Investigation of the effects of b-fit exercise protocol applications on anthropometric parameters of young women

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Abstract

B-fit gyms were established in 2006 to offer women who do not have much knowledge and experience in physical activity and exercise the opportunity to exercise correctly and effectively (B-fit, 2006). The B-fit exercise protocol applied in these halls consists of resistance and aerobic exercises aimed at working all muscle groups of the body. When the studies examining the B-fit exercise protocol in the literature are examined, it is not stated that the ages of the research participants have a wide range and how many participants are at what age. Therefore, this study is important in terms of clearly revealing the effects of the B-fit exercise protocol on the anthropometric characteristics of young female participants (18-20 years old). Twenty-two female participants between the ages of 18-20 who do sports at least 5 days a week in B-fit Sports Centers and do not follow any diet program participated voluntarily in this single group pre-test- post-test study. At the beginning of the study, the mean body weight of the participants was 76.50±18.80, and the mean height was 165.13±4.44. Participants participated in the B-fit exercise protocol five days a week for eight weeks. During the study, the participants were asked to continue their daily routines and not make any changes in their eating habits. When the research findings were examined, it was observed that there was a statistically significant difference between the pretest-posttest averages of the participants' body weights, waist, chest, hip, abdomen, leg, arm and thigh circumferences (p<0.05). According to these results, it can be said that B-fit exercise protocol applications have positive effects on anthropometric characteristics.

Keywords: Anthropometric measurements, b-fit exercises, young female individuals

B-fit egzersiz protokolü uygulamalarının genç kadınların antropometrik parametreleri üzerindeki etkilerinin incelenmesi

Özet

B-fit spor salonları, fiziksel aktivite ve egzersiz konusunda fazla bilgi ve tecrübesi olmayan kadınlara doğru ve etkili egzersiz yapma imkânı sunmak amacıyla 2006 yılında kurulmuştur (B-fit, 2006). Bu salonlarda uygulanan B-fit egzersiz protokolü, direnç ve aerobik egzersizlerden oluşmaktadır. Literatürde B-fit egzersiz protokolünü inceleyen çalışmalar incelendiğinde araştırma katılımcılarının yaşlarının geniş bir yelpazeye sahip olduğu ve hangi yaşta kaç katılımcı olduğu belirtilmemiştir. Bu nedenle bu çalışma, B-fit egzersiz protokolünün genç kadın katılımcıların (18-20 yaş) antropometrik özellikleri üzerindeki etkilerini net bir şekilde ortaya koyması açısından önemlidir. Tek Grup Ön Test- Son Test tipteki bu çalışmaya, B-fit Spor Merkezlerinde haftanın en az 5 günü spor yapan ve herhangi bir diyet programı uygulamayan 18-20 yaş arası 22 kadın katılımcı gönüllü olarak katılmıştır. Çalışmanın başında katılımcıların ortalama vücut ağırlığı 76,50±18,80, boy ortalaması 165,13±4,44 idi. Katılımcılar, sekiz hafta boyunca haftada beş gün B-fit egzersiz protokolüne katıldı. Araştırma süresince katılımcılardan günlük rutinlerine devam etmeleri ve beslenme alışkanlıklarında herhangi bir değişiklik yapmamaları istenmiştir. Araştırma bulguları incelendiğinde, katılımcıların vücut ağırlıklarının, bel, göğüs, kalça, karın, bacak, kol ve uyluk çevreleri ön test-son test ortalamaları arasında istatistiksel olarak belirgin bir fark olduğu görülmüştür (p<0,05). Bu sonuçlara göre B-fit egzersiz protokolü uygulamalarının antropometrik özellikler üzerine olumlu etkileri olduğu söylenebilir.

Anahtar Kelimeler: *Antropometrik ölçümler, b-fit egzersizler, genç kadın bireyler*

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Genişletilmiş Türkçe Özet makalenin sonunda yer almaktadır.

INTRODUCTION

The inactive lifestyle, which is accessioned day by day with developing technology, poses serious threats to public health. It is really significant to exercise so as to minimize these threats. Individuals, who have a great importance of exercise in the protection of health, participate in many sportive activities and various exercise practices in Sports Centers (Kilincarslan et al., 2022). With the increasing rapid urbanization, the decrease in the areas to exercise has led to the opening of sports halls called fitness centers and people to be directed there (İlbak et al., 2022). The culture of doing exercises in Sports Centers gained popularity with the nascency of contemporary society, particularly at the end of the 19th century (Andreasson & Johansson, 2014), and since the significance of regular physical activity in the the community was understood, the interest in Sports Centers increased day by day (Ferrand et al., 2010).

