A Study on the Effect of Cowboy Dance on the Body Shape, Body Function and Physical Fitness of Female College Students

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Abstract: Jean dancing exercises with an average heart rate of about 140 beats per minute and an average heart rate index of more than 1.8 were conducted twice a week for 18 weeks, twice a week, and 90 minutes each time. These exercises had different effects on various indexes of female college students'body shape, including body weight, BMI, waist circumference, waist-hip ratio, waist-abdomen skin fold thickness and thigh circumference. The effect on lowering the calf circumference is weaker than aerobics; the development of female college students' body function and physical quality, the denim dance also has a positive effect, which is reflected in the decrease of the mind rate of the practitioners, the improvement of lung capacity, balance ability, flexibility and endurance quality. The effect of balance ability is better than aerobics, and the impact on lung capacity is weaker than aerobics.

1. Subject selection basis

Sports dance as a public physical education teaching content is deeply loved by students, especially by the majority of female college students. Sports dance is a practical sports activity which combines many elements of music, art, dance, competition, performance and entertainment. It can meet the various needs of students at different levels and levels. Therefore, the promotion of sports dance in colleges and universities has good feasibility and applicability. At present, the research on the physiological influence of sports dance mainly includes three aspects: body shape, body quality and body function. Body shape is composed of body measurement index, length index, width index, circumference index, body fat and its proportion. The American Sports Medical Association believes that long-term and regular participation in dance sports can effectively reduce body fat content. Physical qualities include strength, speed, endurance, flexibility and agility. It is generally believed that sports dance can significantly improve women's flexibility and endurance quality[1].

2. Objects and methods of experiment

Among the ordinary female students in the third year of university, 63 students were selected as experimental objects and divided into control group (b, N=21), jeans dance group (e, N=21) and aerobics group (C,N=21) according to their athletic specialty.After two years of systematic learning

of public physical education courses, the experimental subjects have a certain special sports foundation.

The cowboy dance group and aerobics group participated in the teaching activities of the extracurricular sports club of cowboy dance and aerobics respectively (Table 1); the control group did not participate in any extracurricular sports club. The subjects wore heart rate bracelets during exercise, and monitored and recorded the changes of heart rate. Heart rate is the most intuitive and convenient evaluation index of exercise intensity. In general, target heart rate is used to control exercise load in physical exercise. However, there are individual differences in the cardiovascular system of female college students. Different individuals have different responses to exercise load under the same target heart rate. In addition, the skill learning in the experimental teaching occupies a certain proportion, the subject has more uncertain factors in learning, and it is difficult to control the intensity of the classroom exercise with the target heart rate. Therefore, in the experiment, the "effective practice density" weight is set, the "average heart rate" is calculated, and the "average heart rate/quiet heart rate" is used to obtain the "mean heart rate index", thereby reflecting the degree of stimulation generated by the exercise of different individuals. To achieve the purpose of effectively controlling the exercise load, as far as possible to ensure the reliability of the experimental data.

Table 1 Arrangement of experimental teaching

Grouping	Cycle number	Class times	Time (points/times)	Effective exercise density	Average Heart Rate Index	Primary coverage
Cowboy Dance Group	18	36	90	40%	1.8	BasicPosture, Moving, Rotating Copper, Silver and Gold Basic Footwork Gold Medal Routine Combination
Aerobics group						Basic footwork and four-level routine of hand-type Mass Aerobics Routine Combination of Transform Formation

Before and after the experiment, the body shape (height, weight, BMI, waist circumference, hip circumference, waist-hip ratio, anterior iliac spine skin fold thickness, paraumbilical skin fold thickness) of the subjects were measured. Physical function (lung capacity, heart rate, closed eyes, vestibular step), physical fitness (800M running, sitting body flexion) were tested, evaluated, and compared. Among them, the ability to measure balance is to use the closed-foot step method and the vestibular step test method. The specific test methods are as follows:

(1) Closed-eyed in situ treadmill test: subjects stand barefoot in the center of a circle with radius of 20CM, and tread in situ at a frequency of 2 steps/seconds. Record the time from the beginning of treadmill to treadmill, in seconds. Measure 3 times to get the best results.

