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# Acute effects of Spinning® session on body composition in healthy adults

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## Abstract

The purpose of this study was to determine the acute effects of Spinning® session on body composition in healthy adults. 32 healthy adults (9 men, 23 women) voluntarily participated in the study. The body composition of the participants was determined before and after Spinning® session by bioelectrical impedance analysis (BIA). A significant decrease in body weight, body fat, visceral fat level and metabolic age and significant increase in total body water, muscle mass, basal metabolic rate, physical activity level was determined in women after Spinning® session. A significant decrease in body weight, body fat, visceral fat level and significant increase in total body water, muscle mass, basal metabolic rate was found in men after Spinning® session. Although the decrease in metabolic age and the increase in physical activity level after Spinning® session in men, this difference was not significant. Spinning® exercise has a significant acute effect on body composition in healthy adults. In conclusion, Spinning® can be recommended as an alternative physical activity for sedentary individuals to have long-term beneficial effects, both because of the effects on body composition even with a single session and because it is a fun physical activity for healthy adults.

**Keywords:** Physical activity, muscle mass, indoor cycling, body fat

## *Sağlıklı yetişkinlerde Spinning® seansının vücut kompozisyonu üzerindeki akut etkileri*

### *Özet*

*Bu çalışmanın amacı, sağlıklı yetişkinlerde Spinning® seansının vücut kompozisyonu üzerindeki akut etkilerini belirlemektir. Çalışmaya 32 sağlıklı yetişkin (9 erkek, 23 kadın) gönüllü olarak katıldı. Katılımcıların vücut kompozisyonları Spinning® seansı öncesi ve sonrasında biyoelektrik empedans analizi (BIA) ile belirlendi. Spinning® seansı sonrası kadınlarda vücut kütlesi, vücut yağı, visseral yağ seviyesi ve metabolik yaşta anlamlı bir azalma ve toplam vücut suyu, kas kütlesi, bazal metabolizma hızı, fiziksel aktivite seviyesinde anlamlı bir artış belirlendi. Spinning® seansından sonra erkeklerde vücut kütlesi, vücut yağı, iç organ yağ seviyesinde anlamlı bir azalma ve toplam vücut suyu, kas kütlesi, bazal metabolizma hızında anlamlı bir artış bulundu. Erkeklerde Spinning® seansı sonrası metabolik yaştaki düşüş ve fiziksel aktivite düzeyindeki artışa rağmen bu fark anlamlı değildi. Spinning® egzersizi, sağlıklı yetişkinlerde vücut kompozisyonu üzerinde anlamlı bir akut etkiye sahiptir. Sonuç olarak Spinning®, hem tek seansta bile vücut kompozisyonu üzerindeki etkileri hem de sağlıklı yetişkinler için eğlenceli bir fiziksel aktivite olması nedeniyle sedanter bireyler için uzun süreli yararlı etkilere sahip alternatif bir fiziksel aktivite olarak önerilebilir.*

***Anahtar Kelimeler:*** *Fiziksel aktivite, kas kütlesi, kapalı alan bisiklet, vücut yağı*

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Genişletilmiş Türkçe Özet makalenin sonunda yer almaktadır.

