ORIGINAL ARTICLE

Examination of Anthropometric Profiles of Individuals Who Exercise in the Gym

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ABSTRACT

Background: Anthropometric measurements frequently used in sports sciences and public health is to be informed about the body composition of individuals are simple, cheap, easy and reliable methods. Some of these measurements are body mass index (BMI), waist circumference and waist hip ratio (WHR) measurements.

Aim: The aim of this study is to examine the BMI and WHR values of the individuals who exercise at least two days a weak in the gym in terms of age and gender by benefiting from anthropometric measurement methods.

Methods: The study involved 528 volunteer individuals, including 72 men (13.6%) and 456 women (86.4%) between the ages of 18 and 65 who exercised in the gym at least two days a week in Malatya, Turkey. The mean age of the participants was 28.56±9.96, the height average was 1.65±.08 and the body weight average was 72.60±14.35. The heights of all participants were taken with a wall-mounted stadiometer (Holtain Ltd., England), their body weights were taken with an electronic scale (Seca, Germany), and their diameter-circumference measurements (hip, waist) were taken with a gullick meter.

Results: According to the age variable of the research group, it was determined that there was a low, positive and linear relationship between BMI (r=,361; p<0.05) and WHR (r=,272; p<0.05), and this relationship was statistically significant. In addition, it was determined that there was a statistically significant difference between BMI and WHR averages depending on the gender variable (p<0.05).

Conclusion: As a result, there is an increase in BMI and WHR with the progress of the age. Similarly, as a result of the increase of BMI, WHR is also increased. While the mean BMI is higher in women than in men, WHR is higher in men than in women.

Keywords: Fitness, Exercise, Body mass index, Waist hip ratio

INTRODUCTION

With the technological developments, the sedentary lifestyle, which is increasing day by day, poses a threat to human health. Since sedentary life has many negative effects on human health, it has become very important to exercise in order to improve and protect health today. Realizing this situation, people sought solutions and tried to participate in various activities. In addition to participating in different sports activities, the number of people who participate in weight loss activities in fitness centers is increasing.

The culture of exercising in fitness centers emerged with the formation of modern society, especially at the end of the 19th century, and became widespread by constantly developing[1]. As the importance of physical activity in society is understood, the demand for fitness centers that offer the opportunity to exercise in modern society is increasing day by day[2]. It is known that regular physical activity not only has positive effects on health but also has positive effects on body composition[3,4]. In addition, optimal body composition reflects a healthy body. However, suboptimal body composition can cause various health problems[5]. The relationship between body composition and physical activity has been a subject of interest to researchers throughout history[6,7]. Body composition analysis methods are used for different purposes in clinical and sports sciences[5].

Anthropometric measurements, which are frequently used in order to have information about the body composition of individuals, are simple, inexpensive, easy and reliable methods. These are body mass index (BMI), waist circumference and waist-hip ratio (WHR) measurements, and they are frequently used in sports sciences and fields related to public health[8,9].

The aim of this study is to examine the BMI and WHR values of the individuals who exercise at least two days a weak in the gym in terms of age and gender by benefiting from anthropometric measurement methods.

MATERIAL AND METHODS

The study involved 528 volunteer individuals, including 72 men (13.6%) and 456 women (86.4%) between the ages of 18 and 65 who exercised in the gym at least two days a week in Malatya, Turkey. The mean age of the participants was 28.56±9.96, the height length average was 1.65±.08 and the body weight average was 72.60±14.35.

The heights of all participants were taken with a wall-mounted stadiometer (Holtain Ltd., England), their body weights were taken with an electronic scale (Seca, Germany), and their diameter-circumference measurements (hip, waist) were taken with a gullick meter[10,11,25].

The data obtained in the research were analyzed using the IBM Statistics (SPSS version 25.0, Armonk, NY, USA) package program. Continuous variables were presented as mean±standard deviation (x̄±sd), and categorical variables were presented as frequency-percentage. Pearson Correlation and T-test were used in the analysis of the data. The results were evaluated at the p<.05 significance level.

RESULTS

The findings of the experimental and control groups are given in tables below.

Table 1: Gender distribution of the research group

Gender	N	%
Males	72	13,6
Females	456	86,4
Total	528	100,0

According to Table 1, it was determined that 86.4% of the research group was female and 13.6% was male.

Table 2: Demographic data

	N	Minimum	Maximum	Mean	Std. Deviation
Age	528	18,00	65,00	28,56	9,86
Height	528	142	198	1,65	,08
Body Weight	528	43,00	141,00	72,60	14,35
BMI	528	15,92	51,19	26,51	5,20
WHR	528	,51	1,10	,78	,08

According to Table 2, the mean age of the research group was 28.56±9.96, the mean height was 1.65±.08, the mean body weight was 72.60±14.35, the mean BMI was 26.51± 5.20 and the mean WHR was determined to be .78±.08.

