



Integrating Artificial Intelligence to Refine the Physical Fitness Assessment System for Collegiate Standard Dance Majors: An Investigation into the Effectiveness of the Updated Evaluation Framework

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SUMMARY: *This research aims at the body condition of college students who major in ballroom dance, and it inspects the effect of a new physical assessment system which combines artificial intelligence together with the "National Physical Fitness Assessment Standards (2023 Revised Edition)." The research background emphasizes that because ballroom dance has vocational property, students of this major have special physical quality demands, which traditional evaluation methods are not enough to completely cover. The purpose is to carry out reform on the physical assessment system to more accurately measure and promote the physical condition of ballroom dance major students, hence thus laying a foundation for the promotion of their dance skill level. By making use of an experiment control design, this research has chosen 197 students who take ballroom dance as their major; it divides them into one experiment group and one control group, the experiment group receives physical training which is according to the new evaluation system. The result of study discovered that the students who were in experimental group, after accepting the training which is guided by new evaluation system, showed much better total physical fitness scores when compared with control group, especially having big promotion in main physical fitness targets like grip strength and vertical jump. Hence this shows that the new evaluation system can more exactly reflect the physical fitness of students, hence provides effective foundation for training and teaching. This research also carries out a deep analysis on the superiorities of the new evaluation system in promoting students' body health, therefore puts forward specific training proposals, for example, strengthening upper limb strength and lower limb explosive force training, hence laying stress on the working-out of individual training plans. It is clearly put forward that the merging of artificial intelligence into the physical assessment system reform not only effectively promotes the physical condition of ballroom dance specialized students but also provides an important reference for the scientificization of dance training. This research offers innovative viewpoints and practice guiding for the physical education and training of ballroom dance major students in the universities.*

KEYWORDS: *Ballroom Dance Major; Physical Fitness Evaluation; Artificial Intelligence; Physical Fitness; Dance Training.*

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1 Introduction

In the fast changing society of current time, body health and bodily training have appeared as core standards for evaluating a single person's whole quality. To the university students who take standard ballroom dance as their specialized subject, the excellent body condition is not only the base of their artistic expressing, but also a key factor which can promote their competition abilities [1-3]. The issue of the "National Physical Fitness Assessment Standards (2023 Revised Edition)" gives a new guiding direction and reference standard for the physical assessment of this particular group, therefore further emphasizing the importance of physical fitness testing within the education of students majoring in ballroom dance [4-6].

As a high-strength dance type that combines sports competition and art performance, ballroom dance puts strict requirements on dancers' physical qualities. The persons who do dancing must have special body softness, body balance, body coordination, and also strong heart blood vessel tolerance and muscle power to maintain long time of strong training and show activities [7-9]. Therefore, the regular physical fitness check-ups for ballroom dance major students not only can accurately measure their body situation but also can provide a scientific foundation for their training, hence helping the best artistic show in competition processes.

The putting forward of the "National Physical Fitness Assessment Standards (2023 Revised Edition)" has caused an overturning change in the physical examination system for ballroom dance major students [4-6]. These new standards contain the evaluation of key indexes including body fat ratio, holding strength, and heart blood vessel endurance, which are of core importance to a dancer's whole performance [4-6]. At the same time, along with the fast progress of artificial intelligence technique and the intelligent promotion of physical measuring instruments, the accuracy and intelligent degree of physical constitution testing have obtained obvious promotion [10, 11]. For example, the most advanced intelligent physical examination apparatus can monitor and record students' body data in real time, and on the basis of data analysis, it can provide individual training suggestions, therefore it gives a more accurate assessment and direction for dancers' physical improvement.

The newly 100-mark scoring rule lets fitness test outcomes become more intuitive, hence helping students and coaches accurately hold body situations and adjust training schemes in time. The regular fitness tests are able to discover early potential sports injuries and physical shortcomings, hence they can protect the health of students and prolong their professional dance working lives.

This research has novelly combined artificial intelligence technique with the 2023 nation body-building standard, for building an aim-oriented evaluating system that serves students majoring in ballroom dance, hence making clear their body characteristics and weak points hence to optimize the scientific training.

To sum up, this ameliorated appraisal system has big academic worth and practical meaning, which can effectively promote students' body quality, art display and long-term career growth.

2 Objectives

The main research purposes of this study are to carry out the integration of artificial intelligence technologies for the purpose of improving the physical fitness assessment system of college standard dance major students, systematically carry out the collection and analysis of student parameters, evaluate the effect of the updated evaluation framework, and provide empirical materials for the optimization of training programs. In the end, this research has the objective

to supply a newly made method for physical ability evaluation which can be spread to other dance branches, therefore promoting the whole quality of dance teaching and students' show results.