## INTRODUCTION

Indoor cycling, popularly known as Spinning®, which has significant effects on aerobic capacity, blood pressure, lipid profile and body composition, is a regular and frequently preferred physical activity in gyms (Chavarrias et al., 2019)**.** In addition, data from the "American College of Sports Medicine" ranked group exercise activities like Spinning® classes as the third most popular global fitness trend of 2020 (Thompson, 2019)**.** Spinning® is a high-intensity indoor physical activity practiced in many gyms (Battista et al., 2008; Chavarrias et al., 2019)**,** and has become a popular cardiovascular activity, especially as group exercise classes for adults (López & Muyor, 2010). Spinning® exercise uses both upper and lower body movements along with fast rhythm music on a stationary bike. The intensity of the Spinning® session is closely related to changes in position, pedal resistance, musical rhythm and caddence (Masuda et al., 2022), and is practiced in a gym where participants train on modified stationary bikes and follow the music rhythm under the instructions of a cycling trainer (Bianco et al., 2010). Spinning® is characterized by training phases of varying intensity and exercise drills with high/moderate involvement of the skeletal muscles as well as the cardiovascular system. Several authors have classified Spinning® as an essentially anaerobic and therefore demanding physical activity that is not suitable for everyone (Caria et al., 2007; Francis et al., 1999). On the contrary, according to other authors, Spinning® is an all-purpose fitness activity (Chavarrias et al., 2019; Ratajczak et al., 2020). In fact, this may vary depending on energy expenditure and involvement of the cardiovascular systems, compliance with the music (cadence rhythm) and trainer's instructions, and the technique and power applied to the bike (Bianco et al., 2010). Therefore, Spinning® can be an aerobic or anaerobic activity. The American College of Sports Medicine (ACSM, 2000) recommends that exercise should be between 50 and 85% of heart rate to improve and maintain cardiovascular fitness and this exercise intensity can be easily performed with Spinning® activity.

Along with regular physical activity, it is possible to improve quality of life and contribute to reducing cardiovascular risk (Arija et al., 2018; Nordengen et al., 2019; Pang et al., 2019)**.** Remarkably, the main motivation for many people to start physical activity is weight control rather than improving their cardiovascular fitness (Stutts, 2002). Ratajczak et al. (2020), reported that regular Spinning® sessions had an effect on anthropometric and body composition parameters, and a significant decrease was observed in waist & hip circumference, body mass index (BMI) and body fat mass. In another study, it was stated that Spinning® classes could be effective in increasing lean body mass levels and reducing body

fat mass (Chavarrias et al., 2019). On the other hand, it is known that traditional cycling training (outdoor cycling) can be used to lose weight and increase aerobic performance (Lazar, 2005). However, Spinning® fitness activity is completely different in terms of performing with music, adapting to the trainer and pedaling biomechanics compared to outdoor cycling (Bianco et al., 2010). In addition to this difference, although the effect of regular Spinning® training on body composition is well-known, to the best of authors' knowledge there was not enough research on its acute effect. Therefore, the aim of this study was to determine the acute effects of Spinning® session on body composition in healthy adults.

## METHOD

### Participants

A total of 32 healthy adults, 9 men (mean age: 33.1±8.2 years, body height: 177.8±7.8 cm, body mass: 86.3±10.2 kg) and 23 women (mean age: 28.9±6.9 years, body height: 166.4 ± 7.0 cm, body mass: 67.6±12.5 kg), participated in the study voluntarily. Exclusion criteria from the study were (a) having a physical disability (b) having surgery or an injury history in the last six months (c) having a history of previous cardiovascular disease (d) being an active licensed athlete, and (e) having regular sports activities more than one year. All participants were given detailed information about the purpose of the study, the measurement method and how the data would be used two days before the measurement and informed consent were obtained. Participants were asked not to eat or drink anything 2 hours before the Spinning® session, not to consume caffeine during the day, and not to drink liquids in the last half hour on the measurement day. The research was carried out according to Helsinki Declaration and was approved by the Gazi University Ethics Committee (Research Code: 2022-1098).

### Study design

The Spinning® session lasted a total of 50 minutes, including the warm-up (10 minutes) and cool-down periods (10 minutes). Since the aim of the study was to determine the acute effect of Spinning® activity, the participants were included in only one session of Spinning®. The experimental trial was divided into three stages: warm-up, main session, and cool down. Warm up 60-80 rpm (seated position), main session 70-140 rpm, cool down 60-80 rpm (seated positon). The music played was classified up-tempo dance music, with the same tempo of 140 bpm/32 count and synchronous to the rhythm of cycling. Spinning® was performed at a cadence of 70-140 rpm using different movements (sitting: 1 minute, 70-100 rpm; standing: 4 minutes, 70-100 rpm; standing push-ups: 4 minutes, 70-100 rpm; and spins:

1 minute, 100-140 rpm, 3sets, 30 minutes in total in the main session without a break) with body positions frequently changed.

