

Investigation of Balance, Attention and Concentration Characteristics of Individuals in Dance Studies According To Gender Variable

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Abstract

This study aims to investigate the balance, attention and concentration characteristics of the dancers according to gender variable. 200 university students from Mugla Sıtkı Kocman University with an average age of 21.33 ± 1.68 participated in this study. The students took part in Latin dance lessons, 3 times a week for 12 weeks. The control group did not take part in the dance lessons. The two groups were given tests before and after the study. Their height-weight balance and attention were tested twice. To measure the student's attention according to exercise, the Birckenkamp 'd2 Attention Testing' [1] recognized in Turkey and developed by Caglar and Koruc [2]. Also, the Kolmogorov-Smirnov test, t-test, Mann Whitney, U test groups for frequency and analysis were used. As a result, a significant difference was found between the pre-test and post-test values of the balanced level of male and female students who participated in the dance study. A decrease in the equilibrium error number of male and female students performing dance exercises was found. A significant difference was found between pre-test and post-test levels of attention and concentration of male and female students who participated in the dance study. In this study, it was found that the dance exercise had a positive effect on balance, attention, and concentration.

Keywords: University students, Dance, Balance, Attention, Concentration.

1. Introduction

Dance, containing sports, science, and art in itself is the expression of a feeling presented with a moving body through a physiological process [3]. Dance, being a special expression of human beings' motor behaviors [4], is the art of reflecting inner world to outside, self-explanation and self-expression through movements [5]. Thanks to dance, individuals have the opportunity to do more exercise [6]. To support individuals emotionally, mentally, socially and physically and to understand the correlation between body and mind; the psycho-therapeutic dimension of movements should be used [7]. In addition to the use of dance as a tool that will help individuals explain themselves; the benefits of dance in the human body as a sportive tool have been investigated by many studies [8, 9]. Dance, a multidimensional experience, involving emotional, physical, spiritual and social elements [10], can raise perceived levels of physical and mental well-being and social contact [11], including among those diagnosed with depression and anxiety [12]. Dance has such physical restrictions as muscle mass, joint structure, size, weight, flexibility and place [13]. Being the most aesthetic and rhythmic way of movement, dance is a technical and complex activity that contains exercises that strengthen the skeleton-muscle system as well as improves coordination by enabling the body to move freely in space/time. Thanks to images used, dance brings a new dimension to body awareness and improves imagination [14]. Balance is a reflex realized by the central nervous system and means fulfilling the tasks by the organism's movement system in static and dynamic harmony. The system that provides balance determines the place, position and direction of the body in space and decides whether or not the body should be moving or standing firm [15]. Balance is the ability to keep and to maintain the center of gravity within balance points [16]. Thanks to dance; people can have a fit and aesthetic posture and attain balance, personal discipline, concentration, flexibility, endurance, speed and strength [17]. The essential physical qualifications for the dance are strength, flexibility, special endurance, balance, and body coordination [4]. Dancing could be seen as a medium for increasing leisure-time physical and social activity. A great body of literature reveals the importance of engaging in regular physical exercise for the prevention of several chronic diseases as well as for improving psychological well-being and overall quality of life [18, 19]. Attention is the most essential key element to control opinion processes, concentrate on a duty and show an effective performance in sport [20]. Attention is a basic component of human data processing system. Since human beings cannot process all relevant information at once, human capacity is descreying bed to be a limited system. Attention is necessary for providing information to a processor in this limited capacity [21]. Dance, which is considered as a sport due to its movement-related skills and motor skills and art due to visual and aesthetic aspects, is a practical activity that combines different disciplines. Today, positive

physiological and psychological effects of dancing upon the human body and its contributions to motor growth have been investigated through scientific methods. Dance is thought to be important because unlike sportive activities, freedom of movement is offered by dancing to those who move away from physical activities and perform passive activities due to the effects of advanced technology and because their physical and psychological well-being is protected. In light of that background, the current study aimed at assessing balance and attention values among dancing individuals.

2. Method

2.1. Participants

200 university students from Mugla Sitki Kocman University with an average age of 21.33 ± 1.68 participated in this study where the balance, attention and concentration characteristics of the individuals participating in the dance study were examined according to the gender variable. 80 female students and 120 male students participated in the study. The students took part in Latin dance lessons, 3 times a week for 12 weeks. The control group did not take part in the dance lessons. The two groups were given tests before and after the study. Their height-weight balance and attention were tested twice. To measure the student's attention according to exercise, the Birckenkamp 'd2 attention testing' [1] recognized in Turkey and developed by Caglar & Koruc [2].

