other parameters. Age, weight, double arm push, flamingo balance and 20 m sprint results of the male students of the School of Physical Education and Sports Measurement Results According to the comparison between licensed and unlicensed students (p <0.001; p <0.05) while determining significant differences in the level, statistical significance in other parameters not detected.

Anthropometric measurements are important in predicting physical and physiological performances. It is generally accepted that different anthropometric and performance characteristics should be successful in different sports, with recent research focused on identifying features useful for referral to specific sports (Young et al., 2005). Some studies conducted; Aouichaoui (2014) on the prepuberto period athletes in their work with vertical jump performance and body weight, height and BMI, Moncef et al. (2012) found a significant negative correlation with body weight and splash performance.

As a result; Differences were determined in some anthropometric and physical fitness parameters of male and female students engaged in sports licensed and Unlicensed. It was determined that the anthropometric and physical fitness parameters of licensed female and male athletes students were close to each other. However, the anthropometric and physical fitness parameters of unlicensed female and male athletes were lower than those of licensed athletes. There are differences in some anthropometric and physical fitness parameters of athletes who are licensed in different sports branches. It can be argued that these differences are caused by the different physical characteristics and training programs of the students.

REFERENCES

Akın G, Özder A, Özet BK & Gültekin T (2004). Body composition values of elite male athletes. Ankara Üniversitesi Dil ve Tarih-Coğrafya Fakültesi Dergisi, 44(1):125-134.

Aouichaoui C, Trabelsi Y, Tabka Z, Dogui M, Richalet J, Bouhlel E (2014). Effect of anthropometric characteristics and socio-economic status on vertical jumping performances in Tunisian athletic children. American Journal of Sports Science and Medicine. 2(1): 6-16.

Aydos L, Kürkçü R. (1997). Comparison of Physical and Physiological Characteristics of 13-18 Age Group Sport and Non-Sport Secondary Education, Gazi University Journal of Physical Education and Sport Sciences, Ankara; 2 (2): 31-38.

Ayan V, Kaya M, Erol A.E (2011). Examining the somatotype and performance characteristics of boys for football. Nigde University Journal of Physical Education and Sports Sciences. 5(3): 27-31.

Çolak, H. & Kolukısa, Ş., (2017). Comparison of some Motorical Characteristics of Athletes in Different Branches. Journal of Current Researches on Social Sciences. 7(2): 307-316.

Demirci N, Toptaş Demirci P (2018). The Effect Of Static And Dynamic Warm-Up Protocols On Fitness Component And Body Fat Percentage Of Athletes İn Different Branches. Int J Disabil Sports Health Sci; (1)13-22

Eler N. (2018). Examination of anthropometric and physical fitness parameters in different sports. Atatürk University Journal of Physical Education and Sport Sciences, 20 (3); 1-15

Güvel H, Kayatekin BM, Özgönül H, Kandemir FF (1997). Physiological and Physical Profile of a Basketball Club Infrastructure Athletes. Ege University Journal of Performance 3 (4); 203-208.

Koç H, Pulur A, Karabulut O.E (2011). Comparison of Some Motoric Characteristics of Male Basketball and Handball Players. Nigde University Journal of Physical Education and Sports Sciences. Volume 5, Issue 1, 21-27.

Mackenzie B. (2005). 101 Performance Evaluation Test. London. Electric Word Plc., 96-117.

Moncef C, Said M, Olfa N, Dagbaji G (2012). Influence of Morphological Characteristics on Physical and Physiological Performances

of Tunisian Elite Male Handball Players. Asian Journal of Sports Medicine,.3(2), 74-80.

Öl çüc ü B, Canikli A, Ağaoğlu Y, Erzurumluoğlu A (2010). Evaluation of factors affecting the development of tennis skills in children aged 10-14. Atat ürk University Journal of Physical Education and Sport Sciences. 12 (2): 1-11.

Ölçücü B, Cenikli A, Kaldırımcı M, Bostancı Ö (2010). The effect of collective and ball-free movement training on physical fitness values in tennis players. Journal of Sports and Performance Researches, 2(1); 32-40.

Reilly T, Secher N, Snell P, Williams C (1990). Physiology of sports: An overview. Physiology of sports. England.

Suna G, Beyleroğlu M, Hazar K (2016). Comparıson Of Aerobic, Anaerobic Power Features Basketball And Handball Team Players. Niğde University Journal of Physical Education and Sport Sciences .10(3): 379-385.

Tamer K. (2000). Measurement and Evaluation of Physical-Physiological Performance in Sports, Bağırgan Yayımevi, Ankara; 36: 48–49.

Young W.B, Newton R.U, Doyle T.L.A, Chapman D, Cormack S, Stewart G, Dawson B (2005). Physiological and anthropometric characteristics of starters and non-starters and playing positions in elite Australian Rules football: a case study. Journal of Science and Medicine in Sport. 8(3):333 - 345.