The positive effects of regular physical activity on body health and body composition are accepted by everyone (Matsuoa et al., 2007). However, the selection of appropriate exercises in order to increase the level of physical activity and energy consumption is very important both to achieve the targeted body composition (Swift et al., 2014), and to protect body health (İlbak & Bayer, 2021). In addition, since it is known that warm-up practices have a great effect on heart rate (Kafkas et al., 2018), it is important to determine the most appropriate exercise plan both before and during exercise. For this reason, B-fit sports centers were established in 2006 in order to offer women who do not have much knowledge and experience about physical activity and exercise the opportunity to exercise correctly and effectively. The B-fit exercise protocol applied in these halls consists of resistance and aerobic exercises performed on nine different platforms aiming to train all muscle groups of the body (B-fit, 2006). B-fit exercises are performed with tools that create resistance in the opposite direction depending on the pushing and pulling power of the individual (Aktuğ et al., 2019). This provides individuals with the opportunity to exercise at an intensity appropriate to their physical performance level. In this way, while women exercise with the intensity appropriate to their physical capacity, they both perform the movement in a proper form and stay away from the risk of disability as much as possible (İlbak et al., 2022).

In the literature, when the studies examining the B-fit exercise protocol were examined, it was not specified that the age of the research participants had a wide range and how many participants were at what age. For example, Aktuğ et al. (2019), stated that 50 women between the ages of 20-30 were participants in their research. In similar research carried out

by İlbak et al. (2022), it was stated that there were 74 female participants aged 18-65 years. In another study conducted by İlbak and Bayer (2021), it was stated that there were 30 female participants between the ages of 18-35. However, none of these studies specifically stated how many participants at what age. Therefore, this research is important in terms of clearly revealing the effects of the B-fit exercise protocol on the anthropometric features of young female participants (18-20 aged).

The purpose of this research was to investigate the impact of B-fit exercise protocol applications on anthropometric features in women aged 18-20. When the studies examining the B-fit exercise protocol in the literature are examined, it is not stated that the ages of the research participants have a wide range and how many participants are at what age. Therefore, this study is important in terms of clearly revealing the effects of the B-fit exercise protocol on the anthropometric characteristics of young female participants (18-20 years old).

METHODS

Research design and participant group

Twenty-two female participants between the ages of 18-20, who exercise at least 5 times (days) a week at B-fit Sports Centers and do not follow any diet program, voluntarily participated in this descriptive, cross-sectional study. At the beginning of the study, the average body weight of the participants was 76.50±18.80, and the average height was 165.13±4.44. Participants participated in the B-fit exercise protocol five days a week for eight weeks.

Data collection tools

So as to define the influence of the B-fit exercise protocol on anthropometric factors, at the beginning and end of the study, the heights of the participants were taken using a wall-mounted stadiometer (Holtain Ltd., England), their body weights were taken using an electronic scale (Seca, Germany), and diameter-circumference (waist, hip, thigh, abdomen, leg, chest, arm, (Callaway et al., 1988) measurements were taken using a gullick meter. The participants were asked to continue their daily routines and not make any changes in their eating habits during the research.

B-Fit exercise protocol

The B-fit exercise protocol is a circular exercise protocol consisting of nine different resistance and nine different aerobic exercises for different muscle groups, each lasting 30 seconds (Figure 1). This protocol consists of a total of 18 movements followed by 30 seconds