Considering that the amount of fluid intake independent of each other during the session may affect the post-session body composition, the participants' water and/or fluid consumption was restricted during the session. All participants performed exercise on the Starline brand bike (CB7500 Spin Bike).

**Data collection**

Tanita Inner Scan BC-545N (Tanita, Japan) brand regional bioelectrical impedance analysis (BIA) device was used to determine the body composition of the participants. Participants' body height, body weight, body fat, total body water, visceral fat level (visceral fat level 1-12 indicates normal, 13-59 indicates high), body mass index, muscle mass, metabolic age, physical activity level (1 hidden obese, 2 obese, 3 obese, 4 untrained, 5 standard, 6 standard muscled, 7 thin, 8 thin and muscular, 9 muscular), basal metabolic rate were measured before and after Spinning® session. The visceral fat level, physical activity level, and metabolic age were calculated according to the Tanita algorithm by the BIA segmental body analysis (Heymsfield, 2004; Pietrobelli et al., 2004). Karvonen method which is expressed in the equation Target heart rate (HR)=([(HR$_{max}$−HR$_{rest}$)x(%exercise intensity)] + HR$_{rest}$) (ACSM, 2000) was used to determine the exercise intensity at the end of Spinning® session with . In the spinning session, the mean exercise intensity was 53.2±15.2% in women and 55.6±15.1% of HR$_{max}$ in men. The resistance level of the bike was 1 for all participants. Cengizel, who has a 2nd level fitness coaching certificate from the researchers and has Spinning® group session coaching experience for 6 years, has managed the Spinning® sessions. The instructor provided feedback to help the subjects regulate the intensity.

**Data analysis**

SigmaPlot 11.0 (Systat Software, Inc., San Jose, USA) software was performed for data analysis. The normality of the data distribution was determined by the Shapiro Wilk test. Descriptive statistics were presented as mean, standard deviation, difference (diff), percent of difference (diff%), significancy level (p) and effect size (ES). Wilcoxon paired-sample t-test was applied to compare body composition before and after the Spinning® session. The ES was classified using the Cohen's d (2013), according to following scale: as trivial <0.2, small 0.2–0.5, moderate 0.5–0.8, and large >0.8. Significance level was set at 5%.

## RESULTS

There was a significant decrease in body mass ($p<0.001$, "trivial" ES = 0.02) body fat ($p<0.001$, "small" ES = 0.29) and metabolic age ($p<0.001$, "small" ES = 0.23) after Spinning® session in women. The visceral fat level was at a normal level and there is also a significant decrease ($p<0.001$, "small" ES = 0.20) after the Spinning® session. BMI was not significantly different. A significant increase was determined in total body water ($p = 0.002$, "small" ES = 0.25), muscle mass ($p<0.001$, "small" ES = 0.29) and basal metabolic rate ($p<0.001$, "small" ES = 0.21). In addition, while the physical activity level was "untrained" before the session, it moved to the "standard" category after the session, and there was a significant increase ($p = 0.023$, "small" ES = 0.37) in the physical activity level. HR increased significantly after the session in women ($p<0.001$, "large" ES = 3.71) (Table 1).

**Table 1. Acute effects of Spinning® session on body composition in women**

| | Pre | Post | Diff% | Diff | p | ES |
|---|---|---|---|---|---|---|
| Body mass (kg) | 67.6±12.5 | 67.3±12.6 | 0.44 | -0.3 | <0.001 | 0.02 |
| Body fat (%) | 30.1±7.5 | 27.9±7.6 | 7.3 | -2.2 | <0.001 | 0.29 |
| Total body water (%) | 51.9±5.1 | 53.2±5.2 | 2.5 | 1.3 | 0.002 | 0.25 |
| Visceral fat level | 3.6±2.1 | 3.2±2.0 | 11.1 | -0.4 | <0.001 | 0.20 |
| BMI ($kg.m^{-2}$) | 24.3±3.8 | 24.3±3.8 | 0 | 0 | <0.001 | 0 |
| Muscle mass (kg) | 44.1±4.4 | 45.4±4.7 | 2.94 | 1.3 | <0.001 | 0.29 |
| Basal metabolic rate (kcal) | 1425.0±143.0 | 1456.5±151.9 | 2.2 | 31.5 | <0.001 | 0.21 |
| Metabolic age (years) | 31.0±12.6 | 28.2±12.0 | 9.0 | -2.8 | <0.001 | 0.23 |
| Physical activity level | 4.3±1.8 | 5.0±2.0 | 16.27 | 0.7 | 0.023 | 0.37 |
| Heart rate (beat/min) | 78.4±11.6 | 141.8±21.2 | 80.86 | 63.4 | <0.001 | 3.71 |

