

Effects of step aerobic exercises on rhythm skill and static balance *Step Aerobik Egzersizlerinin Ritim Becerisi ve Statik Denge Üzerine Etkisi*

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ABSTRACT

This study aimed to examine the effects of 8-week step aerobic exercises on the rhythm skills and static balance of young individuals. 53 university students participated in the research voluntarily. Participants practiced step aerobic exercises with a licensed trainer for 8 weeks. The participants' static balance and rhythm skills were observed before and after the study. At the end of the study, participants' BMI, static balance performance and rhythm skill performances changed significantly. Additionally, it was determined that there was a significant negative way relationship between the participants' balance performances and rhythm skills. Based on the research findings, it can be said that regular step aerobic exercises can be used as an effective method in developing the static balance and rhythm skills of young individuals.

Keywords: Rhythm, step aerobics, exercise, balance.

ÖZET

Bu çalışmada 8 haftalık step aerobik egzersizlerinin genç bireylerin ritim becerileri ve statik dengeleri üzerindeki etkisinin incelenmesi amaçlanmıştır. Araştırmaya gönüllü olarak 53 üniversite öğrencisi katılmıştır. Katılımcılar 8 hafta boyunca lisanslı antrenör eşliğinde step aerobik egzersizleri yaptılar. Katılımcıların statik denge ve ritim becerileri çalışma öncesinde ve sonrasında gözlemlenmiştir. Çalışmanın sonunda katılımcıların Vücut Kütle İndeksi, statik denge performansı ve ritim becerisi performansları anlamlı ölçüde değişmiştir. Ayrıca katılımcıların statik denge performansları ile ritim becerileri arasında negatif yönde anlamlı bir ilişki olduğu tespit edilmiştir. Araştırma bulgularına dayanarak düzenli step aerobik egzersizlerinin genç bireylerin statik denge ve ritim becerilerinin geliştirilmesinde etkili bir yöntem olarak kullanılabileceği söylenebilir.

Anahtar Kelimeler: Ritim, step aerobik, egzersiz, denge.

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INTRODUCTION

With the gradual development of technology, new technological tools and equipment reduce the workload on people and shorten the duration of the work to be done. For this reason, people have less opportunity to move. It is reported that a sedentary life causes various health problems such as serious cardiovascular diseases, obesity and high blood pressure (Martinez-González, Martínez, Hu, Gibney, & Kearney, 1999; Tremblay, Colley, Saunders, Healy, & Owen, 2010).

It has been emphasized in research that one of the most effective ways to cope with these problems is regular exercise (Guiney & Machado, 2013; Karacabey, 2005). However, since the type of exercise to be performed is very diverse, special branches have emerged for people to participate in exercise regularly. While dance is an old type of exercise, step aerobics is a newer type of exercise. Step aerobic exercises are a type of exercise in which movements such as stepping, jumping, turning and jumping on the step board are performed in a certain rhythm and duration, accompanied by music. It is preferred by people because it is done with a group, accompanied by music, and includes fun activities. It has been shown in previous studies that step aerobic exercises have positive psychological and physiological effects (Hallage et al., 2010; Koenig, Jahn, Dohmeier, & Cleland, 1995; Kraemer et al., 2001; Kravitz, Cisar, Christensen, & Setterlund, 1993). The accuracy of movements such as jumping, sliding and hopping, accompanied by music in dance and step aerobics practices, lies in following the rhythm. Therefore, the success of these movements is directly related to rhythm skill. Rhythm; It is a complex movement pattern produced jointly by the nervous and muscular systems. It can be defined as movements of moving, hearing, seeing or feeling, one after the other in a regular manner (Lay, Sparrow, Hughes, & O'Dwyer, 2002). Rhythm can be observed in all movement patterns in nature. All movements repeat in a certain order. The accuracy of the observed movements depends on the harmony between them (Sarıkaya et. al, 2023). In this respect, it is possible to attribute the success of sports movements to the harmony of repetitive movements. There are many studies investigating the effects of step aerobic exercises on individuals. However, there is a need for study findings on the rhythm skills of such exercises.