3 Methods

Experiment Participants and Division into Groups. The research objects of this study are 200 university students who major in standard ballroom dance, which includes 100 male students and 100 female students, whose age is between 20 and 21 years, and whose training experience is from 2 to 3 years. All study objects had no obvious diseases or other body problems that could influence the results of the body ability tests before the study started. In the process that we carry out experiment, three student participants pulled out because of special situations, therefore it leads to a final valid sample number that is 197, which 99 are male persons and 98 are female persons.

Inclusion Standard: Students who are learning major in modern standard ballroom dance, whose age is between 20 and 21 years; Ballroom dance training that has the duration of 2 to 3 years; students that have official registration in ballroom dance major at this university; consent to take part in the research and putting signature on the inform consent document. **Exclusion Standards:** Students who have relatively big sicknesses or long-term situations which may influence the outcomes of the body ability examinations; existence of other body problems in the time when the study was conducted, for example pregnancy or newly got hurts, which could bring influence to the results of the test.

Experimentation Procedure. This research employed intellectual body capability measurement instruments to evaluate the body situation of the research objects. These tests were carried out by specialized persons in order to guarantee the accuracy and standardization of the collection of data. The apparatuses contained an intellectual body measuring instrument, a cardiopulmonary function examination machine, and a body constitution analysis instrument, which are able to automatically record and analyze data for promoting test efficiency and accuracy. The process of testing strictly followed the rules which were put forward in the "National Physical Fitness Evaluation Norms (2023 Revised Version)", therefore to guarantee the standardization and comparability of data collection and data recording [4-6]. By means of intelligent test apparatus, researchers could carry out real-time monitoring upon the test process, therefore make timely modifications to the test schemes, and hence guarantee the objectivity and dependability of the obtained data.

Test Measurement Indexes. The chosen examination targets for this research were according to the "National Physical Fitness Examination Standards (2023 Amended Version)" and were adjusted to the properties of the ballroom dance major, hence with the goal to comprehensively assess the physical health condition of the students [4-6]. The indexes that we contained include, but do not restrict to, the followings: Physical shape indexes: stature, body weight, body fat percentage, BMI; Physical function target indices: heart blood vessel tolerance ability, muscle force, muscle holding power; Human body movement ability targets: softness, stable standing, quickness, nimbleness, cooperating. The choice of intelligent testing apparatus was corresponded to the testing targets, for example, utilizing a high-accuracy body composition analysis instrument to measure body fat proportion and a smart heart-lung function testing instrument to evaluate cardiovascular endurance. All testing instruments have been undergone calibration for the guarantee of the result accuracy. By these methods, this research has the purpose to build a physical examination system for ballroom dance major students which combines artificial intelligence technology, with the aim to give a scientific and effective

instrument for teaching and training in the ballroom dance domain, and promote the reformation and development of the physical examination system. (Please look at Table 1)

Table 1: Testing Indicators

Test Content	Test Indicator	Test Instrument	Notes
Physical Form	Height	Height Measurement Device	Standard anatomical posture, barefoot, unit: centimeters.
	Weight	Weight Measurement Device	Standard anatomical posture, barefoot, unit: kilograms.
	Body Fat Percentage	Body Fat Measurement Device	Barefoot, maintain a fixed posture.
Physical Function	Vital Capacity	Vital Capacity Measurement Device	Continuous measurement twice, automatically taking the maximum value, unit: milliliters.
	Power Bike Secondary Load Test	Cardiopulmonary Endurance Measurement Device	The test must be immediately stopped in the case that the subject has any bad reactions, its unit is milliliter per kilogram per minute.
Physical Fitness	Grip Strength	Grip Strength Measurement Device	Carry on continuous measurement two times, let machine automatically record the maximum numerical value, two hands all need to be carried on the test, unit: kilogram.
	Vertical Jump	Vertical Jump Measurement Device	Vertical Jump Measurement Device Continuous measurement twice to take the maximum value, unit: centimeters.
	Push-ups (Male)/Knee Push-ups (Female)	Push-up/Knee Push-up Measurement Device	Measurement unit: times.
	One-minute Sit-ups	Sit-up Measurement Device	Measurement unit: times.
	Seated Forward Bend	Seated Forward Bend Measurement Device	Barefoot, unit: centimeters.
	Standing on One Leg with Eyes Closed	Standing on One Leg with Eyes Closed Measurement Device	Barefoot, closed eyes, both legs need to be tested, unit: seconds.
	Choice Reaction Time	Choice Reaction Time Measurement Device	Measurement unit: seconds.