Diff%: Percentage change of difference between pre and post measurement, Diff: Difference between pre and post measurement, ES: Effect size, BMI: Body mass index. $p<0.05$: Significant difference.

In men, there is a significant decrease in body mass ($p = 0.008$, "trivial" ES = 0.05), body fat ($p = 0.004$, "small" ES = 0.26), BMI ($p = .020$, "trivial" ES = 0.03) and a significant increase in total body water ($p = 0.004$, "small" ES = 0.27), muscle mass ($p = 0.004$, "small" ES = 0.21) and basal metabolic rate ($p = 0.004$, "trivial" ES = 0.17) after Spinning® session. The visceral fat level is at a normal level and there is also a significant decrease ($p = 0.004$, "trivial" ES = 0.15). On the other hand, although a decrease in metabolic age (32.0±16.9 vs. 30.7±16.7, $p = 0.125$) and an increase in physical activity level (4.1±1.6 vs. 4.4±1.4, $p = 0.999$) were observed in men after Spinning® session, this difference was not found to be significant and physical activity level was reported as "untrained". HR increased significantly after the session in men ($p= 0.004$, "large" ES = 4.28) (Table 2).

**Table 2. Acute effects of Spinning® session on body composition in men**

| | Pre | Post | Diff% | Diff | p | ES |
|---|---|---|---|---|---|---|
| Body mass (kg) | 86.3±10.2 | 85.8±10.1 | 0.57 | -0.5 | 0.008 | 0.05 |
| Body fat (%) | 19.8±6.5 | 18.1±6.6 | 8.58 | -1.7 | 0.004 | 0.26 |
| Total body water (%) | 57.0±5.1 | 58.4±5.1 | 2.45 | 1.4 | 0.004 | 0.27 |
| Visceral fat level | 6.6±4.2 | 6.0±3.9 | 9.18 | -0.6 | 0.004 | 0.15 |
| BMI ($kg.m^{-2}$) | 27.3±3.0 | 27.2±3.0 | 0.36 | -0.1 | 0.020 | 0.03 |
| Muscle mass (kg) | 65.3±4.7 | 66.3±4.9 | 1.5 | 1.0 | 0.004 | 0.21 |
| Basal metabolic rate (kcal) | 2020.4±161.6 | 2047.9±165.9 | 1.36 | 27.5 | 0.004 | 0.17 |
| Metabolic age (years) | 32.0±16.9 | 30.7±16.7 | 4 | -1.3 | 0.125 | 0.08 |
| Physical activity level | 4.1±1.6 | 4.4±1.4 | 7 | 0.3 | 0.999 | 0.20 |
| Heart rate (beat/min) | 86.3±12.7 | 145.9±15.0 | 69 | 59.6 | 0.004 | 4.28 |

Diff%: Percentage change of difference between pre and post measurement, Diff: Difference between pre and post measurement, ES: Effect size, BMI: Body mass index. $p<0.05$: Significant difference.

## DISCUSSION AND CONCLUSION

In this study, we aimed to determine the acute effects of Spinning® session on body composition and significant acute effects on body composition were obtained with a single Spinning® session in healthy adults. There was a significant difference in body mass, body fat, total body water, visceral fat level, muscle mass, basal metabolic rate and HR after the Spinning® session in both women and men. In addition, the metabolic age in women is also significantly different. The mean exercise intensity was 53.2±15.2% of $HR_{max}$ in women and 55.6±15.1% of $HR_{max}$ in men during the Spinning® session. The visceral fat level in both men and women was within the normal range. On the other hand, the physical activity level was in the "untrained" range, confirming our inclusion criteria to the study. Although there is an increase in both gender after the Spinning® session, the increase in women is significantly different.