2.2. Procedure

Balance (Flamingo Balance Test-FDT): To explore the static balance of the participants, the Flamingo Balance Test was used. The reliability coefficient of static balance was 0.87 [22]. According to the test, the study group stood on a stabilometry platform of 50 cm in length, 4 cm. in height and 3 cm. in width with the dominant/preferred foot and tried to achieve their balance. Other free leg was bent backward from knee, pulled up to hips and gripped with the hand on the same side and time started when the participants achieved his/her balance on one foot and tried to keep his/her balance for one minute. When the balance was lost (giving up gripping the foot, falling off the platform, touching any part of the body, etc.), time was stopped. When the participant achieved his/her balance on the platform again, time was resumed. The test continued for one minute. When the time was up, the number of the balance lost was counted, and the number was written down as participants' balance score at the end of the test.

The d2 Attention Test: Developed by Brickenkamp [1] and adapted to Turkish by Caglar & Koruc [2], was used to determine the d2 attention test. It was passed through various revisions in the following years. The test aims to evaluate the ability of constant attention and visual screening [23]. The d2 Test is a measure of selective attention and mental concentration. The "attention and concentration" structure in the test manual was used as a performance-oriented, continuous, and focused choice of a stimulant [24]. On the front page of the test, there is a section where the researcher can record personal information and performance results and an exercise track. On the back page, there is a standard test form. The test page consists of 14 rows, each of which has 47 signs. Each row contains 16 letters consisting of the letters "p" and "d" with one, two, three, and four small signs. During the test, the subject has to ignore other unrelated letters to find the letters "d" with two signs and to scan the rows to draw on them. The subject is given 20 seconds for each row. It can be applied individually or as a group [1, 23-25].

2.3. Data Analysis

Collected data was saved in the Statistical Package for the Social Sciences (SPSS) 22.0 program. In the Analysis of Data, Kolmogorow-Smirnov test, t-test, Mann-Whitney U test groups for frequency and analysis were used.

3. Results

As shown in table 1, the distribution of the balance scores of the participants measured in the pre-test and post-test is given. There is a decrease in the number of errors according to the balance level of the male and female participants in the experimental group performing dance exercises. The average pre-test value of the experiment group men's balance was 4.62 ± 3.38 . The final test value was 1.50 ± 1.53 , while the average value of the pre-test of women's balance was 4.24 ± 3.84 so the final test value was 2.03 ± 2.15 , with a decrease in the number of errors that can be said to develop in a positive direction.

Table 1. The balance scores of the participants measured in the pre-test and post-test.

Variables	Groups	Gender	Pre-test	Post-test	Difference
Balance (Unit)	Experimental	Male	4.62 ± 3.38	1.50 ± 1.53	3.12 ± 3.11
		Female	4.24 ± 3.84	2.03 ± 2.15	2.21 ± 2.95
	Control	Male	3.56 ± 3.51	3.27 ± 3.28	0.29 ± 2.77
		Female	5.13 ± 5.10	4.18 ± 3.68	0.95 ± 3.89

As shown in table 2, no significant difference was found between the balance scores of the experimental and control groups of male participants before the dance study ($p > 0.05$). At the end of the dance exercise study, it was determined that the balance scores of the male participants in the experimental group were significantly lower than the control group ($p < 0.05$). There was no significant difference between the balance scores of the female participants before the dance study ($p > 0.05$). At the end of the dance exercise study, it was determined that the balance scores of the female participants in the experimental group were significantly lower than the control group ($p < 0.05$). There is a decrease in the number of errors in the balance scores of women and men who have undergone dance exercise.

Table 2. Comparison of balance scores of male and female students between experimental and control groups.

Variables	Tests	Groups	Rank average	Sum of ranks	U	p
Balance Male	Pre-test	Experimental	69.21	4360.00	1562.000	0.052
		Control	56.69	3515.00		
	Post-test	Experimental	52.23	3238.00	1285.000	0.001*
		Control	72.77	4512.00		
Balance Female	Pre-test	Experimental	36.18	1338.50	635.500	0.472
		Control	39.78	1511.50		
	Post-test	Experimental	30.99	1146.50	443.500	0.005*
		Control	44.83	1703.50		
*P<0,01						

As shown in table 3, the attention scores of the male participants in the experimental group showed a significant increase ($p < 0.05$), but no significant change was observed in the control group ($p > 0.05$). Concentration scores increased in the experimental group ($p < 0.05$) and decreased in the control group ($p < 0.05$).

Table 3. Comparison of attention and concentration test pre - post test for male participants

Variables	Groups	Rank average	Sum of ranks	Z	p
Attention	Experimental	13.94	111.50	-3.621	0.000*
		20.40	591.50		
	Control	19.37	368.00	-0.036	0.971
		19.63	373.00		
Concentration	Experimental	13.36	93.50	-3.893	0.000*
		20.32	609.50		
	Control	18.91	208.00	-2.165	0.030*
		19.04	495.00		
*P<0,01					

As can be seen in Table 4, there was a significant difference in the pre-test and post-test values of the attention level of the female students participating in the dance study. There was no significant difference between pre-test and post-test in the control group of female students. While there was a significant increase in the concentration scores of the female students participating in the dance study, no change was observed in the control group (Table 4).