(2) Vestibular gait test (Fig. 1): The subjects stand barefoot with their feet flat. Draw a 50CM line A along the extension of their left foot. The extension line (starting line) of the extension line of their heels is vertically intersected at point X. The subjects see in front of their eyes, and there is no reference object in their sight. They walk forward 10 steps with normal gait and stride, then stop. Then extend the extension line B along the left foot to the vertical line to the point Y, measure and record the distance of the line segment XY, the unit is centimeter, and measure the best score 3 times [4].
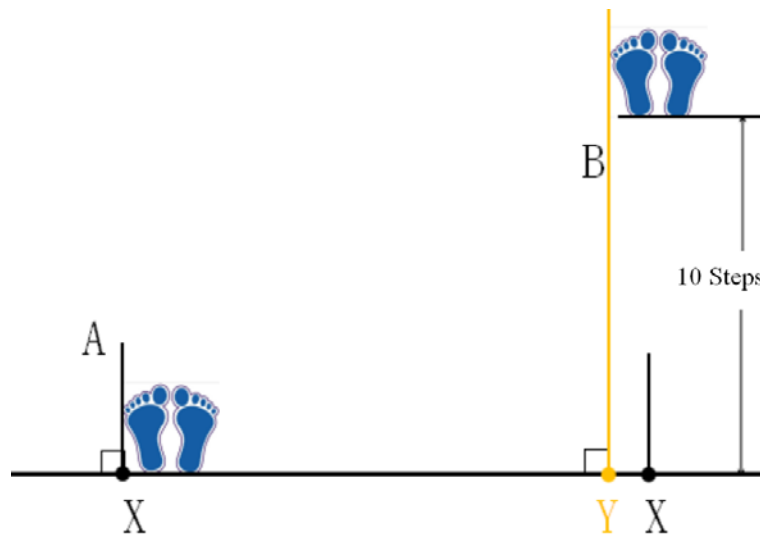
Figure 1. Vestibular step test.

3. Experimental result and analysis

The average heart rate and average heart rate index of students in 36 classes of cowboy dance group and aerobics group were calculated by area calculation method and compared (Table 2).The average heart rate of the denim group was lower than that of the aerobics group (P<0.05), and the average heart rate index exceeded 1.8 and there was no significant difference (P>0.05).

Table 2. Comparisons of teaching load between cowboy dance group and aerobics group (x + S)

Load Heart Rate	N	Cowboy Dance Group	Aerobics group	P
Average Heart Rate (B/M)	36	139.64±0.75	141.52±1.03*	0.026
Average Heart Rate Index	36	1.81±0.010	1.81±0.014	0.922

* P<0.05

Comparing the change of average heart rate of cowboy dancing group and aerobics group (Fig. 2), the duration of effective aerobic exercise heart rate of 140 times per minute in both groups exceeded 40% of the total school hours.The peak heart rate was in the basic part of the lesson and was less than 180 beats/min. The average heart rate in the classroom showed a wave change.
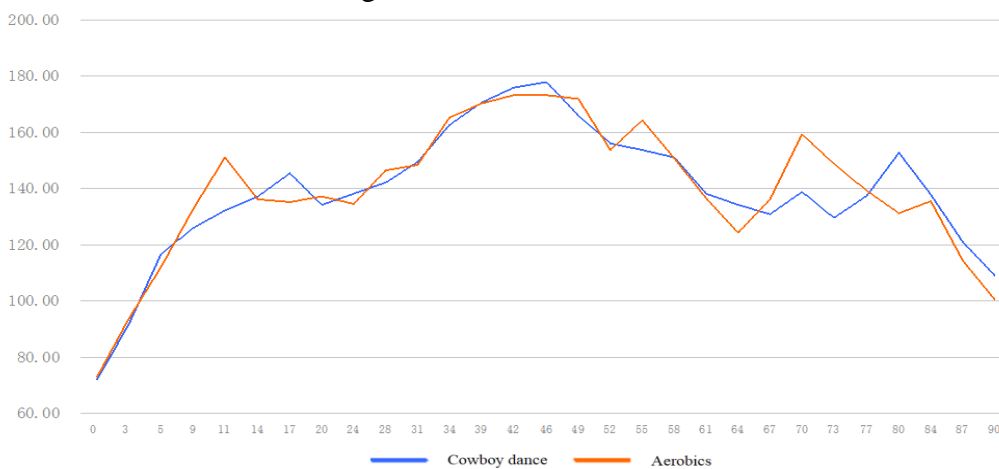

Figure 2. Comparison of Average Heart Rate Changes in Class between Jeans Dance Group and Aerobics Group

3.1. A comparative analysis of experimental data changes in each group after the experiment (Table 3 and Table 4)

Table 3. Comparison of the changes of body shape, function and quality before and after the experiment (X + S)