International Journal of
Disabilities Sports & Health Science

RESEARCH ARTICLE

An Investigation of Knowledge Attitude and Practices Toward of Cardiovascular Disease Risk Factors Among the Patients of Metabolic Syndrome

Ahmet TOPTAŞ *

Şehit Ahmet Özsoy Devlet Hastanesi, Ankara, Turkey
*Corresponding author: toptasahmet06@gmail.com

Abstract

Metabolic syndrome is a common global public health problem and it is characterized by a group of risk factors in one person. Metabolic syndrome (MS) is a group of cardiometabolic risk factors. Many people may not be aware of the risks for MS. MS is a condition which can lead to many complications including cardiovascular diseases (CVDs) worldwide. The aim of this study was to examine the knowledge, attitude and practices toward of cardiovascular disease risk factors in patients with Metabolic Syndrome. A total of 140 adult subjects (78 males and 62 females) aged 35 years and over were included in this study. The sample group consisted of patients diagnosed with metabolic syndrome from January 2018 to January 2019 who were admitted to the public hospital. Questionnaire was used to evaluate knowledge, attitude and practices toward behavior (CAP) related to CVDs disease risk factors. CAP scores were defined as poor, mean and good. Data were analyzed using descriptive statistics. ANOVA and post hoc tests were performed to determine within- and between-group differences. Level of significance was set at $P < 0.05$. Results: 55.8% of the participants were male, 25% were between 55-59 years of age and 44.3% completed secondary education, 32.2% were workers and 30% were lower secondary. Participants with high application scores significantly reduced BMI and WC, suggesting that better information and practices were associated with a reduction in CVDs risk markers in these patients. Good attitude scores were associated with education and Waist circumference (WC). As a result; Despite having a good attitude, MS patients did not follow good lifestyle practices to prevent CVDs. The results of this study require intensive training interventions to prevent complications in these patients.
.

Keywords

Metabolic Syndrome, Cardiovascular Disease, Knowledge, Attitudes, Practices

INTRODUCTION

Metabolic syndrome is an important cause of morbidity and mortality affecting more and more people in the world and in our country (Sarti and Gallagher, 2006). Metabolic syndrome, which is known as the epidemic of the age, increases the risk of cardiovascular diseases all over the world and in our country and is considered the most important cause of death. Metabolic syndrome, also known as Insulin Resistance Syndrome, Syndrome X, Polymetabolic Syndrome or Fatal Quadruple, is the same as the increase in blood fats as a result of a defect in glucose and insulin balance in the body, excess weight, high blood pressure and glucose imbalance is an endocrinopathy that is present in many organs (Kang et al., 2002). Lifestyle changes such as regular exercise, healthy eating and weight control are recommended as first-line interventions for MS management. All of these lifestyle changes involve behavioral changes. Adequate information on the prevention and management of MS will facilitate people's adaptation to healthy behavior (Wang et al., 2019).

Metabolic syndrome (MS) represents a combination of noncommunicable diseases (NCDs) and risk factors, and the International Diabetes Federation (IDF) states that central the presence of central obesity with the following obesity: elevated triglycerides or specific treatment

hypertriglyceridemia low HDL [high-density lipoprotein] specific treatment for cholesterol or low HDL-cholesterol, blood pressure or treatment for previously diagnosed hypertension and dysglycemia (Ford et al., 2010; Li et al., 2018). Nowadays, cardiovascular diseases (CVDs) are lethal causes in the US and industrialized countries of the world and account for about one third of the untimely death in the adult population (Karami et al., 2014). One of the ways to prevent CVDs is unhealthy lifestyle change (Imanipour et al., 2008). In developing countries, CVDs are increasing as a result of lifestyle, particularly smoking, consumption of fatty foods, lack of physical activity, and rapid changes in industrial life patterns. Unhealthy lifestyle is one of the most important factors in the development of chronic diseases such as CVDs (Mohseni et al., 2015). Physical inactivity is among the most important causes of the increase in the number of obese people. In addition, there is a close relationship between obesity and cardiovascular diseases, diabetes, osteoporosis, some types of cancer, mental problems, and many health problems in studies conducted (Demirci et al., 2018).

According to WHO and the International Diabetes Federation, treatment of MS should include lifestyle development, including balanced eating habits when they prevent regular physical activity and complications (WHO, 2009). Changing a lifestyle as an important intervention strategy may include knowledge, attitudes, social support, etc. that can determine the individual's adoption of healthy behavior. Such factors require consideration (Glanz, 1981). The literature review shows that cognitive factors (knowledge) (Murer et al., 2012) and emotional behaviors (attitude) affect healthy behaviors (Kudo et al., 2011). Positively affect healthy behavior in MS patients. The aim of this study was to examine the knowledge, attitude and cardiovascular disease risk factors in patients with Metabolic Syndrome. The findings of the study will provide valuable information to develop effective MS management strategies in this at-risk population.

MATERIALS AND METHODS

Participants

Since it was stated in the literature that 35 age and older groups were at risk for MS, this age group was included in the study. The researcher firstly screened the eligibility of patients in the study hospitals by reviewing the medical records. The study sample consisted of 140 people. After obtaining the written consent, the researcher started the data collection procedure. Patients identified as having MS when they met at least three of the five criteria: > 90 cm in men > 80 cm in women, (IDF, 2006) blood pressure (SBP> 130 mmHg and / or DBP> 85 mmHg), (Li et al., 2018) HDL - C <40 mg / dl in men and <50 mg / dl in women, (Ford et al., 2010) fasting glucose> 110 mg / dl or drug treatment for high glucose and (Dunbar et al., 2008) TG ≥150 mg / dl or drug treatment for high TG.