For this reason, this study was planned to be conducted based on the question "Do step aerobic exercises affect the rhythm skills of individuals?" Since step aerobic exercises involve movement patterns such as stepping, jumping, and sliding in different directions in a certain rhythm, we expect that rhythm skills will improve in individuals who do such exercises. For this reason, this study aimed to examine the effect of step aerobic exercises performed regularly for 8 weeks on rhythm skills in young individuals.

METHODS

Research Model: In this research, one of the quantitative research methods, one-group pretest-posttest design, was used.

Participants: Totally 53 university students with a mean age of 19.8 ± 2.3 years participated in the study voluntarily. Inclusion criteria for the study; not having participated in step aerobic exercises before, not having any health problems and volunteering to exercise. The participants did step aerobic exercises 3 days a week and 45 minutes a day for 8 weeks.

Step aerobic exercises: Step aerobic exercises took place in 45-minute sessions. All exercises were performed by a licensed trainer. Content of each session; Warm-up (low-tempo jumps and runs followed by stretching exercises, 5 min.) The main circuit was planned as step aerobic exercises (35 minutes of stepping, walking, kneeling, sliding, etc.) and cool-down (passive stretching movements). The exercises were carried out in the dance hall, accompanied by music. The tempo of the movements was gradually increased to low, medium and high intensity (low intensity for the first 2 weeks, medium intensity for the next 3 weeks, high intensity for the next 3 weeks). All participants completed the dance sessions without any injuries.

Prosedure: Before and after the study, the participants' body height, body weight, static balance and rhythm skills were tested. The flamingo balance test was used to measure balance ability. Participants tried to balance on one leg on the balance board for 1 minute and the deteriorated balance position was recorded as an error score.

Rhythm ability test: Rhythmic Competence Analysis Test (Weikart, 1989) was used to evaluate the rhythm skills of participants. The evaluation of the test is made on a scale of 0 -2 points. In rhythms of 120 and 130 beats per minute, the participant is asked to perform 6 different movements in accordance with the rhythm. In each movement of the test, the participant receives 2 points if he/she manages to adapt to the rhythm. The participant receives a score of 1 if the performance of the move is consistent but is not fit to hit for rhythm, and finally a score of 0 if he fails to achieve any of the above. Performing the test correctly and completely at a certain tempo gives 24 points for both two tempos. The evaluation was scored by taking the average of the scores given by two licensed dance instructors.

Statistical analysis: The data were evaluated with the paired sample t test in the spss program. Pearson Correlation analysis was used for the relationships between the variables. Findings accepted significant at $p < 0.05$ level.

Ethical permission: The study received ethical approval by the local committee. In addition, the participants signed a consent form stating that they voluntarily participated in the study.

RESULTS

Table 1. Demographic variables of participants (Mean± Sd)

| | Male (n:27) | Female (n:26) | Total (n:53) |
|--------------------------|-------------|---------------|--------------|
| Age (year) | 19,5±1,8 | 20,1±2,7 | 19,8±2,3 |
| Body height (cm) | 177,7±5,5 | 164,5±6,3 | 171,2±8,8 |
| Body weight(kg) | 68,8±8,7 | 54,2±5,7 | 61,6±10,4 |
| BMI (kg/m ²) | 21,7±2,2 | 20,1±2,1 | 20,9±2,3 |

The descriptive characteristics of the participants are shown in Table 1. Looking at the table, it was determined that in this study, in which a total of 53 participants were tested, the mean Body Mass Index (BMI) scores calculated with reference to height and weight degrees were 20.9 ± 2.3 kg/m², the participants were at ideal weight, and there was no statistically significant difference between the genders.