	Pre-experiment				After the experiment			
	Control group	Cowboy Dance Group	Aerobics group	P	Control group	Cowboy Dance Group	Aerobics group	P
Height (M)	1.64±0.06	1.62±.04	1.63±0.05	0.371	1.64±0.06	1.61±0.05	1.63±0.05	0.201
Weight (KG)	54.96±6.47	54.02±4.61	52.81±5.52	0.461	55.06±5.06	51.32±2.78	52.39±5.18	0.026*
BMI	20.46±1.73	20.70±1.49	19.88±1.78	0.265	20.53±1.38	19.82±0.72	19.68±1.71	0.099
Waist circumference (CM)	71.70±2.10	71.88±3.47	71.40±4.59	0.904	70.94±2.03	67.87±2.06	68.98±2.96	0.000**
Hip circumference (CM)	89.60±2.02	89.85±2.75	89.56±3.19	0.973	89.03±1.94	88.99±2.03	89.23±2.90	0.939
Waist-hip ratio	0.80±0.02	0.80±0.04	0.80±0.05	0.959	0.80±0.02	0.76±0.02	0.77±0.04	0.000**
Thigh circumference (CM)	49.89±1.64	49.09±2.70	50.76±2.76	0.091	49.27±1.71	47.83±1.10	48.82±2.21	0.028*
Crus circumference (CM)	31.99±1.69	32.15±1.57	32.21±1.55	0.899	31.75±1.60	31.50±1.03	30.30±1.55	0.003**
Anterior superior iliac spine (MM)	20.80±2.22	20.96±3.20	21.80±3.43	0.511	20.15±2.36	18.14±2.60	19.16±2.24	0.031*
Paraumbilical	19.21±2.90	18.91±2.86	19.05±3.62	0.953	18.80±2.92	16.52±2.84	17.34±2.80	0.040*
Resting heart rate (B/M)	72.19±2.11	71.95±2.31	72.95±2.44	0.342	72.71±1.68	70.43±2.14	71.00±2.67	0.004**
Vital capacity (ML)	2934.76±758.10	2842.48±369.21	2700.43±236.66	0.325	2740.48±377.65	3060.10±386.80	3285.29±292.58	0.000**
Stepping in Place (S)	13.39±2.12	12.94±3.42	12.64±4.12	0.765	13.88±2.96	17.09±3.36	14.40±3.51	0.005**
Vestibular Steps	6.87±2.42	7.02±2.29	6.95±2.19	0.977	7.08±1.47	5.00±1.90	5.53±1.85	0.001**
Sitting forward bending	11.02±1.43	11.24±1.99	11.13±2.17	0.842	11.50±1.80	13.39±1.47	12.24±1.37	0.001**
800M Run	248.10±11.24	244.29±14.93	248.00±16.71	0.625	240.57±14.81	230.24±11.29	231.57±15.79	0.042*

Table 3 showed that there were no significant changes in height, BMI and hip circumference ($P > 0.05$), but there were significant changes in body weight, thigh circumference, thickness of anterior superior iliac spine and paraumbilical skin fold, waist circumference, waist-hip ratio and crus circumference ($P < 0.05$, $P < 0.01$).In terms of physical function, heart rate, lung capacity, closed eyes and vestibular steps were significantly changed ($P<0.01$); 800M in physical fitness and sitting position flexion scores were also significantly different ($P<0.05$, $P<0.01$).

Table 4. Multiple comparisons of body shape, function and quality of each group after the experiment

Group (I)	Group (J)	Height	Weight	BMI	Waistline	Hipline	Waist-hip ratio	Thigh circumference
E	C	.091	.443	.732	.139	.742	.246	.069
C	B	.176	.048*	.045*	.010*	.782	.013*	.406
B	E	.728	.009**	.093	.000**	.958	.000**	.009**

Calf circumference	Anterior iliac Upper spine	Umbilicus	Be quiet heart rate	Vital capacity	In situ Stepping	Vestibular step	Sitting body Forward bending	800M Run
.008**	.173	.359	.403	.044*	.010*	.332	.020*	.760
.002**	.188	.104	.014*	.000**	.614	.006**	.126	.043*
.573	.009**	.012*	.001**	.005**	.002**	.000**	.000**	.021*

B: Control group, E: Cowboy dance group, C: Aerobics group; * P < 0.05, ** P < 0.01

Table 3 combined with table 4 showed that there were no significant changes in height, BMI, hip circumference and calf circumference between the cowboy dance group and the control group (P > 0.05). The thickness of paraumbilical skin fold, body weight, waist circumference, waist-hip ratio, thigh circumference and the thickness of anterior iliac spinous skin fold significantly decreased or decreased (P < 0.05, P < 0.01). Compared with the aerobics group, except calf circumference was significantly larger (P < 0.01), other body shape indicators were found. There was no significant difference (P > 0.05).In terms of bodily functions, the lung capacity of the denim dance group was significantly weaker than that of the aerobics group (P<0.05), while the closed-eye position was better than the aerobics group (P<0.05), and other indicators showed no significant change (P>0.05); Compared with the control group, the four indexes were significantly better than the control group (P<0.01). There was no significant difference between the 800M running performance of the denim dance group and the aerobics group (P>0.05), and the sitting position of the sitting body was significantly better than that of the aerobics group (P<0.05). Compared with the control group, it was significantly better than the latter. (P<0.05, P<0.01).

4. Conclusion

Jean dancing exercises with an average heart rate of about 140 beats per minute and an average heart rate index of more than 1.8 were conducted twice a week for 18 weeks, twice a week, and 90 minutes each time. These exercises had different effects on various indexes of female college students'body shape, including body weight, BMI, waist circumference, waist-hip ratio, waist-abdomen skin fold thickness and thigh circumference. The influence on reducing the circumference of the calf is weaker than that of aerobics, and it also has a positive effect on the development of female college students'physical function and physical quality.It is reflected in the decrease of the heart rate of the practitioners, the improvement of lung capacity, balance ability, flexibility and endurance quality. The influence on balance ability is better than that of aerobics, and the impact on lung capacity is weaker than aerobics.

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