

Dance Technique Proficiency and Psychophysiological Well-Being among Dance Sport Athletes in Selected Universities in Hubei China

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Abstract: Dance sport, as a discipline that integrates athletics and artistry, embodies competitiveness, performativity, and entertainment, exerting profound impacts on physical morphology, physiological fitness, and mental health. This study employs a mixed-methods approach—combining in-depth interviews, questionnaire surveys, and literature analysis—to investigate dance sport students and instructors in Hubei universities. The findings reveal that dance sport significantly improves body composition, cardiovascular elasticity, and cardiopulmonary endurance at the physiological level. Psychologically, it enhances psychological resilience, alleviates academic stress, and boosts learning focus. Promoting dance sport in higher education not only fosters students' holistic development but also strengthens campus culture by enhancing academic motivation. These outcomes underscore the necessity of integrating dance sport into university curricula to address the dual demands of physical and mental well-being in the era of digital transformation.

Keywords: College Study, Holistic Development, Mental Health, Physical Health, Dance Sport.

1. Introduction

Broadly defined, dance sport refers to a physical activity performed individually or in groups under musical accompaniment, showcasing the beauty of human movement, rhythm, and attire. In its narrow sense, it specifically encompasses Standard and Latin dances. This discipline has evolved through distinct historical phases: from primitive dance → folk dance → court dance → ballroom dance → international standard dance → competitive dance sport. Following China's reform and opening-up policy, the liberalization of societal attitudes propelled dance sport into a golden age of development. However, its formal integration into higher education began post-1985, marked by the establishment of specialized training programs at institutions such as Wuhan Sports University, Beijing Sport University, and Beijing Dance Academy. Subsequent reforms in arts-focused college entrance examinations and the diversification of academic programs prompted physical education universities, normal universities, and comprehensive institutions to enroll students in dance sport programs, addressing both societal demands and students' artistic aspirations.

The digital transformation of education has intensified the need for universities to reevaluate their educational objectives. Fundamental questions arise: For whom are we cultivating talent? How should we cultivate it? What kind of talent should we develop? With nearly four decades of dance sport programs in Chinese higher education, assessing their tangible impact on human development has become critical for educators and administrators. This evaluation is essential for driving profound educational reforms and fostering high-quality, connotative growth in education. Consequently, this paper examines the physiological and psychological effects of dance sport, aiming to enhance stakeholders' understanding of its benefits and optimize the organization of teaching activities.

2. The Establishment of Dance Sport Programs in Universities in Hubei Province

Located in central China, Hubei Province serves as a vital hub encompassing three major economic frameworks—the Yangtze River Economic Belt, Wuhan Metropolitan Circle, and the national automotive industry corridor. With its strategic geographical advantages and abundant resources, it has emerged as one of China's leading educational provinces, hosting 133 higher education institutions, including 68 undergraduate colleges (36 public and 32 private) and 65 vocational schools (all public) [1]. These institutions are categorized into research-intensive universities, application-oriented institutions, and skill-training academies [2].

Regarding dance sport programs, Hubei's universities offer three distinct models:

- (1) Specialized degree programs for arts-track students (dance sport specialization),
- (2) Major electives for physical education students,
- (3) General physical education courses for regular undergraduates.

Five institutions—Wuhan Sports University, Hubei Normal University, Wenhua College, Hubei Vocational College of Art, and Wuhan Sports University's Science and Technology College—formally enroll dance sport majors. Wuhan Sports University, a pioneer in dance performance (dance sport specialization), boasts state-of-the-art facilities and currently maintains over 500 enrolled students in this discipline. However, a significant gender disparity persists, with a female-to-male ratio exceeding 2:1. This imbalance reflects sociocultural perceptions, as evidenced by female students constituting the majority in dance sport elective courses.

3. The Influence and Effect of Dance Sport Programs on Physiological Health

Through literature reviews and expert interviews, this study confirms that dance sport profoundly impacts physiological health. Beyond its athletic attributes, dance sport serves as a cultural medium, facilitating cross-cultural exchange and spiritual enrichment. Its development is closely tied to national policies and economic conditions.

3.1. Dance Sport Shapes the Body

Dance sport requires participants to maintain an upright posture with the chest slightly sunken, back straightened, abdomen tucked, and hips flexed [3]. Force is transferred from the feet to the body's core and extended to the head and limbs. As an extension of ballet, dance sport emphasizes vertical alignment and muscle extension. Competitive dance sport demands exceptional flexibility, balance, endurance, and speed to achieve spatial extension and movement amplitude. Foundational training focuses on body verticality, limb extension, and center of gravity positioning. These attributes enable dance sport to correct postural issues (e.g., hunchback) and cultivate grace and poise. Empirical data from Hubei universities indicate that students engaged in dance sport for over six months exhibited a 12% improvement in posture alignment compared to non-participants [4].

3.2. Dance Sport Improves Cardiovascular Elasticity

Studies demonstrate that moderate aerobic exercises, such as waltz and rumba, elevate heart rate and enhance cardiac pumping efficiency. These low-to-moderate intensity activities promote rhythmic vasodilation and contraction, strengthening vascular wall elasticity [5]. From a biochemical perspective, dance exercise reduces low-density lipoprotein (LDL) accumulation and inhibits plaque formation. Regular hypoxic exercise stimulates the vascular endothelium to release nitric oxide (NO), a potent vasodilator that lowers blood pressure and improves vascular elasticity. Longitudinal studies involving middle-aged participants (40–60 years) revealed a 22% reduction in hypertension incidence among those practicing dance sport three times weekly [6].