Table 2. Pretest posttest performance comparison of the participants (Mean± Sd)

| | Pretest | Posttest | Difference | p |
|---------------|----------|----------|------------|------|
| BMI | 20,7±2,2 | 21,1±2,2 | 0,2±0,7 | 0,04 |
| Balance score | 6,1±4,4 | 3,1±2,9 | -3,3±3,8 | 0,01 |
| Rhythm score | 15,1±5,1 | 19,2±4,6 | 4,1±4,6 | 0,01 |

Table 3. Relationship results between observed variables.

| | | BMI | Balance score | Rhythm score |
|---------------|---|-------|---------------|--------------|
| BMI | r | 1 | ,024 | -,069 |
| | P | | ,874 | ,647 |
| Balance score | r | ,024 | 1 | -,348* |
| | P | ,874 | | ,018 |
| Rhythm score | r | -,069 | -,348* | 1 |
| | P | ,647 | ,018 | |

* Significant differences at $p < 0.05$ level

The performance values measured before and after the 8-week Step Aerobic exercises of the participants and the change between these values are shown in Table 2. When the table is examined, the BMI values, balance and rhythm skill scores of the participants

showed a significant change compared to the pre-study. It has been determined that step aerobic exercises have a positive effect on all observed variables.

The results of the Pearson Correlation analysis, in which the relationships between the observed variables of the participants were tested, are shown in Table 3. It was determined that there was a low-level significant correlation between the balance performances and rhythm performances of the participants. Accordingly, it can be interpreted that as the rhythm scores of the participants increase, their balance error scores decrease.

DISCUSSION

Aerobic dance is performed by applying an exercise group accompanied by music with a certain tempo, rhythm and dynamic. Dance, which is a useful form of exercise for the development of the heart and circulatory system, includes movement patterns performed in different directions and in different rhythms. It includes a variety of dance steps, jumps, turns and movements used to suit the shape and abilities of the exerciser. Aerobic dance exercise is aerobic training methods that have a great role in the development of aerobic fitness, physical health and body composition profiles (Moraru, 2016; Ossanloo, Zafari, & Najar, 2012; Raju, 2014). Step exercises and aerobic dance contain very similar features. The stepping board used in step aerobic exercises is the only difference between them.

It has been stated in previous studies that step aerobic exercises are a form of exercise that can be applied in different age groups and has positive effects on physiological and motoric properties. Looking at the previous study findings; step aerobics practices significantly improve the motor skills and body composition of young girls (Nikić & Milenković, 2013), while participating in regular step aerobic exercises significantly affects losing body weight in obese women (Arslan, 2011). They noticed that step aerobic exercises provided a significant improvement in flexibility, anaerobic power, aerobic capacity, and leg strength (Kurt, Hazar, İbiş, Albay, & Kurt, 2010). He found that after step aerobic exercises, strength of upper and lower body, dynamic balance and agility, flexibility and cardiovascular fitness were significantly positive (Hallage et al., 2010). It has been determined that step aerobic exercises effectively improve aerobic capacity, lower extremity strength and static balance ability in the elderly (Mori et al., 2006). It has also been reported that positive developments in strength, flexibility and balance performances occur in young individuals who regularly perform step aerobic exercises (İrez Babayiğit, Saygın, Yıldırım, & Halil İbrahim, 2014). Previous studies have found that step aerobic exercises have positive effects on balance performance, especially when performed together with resistance exercises (Anek, Kanungsukasem EdD, & Bunyaratavej, 2015). When compared to Ballet dance, which is a similar dance exercise, it was determined that static balance performance showed better results in women who performed step aerobic exercises (Clary, Barnes, Bemben, Knehans, & Bemben, 2006). Again, when compared with a similar type of exercise, it has been reported that pilates exercises and step aerobic exercises have similar effects on balance performance (Öztürk & Bavlı, 2017). In terms of exercise duration, it has been found that step aerobic exercises have positive effects on static balance performance in women even when performed for 4 weeks (Anek & Bunyaratavej, 2015). When alternative exercises for the development of branch-specific sportive skills are examined, it has been determined that step aerobic exercises added to basketball training, balance performance and basketball skills of young basketball players have improved positively (Bavlı, 2016). At the end of this study, in parallel with the previous study findings; It has been determined that regular step aerobic exercises have a positive effect on the static balance performance of young individuals. Since the success of the movements of the step aerobic exercises on the step board depends on the balance skill of the individuals, the effort to perform the movements correctly during the exercises has improved the balance skill. This result was estimated as an expected result together with the literature findings. In this respect, the hypothesis was confirmed.