507

of aerobic exercise immediately after 30 seconds of instrumented resistance exercise. Since the resistance machines used in the B-fit protocol work according to the hydraulic system, the exercise resistance is created by the users' own pushing and pulling forces. For this reason, since the exercise intensity is adjusted by the users according to their personal performance, there is not much difficulty (B-fit, 2006). The exercises in the protocol were performed in three sets and each set took approximately nine minutes to complete. A one-minute rest period was given between each set. The B-fit exercise protocol, which lasted approximately 30 minutes, was terminated with stretching exercises.
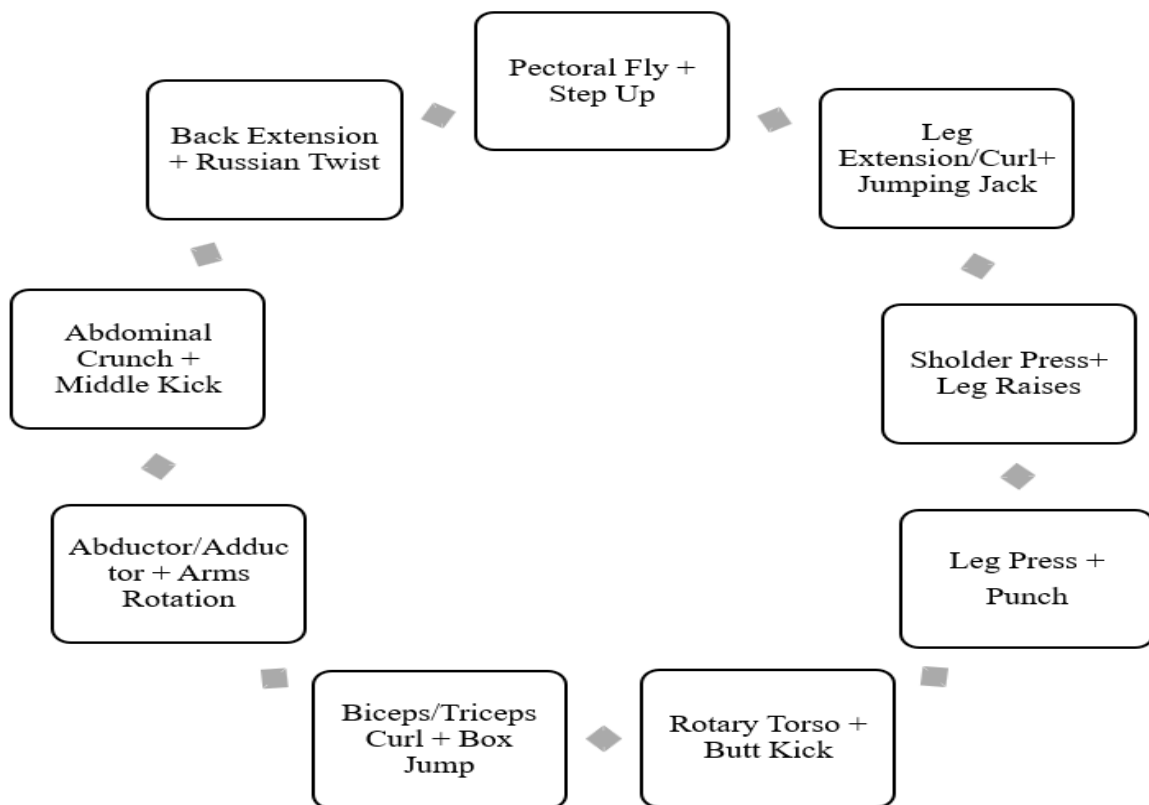

Figure 1. Exercise Protocol Cycle (İlbak et al., 2022).

Statistical analysis

The data resulting in this paper were appraised via the IBM Statistics (SPSS version 26.0, Armonk, NY, USA) package program. Whether the data showed normal distribution or not was tested with the Shapiro-Wilk Test. In order to determine whether the data meet the normal distribution assumption, skewness-kurtosis coefficients were taken into account to be in the reference range of -2 to +2 (George and Mallery, 2010). Since the research data did not show normal distribution, Wilcoxon signed-rank test was used to evaluate the pretest-posttest measurements of the participants. Obtained values were shown as mean±standard deviation ($\bar{x}$±ss) and the level of significance was accepted as $p<0.05$.

RESULTS

Table 1. Pretest-posttest values of the participants' anthropometric measurements

Diameter-Circumference Measurements	Pre-test and Post-test	X̄±SS	Z	p
Body Weight (kg)	Pre-test	76.50±18.80	-3.245	0.001*
	Post-test	74.18±17.99		
Chest (cm)	Pre-test	97.50±11.29	-3.184	0.001*
	Post-test	91.72±17.20		
Waist (cm)	Pre-test	83.27±12.18	-3.573	0.000*
	Post-test	78.77±10.91		
Abdomen (cm)	Pre-test	94.40±12.91	-2.729	0.006*
	Post-test	87.72±14.29		
Hip (cm)	Pre-test	111.40±13.21	-3.079	0.002*
	Post-test	108.45±12.68		
Thigh (cm)	Pre-test	106.68±10.88	-3.118	0.002*
	Post-test	103.36±11.04		
Leg (cm)	Pre-test	65.72±8.27	-2.754	0.006*
	Post-test	64.77±11.27		
Arm (cm)	Pre-test	31.72±4.92	-3.550	0.000*
	Post-test	30.00±4.47		

*=p<0,05

If Table 1 is investigated, it is figured out that there is a statistically prominent difference between the pretest-posttest averages of the participants' body weight; waist, chest, hip, abdomen, leg, arm and thigh circumferences (p<0.05).