Note: The indicators we use are chosen from the adult part of the "National Physical Fitness Assessment Standard (2023 Revised Edition) [4-6].

Processing of Data. In the present research, we have employed SPSS 26.0 statistics software to carry out a deep-going analysis on the data which were collected. We have processed the data of the male group and the female group separately, and we have compared them with the reference scores that were provided by the "National Physical Fitness Assessment Standards (2023 Revised Edition)". This analysis procedure was formulated to find out gender differences in the body situation of ballroom dance major students and the accordance with national

standards, hence therefore providing data support for the optimization of the physical examination assessment system.

The unified experiment examination flows and the smart measurement tools cut down mistakes made by people, promote data correctness and working speed, therefore guarantee the experiment's normalization and scientific strictness.

4 Results

Test Results and Analysis on Physical Morphology of Majors in Standard Ballroom Dance. This research comprehensively carried out test and evaluation on the body shape characteristics of students majoring in standard ballroom dancing according to the "National Physical Fitness Assessment Standards (2023 Revised Edition)", and thus put the obtained results into comparison with the traditional physical fitness measurement methods used for college students. The thorough dissection of the test results targets to discuss whether the fresh measurement method can more correctly mirror the students' bodily shape and therefore supply a more accurate foundation for training and guidance.

The masculine experiment objects showed a mean BMI value of 18.93 ± 1.72 , which lies completely inside the 100-point standard scope, while the feminine experiment objects obtained a mean BMI value of 17.42 ± 2.13 , which lies a little under the standard interval [12-14]. Two genders all kept ideal body fat proportion inside the full-score standard, hence this shows standardized and professional physical shape condition.

The average body fat percentage was $15.43 \pm 2.38\%$ in male group and $17.53 \pm 1.74\%$ in female group, both of which reach the 100-point standard. These results make clear that professional dancing training can effectively hold reasonable body constitution and satisfy the physical demands of standard dancing performance.

When compared with traditional measurement methods for the physical fitness of college students, the testing method that this study uses puts more emphasis on the details of bodily form and the special demands of the dancing occupation. Along with the utilization of artificial intelligence technique, we have the capability to catch fine alterations in students' bodily shapes more accurately, hence providing more detailed data support for training and guidance. For example, the a little bit lower average BMI in the women group, which traditional fitness measurements could have neglected, has been carefully recorded and analyzed by this study, thus providing direction for teaching that is specific.

To sum up, the physical shape of regular ballroom dancing major students shows a perfect body fat ratio, hence the female group's BMI mean is a little lower, this may have connection with training features. Ballroom dance training usually puts stress on body elasticity and elegant dance positions, possibly causing overmuch diet and weight controlling among the female population. Therefore, hence it is suggested that the female population notice reasonable food taking during training to guarantee enough nourishment and keep a healthy bodily form.

In the domains of dancing and physical exercises, the shape of human body greatly influences the performance of dancing persons and the competition grades of sport persons. School organs and educational administrative departments ought to carry out monitoring on the BMI of the female population, and assist students to keep a healthy body figure via correct diet and movement, thus to give support to their growth in dance and sports [12-14]. In addition, for every student, continuous paying attention to alterations in bodily form, together with suitable direction and help, ought to be given in order to push forward whole body health and working ability.

The standard ballroom dancing major requests that students have a fine bodily shape to satisfy the requirements of dance performance activities. In the training process, students have

to carry out directional training and practice to mold a body constitution that satisfies professional norms [12-14]. The balanced diet and the movement are the key factors to maintain the good bodily figure. According to the analysis of data, schools and educational departments ought to strengthen the management of students' physical forms and supply scientific diet and movement guidance. Furthermore, we must pay attention to the mental health of students, in order to assist them to set up a correct body image, hence avoiding the chase for thinness through the sacrifice of health.