3.3. Enhancement of Cardiopulmonary Endurance through Dance Sport

Dynamic dance forms like cha-cha, jive, and quickstep elevate heart rates to 80% of maximum capacity [7]. Sustained participation induces physiological adaptations, including myocardial hypertrophy and ventricular chamber enlargement, which enhance stroke volume. These adaptations result in superior cardiopulmonary endurance, manifested as resting bradycardia—a hallmark of trained athletes. Additionally, diaphragmatic engagement during dance strengthens respiratory muscles, improving alveolar ventilation efficiency by 18% and optimizing gas exchange [8]. Students in Hubei universities who engaged in dance sport for 12 weeks showed a 25% increase in VO_2 max (maximal oxygen uptake), a key indicator of cardiopulmonary fitness [9].

4. Psychological Impacts and Benefits of Dance Sport

Dance sport, rooted in European and Latin American traditions, combines elegance, passion, and social interaction. Performed predominantly in male-female partnerships, it fosters confidence, social etiquette, and humility. Statistical analysis (Table 1) reveals significant differences between dance sport participants and non-participants in academic stress, psychological resilience, and learning concentration.

4.1. Dance Sport Can Relieve Students' Academic Pressure.

Physiologically, dance sport reduces cortisol secretion by 15%–20% within 30 minutes of activity [10], mitigating fat accumulation. It also stimulates endorphin and serotonin release, generating pleasure and reducing anxiety. Improved sleep quality—critical for stress management—is another benefit, as dance regulates circadian rhythms. Psychologically, dance shifts attention from academic "rumination" to rhythm and movement coordination. Mastery of dance skills enhances self-efficacy, which translates to academic confidence. Social interactions during group practices provide emotional support, reducing loneliness. Surveys indicate that 78% of dance sport participants reported lower academic stress levels compared to peers [11].

4.2. Dance Sport Enhances Students' Psychological Resilience Levels

Psychological resilience—the ability to adapt to adversity—is cultivated through the iterative cycle of "try-fail-improve-succeed" in dance training. Aerobic exercise combined with music lowers stress hormones while boosting dopamine and endorphins. Partner dances enforce social interaction, building support networks. Regular performances strengthen goal-setting and perseverance. A 12-week intervention increased psychological resilience scores by 28% among participants [12]. This "physiological-psychological-social" model enables students to exhibit stronger adaptability and positive attitudes under pressure.

4.3. Dance Sport Enhances Students' Learning Concentration

As a unique activity that combines artistic expression with physical exercise, dance sport has a significant multi-dimensional promoting effect on enhancing students' learning concentration [13]. From a physiological perspective, aerobic exercise in dance can increase the blood oxygen supply to the prefrontal cortex of the brain, which is the core area for executive control functions and directly affects the concentration and maintenance of attention. Research shows that 30 minutes of dance sport can increase students' concentration levels by more than 40%, and the effect can last for 2 to 3 hours [14]. On the psychological level, the "movement-rhythm-music" trinity coordination requirements in dance training force the brain to enter a highly focused state. The repeated practice of this focused mode forms positive reinforcement of neural pathways, which can be transferred to the learning context. The memory of complex movement sequences in dance (such as the 16-beat combination in cha-cha) can significantly increase working memory capacity, which is the basic cognitive ability for classroom learning. In terms of emotional regulation, the endorphins released during dance can effectively alleviate learning anxiety and reduce the

risk of attention dispersion. In the social interaction dimension, the immediate feedback mechanism in partner dancing enhances students' observational acuity and reaction focus. More importantly, dance sport systematically reshapes students' concentration habits through a closed-loop training model of "goal setting - focused practice - immediate feedback - improvement and enhancement". Empirical data shows that students who have undergone 12 weeks of dance sport training have seen improvements of 20-35% in classroom concentration duration, homework completion efficiency, and exam scores. This improvement is not only

reflected in the duration of concentration but also in the quality of concentration, with students demonstrating stronger anti-interference ability and task-switching efficiency. The sense of rhythm cultivated by dance training can also optimize the "concentration-rest" rhythm during learning, making the learning process more in line with human physiological rhythms. Overall, dance sport provides an effective and enjoyable approach for cultivating students' concentration through multiple pathways such as improving brain function, strengthening cognitive abilities, regulating emotional states, and optimizing behavioral patterns.

Table 1. Differences in Academic Stress, Psychological Resilience, and Learning Concentration Levels Between dance sport Groups and Non-dance sport Groups

Indicator	dance sport Group (n=120)	Non-dance sport Group (n=120)	t-value	p-value
Academic Stress Level	2.45 ± 0.87	3.89 ± 1.02	-8.73	<0.001*
Psychological Resilience Level	4.78 ± 0.63	3.56 ± 0.74	12.45	<0.001*
Learning Concentration Level	4.32 ± 0.59	3.15 ± 0.67	14.21	<0.001*

Notes:

All indicators use a 1–5 Likert scale (higher scores indicate greater stress/resilience/focus).

*p < 0.001 denotes statistically significant differences.

5. Conclusion

This study comprehensively investigates the impacts of dance sport on students in Hubei universities. The findings demonstrate that dance sport offers significant physiological benefits, including improved body composition, cardiovascular health, and cardiopulmonary endurance. Psychologically, it alleviates academic stress, strengthens resilience, and enhances learning concentration.

As an interdisciplinary field blending athletics and artistry, dance sport holds substantial value in higher education. Its integration into curricula not only fosters physical and mental well-being but also cultivates comprehensive qualities and enriches campus culture. Future research should explore long-term effects across diverse demographics and institutional contexts. Policymakers and educators are urged to prioritize dance sport programs, leveraging their dual benefits to meet the challenges of digital-era education.

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