Table 3: Correlation analysis

		Age	BMI	WHR
Age	Pearson Correlation	1	,361[*]	,272[*]
	p		,000	,000
	N	528	528	528
BMI	Pearson Correlation	,361[*]	1	,300[*]
	p	,000		,000
	N	528	528	528
WHR	Pearson Correlation	,272[*]	,300[*]	1
	p	,000	,000	
	N	528	528	528

*p<0.05

According to Table 3, there is a low level, positive and linear relationship between BMI (r=.361; p<0.05) and WHR (r=.272; p<0.05) according to the age variable of the research group, and this relationship is statistically significant. In addition, it was determined that there was a low level, positive and linear relationship between the WHR and BMI values of the research group (r=300; p<0.05), which was statistically significant. According to these findings, it can be said that BMI and WHR increase as age increases, and WHR increases in the same way as BMI increases.

Table 5: Analysis results according to the gender variable of the research group (t-test)

	Gender	N	Mean	SD	t	p
BMI	Males	72	24,13	3,90	4,258	,000*
	Females	456	26,89	5,28		
WHR	Males	72	0,88	0,09	-12,202	,000*
	Females	456	0,76	0,07		

*p<0.05

According to Table 4, it was determined that there was a statistically significant difference between the mean BMI and WHR depending on the gender variable. BMI averages were higher in women, and waist-hip ratios were higher in men.

DISCUSSION

WHR[12] and BMI[13] methods are frequently used to measure body composition, which is an indicator of body health. In this study, anthropometric profiles of individuals who exercise at least two days a week in fitness centers were examined using these two methods.

Within the scope of this study, the mean WHR of female individuals was found to be 0.76, and the average of WHR of male individuals was found to be 0.88 (Table 5). When some studies in the literature were examined, it was determined that the average WHR of female individuals was 0.72[14], 0.70[15], 0.83[16], 0.78[17] and the average WHR of male individuals was 0.81[15], 0.81[14], 0.96[17], 0.94[18]. In addition, the mean BMI of female individuals was found to be 26.89, and the average of BMI of male individuals was found to be 24.13 (Table 5). When some studies in the literature were examined, it was determined that the average BMI of female individuals was 21.9[15], 22.78[14], 34,8[19], 22,71[20], 22.08[21] and the average of BMI of male individuals was found to be 27.99[16], 23.4[22], 23.1[15], 23.0[23], 29.8[24]. In this context, it can be said that the average WHR and BMI of individuals may differ due to factors such as gender, age, participation in exercise and frequency of participation in exercise, and nutritional habits.

CONCLUSION

As a result, there is an increase in BMI and WHR with the progress of the age. Similarly, as a result of the increase of BMI, WHR is also increased. While the mean BMI is higher in women than in men, WHR is higher in men than in women.

REFERENCES

1. Andreasson J, Johansson T. The fitness revolution. Historical transformations in the global gym and fitness culture. Sport Science Review 2014; 3(4): 91-112.
2. Ferrand A, Robinson L, Valette P. The intention-to-repurchase paradox: A case of the health and fitness industry. Journal of Sport Management 2010; 24(1): 83-105.
3. Matsuoa T, Okura T, Nakata Y, Yabushita N, Numaoa S, Sasai H. The influence of physical activity-induced energy expenditure on the variance in body weight change among individuals during a diet intervention. Obesity Research & Clinical Practice 2007; 1(2): 109-117.
4. Ilkim M, Ozdemir M, Tanir H. Evaluation of some physical and motoric characteristics of athletes with down syndrome. SHS Web Konf. 2017 (37) 01030.
5. Uğraş S, & Özdenk Ç. Biyoelektrik impedans yöntemi ve antropometrik ölçümler ile vücut kompozisyon analizinin sedanter genç erkek ve kadınlarda karşılaştırılmalı olarak değerlendirilmesi. Sağlık Bilimleri Dergisi 2020; 29(1): 14-18.
6. Bilge M, Tuncel F. Hentbolcularda anaerobik güç ve kapasite ile vücut kompozisyonu arasındaki ilişkinin incelenmesi. Gazi Beden Eğitimi ve Spor Bilimleri Dergisi 2003; 8(4): 67-76.
7. Ayan V, Mülazimoğlu O. Sporda yetenek seçimi ve spora yönlendirmede 8-10 yaş grubu erkek çocuklarının fiziksel özelliklerinin ve bazı performans profillerinin incelenmesi (Ankara Örneği) 2009; FÜ Sağ. Bil. Tıp Derg. 23(3): 113-118.
8. Kafri MW, Potter JF, Myint PK. Multi-frequency bioelectrical impedance analysis for assessing fat mass and fat-free mass in stroke or transient ischaemic attack patients.