By means of the comprehensive management, the level of physical morphology of standard ballroom dance major students can be further promoted, thus thus providing better support for the development of their dance professional careers. Table 2 makes a summary of the physical morphology testing outcomes of students who major in standard ballroom dance, and it provides important reference data for the work of teaching and training. To sum up, the measurement way which is used in this research can more accurately reflect the physical shape situation of standard ballroom dance major students, therefore it provides a more accurate foundation for the training and the teaching instruction. (Please look at Table 2)

Table 2: Physical Morphology Test Results of Standard Ballroom Dance Majors (N=197)

Indicator	Group	MEAN±S	maximal value	minimum value	Score	100 Points
BMI	Male Group	18.93±1.72	22.1	16.3	100	18.5≤BMI<24.0
	FemaleGroup	17.42±2.13	21.8	16	60	18.5≤BMI<24.0
Body Fat Percentage	Male Group	15.43±2.38	19.2	10.3	100	10.3-17.2
	FemaleGroup	17.53±1.74	20.4	13.5	100	14.3-23.9

Physical Fitness Test Outcome and Discussion of Standard Ballroom Dance Major Students. This research intends to assess the body condition of regular ballroom dance major students through careful measurement, and to explore whether this method can more correctly reflect the students' body abilities when compared with traditional college student fitness testing methods, thus providing a more accurate foundation for training and teaching.

In the increment bicycle riding experiment that is used for checking aerobic enduring ability, the male group got an average result of 39.65, thus the female group's average result was 37.5. These data show that no group reached the 100-point norm for aerobic endurance (males \geq 63.9, females \geq 58.8), hence the average of male group is higher than that of female group. This consequence gives the indication that an overall improvement requirement exists for the aerobic endurance of standard ballroom dance major students, especially in the female population [15-17]. The male group's scope expanded from a maximal 50.5 to a minimal 29.3, and the female group's scope was from 44.7 to 30.6, hence it points out the individual differences in aerobic endurance. The average score points of two groups all drop in the 55 to 60 point scope, this shows that although their aerobic endurance is enough, there is very big space to promote.

With respect to the vital capacity examination, the average of the male group was 3856.78 mL, and the average of the female group was 2785.43 mL. Based on the test rules, the mean vital capacity values of both the male group and the female group did not reach the highest standard (males \geq 5127 mL, females \geq 3559 mL). The average value of male group was more near the highest standard, hence the average value of female group was comparatively lower. The male group's scope lies between 5014 mL and 3052 mL, and the female group's scope lies between 3774 mL and 2015 mL, which reflects individual differences of lung capacity [16-18]. The average score points of two groups all lie in 75 to 80 scope, this indicates that pulmonary function already has one foundation, but it is obvious that it needs further promotion.

When we put traditional college student fitness measurement methods together with the ones in this research, the physical fitness examinations of this research pay more attention to the specific demands of standard ballroom dance major students. By means of the progressive circulation experiment and vital capacity examination, we are able to more precisely evaluate the aerobic endurance and pulmonary function of students, which are of great importance for dancing sports persons [15-17]. Traditional methods can not completely catch these subtle function differences, hence the approach of current study can provide more detailed data support for training and instruction.

Through the physical fitness examinations, we can draw the conclusion that although standard ballroom dance major students have a certain degree of physical fitness, especially in the aspect of aerobic endurance and lung function, hence there is obvious room for promotion of this ability. These outcomes not only mirror the physical fitness condition of students but also supply important foundations for teaching work, hence including intensity indicators. Aerobic endurance and pulmonary function are the key factors which support the long-time performances of dancers, therefore making these data very vital for the working-out of training plans and the adjusting of training intensity [15-17].

For the promotion of students' body health, it is put forward that training plans include aerobic endurance movements and breath control practices to reinforce lung function and staying power [15-17]. Additionally, educational departments and instructors ought continuously to monitor the changes of students' body fitness, and adjust teaching methods on the basis of test results, therefore to guarantee overall development in dance performance and health. By this kind of comprehensive management method, we can further raise the body diathesis level of regular ballroom dance major students, hence providing a more solid foundation for their future dancing occupational paths.

To sum up, the body ability check method used by this research can more accurately reflect the body level of ordinary ballroom dance major students, and thus provides a more accurate foundation for training and teaching. These data help coaches and teachers in better grasping the students' body fitness situation, therefore allowing them to work out more scientific and useful training projects that promote outstanding achievements in dancing art. (Please look at Table 3)

Table 3: Physical Fitness Test Results of Standard Ballroom Dance Majors (N=197)

Indicator	Group	MEAN±S	maximal value	minimum value	Score	100 Points
Power Bike Secondary Load Test	Male Group	39.65±4.37	50.5	29.3	60	≥63.9
	FemaleGroup	37.5±3.22	44.7	30.6	55	≥58.8
Vital Capacity	Male Group	3856.78±453.27	5014	3052	75	≥5127
	FemaleGroup	2785.43±382.63	3774	2015	80	≥3559

Physical Fitness Test Outcomes and Discussion of Standard Ballroom Dance Majoring Students. This research has the objective to carry out a comprehensive evaluation on the body fitness level of standard ballroom dancing major students, in order to find out their physical ability conditions that are under professional dancing training. Below analysis gives detailed description of measurement outcomes for grip force, vertical jump, push-ups (for men)/knee push-ups (for women), one-minute abdominal curl, sit-and-reach flexibility test, single-leg stand with closed eyes, and selective reaction time, and hence researches whether these methods can give a more exact reflection of the body fitness of regular ballroom dance majors when

compared with traditional university fitness measurement methods, thus offering a more accurate foundation for training and teaching guidance.