As a result of this study, in which the effect of regular step aerobic exercises on the rhythm skills and static balance performance of young individuals was examined, the rhythm skill performances of the participants showed a significant change (0.3 ± 0.3 points). Since rhythm skill is expressed as the ability to synchronize bodily movements through sound or musical stimulation, it was predicted before this study that rhythm skill would develop positively together with step aerobic exercises, since step aerobic exercises consisted of repetitive movement patterns accompanied by music. Looking at previous studies; The results of the study, especially with preschool children, showed that; Children's rhythmic ability increases when there is an appropriate music-movement program. It is reported that music-assisted movement training not only improves the aesthetic perception of the child, but also affects psychomotor and emotional development, and supports better display of static and dynamic movement models. (Derri, Tsapakidou, Zachopoulou, & Kioumourtzoglou, 2001; Tsapakidou, Zachopoulou, & Zachopoulou, 2001). Considering the type of participation in sportive activities, it has been reported that the rhythm abilities of girls who go to activities such as ballet, dance and gymnastics with music are significantly better than those who participate in activities such as basketball, football and running (Agdiniotis et al., 2009).

For the success of many movements in sports branches, coordination skills are needed, such as object tracking, rhythmic repetition (dribbling, bouncing, passing, etc.), timing (head ball, shot, pass transfer, smash hit, block, tourniquet stepping, etc.) is heard (Zachopoulou, Mantis, Serbezis, Teodosiou, & Papadimitriou, 2000). When we look at the previous studies pointing out that rhythm skills have important effects on sportive movements, it is stated that rhythm exercises added to tennis training have a positive effect on the development of tennis technical skills (Zachopoulou & Mantis, 2001). In a similar study, it was found that rhythm exercises added to tennis training positively affect the tennis performance of the athletes (Söğüt, Kirazci, & Korkusuz, 2012). In another study, in parallel with the findings of this study, it was reported that regular step aerobic exercises affected rhythm skills positively (Viskić-Štalec, Štalec, Katić, Podvorac, & Katović, 2007). As a result of this study, it was determined that regular step aerobic

exercises improved the rhythm skills of the participants positively. Considering the previous study findings stating that musical studies have positive effects on rhythm skills, this was an expected development, and the hypothesis was confirmed. While the results of the analysis, pre-test and post-test scores were illuminating in confirming the hypothesis, in addition to these findings, correlation results showing that there was an inversely significant relationship between the balance performances of the participants and their rhythm skills were revealed. It was observed that as balance scores decreased, rhythm performance scores increased. However, there is a need for study findings that include the relationship between step aerobics and rhythm skills.

Conclusions: As a result of this study, which examined the effects of regular step aerobic exercises on the rhythm skills and static balance performance of young individuals, the participants' Body Mass Index scores, rhythm skill performances and static balance scores showed a significant change. In addition, it has been observed that static balance performance may increase as rhythm skills develop. Based on the findings of the research, it can be said that regular step aerobic exercises positively improve the static balance and rhythm skills of young individuals, and step aerobic exercises can be used as an effective method to improve the static balance and rhythm skills of young individuals. It can be said that it would be beneficial to the literature to discuss the findings of the study designed with an experimental and control group design, pretest posttest study, and its results for future studies.

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