

INPLASY

Effects of physical training programs on physical fitness in dancer:A systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - The review has not yet started.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 28 September 2024 and was last updated on 6 February 2025.

INTRODUCTION

Review question / Objective Dancers often fear that excessive exercise training will damage their physical appearance and lack the appropriate attention to exercise training. Previous studies have shown that exercise training not only improves dancers' technical performance, but also has a positive effect on preventing injuries and minimizing sports injuries. In addition, studies have shown that athletic training can improve the aesthetics of athletes. Therefore, athletic training for dance athletes is beneficial and necessary. However, combing through the current literature, we can find that there are many types of sports training, and some subjects have different names and forms but have a certain degree of crossover in the inner training content, so that those programs and ways are more helpful for dance athletes to improve their own performance is the focus of this study.

Condition being studied DanceSport is a comprehensive competitive sport, and from a competitive point of view the sport belongs to the performance category of competitive events. Movement standardization, music expression, coordination, etc. are all sports dance investigation project, athletes not only to solve the individual technical movements in the kinematics and dynamics of the problem, but also to cooperate with the partner, with the music to match the style of dance, to express the emotions of the show self, in many constraints so that the human body outside the elements of the athletes movements, artistic expression of the depth of the combination. The importance of modern athletic training for dance athletes is gradually increasing. First, the increasing competitive nature of sports dance, the physical quality of the players is also more and more demanding, good physical quality can help athletes to maximize the mobilization of body functions, but also to ensure that the play of sports skills. Second, the evaluation of physical fitness in

sports training can provide a reference for coaches to develop training programs . Thirdly, sports training for athletes' strength, endurance, speed and other physical qualities can ensure that athletes focus on technical movements in training . Fourth, exercise training can help improve the nervous system, reduces the risk of injury to athletes while promoting recovery from injury[15, 16]. Fifth, athletic training can influence athlete motivation , increases the psychological motivation of athletes for discovery, perfection and experience, this in turn affects the level of participation of athletes in dance sport.

Multiple factors influence the athletic performance of high-level sport dancers . A review of the literature reveals that various types of training methods have been used in multiple research programs, involving multiple aspects and types of training[25]. It has been suggested that strength plays an important role in athletic dance (Latin and ballroom) and that athletes with greater strength have higher dance scores. Peng (2023) concluded that core strength training has a positive effect on improving dancers' motor skills. Zhang (2022) conducted a study on dancers for stretching training and showed that stretching exercises can improve athletes' skills. M Radulescu (2024) reveals that athletic training and technical performance in dance athletes.

However, dancers often fear that excessive exercise training will damage their physical appearance and lack the appropriate attention to exercise training[29]. Previous studies have shown that exercise training not only improves dancers' technical performance, but also has a positive effect on preventing injuries and minimizing sports injuries. In addition, studies have shown that athletic training can improve the aesthetics of athletes . Therefore, athletic training for dance athletes is beneficial and necessary. However, combing through the current literature, we can find that there are many types of sports training, and some subjects have different names and forms but have a certain degree of crossover in the inner training content, so that those programs and ways are more helpful for dance athletes to improve their own performance is the focus of this study.

METHODS

Search strategy

Keywords
Intervention: exercise; physical activity; physical exercise; acute exercise; isometric exercise; aerobic exercise; exercise training; training ; physical training; physical therapy.
Participant: dance; dancer; dance player; dance athlete

Study: randomized controlled trial; randomized; RCT; placebo.

This article was searched in PubMed, CNKI, WOS, Cochrane, Embase, and CBM databases.,and then screened by two researchers with relevant research backgrounds to eliminate the literature that did not meet the criteria, and the literature that met the criteria was included in this study . On the other hand, the search was conducted with the help of the school library and databases such as Google Scholar to prevent the omission of potential articles that met the criteria.

Participant or population Latin dancers, but the inclusion sample included all ages and skill levels.

Intervention Intervention Intervention period of not less than 6 months Forms of intervention other than physical training.

Comparator Include at least experimental and control groups.

Study designs to be included Study design RCT non-RCT.

Eligibility criteria Category Inclusion criteria Exclusion criteria

Population Athletes are selected regardless of age or athletic skill level Subjects are specific (health issues, etc.)

Intervention Intervention period of not less than 6 months Forms of intervention other than physical training

Comparison Include at least experimental and control groups Experiments without control group

Outcome The results contain all pre- and post-test data for both the experimental and control groups Lack of pre- and post-test data and other data Study design RCT non-RCT.

Information sources The literature reviewed was from PubMed, CNKI, WOS, Cochrane, Embase, and CBM databases, the research direction was from our own teaching practice, the software was applied thanks to the platform resources and the help of our classmates, and the full-text writing was from the guidance of our supervisor prof. Kim.

Main outcome(s) A total of 871 relevant literatures were searched, and 627 papers were retained after removing duplicates, and two researchers performed the initial screening, and 424 literatures were passed in the initial screening. Ten papers passed the final review and were finally included in the meta-analysis.

In the ending indicators, according to the characteristics of the included literature and the

characteristics of the dance movement, the relevant controversial or less involved contents were screened, and finally the following contents were selected as the ending indicators for meta-analysis.

Thigh circumference (cm)/Calf circumference (cm)
Vertical jump (cm)
Relative maximal oxygen uptake (ml·kg⁻¹·min⁻¹)
Active critical mobility (AROM).

Quality assessment / Risk of bias analysis

Included articles were assessed using the PEDro generic scale, which is widely used in clinical RCTs to test the quality of the included literature, with a total score of 0-3=poor, 4-5=moderate, and 6-10=high. The scale was assessed independently by the two researchers, who were trained using the PEDro training scale prior to working on the article to improve the accuracy of the assessment. assessment accuracy, and if there was a discrepancy between the scores of the two researchers, it was discussed by way of discussion with the third-party research institute until there was a unity of opinion.

Strategy of data synthesis Literature screening results

Quality evaluation of included studies
Sample Characteristics
Characterization of the intervention
Meta-analysis results
Subgroup analysis and sensitivity testing.

Subgroup analysis The intervention characteristic shows that the time span between the studies varies considerably, so the analysis was grouped by time. Subgroup analysis of duration.

Sensitivity analysis “Active critical mobility” was not analyzed for subgroups due to the small number of included literature. A read-through analysis of the 3 included literature revealed that marshall had a high degree of heterogeneity compared to the other literature, so a sensitivity performance analysis was performed on the remaining literature after excluding this literature.

Country(ies) involved Malaysia(Geok, SK; Abdullah, BB); China(Ai, MQ; Wang, XZ; Lv, ST).

Keywords physical training programs; physical fitness; dancer; systematic review; meta-analysis.

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