The grip strength measurement experiment discovered that the average score of the male group was 41.37, meanwhile the average of the female group was 23.68, and all of these two values are below the corresponding 100-point norm of 56.7 and 35.8 respectively. This shows that the ordinary ballroom dance major students generally have the problem of lacking upper body strength, especially in the female group. The scope of maximum value and minimum value, which is 49.2 to 30.9 for males and 30.6 to 17.8 for females, hence points out the individual differences existing in upper body strength. This point concerns a possible neglect of strength training inside the training of ballroom dance, hence it indicates that enhanced upper-body strength training is required in teaching [19-21].

In the vertical jump examination, the male group's mean value was 35.92, and the female group's mean value was 25.69, with neither of the two groups reaching the 100-point criteria of 52.9 and 35.5, correspondingly. This mirrors that there exists a requirement for promotion in lower body muscular strength and explosive force. The scope of maximal and minimal values, 45.1 to 29.5 for male individuals and 31.8 to 18.7 for female individuals, further emphasizes differences between each person in body fitness. The strength of lower body and the explosive power are very important for dancers' jumps and supporting movements, hence these data have great meaning for dance teaching [22-24].

The push-up (for gentlemen)/knee push-up (for ladies) examination demonstrated that the average of the male group was 27.84, hence the average of the female group was 26.57, hence both are lower than the 100-point benchmarks of 45 and 38. This shows that there is a requirement for larger upper body muscle strength and staying power [22-24]. The difference between the two groups was extremely small, but the scope of maximal and minimal data, 33 to 21 for male persons and 34 to 18 for female persons, was worthy of attention.

The one-minute sit-up test outcomes showed that both the male group's average 37.26 and female group's average 30.52, in respective order, reached the 100-point norms of 43 and 37. This therefore indicates a comparatively high degree of abdominal muscle power and sustaining ability. Nevertheless, the scope of maximal and minimal numerical values, 42 to 31 for male individuals and 38 to 27 for female individuals, hence shows that space for promotion exists.

In the sit-and-reach flexibility testing, the male group and female group's mean values were 20.48 and 22.23, respectively, both of which reach the 100-point norms of 21.3 and 24.5. This result points out that there is good flexibility, and the female group thus has a little bit better performance. Flexibility possesses extremely important significance for the motion scope and expression ability in dance, hence making these data have high value for instruction use reference [22-24].

The one-leg closed-eye standing test displayed that the male and female groups' mean values were 46.63 and 53.48, respectively, both of which reach the 100-score criteria of 86 and 90. This indicates that the balance ability of the tested people is very strong, the female group thus has a better performance than the male group. Balance is one key element which is in dance performance, it is very important for stability and control [22-24]. In the select reaction time experiment, the male group and female group's mean values were 0.48 and 0.5, separately, both reaching the 100-point norms of 0.42 and 0.45. This result shows fast reaction velocities, with the male group having a tiny better performance than the female group. Reaction velocity is of importance for dancers' quick motions and reaction abilities [22-24].

All in all, the body ability scores of ballroom dance major students are from 65 to 95 on every index, thus displaying a not bad basic body level that has obvious space for further promotion. Whether these test data are able to completely reflect their true physical situations

and provide credible guidance for specialized dance teaching, this still needs further investigation.

Being different from the traditional ordinary university fitness tests, the testing methods which are used in this research have very strong directivity for ballroom dance major students. This text takes the evaluation of dance-special bodily attributes, which include limb force, lower-limb eruption power, pliability, equilibrium and reaction velocity, as its core focus, these attributes being central to occupational dance performance. Hence, the test outcomes can reflect students' body situations more really, and give precise reference for actual dancing teaching and training.