Table 4. Comparison of attention and concentration test pre - post test for male participants

Variables	Groups	Rank average	Sum of ranks	Z	p
Attention	Experimental group	38.44	346.00	-4.532	0.000**
		30.93	1670.00		
	Control group	29.43	853.50	-0.862	0.388
		33.32	1099.50		
Concentration	Experimental group	29.97	539.50	-3.208	0.001**
		32.81	1476.50		
	Control group	37.46	936.50	-0.065	0.948
		26.51	954.50		
*P<0,05					

5. Discussion and Conclusion

In the study where the balance, attention and concentration characteristics of the individuals participating in the dance study were examined according to gender variable;

When the balance values of the male and female participants who performed dance exercises were examined, there is a decrease in balance error values at the end of dance exercise. Upon the decrease in the number of equilibrium errors of the male and female students in the experimental group, we can say that the balance of the students improved positively (Table 1). Cha-cha-cha exercises were conducted for 12 weeks and it was concluded that aerobic capacity increased depending on the duration of the dance exercise [26]. Bastug [27] found that there were significant differences between pre-test and post-test scores of body weight, BMI, flexibility, balance, concentration among the students doing dance exercises (the experimental group). There were no significant differences between pre-test and post-test scores of body weight, BMI, concentration among the students not doing dance exercises (the control group) but there were significant differences in flexibility and balances cores. There was no significant difference between the balance scores of the experimental and control groups of male participants before the dance study. At the end of the dance

exercise study, it was found that the balance scores of the male participants in the experimental group were significantly lower than the control group. There was no significant difference between the balance scores of the female participants before the dance study. At the end of the dance exercise study, it was found that the balance scores of the female participants in the experimental group were significantly lower than the control group. There was a decrease in the number of errors in the balance scores of the female and male students who had dance exercises. The decrease in the number of errors indicates the improved balance function (Table 2). University students were given folk dance exercises for 12 weeks and there was an improvement in rest, pulse, body weight, body fat percentage, body mobility, right-hand and left-hand grip strength, leg strength, anaerobic and aerobic strength, and physical fitness parameters improved positively [28]. Attention scores of male students who applied dance exercise (experimental group) showed a significant increase at the end of the dance exercise, and no significant change was observed in male students who did not perform dance exercise (control group). Concentration scores increased in the experimental group and decreased in the control group (Table 3). The problem-solving skills of the students who took rhythm training and dance lessons were examined and it was concluded that students developed themselves with the demonstrations prepared in rhythm training and dance lessons, increasing their self-confidence, developing their creativity and positively influencing their problem-solving skills [29]. Akman [30] has found that dancers are more flexible than sedentary individuals and they have a better vertical jump (explosive force). There was a significant difference in the pre-test and post-test values of the attention level of the female students participating in the dance study. There was no significant difference between pre-test and post-test in the control group of female students. While there was a significant increase in the concentration scores of the female students participating in the dance study, no change was observed in the control group (Table 4). Ates [31] found that the personality traits of individuals engaged in dance sports showed significant differences from the personality traits of individuals engaged in team sports and individual sports. In a study that investigated the effect of play education on attention and concentration level and hand-eye coordination of sedentary children, educational game and dart education have been found to have a high positive effect on attention and concentration and hand-eye coordination levels of students [32]. It was remarked that dance, based on movements, increased individuals' quality of life and physical activities produced positive effects upon learning skills [33]. Dance development can be multidimensional among individuals and brings about positive improvements when individuals dance as a sportive activity or physical activity. Numerous studies emphasize the physiological benefits of dancing [34-37]. It was found that the hopelessness levels of university students who danced decreased [38]. Minton [39] reported that students who received dancing classes had more abstract and creative thinking skills compared to those who did not receive dancing courses. Fonseca et al. [40] observed that ballroom dancing brought perceptual benefits for those who practiced it. Krampe [41] found that dance-based therapy was mildly or moderately effective in several components of balance and mobility. It was identified that motivation, self-confidence, body language, dancing-related self-sufficiency, and dance performances improved positively [42]. Dancing, playing games, painting, and singing by the children support growth as well as play a key role in the brain's learning skills and improve all of the senses [43]. It was identified that university students who participated in dancing activities had positive perceptions about social, physical anxiety levels and higher satisfaction with body image [44]. Akandere et al. [45] found that the problem-solving skills of the subjects who participated in research differed at the beginning and the end of dance exercise. These findings support our study.

As a result, significant differences were found in the balance and attention levels of the 12-week dance exercises. A significant difference was found between pre-test and post-test balance scores of male students who participated in the dance study. According to the balance score average values of the male and female participants of the experimental group performing dance exercises, there is a decrease in the number of errors due to the dance study. A significant difference was found between pre-test and post-test balance scores of male students who participated in the dance study. According to the balance score average values of the male and female participants of the experimental group performing dance exercises, there is a decrease in the number of errors depending on the dance study.

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