A decrease in body mass, in particular, is the first consideration for those participating in an exercise program (Kaya et al., 2018; Stutts, 2002). It is known that Spinning®, applied for a certain period of time, optimizes body composition and reduces BMI (Kaya et al., 2018; Valle et al., 2010) as well as being effective in weight loss and thinning around the waist in young women (Chukhlantseva, 2019; Ratajczak et al., 2020). 16 weeks of Spinning® exercises have been reported to reduce body fat and BMI in adolescent girls (Yoon et al., 2017). A significant difference in body composition was obtained after 36 Spinning® sessions

for 12 weeks in fourteen overweight sedentary women (Bianco et al., 2010). In addition, after the 24th and 36th session, there was a 2.6% and 3.2% decrease in body mass, 4.3% and 5% decrease in fat mass, while an increase of 2.3% and 2.6% in lean mass was observed, respectively. Valle et al. (2010), observed a significant decrease in body mass, body fat and BMI of the participants as a result of 12-week indoor cycling intervention, while they reported that there was a quantitative increase in lean body mass, although there was no significant increase. On the other hand, in another study conducted on sedentary women aged 32-47 (Kaya et al., 2018), a decrease in body mass and BMI was found in the participants after 6-weeks Spinning® exercise (three sessions of per week). In addition, it is possible to find studies showing that positive changes in body composition are more effective when an ideal diet is observed compared to those who only diet or only participate in physical activity (Chavarrias et al., 2019; Yoon et al., 2017). Although our research is not involving a regular exercise and diet program, the positive result obtained as a result of even a single session is a remarkable finding that will be beneficial in optimizing body composition, encouraging people to exercise and supporting us to create a healthier society. In our study, there was a significant decrease in body mass, body fat, visceral fat level, and a significant increase in total body water, muscle mass, basal metabolic rate and heart rate after the Spinning® session in both women and men. In addition, it is thought that the significant increase in total body water is due to the blood supply in the tissues after Spinning® exercise, and to the best of authors' knowledge, there is no study in the literature regarding this finding.

There is limited research relevant the effect of Spinning® sessions on HR. Bianco et al. (2010), found a significant difference in $HR_{rest}$ with a 6.5% decrease after the 24th indoor cycling session and 9% after the 36th session. However, in another study, HR of trained and sedentary participants was examined, and the exercise intensity was found to range from moderate to very high during the Spinning® session. In the same study, although it was stated that sedentary participants had higher HR (Santos et al., 2017). Additionally, Spinning® exercise confirms increased cardiovascular fitness, and this exercise intensity is consistent with current recommendations for physical activity (ACSM, 2000) in healthy adults, also may lead to beneficial cardiovascular adaptations in individuals who are frequently involved in this activity (Barbado et al., 2017). Due to the improvement observed in body composition and HR after a long-term Spinning® session, this exercise is recommended as a beneficial fitness activity for weight loss and reducing the risk of cardiovascular disease (Verrusio et al., 2016). In the light of these findings, it is thought that the sedentary healthy participants in our study

need regular exercises to improve and maintain cardiovascular fitness, even if they are at moderate and optimal exercise intensity in only a single session.

In addition to all these findings, it is known that Spinning® training is performed with both music and leading a trainer has a positive effect on the health of the participants and increases the level of enjoyment from the training (Szabo et al., 2015). Therefore, it is possible to say that the Spinning® session is an exercise that will enable individuals who want to have a healthy body both to have fun and to be physically active. The biggest limitation of this research is the sample size. Despite this, we needed participants in the same session to determine the acute effect of the Spinning® with constant exercise intensity on body composition, and hence we have reached the maximum number of participants who can train in the same hall to achieve this condition. In this type of exercise, where even a single session affects body composition, it is possible that the positive improvements obtained with regular participation will continue exponentially. Although there are studies about the effects of long-term Spinning® exercises in the literature, to the best of authors' knowledge there was no study to investigate the acute effect of this exercise on body composition.