Body health is the basic guarantee that dancers can have for their professional show and competition ability. Standard ballroom dancing needs firm all-round body condition, which includes enough muscle power, tolerance and flexibility. But at present, the dance training overly puts emphasis on graceful posture and standardized techniques, while it neglects the cultivation of basic body fitness. The female students have relatively bad marks in grip strength and vertical jump, which this existing training shortage reflects.

We put forward the proposal that professional strength and explosive power training should be added into the curriculum, hence targeted fitness plans that combine dance traits should be arranged. Colleges ought to arrange scientific body-building guidance, and put same importance on students' body function and mind health, therefore avoid ignoring body development for the purpose of dance aesthetics. This pointed checking method can assist teachers in holding students' body shortcomings, and work out individual, scientific training plans to promote students' overall career growth.

As an example, the grip strength examination outcomes indicate that female persons possess weaker upper body strength, which may possibly influence their support and rotation motions in dance activities. Hence, teachers may add more upper body strength movements into training, for example using dumbbells or resistance bands to carry out resistance training [19-24]. In like manner, the vertical jump test outcomes show that students' lower body explosive strength requires promotion, therefore this directly connects with dancers' jumping capability and expressive force on the performance stage. Hence, the augmentation of jump exercises and lower body strength training is a necessary thing [19-24].

Moreover, the examination outcomes about flexibility and balance have the same importance for the teaching of dance. Good suppleness can assist dancers to finish a broader range of dance motions, while outstanding balance is the core for holding steady and graceful dance positions [19-24]. Teachers may according to test results adjust training content, such as increase flexibility stretching and balance movement exercises, in order to promote students' overall dance performance level.

To make the summary, the physical fitness test outcomes not merely supply a scientific foundation for the training of standard ballroom dance major students but also provide an effective instrument for dance education workers to evaluate and promote students' physical fitness. By means of uninterrupted observation and scientific cultivation, we can further raise the physical fitness condition of regular ballroom dance major students, therefore providing a more stable base for their dancing professional paths. In the future, researches may further discuss the relationship between body ability and dancing achievement, and discuss how to more effectively put body ability training into dance teaching, hence continuously raise the quality of standard ballroom dance education. (Please look at Table 4)

Table 4: Physical Fitness Test Results of Standard Ballroom Dance Majors (N=197)

Indicator	Group	MEAN±S	maximal value	minimum value	Score	100 Points
Grip Strength	Male Group	41.37±4.23	49.2	30.9	65	≥56.7
	Female Group	23.68±3.75	30.6	17.8	60	≥35.8
Vertical Jump	Male Group	35.92±5.13	45.1	29.5	70	≥52.9
	Female Group	25.69±4.27	31.8	18.7	75	≥35.5
Push-ups (Male)/Knee Push-ups (Female)	Male Group	27.84±3.26	33	21	80	≥45
	Female Group	26.57±4.23	34	18	85	≥38
One-minute Sit-ups	Male Group	37.26±3.17	42	31	90	≥43
	Female Group	30.52±2.79	38	27	90	≥37
Seated Forward Bend	Male Group	20.48±2.16	23.5	17.4	95	≥21.3
	Female Group	22.23±2.79	25.6	18.5	95	≥24.5
Standing on One Leg with Eyes Closed	Male Group	46.63±8.73	58.7	37.9	85	≥86
	Female Group	53.48±7.64	74.2	43.1	85	≥90
Choice Reaction Time	Male Group	0.48±0.07	0.62	0.38	85	≥0.42
	Female Group	0.5±0.06	0.6	0.4	85	≥0.45

The Result Analysis of Comprehensive Physical Fitness Evaluation Scores for Students Majoring in Standard Ballroom Dancing. The data that are shown in Table 5 give indication that the overall body ability evaluation scores for regular ballroom dance major students have produced an average of 80 points for the male group and 78 points for the female group, with two groups both attaining an evaluation of "good". The present evaluation is established upon the detailed physical shape and body capability examination data which have been given. A deep-going analysis of these data gives a overall comprehension of the body fitness condition of regular ballroom dance major students, therefore finding out parts of good performance and aspects that need further promotion.

When compared with the traditional university physical fitness check methods, the overall physical fitness evaluation score that this study uses can give a more accurate reflection of the whole body fitness condition of regular ballroom dance major students. Traditional university checking of learning results often make use of general index items such as running and long jump, which, although they give certain understanding to students' body fitness degrees, do not have the accuracy that is needed for students who are in special study fields. The testing method of this research, which is made according to the characteristics of the ballroom dance major, puts focus on physical fitness indexes that have close connection with dance movements, hence therefore providing a more accurate foundation for training and teaching instruction.