European journal of clinical nutrition 2014; 68(6): 677-682.

9. Kreissl A, Jorda A, Truschner K, Skacel G, Greber-Platzer, S. Clinically relevant body composition methods for obese pediatric patients. BMC pediatrics 2019; 19(1): 1-8.

10. Tamer K. Sporda Fizksel-Fizyolojik Performansın ölçülmesi ve değerlendirilmesi. 2000; Ankara: Bağırgan Yayımevi.

11. Callaway CW, Chumlea WC, Bouchard C, Himes JH, Lohman TG, Martin AD, Mitchell CD, Mueller WH, Roche AF, Seefeldt VD. Circumference in anthropometric standardization reference manual. In: Lohman TG, Roche AF, Martorell R. (Eds), Champaign, Human Kinetics Books 1988; 39-54.

12. Bozbora A. Obezite ve tedavisi. 1. Baskı, İstanbul: Nobel Tıp Kitabevleri, 2002; 1-61.

13. Garrow JS, Webster J. Quetelet's index (W/H2) as a measure of fatness. International journal of obesity 1985; 9(2): 147-153.

14. Taşlı H. Obezitenin belirlenmesinde kullanılan beden kitle indeksi, bel çevresi, bel kalça oranı metotlarının karşılaştırılması. (Yüksek lisans Tezi). Kırşehir Ahi Evran Üniversitesi Sosyal Bilimler Enstitüsü: 2019, Kırşehir.

15. Özütürker S. Üniversite öğrencilerinde beslenme durumları ve antropometrik profillerinin belirlenmesi: erzincan örneği. (Doktora Tezi). Ankara Üniversitesi Sosyal Bilimler Enstitüsü: 2016, Ankara.

16. Başıbüyük ÖG, Akın G. Sivas il merkezinde yetişkin kadın ve erkeklerde obezite değerleri. Turkish Studies 2007; 2(4): 1239-1261.

17. Güler U, Ateş M, Yilmaz S, Akgül E. Hipertansiyon ilacı kullanan sedanter bireylerde 24 haftalık egzersiz programının vücut kompozisyonu, maksimal oksijen kapasitesi ve seçili fizyolojik parametreler üzerindeki etkileri.

Spor Eğitim Dergisi 2020; 4(2): 203-214.

18. Perçinci NB, Kibçak N. Body building yapan erkeklerin besin desteği kullanim durumlarinin antropometrik ölçümleri ile ilişkisinin değerlendirilmesi. Spor ve Performans Araştırmaları Dergisi 2020; 11(3): 196-206.

19. Eren F, Kurtel H, Çeçen S, Bulur Ş. Kilolu/Obez Kadınlarda Metabolik Sendrom Sıklığı, Antropometrik Ölçümler Ve Metabolik Parametreler Arasındaki İlişki, Egzersiz Reçetelendirmesi. The Journal of Turkish Family Physician 2014; 5(1): 1-7.

20. Aslan Ş. Kadınlarda Pilatesin Vücut Kompozisyonuna Etkisi. İnönü Üniversitesi Beden Eğitimi ve Spor Bilimleri Dergisi 2019; 6(1): 24-35.

21. Günal A, Demirtürk F, Arıkan H, İnal B. Ebelik ve hemşirelik öğrencilerinin egzersiz davranışı, sigara bağımlılığı ve genel sağlık durumu. Sağlık Bilim ve Meslekleri Derg 2018; 5(2): 169-78.

22. Murathan F. Üniversite öğrencilerinde obezite sıklığı, fiziksel aktivite düzeyi ve sağlıklı yaşam biçimi davranışlarının incelenmesi. (Doktora Tezi). Fırat Üniversitesi Sağlık Bilimleri Enstitüsü: 2013, Elazığ.

23. Genç A, Şener Ü, Karabacak H, Öçok K. Kadın ve erkek genç erişkinler arasında fiziksel aktivite ve yaşam kalitesi farklılıklarının araştırılması. Kocatepe Tıp Dergisi 2011; 12(3): 145-150.

24. Eisenberg ML, Kim S, Chen Z. Erkek vücut kitle indeksi ve bel çevresi ile semen kalitesi ilişkisi: LIFE çalışması verileri. Human Reproduction 2014; 29: 193-200.

25. Ilkım M. Çelik T., Mergan B.(2021) Investigation of Sports Management Students' Perceptions and Attitudes towards the COVID-19 Pandemic, Pakistan Journal Of Medical & Health Sciences, Volume15 Issue 2 Page799-803,