Data Collection

To evaluate the knowledge, attitudes and lifestyle practices of MS patients on CVD risk factors, Mirza et al. (2016) designed a questionnaire. A literature review reported the structure and content of the questionnaire. The questionnaire follows the format of the Behavioral Risk Factor Surveillance System, which was established in 1984 by the Centers for Disease Control (CDC, Atlanta, USA) and was established as a state-based health research system, gathering information on preventive health practices related to Health Risk Behaviors. The questionnaire was composed of 43 items. The information was evaluated with a series of 20 questions and the answers were recorded as correct answer (1), wrong answer or not knowing (0). Attitude was assessed with 13 questions and answers were recorded on a 0-2 Likert scale; I disagree (0), agree (1) and strongly agree (2). Lifestyle practices of the patients were evaluated with 10 questions and 0-3 - marked Likert scale, never (0), rarely do (1), sometimes do (2) and always do (3). The questionnaire was tested for internal validity and reliability. Cronbach's alpha values for "knowledge", "attitude" and "practice 0 were 0.72, 0.8, and 0.73, respectively. A higher score was associated with better knowledge, positive attitudes and better practices. The scores that received maximum knowledge, attitude and practice scores as 20, 26 and 30 respectively were divided into schemes classified as "poor", "average" and "good sırasıyla, respectively.

Biochemistry Analysis

After screening the patients coming to the biochemistry laboratory, data were collected from

appropriate subjects selected by simple random sampling method. In this hospital, the laboratory of eligible for the study (meeting the eligibility criteria) departments. Patients who were found to bwere reached by a trained researcher. After obtaining informed consent, the participants were interviewed and five milliliters of 8-hour fasting venous blood samples were collected in a sterile vial under aseptic measures. Biochemical parameters (fasting blood glucose, high density lipoprotein [HDL], triglyceride [TG], glycosylated hemoglobin [HbA1C]) were analyzed.

RESULTS

The majority of the participants (n = 78; 55.8%) were male. Socio-demographic characteristics of the participants are given in Table 1.

Table 1. Socio-demographic Characteristics of participants

Demographic Characteristics	Frequency (%)
Gender	
Female	62 (44.2)
Male	78 (55.8)
Age (years)	
35-39	12 (8.5)
40-44	18 (12.9)
45-49	23 (16.5)
50-54	25 (17.8)
55 -59	35 (25.0)
60 and over	27 (19.3)
Education level	
No schooling	8 (5.7)
Primary schooling	16 (11.5)
Secondary education completed	62 (44.3)
High school	42 (30.0)
University	12 (8.5)
Occupation	
Unemployed	27 (19.3)
Housewife	33 (23.5)
Labor-officer	45 (32.2)
Self-employment	35 (25.0)
Socioeconomic status	
Upper lower	28 (20.0)
Lower middle	42 (30.0)
Upper middle	46 (32.8)
Upper	24 (17.2)

the biochemistry department performs blood examinations of patients referred from various e

Statistical Analysis

SPSS 21 version was used to derive statistical inferences. While $P < 0.05$ was considered significant. Data were summarized as standard deviation with ratios and means. ANOVA were used as significance tests in the analysis of qualitative and quantitative variables.

55.8% of the individuals included in the study sample were male, 25% were between 55-59 years old and 44.3% Second Secondary education completed,, 32.2% Labor-officer, 30% Lower Middle (Table 1).

Tables 2, 3 and 4 show the relationship between anthropometric and biochemical measurements with knowledge, attitudes and practices towards CVDs risk factors. Subjects with low BMI had better knowledge, attitudes and practices; however, it was not statistically significant. Of the studied anthropometric variables (BMI, WC and W: H ratio), only waist circumference was found to be significantly associated with CVDs in relation to CVDs risk factors. Lower waist circumference, knowledge, attitude and lifestyle practices were better among patients. There was a significant difference between HDL-C levels related to knowledge, attitudes and practices related to CVDs risk factors. Among the patients measured as fasting blood glucose (FBS), it was found that blood glucose control was also related to knowledge and applications of CVDs risk factors. Patients with better diabetes control (low FBS) followed good lifestyle practices and the difference was statistically significant. However, HbA1c levels and long-term control of blood glucose indicated were not significantly correlated with any of the studied variables.

Table 2: Association of participants' anthropometric and biochemical variables with knowledge scores

Variables	Knowledge (mean±SD*)			
	Poor (n=22)	Average (n=76)	Good (n=42)	p
BMI (kg/m^2)	30±2.1	31±2.0	31±1.6	0.41
WC (cm)	93±3.4	90±1.2	88±0.7	0.01*
W:H ratio	1.21±0.7	1.26±0.6	1.33±0.4	0.91
HDL-C (mg/dl)	41±2.2	43±1.5	44±1.4	0.07
LDL-C (mg/dl)	104.3±28.	105.4±30.1	107.2±29.2	0.23
TG (mg/dl)	153±0.5	149±0.7	151±0.3	0.51
FBS (mg/dl)	130±1.3	116±2.2	110±1.2	0.01*
HbA1c (%)	7.2±1.2	7.4±0.3	7.4±0.2	0.67

P values in bold have significance p<0.05. *SD: Standard deviation; BMI: Body mass index; WC: Waist circumference; W:H: Waist:hip ratio; HDL: High‑density lipoprotein; TG: Triglyceride, FBS: Fasting blood sugar; HbA1c: Glycosylated hemoglobin

Table 3: Association of participants' anthropometric and biochemical variables with attitude scores

Variables	Attitude (mean±SD*)			
	Poor (n=24)	Average (n=56)	Good (n=60)	p
BMI (kg/m^2)	31±0.5	31±1.2	30±2.0	1.20
WC (cm)	97±1.6	92±1.6	86±1.5	0.01*
W:H ratio	1.4±0.3	1.3±0.6	1.3±0.4	0.56
HDL-C (mg/dl)	40±0.4	42±0.9	40±0.6	0.09
LDL-C (mg/dl)	106.1 ±28.4	105.3 ±22.3	107.6 ±31.8	0.11
TG (mg/dl)	153±2.3	151±1.4	151±1.2	0.41
FBS (mg/dl)	123±1.3	125±2.6	128±1.5	0.09
HbA1c (%)	7.4±0.6	7.7±1.2	7.7±1.1	0.54