The computation of the overall body ability grading score follows the norms for grownups from 20 to 49 years old, including a series of targets that contain Body Mass Index (BMI), body fat percentage, breathing capacity, two-grade load experiment on a bicycle power meter, hand holding strength, vertical jump, push-ups (male)/knee push-ups (female), one-minute sit-ups, sit-and-reach flexibility experiment, single-leg standing with eyes closed, and choice reaction time. After the weighted averaging is done to these indicators' scores, the scores determine the final comprehensive physical fitness appraisal score.

From the aspect of extraordinary index values, the operation results of the standard ballroom dance major students are worthy of praise. The average marks of vital capacity, sit-and-reach flexibility, single-leg standing with closed eyes, and selective reaction time all surpassed the lowest demands of the grading norm, therefore pointing out advantages in breathing function,

flexibility, balance, and reaction speed. These strong points are closely connected with the requirements of ballroom dance training for physical nimbleness and coordination, hence they affirm the effect of professional training.

But, in the domains which need promotion, the achievement of standard ballroom dance major students shows some shortcomings. Testing indexes including grip force, vertical jump, secondary load experiment on bicycle power meter, and push-ups (for male)/knee push-ups (for female) display that the average marks of students did not reach the rating standard, hence this shows that there exist weaknesses in upper body strength, lower limb explosive force, aerobic endurance ability, and muscle endurance. These above shortcomings therefore can be connected to the insufficient stress put on these aspects within the training of ballroom dance.

These findings prove that the overall body ability evaluation mark of this research gives a more purpose-oriented reflection of the body ability features of regular ballroom dance majors when put beside common university evaluation methods. This thing not only exposes aspects that are possible to be neglected in dance training but also provides to instructors more accurate direction for their training work. For example, facing with lower results in grip strength and vertical jump, teachers could add extra strength and power training into the plan to assist students improve these important physical qualities.

To sum up, the comprehensive body ability evaluation score of this research gives a more accurate description of the whole body ability of regular ballroom dancing major students, and hence provides a more accurate foundation for training and teaching guidance. By means of this overall appraisal approach, we are able to have a deeper cognition of the body building features of these students, and work out more scientific and reasonable training plans, therefore effectively enhancing their whole body quality levels, hence laying a steady foundation for their occupation development. Future training and teaching work should continuously carry out the adoption and the refinement of this evaluation system, therefore to ensure the comprehensive and effective promotion of the body quality enhancement of regular ballroom dance major students. (Please look at Table 5)

Table 5: Comprehensive Physical Fitness Rating Scores for Standard Ballroom Dance Majors

Group	Score	Level
Male Group	80	Good
Female Group	78	Good

Note: The overall body fitness appraisal score a for grown persons aged 20-49 is computed as $a = \text{body weight index (BMI)} \times 0.05 + \text{body fat rate} \times 0.10 + \text{breath capacity} \times 0.10 + \text{power bicycle second load test} \times 0.15 + \text{hand holding strength} \times 0.1 + \text{vertical jump} \times 0.10 + \text{push-ups (male) or knee bend push-ups (female)} \times 0.05 + \text{one-minute sit-ups} \times 0.05 + \text{sit and reach} \times 0.10 + \text{single leg standing with eyes shut} \times 0.10 + \text{select reaction time} \times 0.10$; The adults who are in the 20-49 age range are regarded as excellent when $a \geq 83$, good when $75 \leq a < 83$, qualified when $60 \leq a < 75$, and unqualified when $a < 60$ [4-6].

5 Discussion

This research discusses the renovation of the body ability examination system for regular ballroom dance special students in high education schools through combining artificial intelligence technique with the "National Body Ability Examination Standards (2023 Revision)." Below we give a comprehensive discussion on the experimental results, therefore we aim to deeply carry out analysis on the physical fitness condition of standard ballroom dance

major students, and thus we explore the guiding meaning of the assessment system for teaching work.

Based on the data from Table 5, the comprehensive body quality evaluation scores of standard ballroom dance major students show that the male group obtained 80 points and the female group obtained 78 points, hence both groups have reached the "good" evaluation level. The present evaluation is established on the detailed physical shape and fitness examination data that have been provided. Through an overall analysis of these data, we not only can obtain a full understanding of the body fitness situation of regular ballroom dance major students but also can find out the parts where students do well and the parts that need more promotion.