DISCUSSION AND CONCLUSION

In this study, the effects of the B-fit exercise protocol on the anthropometric features of women aged 18-20 were examined. As a result of the study, it was determined that participation in B-fit exercise practices five days a week for eight weeks had positive effects on the anthropometric parameters of young women (p<0.05). When similar studies in the literature are examined, it has been reported that there is very little research on this subject and in these studies, the B-fit exercise protocol has suitable impacts on the anthropometric parameters of women.

In a study conducted by İlbak and Bayer (2021), it was reported that female individuals who joined in B-fit exercises five days a week for eight weeks had a reduce in body weight, body fat ratio, body mass index, and increase in body muscle ratio. In addition, in the same study, it was reported that there was a statistically important difference between the pretest-posttest values of the arm, chest, waist, abdomen, hip and thigh circumference measurements of the participants (p<0.05). In another similar study conducted by İlbak et al. (2022), B-fit exercise practices were applied five days a week for eight weeks. According to the findings of the study, it was determined that the B-fit exercise protocol had a statistically significant

effect on the participants' body weight; waist, chest, hip, abdomen, leg, arm and thigh circumference measurements ($p<0.05$).

It has also been reported that, in addition to eight weeks of B-fit exercises, four weeks of B-fit exercises also reduce BMI, waist circumference and waist-hip ratio (Günay et al., 2021). It is known that BMI and waist-hip ratio are important indicators of body composition, and BMI and waist-hip ratio values are directly proportional (Kilincarslan et al., 2022). In this context, it would be correct to say that B-fit exercise practices can be effective in providing ideal BMI and waist-hip ratio.

Although many researchers argue that aerobic exercise practices are one of the most effective methods in reducing body fat (Ali et al., 2015; Okura et al., 2005), it has recently been reported that high-intensity interval resistance training (HIIRT), which is applied by combining interval training and resistance training, is quite effective on body composition (Jitwil et al., 2019; Norizzati et al., 2018). B-fit exercise applications and HIIRT exercise applications are quite similar, although not exactly the same. In particular, the use of resistance exercises in both methods, the continuation of high-intensity exercise series and the fact that the exercise duration is around 30 minutes make both exercise protocols similar (İlbak et al., 2022). Paoli et al. (2012), reported that HIIRT exercise applications increase the basal metabolic rate and accordingly, more fat burning can be achieved in a shorter time. In this context, it is thought that B-fit exercises also increase the basal metabolic rate (İlbak et al., 2022).

Considering the test results of anthropometric measurements and the weight loss of the participants, the findings are largely in line with the literature.

Since the skewness and kurtosis coefficients did not take values in this range, the assumption of normal distribution could not be obtained. Therefore, Wilcoxon test, which is a non-parametric test, was used.

The parallelism between the findings of this study and the findings in the literature is thought to be due to the impact of B-fit exercise practices on basal metabolic rate. In future studies, it may be recommended to conduct new studies on different age groups and also on male individuals so as to define the role played by B-fit exercise practices in determining the effects on body composition.

In conclusion, it was determined that attendance in B-fit exercise practices five days a week for eight weeks had favorable impacts on anthropometric parameters such as chest, abdomen, waist, hip, thigh, leg and arm circumferences and body weight of young women.

GENİŞLETİLMİŞ ÖZET

GİRİŞ

Gelişen teknoloji ile her geçen gün artan hareketsiz yaşam tarzı toplum sağlığını ciddi şekilde tehdit etmektedir. Bu tehditleri en aza indirgemek için egzersiz yapmak gerçekten önemlidir. Sağlığın korunmasında egzersize büyük önem veren bireyler, Spor Merkezlerinde birçok sportif aktiviteye ve çeşitli egzersiz uygulamalarına katılmaktadır. Düzenli fiziksel aktivitenin vücut sağlığı ve vücut kompozisyonu üzerindeki olumlu etkileri herkes tarafından kabul edilmektedir. Ancak fiziksel aktivite düzeyini ve enerji tüketimini artırmak için uygun egzersizlerin seçimi hem hedeflenen vücut kompozisyonuna ulaşmak hem de vücut sağlığını korumak açısından oldukça önemlidir.