P values in bold have significance <0.05. *SD: Standard deviation; BMI: Body mass index; WC: Waist circumference; W:H: Waist:hip ratio; HDL: High‑density lipoprotein; TG: Triglyceride, FBS: Fasting blood sugar; HbA1c: Glycosylated hemoglobin

Table 4: Association of participants' anthropometric and biochemical variables with application scores

Variables	Attitude (mean±SD*)			
	Poor (n=44)	Average (n=62)	Good (n=34)	p
BMI (kg/m^2)	30±1.3	31±0.6	28±2.1	1.13
WC (cm)	99±2.5	92±1.3	86±0.8	0.01*
W:H ratio	1.6±0.7	1.4±0.6	1.2±0.3	0.53
HDL-C (mg/dl)	39±1.6	42±0.7	40±1.5	0.06
LDL-C (mg/dl)	107.1±34.6	106.4 ± 31.4	102.5±31.8	0.32
TG (mg/dl)	153±2.0	151±1.1	150±1.0	0.20
FBS (mg/dl)	132±0.8	122±1.3	108±2.3	0.01*
HbA1c (%)	7.8±1.0	7.4±0.3	7.5±0.6	0.71

P values in bold have significance <0.05. *SD: Standard deviation; BMI: Body mass index; WC: Waist circumference; W:H: Waist:hip ratio; HDL: High‑density lipoprotein; TG: Triglyceride, FBS: Fasting blood sugar; HbA1c: Glycosylated hemoglobin

DISCUSSION AND CONCLUSION

Metabolic syndrome is a modern life disease. MS is considered an epidemic of the 2000s. Metabolic syndrome prevalence was found to be different in different populations (Yang et al. 2002). The prevalence of metabolic syndrome in adults is reported to be 23% in the United States (USA), between 12% and 28% in European countries, and in the UK, 25% of the population is diagnosed with definite metabolic syndrome (Ford et al., 2002).

Our findings suggest that patients with MS have a moderate level of knowledge and practice and a high level of attitudes towards reducing CVDs risk, but that knowledge and practice are low in some areas. Active lifestyles contribute to the maintenance and improvement of health and well-being and prevention of disease among people (American College of Sports Medicine, 2009). In particular, physical activity (PA) reduces the risk of cardiovascular disease (Demirci et al., 2018).

An important aspect of our study was that participants with high knowledge scores significantly reduced WCs and tended towards lower FBG levels. Similarly, participants with high application scores significantly reduced BMIs and WCs, making it clear that better information and practices are associated with better anthropometric and biochemical parameters to reduce the risk of CVDs in these patients (Simpson et al., 2004) Overall, the information was average among most patients. It was associated with socio-demographic, anthropometric and biochemical measurements. The fact that the literacy rates among the participants were low and that they caused their awareness to decrease were not well educated. The waist circumference was lower and the sugar control was better, so the information was better in patients with low FBS levels. In a study, Amarasekara et al. (2016) reported that patients with low waist circumference and low FBS had a higher knowledge score about CVDs risk factors.

It was significantly correlated with MS knowledge in previously published studies. In addition, participants with a history of dyslipidemia or a high level of normal HDL-C had more MS knowledge (Wang et al., 2015). These participants may have received training in MS after the diagnosis of dyslipidemia. In addition, when participants are aware of the diagnosis of dyslipidemia, they can pay attention to self-learning of relevant information. People with normal HDL-C levels knew more about MS, which indicates the positive impact of information on disease management (Lo et al., 2015; Zhao and Zhang, 2008). Compared to other studies on CVDs and risk factors, this population also demonstrated broad discrepancies in knowledge, as well as inconsistency between knowledge and attitudes. However, it is not easy to make sustainable changes to lifestyle practices. Various studies on NCDs have shown that there are many interrelated problems associated with individual behavior, so that even if knowledge and attitudes are high, implementation remains low (Parvin et al., 2010; Oguoma et al., 2014).

Conclusion

The results support the need for a health promotion strategy among MS patients. Because of the significant differences between the various socio-demographic groups, health promotion interventions should be planned and implemented with different studies. The results also show the health department's difficulties in persuading patients to change their lifestyle, which is only possible through intensive counseling sessions and health promotion policies. In view of all these aspects, in addition to diagnosing MS, there is a need to identify individuals at risk for CVDs to identify and treat additional risk factors in patients with only one or two risk factors. Future planning programs are well targeted and more directive to focus more on the behavioral aspects of managing information and risk reduction. The aim of prevention / reduction of CVDs risk is to investigate further the barriers and chambers of increasing patient knowledge and practices.

REFERENCES

Amarasekara P, de Silva A, Swarnamali H, Senarath U, Katulanda P (2016). Knowledge, attitudes, and practices on lifestyle and cardiovascular risk factors among metabolic syndrome patients in an Urban Tertiary Care Institute in Sri Lanka. Asia Pac J Public Health;28(1 Suppl):32S‑40S.

Demirci N, Toptaş Demirci P, Demirci E (2018). The Effects of Eating Habits, Physical Activity, Nutrition Knowledge and Self-efficacy Levels on Obesity. Universal

Journal of Educational Research 6(7): 1424-1430

Demirci N, Yıldırım İ, Toptaş Demirci P, Ersöz Y (2018). Why Should We Do Physical Activity? More Active People For A Healthier World. Int J Disabil Sports Health Sci;1(2);1-14

Dunbar J.A, Reddy P, Davis-Lameloise N, Philpot B, Laatikainen T, Kilkkinen A, Bunker S.J, Best J.D, Vartiainen E, Kai Lo S (2008). Depression: An important comorbidity with metabolic syndrome in a general population. Diabetes Care, 31, 2368–2373.