**Suggestions**

As a result of our research, it is seen that a single Spinning® session has a positive and desired effect on body composition. It can be suggested that the results obtained from this study be supported with different age groups and different variables. With this study, it has been determined how important even a single Spinning® session is. In addition, it is possible to suggest that cardiovascular exercises such as Spinning® are one of the most enjoyable types of physical activity in preventing obesity and may be a useful exercise in increasing the number of healthy individuals.

## GENİŞLETİLMİŞ ÖZET

### GİRİŞ

Spinning®, grup egzersiz sınıfları arasında popüler bir kardiyovasküler fiziksel aktivitedir ve sabit bir bisiklet üzerinde hızlı ritimli müzik eşliğinde hem üst hem de alt gövdeyi harekete geçirir. Düzenli Spinning® egzersizlerinin vücut kompozisyonu üzerindeki etkisi iyi bilinmesine rağmen, akut etkisi konusunda yeterli araştırma yapılmamıştır.

Aerobik kapasite, kan basıncı, lipid profili ve vücut kompozisyonu üzerinde önemli etkileri olan, halk arasında Spinning® olarak bilinen salon bisikleti, spor salonlarında düzenli ve sıklıkla tercih edilen bir fiziksel aktivitedir (Chavarrias ve ark., 2019). Ayrıca, "Amerikan Spor Hekimliği Koleji"nden alınan veriler, Spinning® dersleri gibi grup egzersiz aktivitelerini 2020'nin en popüler

üçüncü küresel fitness trendi olarak sıraladı (Thompson, 2019). Spinning®, birçok spor salonunda uygulanan yüksek yoğunluklu bir iç mekan fiziksel aktivitesidir (Battista ve ark., 2008; Chavarrias ve ark., 2019) ve özellikle yetişkinler için grup egzersiz sınıfları olarak popüler bir kardiyovasküler aktivite haline gelmiştir (López & Muyor, 2010). Spinning® egzersizi, sabit bir bisiklet üzerinde hızlı ritim müziği ile birlikte hem üst hem de alt vücut hareketlerini kullanır. Spinning® seansının yoğunluğu, uygulama pozisyonundaki değişiklikler, pedal direnci, müzik ritmi ve kadans ileyakından ilişkilidir (Masuda ve ark., 2022) ve katılımcıların bir bisiklet eğitmeninin talimatları doğrultusunda modifiye edilmiş sabit bisikletlerde antrenman yaptıkları ve müzik ritmini takip ettikleri bir spor salonunda uygulanır (Bianco ve ark., 2010).

Dikkat çekici bir şekilde, birçok insan için fiziksel aktiviteye başlamanın ana motivasyonu, kardiyovasküler kondisyonlarını geliştirmekten çok kilo kontrolüdür (Stutts, 2002). Ratajczak ve ark. (2020), düzenli Spinning® seanslarının antropometrik ve vücut kompozisyonu parametreleri üzerinde etkisi olduğunu ve bel - kalça çevresi, vücut kütle indeksi (VKİ) ve vücut yağ kütlesinde önemli bir azalma gözlemlendiğini bildirmiştir. Başka bir çalışmada, Spinning® sınıflarının yağsız vücut kütle düzeylerini artırmada ve vücut yağ kütlesini azaltmada etkili olabileceği belirtilmiştir (Chavarrias ve ark., 2019). Öte yandan, kilo vermek ve aerobik performansı artırmak için geleneksel bisiklet antrenmanlarının (açık havada bisiklet sürme) kullanılabileceği bilinmektedir (Lazar, 2005). Ancak Spinning® kondisyon aktivitesi, müzikle performans, antrenöre uyum sağlama ve pedal çevirme biyomekaniği açısından açık alan bisiklete göre tamamen farklıdır (Bianco ve ark., 2010). Bu farka ek olarak, düzenli Spinning® eğitiminin vücut kompozisyonu üzerindeki etkisi iyi bilinmesine rağmen, yazarların bildiği kadarıyla akut etkisi konusunda yeterli araştırma yapılmamıştır. Bu nedenle bu çalışmanın amacı, sağlıklı erişkinlerde Spinning® seansının vücut kompozisyonu üzerindeki akut etkilerini belirlemektir.