Kadının rolü ve önemi ise toplumsal hayat içerisinde sürekli olarak da her geçen gün artmaktadır. Özellikle araştırmaya konu olan 18-20 yaş gurubu genç kadınlar gelecekte yüklenecekleri bu önemli rollere fiziksel ve ruhen hazır olmak durumundadırlar. Sağlıklı yaşam koşullarını yakalamanın yanı sıra estetik bir beden görüntüsüne sahip olabilmek, başkaları tarafından da bu fiziksel görüntüyle beğenilmek her bireyin olduğu gibi genç kadınlarında en önemli öncelikleri arasında yer almaktadır. B-fit spor salonları, fiziksel aktivite ve egzersiz konusunda fazla bilgi ve tecrübesi olmayan kadınlara doğru ve etkili egzersiz yapma imkânı sunmak amacıyla 2006 yılında kurulmuştur. Bu salonlarda uygulanan B-fit egzersiz protokolü, vücudun tüm kas gruplarını çalıştırmaya yönelik direnç ve aerobik egzersizlerden oluşmaktadır. Literatürde B-fit egzersiz protokolünü inceleyen çalışmalar incelendiğinde araştırma katılımcılarının yaşlarının geniş bir yelpazeye sahip olduğu ve hangi yaşta kaç katılımcı olduğu belirtilmemiştir. Bu nedenle bu çalışma, B-fit egzersiz protokolünün genç kadın katılımcıların (18-20 yaş) antropometrik özellikleri üzerindeki etkilerini net bir şekilde ortaya koyması açısından önemlidir.

YÖNTEM

Tek Grup Ön Test- Son Test tipteki bu çalışmaya, B-fit Spor Merkezlerinde haftanın en az 5 günü spor yapan ve herhangi bir diyet programı uygulamayan 18-20 yaş arası 22 kadın katılımcı gönüllü olarak katılmıştır. Protokoldeki egzersizler üç set halinde yapıldı ve her setin tamamlanması yaklaşık dokuz dakika sürdü. Her set arasında bir dakikalık dinlenme süresi verildi. Yaklaşık 30 dakika süren B-fit egzersiz protokolü germe egzersizleri ile sonlandırıldı.

BULGULAR

Çalışmanın başında katılımcıların ortalama vücut ağırlığı 76,50±18,80, boy ortalaması 165,13±4,44 idi. Katılımcılar, sekiz hafta boyunca haftada beş gün B-fit egzersiz protokolüne katıldı.

B-fit egzersiz protokolünün antropometrik faktörlere etkisini belirlemek amacıyla, çalışmanın başında ve sonunda katılımcıların boyları duvara monte bir stadyometre (Holtain Ltd., İngiltere) kullanılarak ölçüldü. Vücut ağırlıkları elektronik tartı (Seca, Germany) kullanılarak ölçüldü. Bel, kalça, uyluk, karın, bacak, göğüs, kol çap-çevre ölçümleri gullick metre kullanılarak alındı (Callaway ve ark., 1988). Araştırma süresince katılımcılardan günlük rutinlerine devam etmeleri ve beslenme alışkanlıklarında herhangi bir değişiklik yapmamaları istenmiştir. Araştırma bulguları incelendiğinde, katılımcıların vücut ağırlıklarının, bel, göğüs, kalça, karın, bacak, kol ve uyluk çevreleri ön test-son test ortalamaları arasında istatistiksel olarak belirgin bir fark olduğu görülmüştür (p<0,05).

SONUÇ

Sonuç olarak, sekiz hafta boyunca haftada beş gün B-fit egzersiz uygulamalarına katılımın genç kadınların göğüs, karın, bel, kalça, uyluk, bacak ve kol çevresi ve vücut ağırlığı gibi antropometrik parametreleri üzerinde olumlu etkileri olduğu belirlendi. Bu çalışmanın bulguları ile literatürdeki bulgular arasındaki paralelliğin B-fit egzersiz uygulamalarının bazal metabolizma hızı üzerindeki etkisinden kaynaklandığı düşünülmektedir. Gelecekteki çalışmalarda, B-fit egzersiz uygulamalarının vücut kompozisyonu üzerindeki etkilerinin belirlenmesinde oynadığı rolün tanımlanması için farklı yaş grupları ve erkek bireyler üzerinde yeni çalışmaların yapılması önerilebilir.

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KATKI ORANI *CONTRIBUTION RATE*	AÇIKLAMA *EXPLANATION*	KATKIDA BULUNANLAR *CONTRIBUTORS*
Fikir ve Kavramsal Örgü *Idea or Notion*	Araştırma hipotezini veya fikrini oluşturmak *Form the research hypothesis or idea*	Rafet ÜNVER
Tasarım *Design*	Yöntem ve araştırma desenini tasarlamak *To design the method and research design.*	Rafet ÜNVER
Literatür Tarama *Literature Review*	Çalışma için gerekli literatürü taramak *Review the literature required for the study*	Rafet ÜNVER
Veri Toplama ve İşleme *Data Collecting and Processing*	Verileri toplamak, düzenlemek ve raporlaştırmak *Collecting, organizing and reporting data*	Rafet ÜNVER
Tartışma ve Yorum *Discussion and Commentary*	Elde edilen bulguların değerlendirilmesi *Evaluation of the obtained finding*	Rafet ÜNVER

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