Ford E.S, Li C, Zhao G(2010). Prevalence and correlates of metabolic syndrome based on a harmonious definition among adults in the US. Diabetes Care, 2, 180–193.

Ford E.S, Giles W.H, Dietz W.H (2002). Prevalence of the metabolic syndrome among US adults. Findings from the third National Health and Nutrition Examination Survey. JAMA, 287: 356-359.

Glanz K, Kirscht JP, Rosenstock IM (1981). Linking research and practice in patient education for hypertension: Patient responses to four educational interventions. Med Care;19:141‑52.

Imanipour M, Bassampour S, Haghani H (2008). Relationship between preventive behaviors and knowledge regarding cardiovascular diseases. Hayat;14(2):41–9.

International Diabetes Federation (2006). The IDF Consensus Worldwide Definition of the Metabolic Syndrome; International Diabetes Federation: Belgium; Available online: https://www.idf.org/component/ attachments/attachments.html?id=705&task= download (accessed on 14 june 2019).

Kang HS, Gutin B, Barbeau P, Litaker MS, Allison J, Le NA (2002). Low-density lipoprotein particle size, central obesity, cardiovascular fitness, and insulin resistance syndrome markers in obese youths. Int J Obes Relat Metab Disord., 26: 1030-1035.

Karami J, Komasi S, Maesoomi M, Saeedi M (2014). Comparing the effectiveness of two methods of relaxation and interpersonal cognitive problem solving on decreasing anxiety and depression in cardiac rehabilitation patients. Urmia Med J;25(4):298–308.

Kudo Y, Okada M, Tsunoda M, Satoh T, Aizawa Y.A (2011). Lifestyle to prevent or combat the metabolic syndrome among Japanese workers: Analyses using the health belief model and the multidimensional health locus of control. Ind Health;49:365‑73.

Li Y, Zhao L, Yu D, Wang Z, Ding G (2018). Metabolic syndrome prevalence and its risk factors among adults in China: A nationally representative cross-sectional study. PLoS ONE, 13, e0199293.

Lo S.W.Z, Chair S.Y, Lee I.F.K (2015). Knowledge of metabolic syndrome in Chinese adults: Implications for health education. Health Educ. J., 75, 589–599.

Mirza A, Aslam S, Perin K, Curtis T, Stenback J, Gipson J, Alrabaa S (2016). Knowledge, attitudes and practices among patients with coronary artery disease in Dhaka, Bangladesh. Int J Community Med Public Health; 3:2740‑8.

Mohseni Pouya H, Hajimiri K, Esmaeili Shahmirzadi S, Golshani S, Hashemi Amrei S, Eifi Makrani A (2015). Relationship between health promoting behaviors and severity of coronary artery stenosis in angiography department in Mazandaran Heart Center]. Mazandaran Med J.; 25(130):19–29.

Murer M, Schmied C, Battegay E, Keller DI (2012). Physical activity behaviour in patients with metabolic syndrome. Swiss Med Wkly;142:w13691.

Oguoma VM, Nwose EU, Bwititi PT (2014).Cardiovascular disease risk prevention: preliminary survey of baseline knowledge, attitude and practices of a Nigerian rural community. N Am J Med Sci;6: 466-471.

Parvin M, Fatemah MN, Nasrin O, et al. (2010). Nutritional knowledge, attitude and practice of Teheranian adults and their relation to serum lipids and lipoproteins: Teharan lipid and glucose study. Ann Nutr Metab;56:233-240.

Sarti C, Gallagher J (2006). Metabolik sendrom Prevalansı, KKH riski ve tedavisi. J Diabet. Comp.2: 106-120.

Simpson DR, Dixon BG, Bolli P (2004). Effectiveness of multidisciplinary patient counselling in reducing cardiovascular disease risk factors through non-pharmacological intervention, Ontario. Can J Cardiol; 20:177–186.

Wang Q, Chair SY, Mi-Ling Wong E, Taylor-Piliae RE, Hui Qiu XC and Mei Li X (2019). Metabolic Syndrome Knowledge among Adults with Cardiometabolic Risk Factors: A Cross-Sectional Study, Int. J. Environ. Res. Public Health, 16, 159;1-10.

Wang J.H, Dong L.P, Jiang H.J (2015). The survey of clinical nurses' understanding on metabolic syndrome. Chin. Rural Health Serv. Adm, 35, 253–255.

World Health Organization (2009). The metabolic syndrome. In: Department of Noncommunicable Disease Surveillance, editor. Definition, Diagnosis and Classification of Diabetes Mellitus and its Complications. Report of a WHO Consultation. Geneva: World Health Organization; 1999. p. 31‑3. Available from: http://apps.who.int/iris/bitstream/10665/66040/1/WHO_NCD_NCS_99.2.pdf.(Last accessed on 2019 june 14).

Yang WS, Lee WJ, Funahashi T, Tanaka S, Matsuzawa Y, Chao CL, Chen CL, Tai TY, Chuang LM. (2002). Plasma adiponectin levels in overweight and obese Asians. Obes Rev., 10: 1104-1110.

Zhao X.J, Zhang S.M.A (2008). survey of knowledge about metabolic syndrome in medical workers. Neural Injury Funct. Reconstruct, 3, 173–175.