## YÖNTEM

Çalışmaya 32 sağlıklı yetişkin (9 erkek, 23 kadın) gönüllü olarak katılmıştır. Katılımcıların vücut kompozisyonları Spinning® seansı öncesi ve sonrasında biyoelektrik empedans analizi (BİA) ile belirlenmiştir. Spinning®, 70-140 rpm'lik bir kadansta, farklı hareketler (oturma, ayakta durma, ayakta şınav ve dönüşler) kullanılarak, vücut pozisyonları sıklıkla değiştirilerek gerçekleştirilmiştir. Seans sırasında birbirinden bağımsız sıvı alım miktarının seans sonrası vücut kompozisyonunu etkileyebileceği düşünülerek katılımcıların seans boyunca su ve/veya sıvı tüketimleri kısıtlanmıştır. Tüm katılımcılar Starline marka bisiklet (CB7500 Spin Bike) üzerinde egzersiz yapmıştır.

## BULGULAR

Spinning® seansı sonrası kadınlarda vücut kütlesi, vücut yağı, visseral yağ seviyesi ve metabolik yaşta anlamlı bir azalma ve toplam vücut suyu, kas kütlesi, bazal metabolizma hızı, fiziksel aktivite seviyesinde anlamlı bir artış belirlenmiştir. Spinning® seansından sonra erkeklerde vücut kütlesi, vücut

yağı, iç organ yağ seviyesinde anlamlı bir azalma ve toplam vücut suyu, kas kütlesi, bazal metabolizma hızında anlamlı bir artış bulunmuştur. Erkeklerde Spinning® seansı sonrası metabolik yaştaki düşüş ve fiziksel aktivite düzeyindeki artışa rağmen bu fark anlamlı değildi.

## TARTIŞMA VE SONUÇ

Bu çalışmada Spinning® seansının vücut kompozisyonu üzerindeki akut etkilerinin belirlenmesi amaçlandı ve sağlıklı yetişkinlerde tek Spinning® seansı ile vücut kompozisyonu üzerinde anlamlı akut etkiler elde edilmiştir. Hem kadınlarda hem de erkeklerde Spinning® seansından sonra vücut kütlesi, vücut yağı, toplam vücut suyu, iç organ yağ seviyesi, kas kütlesi, bazal metabolizma hızı ve kalp hızı açısından anlamlı bir fark bulunmuştur. Ayrıca kadınlarda metabolik yaş da anlamlı farklıdır. Spinning® seansı sırasında ortalama egzersiz şiddeti kadınlarda $HR_{max}$'ın %53,2±15,2 ve erkeklerde %55,6±15,1'dir. Hem erkeklerde hem de kadınlarda visseral yağ seviyesi normal aralıktadır. Literatürde uzun süreli Spinning® egzersizlerinin etkileri ile ilgili çalışmalar olmasına rağmen, yazarların bildiği kadarıyla bu egzersizin vücut kompozisyonu üzerindeki akut etkisini araştıran bir çalışma yoktur. Araştırmamız sonucunda tek bir Spinning® seansının vücut kompozisyonu üzerinde olumlu ve istenen bir etkiye sahip olduğu görülmüştür. Bu çalışmadan elde edilen sonuçların farklı yaş grupları ve farklı değişkenlerle desteklenmesi önerilebilir. Bu çalışma ile tek bir Spinning® seansının bile ne kadar önemli olduğu tespit edilmiştir.

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| Tartışma ve Yorum *Discussion and Commentary* | Elde edilen bulguların değerlendirilmesi *Evaluation of the obtained finding* | Çağdaş Özgür CENGİZEL Elif CENGİZEL |

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**Etik Kurul Beyanı/ *Statement of Ethics Committee***

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