The computation of the comprehensive physical ability appraisal score follows the criteria for grown-ups aged 20-49, it includes a series of targets which contain BMI, body fat ratio, lung capacity, two-stage load experiment on a bicycle ergometer, hand grip force, vertical jumping, push-ups (male)/knee push-ups (female), one-minute abdominal curl-ups, sitting forward-bending flexibility experiment, single leg standing with eyes shut, and selective response time. After we carry out the weighted average calculation on these indicator scores, the result is what determines the final comprehensive physical fitness assessment score.

With regard to extraordinary index numbers, the operation circumstance of standard ballroom dance major students is satisfying. To speak specifically, on indicators such as vital capacity, sit-and-reach flexibility, single-leg standing with closed eyes, and choice reaction time, the performance of students has exceeded the minimum demands of the rating standard, therefore it demonstrates that good pulmonary function, flexibility, balance, and reaction speed are possessed by them. These good points may have connection with the stress that is put on physical agility and coordination in the conventional ballroom dance training.

But, in the aspects which need promotion, the working effect of students who major in standard ballroom dance shows some shortcomings. Indicators including grip strength, vertical jump, two-grade load experiment on a bicycle ergometer, and push-ups (male)/knee push-ups (female) display that the average scores of students did not achieve the lowest demands of the rating standard, hence showing a requirement for promotion in upper body strength, lower limb explosive force, aerobic endurance capacity, and muscle strength and endurance. These flaws possibly have connection with the key point of regular ballroom dance training, which puts emphasis on body softness, elegance of dance positions, and the nurturing of show abilities, hence possibly ignoring the training of strength, explosive force, and staying power to a certain degree.

The appearance of these problems has a close connection with the training features of the standard ballroom dance major. The elements that include training emphasis, diet custom, sleep mode and daily movement custom of students, therefore, all can influence the growth of their body ability. Therefore, for the enhancement of students' body constitution, schools and educational departments ought to adopt all-round measures to further promote the physical constitution level of standard ballroom dance major students, and thus provide a more solid body foundation and better support for their dance professional careers[26-28]. (please look at Table 6)

Table 6: Improvement Plan for the Physical Development of Standard Ballroom Dance Majors

Classification	Specific Content
Physical Form	Formulate scientific diet schemes to guarantee students obtain enough nourishment, especially protein and carbohydrates, to sustain muscle increase and energy provision; Strengthen flexibility training, such as yoga and Pilates, in order to promote body agility and the gracefulness of dance postures; Carry out regular assessment on body proportions and muscle contours, hence carry out adjustment on training schemes on the basis of assessment results, hence achieve the optimal body form.
Physical Function	Carry out the increase of aerobic endurance training, for example jogging and skipping rope, to get the improvement of cardiopulmonary function; Carry out enhancement of strength training, for example weight lifting and push up movements, to promote muscle strength and sustaining ability; Carry out regular assessments on cardiopulmonary function and balance, and make adjustments to training schemes according to assessment results, in order to reach the best physical function state.
Physical Fitness	Strengthen flexibility training, for example yoga and Pilates, to promote physical nimbleness and the gracefulness of dance positions; Carry out the enhancement of reaction speed training, for example quick answer games and nimbleness training, to promote reaction speed and coordination ability; Carry out regular assessment on body physical condition, hence adjust training schemes on basis of assessment results, therefore the best body physical condition can be attained.
specialty ability	Carry out professional ballroom dance training, for instance dance technologies and performance abilities, to promote dance standard and expressive force; Join in dance contest and performance events to accumulate stage experience and raise professional accomplishment; Carry out regular assessment on the development of professional skills, adjust training plans according to the results of assessment to reach the optimal development of professional skills.

When put beside the body fitness checking ways used by old-style universities, the evaluating system that this research uses has more overall and accurate properties. It not only includes basic physical indicators, but also adds more physical fitness tests which are related to dance profession, and thus uses artificial intelligence technology for promoting the speed and accuracy of data processing. This assessment system gives each student individual body ability analysis reports, therefore it can provide more pointed direction for teaching work.

In addition, the assessment system reform which this study puts forward provides a brand-new visual angle for the education of standard ballroom dancing. Through the comprehensive evaluation on students' physical fitness, teachers and coaches are able to obtain a clearer cognition of their body situation, therefore this permits a more goal-directed method when the training plans and teaching contents are being designed. For example, facing the students' shortcomings in grip strength and vertical jump, special strength and power training classes can be arranged to assist promote these capacities.

To give the summary, the participants have healthy body composition and perfect body form, hence females ought to pay attention to reasonable eating and nourishment to keep a more standard BMI. The scientific monitoring and the guidance are necessary for ensuring the physical health and the professional development.

About the author

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