International Journal of
Disabilities Sports & Health Science

Does Depression Cause Obesity or Does Obesity Prompt Depression?

Nevzat DEMİRCİ*

Faculty of Sports Sciences, Mersin University, Turkey
*Corresponding author: nevzatdemirci44@hotmail.com

Abstract

Both depression and obesity are health problems frequently encountered all around the world. The studies carried out in recent years indicate that there is a relationship between obesity and depression but a complete cause and effect relationship cannot be determined. The purpose of this research is to seek an answer to the question of does depression cause obesity o r does obesity prompt depression. Studies were found using PubMed, PsycINFO, and EMBASE databases and selected on several criteria. When the relationship between depression and obesity is examined, the most basic question is which one affects the other one, in other words what the direction of the relationship between them is. Consequently: studies indicate that there is a relationship between obesity and depression and focus on cause and effect relationship. It is argued that this relationship is bilateral, and it is stated that many factors can affect this relationship. It has been found that obesity increases the depression risk, and depression is also a predictor factor for the development of obesity. In conclusion, it can be said that there is not a single cause for the relationship between obesity and depression, and it has a multi-factorial structure.

Keywords

Obesity, Depression, Health, Body Mass İndex

INTRODUCTION

Significant progress has been made in improving public health around the world; However, many serious health problems such as depression and obesity need to be solved. The global prevalence of being overweight and obese was estimated to be 39% and 13% in 2017 for adults 18 years and older, respectively (Ha et al., 2017). In 2018, the World Health Organization (WHO) estimates that depression affects approximately 300 million people worldwide (Cui et al., 2018). Obesity; Due spent than more calories, characterized by fat tissue growth in the body, which reduces the quality of life by preparing the ground for organic disorder is a public health problem of significant and avoidable (Garaulet et al., 2010) The prevalence of obesity in Turkey was reported to be 32%.

In our country, adults It has been shown that 2/3 of the population is overweight or obese, weight gain is more common in men and obesity is more common in women. In 2016, the World Health Organization (WHO) stated that more than half of the world's population was obese or overweight. reported that more than 42 million children under five years of age suffer from overweight or obesity (Çakmur and Güneş, 2018).

Depression, which is defined as a deeply sad mood disorder that negatively affects the thoughts, feelings and behaviors of the individual, is considered as another public health problem and its incidence is increasing gradually. (WHO, 2019) It has been reported that 350 million people in every age group are affected by depression. The increasing prevalence of depression and obesity is important because both conditions increase the risk of systemic disease (Luppino et al., 2010) The preventable and manageable nature of obesity and depression is the development of policies in primary health care that protect and improve health and thus reduce health expenses (Baughman et al.,

2003) A number of molecular, genetic, hormonal, immunological and environmental factors have been investigated in the etiology of depression and obesity (Gesta et al., 2007) In recent years, a causal relationship between obesity and depression has been investigated.

Many studies have been reported to examine whether or not. (Lang et al., 2015; Onyike et al., 2003). Both depression and obesity are major health issues which require particular attention in order to reduce the global burden. In terms of mechanisms, a growing body of literature sustains that depression and obesity share some epidemiological, clinical and biological pathways (Milaneschi et al., 2018) in a bidirectional manner, with obesity increasing the risk of depression and depression increasing the risk of obesity in prospective studies (Wurtman and Wurtman, 2018). The purpose of this research is to seek an answer to the question of does depression cause obesity o r does obesity prompt depression**.**

Obesity of Epidemıology

Obesity is defined as excess body fat. Body mass index (BMI) is the standard measure of obesity and overweight in children 2 years and older. BMI is divided by square length, which is equal to body weight. In adults, a BMI between 25 and 30 is considered overweight, a BMI equal to or greater than 30 is considered obese. In children, BMI varies according to age and gender. Obesity in children is defined as a BMI greater than or equal to 95 percent for age and gender. As children approach adulthood, the percentage of BMI in age and gender is approaching adult standards (Stunkard et al., 2003) Countries across the world have experienced a significant increase in the prevalence of overweight and obese children and adolescents from the 1980s to the 1990s.

Evidence from the United States reveals that this upward trend continues until the 21st century (Janssen et al., 2005). A dramatic increase in the prevalence of obesity among adolescents in the United States 1976 The prevalence of overweight and obesity in 1980 and 2007–2008 (Ogden et al., 2010), 1986 and 1998, Increased 120% for blacks and Hispanics, 50% for whites and 50% for whites. Although obese girls strive to reduce the increasing prevalence during puberty, rates are still increasing and the stigma of obese children is increasing. Currently, almost one-third of children and adolescents in the United States are

either overweight or obese. The factors affecting the outbreak of obesity mainly include an increase. changes in diet and food consumption such as inactivity and fast feeding patterns and large portion sizes (Melnyk et al., 2009).

Epidemiology of Depression

The risk of depression increases in adolescents and the prevalence of major depressive disorder (MDD) is 2% in children and 4% to 8% in adolescents. a rate comparable to the lifetime prevalence of MDD in adults. Young girls are likely to experience more depression than adolescents during adolescence. Gender differences occur in early adolescence and persist in adulthood (Reeves et al., 2008). Criteria for depression include mood, anhedonia, fatigue, feelings of guilt or worthlessness, thoughts of death, sleep and appetite changes, or psychomotor activity.

Problems with sleep, appetite, or psychomotor activity can occur in either direction (ie, a person's insomnia or hypersomnia; anorexia or increased appetite; psychomotor retardation or agitation). The DSM-IV-TR criteria for MDD require that five of the nine depression criteria are often present for a period of 2 weeks; One of the criteria should include either depressive mood or anhedonia (ie, decreased interest or pleasure) and symptoms should be a change from previous functioning (Hankin et al., 1998; APA, 2000)

Obesity–Depression Cycle

Obesity and depression are therefore common conditions that have significant individual effects. Taken together, it has been shown that depression and obesity affect the quality of life negatively in a synergistic way (Romain et al., 2018). A two-way relationship has been proposed between the two, but not all studies support this, suggesting that the relationship is a complex one (Singh 2014). Increased severity of depression has been shown to be associated with decreased physical activity and increased caloric intake, resulting in an increased risk of obesity.

Obesity can be used to predict a weaker response to antidepressants and a worse depression outcome for 1 year; One particular factor involved is the development of metabolic syndrome (Jantaratnotai 2017). Both depression and obesity are common health problems worldwide. Recent

studies indicate that there is a relationship between complete cause-effect relationship. When the relationship between obesity and depression is examined, the most important question is which one affects the other, ie the direction in which the relationship is between them. Some studies suggest that there is a corresponding relationship between these two variables; some are depression risk factors for obesity; others found that obesity is a risk factor for depression (Bartlett et al., 2017).

Effect of Obesity and Depression

For years, any association between obesity and depression has been assumed to be largely random in the general population, but a recent subanalysis by Luppino and colleagues (Faith et al., 2002) found that the impact of obesity on depression development was stronger in American studies. They emphasized the possibility of a biological link between overweight, obesity and depression; obesity was seen as an inflammatory condition. Inflammation has also been associated with depression, which is perceived as a stressful obesity and depression, but cannot identify a living event in which the brain responds similarly to a medical disease, leading to high proinflammatory cytokines.

In normal overweight people, adipose tissue contains adipose cells, but in obese people adipose tissue remains macrophages, pathogens and other impurities, and the immune system is released continuously by releasing inflammatory hormones such as TNF-alpha and interleukin-6. contributes to the situation (Bastard et al., 2006). Luppino and colleagues also noted that the biological mechanisms underlying the risk of onset of obesity and depression may not be different across cultures, but that sociocultural systems may be different and more stringent in one culture compared to other cultures. According to the National Health and Nutrition Examination Questionnaire (NHANES) -III data, among the most obese adolescents, 95-100. In percentages, the prevalence of majordepression has increased to 20% for boys and 30% for girls (Stunkard et al., 2003)
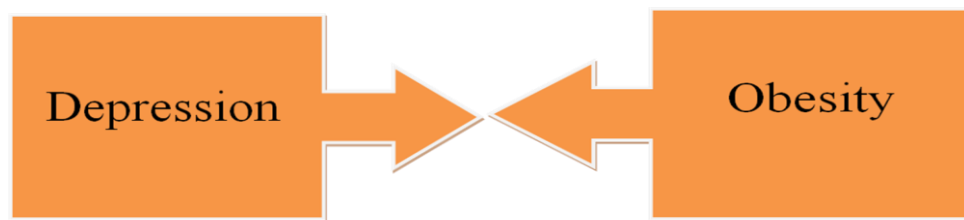
Figure 2. Longitudinal studies support the possibility of two-way causal interaction.

Archives of General Psychiatry - The results of a new metanalysis have shown that obesity and depression are closely linked, and that an increase in one increases the risk for another. In obese people, the risk of developing depression increases by 55%, and in people with depression, the risk of developing obesity increases by 58% (Stunkard et al., 2003). In a review study examining in which direction the relationship between obesity and depression provides more consistent information, 15 studies indicating that depression causes obesity and 10 studies indicating that obesity causes depression have been examined. As a result of this study, 80% of the studies showed that obesity causes depression; 53% reported that depression causes obesity. In the general population, it was concluded that being obese increases the risk of developing depression (Faith et al. 2011). In another longitudinal study involving 9374 adolescents; In the first measurements obtained cross-sectionally, there was no significant relationship between depression and obesity; When the measurements taken one year later, depressive mood predicted obesity (Goodman and Whitaker 2002). Obesity and depression are just one area of concern, and the following statistics indicate the scale of the problem:
• 13% of the world's population is obese (WHO 2017a)
• Over 300 million people worldwide become depressed (WHO 2017b)
• 23% of obese individuals have comorbid depression (Carey 2014)

• The prevalence of obesity is as high as 55% among adults with severe mental health problems.
• As independent risk factors, depression constitutes a relative risk of obesity of 37% and obesity of 18%; however, the risk of overweight in depression is low (Mannan 2015)

Conclusions

When the relationship between depression and obesity is examined, the most important question is which one affects the other, ie the direction of the relationship between them. Studies indicate a relationship between obesity and depression, while emphasizing cause-effect relationship. It is suggested that this relationship is bilateral and many factors may affect this relationship. Obesity increases the risk of depression; depression was also found to be a predictor for the development of obesity. In summary, it can be said that the relationship between obesity and depression is not a single cause, it has a multi-factor structure.

REFERENCES

American Psychiatric Association (2000). Diagnostic and Statistical Manual of Mental Disorders: DSMIV- TR. 4. Washington, DC.

Bartlett A.A, Singh R, Hunter R.G (2017). Anxiety and Epigenetics. Adv. Exp. Med. Biol., 978, 145–166.

Bastard JP, Maachi M, Lagathu C, Kim MJ, Caron M, Vidal H, Capeau J, Feve B (2006). Recent advances in the relationship between obesity, inflammation, and insulin resistance. Eur Cytokine Network; 17(1):4–12.

Baughman K, Logue E, Sutton K, Capers C, Jarjoura D, Smucker W. (2003). Biopsychosocial characteristics of overweight and obese primary care patients: do psychosocial and behavior factors mediate sociodemographic effects? Prev Med;37(2):129-37.

Carey M, Small H, Lin Yoong S, Boyes A, Bisquera A, Fisher RS (2014) Prevalence of comorbid depression and obesity in general practice: a cross sectional survey. British Journal of General Practice, 64(620): e122–7.

Cui J, Sun X, Li X, Ke M, Sun J, Yasmeen N, Khan JM, Xin H, Xue S and Baloch Z (2018) Association Between Different Indicators of Obesity and Depression in Adults in Qingdao, China: A Cross-Sectional Study. Front. Endocrinol. 9:549.

Çakmur H, Güneş ÜB (2018). Examination of the relationship between obesity and depression in outpatient admissions. Türk Aile Hek Derg; 22 (2): 58-65.

Demirci N, Toptaş Demirci P, Demirci E (2017). The Effect of School-based Exercise Practices of 9-11 Year Old Girls Students on Obesity and Health-related Quality of Life. Universal Journal of Educational Research 5(8): 1323-1331.

Faith MS, Matz PE, Jorge MA (2002). Obesity-depression associations in the population. J Psychosom Res; 53:935–942.

Garaulet M, Ordovás JM, Madrid JA (2010). The chronobiology, etiology and pathophysiology of obesity. Int J Obes ;34:1667-83.

Gesta S, Tseng YH, Kahn CR (2007). Developmental origin of fat: tracking obesity to its source Cell;131:242-56.

Goodman E ve Whitaker RC (2002). A prospective study of the role of depression in the development and persistence of adolescent obesity. Pediatrics 110(3): 497-504.

Ha H, Han C, Kim B (2017). Can Obesity Cause Depression? A Pseudo-panel Analysis. J Prev Med Public Health;50:262-267.

Hankin BL, Abramson LY, Moffitt TE, Silva PA, McGee R, Angell KE (1998). Development of depression from preadolescence to young adulthood: emerging gender differences in a 10-year longitudinal study. J Abnorm Psychol; 107(1):128–140.

Janssen I, Katzmarzyk PT, Boyce WF, Vereecken C, Mulvihill C, Roberts C, Currie C, Pickett W (2005). Comparison of overweight and obesity prevalence in school-aged youth from 34 countries and their relationships with physical activity and dietary patterns. Obes Rev; 6:123–132.

Jantaratnotai N, Mosikanon K, Lee Y, McIntyre RS (2017) The interface of depression and obesity. Obesity Research & Clinical Practice, 11: 1–10.

Lang UE, Beglinger C, Schweinfurth N, Walter M, Borgwardt S (2015). Nutritional aspects of depression. Cell Physiol Biochem;37(3):1029-43.

Luppino FS, de Wit LM, Bouvy PF, Stijnen T, Zitman FG (2010). Over-weight, obesity, and depression: a systematic review and meta-analysis of longitudinal studies. Arch Gen Psychiatry; 67:220-29.

Mannan M, Mamun A, Doi S, Clavarino A (2015) Is there a bi-directional relationship between depression and obesity among adult men and women? Systematic review and bias-adjusted meta analysis. Asian Journal of Psychiatry, 21: 51–66.

Melnyk BM, Jacobson D, Kelly S, O'Haver J, Small L, Mays MZ (2009). Improving the mental health, healthy lifestyle choices, and physical health of Hispanic adolescents: a randomized controlled pilot study. J Sch Health; 79(12):57–584.

Milaneschi Y, Simmons WK, Van Rossum EFC, Penninx BW (2018). Depression and obesity: evidence of shared biological mechanisms. Mol Psychiatry.

Ogden CL, Carroll MD, Curtin LR, Lamb MM, Flegal KM. (2010). Prevalence of high body mass index in US children and adolescents, 2007–2008. JAMA ; 303:242–249.

Onyike CU, Crum RM, Lee HB, Eaton WW (2003). Is obesity associated with major depression? Results from the third national health and nutrition examination survey. Am J Epidemiol;158:1139-47.

Reeves GM, Postolache TT, Snitker S (2008). Childhood obesity and depression: connection between these growing problems in growing children. Int J Child Health Hum Dev.; 1(2):103–114.

Romain K, Webb T, Kumar M (2018). Depression and obesity: can the cycle be broken? BJPsych Advances, vol. 24, 132–140

Singh G, Jackson CA, Dobson A, Mishra GD (2014) Bidirectional association between weight change and depression in mid-aged women: a population- based longitudinal study. International Journal of Obesity, 38: 591–6.

Stunkard AJ, Faith MS, Allison KC (2003). Depression and obesity. Biol Psychiatry; 54:330–337.

Toptaş Demirci P (2018). The Effect of Exercise Behavior Change Processes in the Prevention of Obesity in Elderly. Int J Disabil Sports Health Sci; 1(2);40-48

World Health Organization (2019). Depression: a global public health concem. http://www.who.int/mental_health/managem ent/depression/who_paper_depression_wfmh _2012.pdf/ adresinden 11/12/2019.

World Health Organization (2017a) Obesity and overweight [Online Fact Sheet]. WHO (http://www.who.int/mediacentre/factsheets/f s311/en/). Accessed May 2017.

World Health Organization (2017b) Depression [Online Fact Sheet]. WHO (http://www.who.int/mediacentre/factsheets/f s369/en/). Accessed May 2017.

Wurtman J, Wurtman R. (2018). The Trajectory from Mood to Obesity. Curr Obes Rep; 7:1-5.