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Development of Taichi Training Program to Improve the Core Physical Fitness of Male College Students

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Abstract

Background and Aim: The Taichi training program significantly enhances core physical fitness by improving balance, strength, and flexibility through gentle, flowing movements. Additionally, it promotes better posture and body awareness, crucial for overall physical stability and injury prevention. This study aims to: (1) validate the effectiveness of a Tai Chi training program in enhancing core physical fitness among male college students and (2) compare the mean and standard deviation of core physical fitness between the experimental and control groups using t-tests.

Materials and Methods: A quasi-experimental research design was employed, involving 40 male college students from a university Tai Chi club. Participants were systematically assigned to either an experimental group (n = 20) or a control group (n = 20). The experimental group underwent an eight-week Tai Chi training program, consisting of three 90-minute sessions per week (Monday, Wednesday, and Friday). The core physical fitness of both groups was assessed before and after the intervention. An independent samples t-test was used to compare baseline differences, while post-intervention differences were analyzed using both independent samples t-tests and paired samples t-tests. The significance level was set at 0.05.

Results: The findings indicate that the eight-week Tai Chi intervention, incorporating the 24-style Tai Chi form and key movement patterns, significantly improved core strength, coordination, functional stability, and flexibility among the experimental group compared to traditional training methods. Statistical analysis showed a significant increase in sit-up performance ($p = 0.03$), highlighting improvements in muscular endurance. Additionally, the experimental group exhibited greater flexibility ($p = 0.002$) and enhanced balance and coordination, as indicated by superior performance in the one-legged jump test ($p = 0.02$). These results suggest that Tai Chi is an effective approach for enhancing core physical fitness in college students. The study confirms that Tai Chi training significantly enhances core strength, flexibility, and postural stability in young adults. The structured, low-impact nature of Tai Chi makes it an accessible and sustainable training method for core fitness development. The controlled, rhythmic movements of Tai Chi foster muscle endurance, postural control, and neuromuscular efficiency, reinforcing its validity as a functional fitness approach.

Keywords: Tai Chi; Physical Fitness; Training Program; College students

Introduction

Tai Chi, a traditional Chinese martial art, embodies the rich cultural heritage of China. On December 17, 2020, Tai Chi was inscribed on the Representative List of the Intangible Cultural Heritage of Humanity by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) (UNESCO, 2020). Within this socio-cultural and policy-driven context, promoting Tai Chi as a means to enhance the physical fitness of college students has significant contemporary relevance.

At present, college students face demanding academic workloads and high learning pressures, leaving little time for regular physical exercise. Most universities do not offer structured physical education courses beyond the sophomore year, with only top-tier institutions incorporating physical education into the final-year curriculum (Li, 2013). Additionally, during the COVID-19 pandemic and the post-pandemic period, students—particularly non-physical education majors—have exhibited prolonged sedentary behavior, which contributes to muscular atrophy and postural instability (Chen, Fan, & Panda, 2021). Research has shown that sedentary lifestyles weaken the muscles responsible for spinal support, reducing

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muscle activation and increasing the risk of musculoskeletal injuries (Huang & Zhao, 2010). Proper body posture is essential for executing daily movements and preventing sports-related injuries. To achieve this, students require three key physical attributes: trunk stability, core physical fitness, and appropriate muscle tension (Paul, 2004).

The concept of the "core" was first introduced in Western exercise science, integrating principles from exercise physiology, biomechanics, and human anatomy. Core training quickly became essential for both competitive and recreational sports, as core physical fitness is fundamental to enhancing athletic performance. Strengthening the core improves posture, stabilizes the spine and pelvis, enhances coordination, balance, and proprioceptive function, and optimizes movement efficiency (Huang, 2013). Tai Chi contributes to core stability through its upright posture, controlled breathing (including dantian breathing techniques), and coordinated movement patterns. The practice enhances neuromuscular control over deep muscles and improves the synchrony of movement and respiration, facilitating muscle strength development and postural stability. The waist, abdomen, and coccyx—recognized as the core areas in Tai Chi—are integral to generating and transmitting power, aligning with the principles of core stability training (Paul, 2004).

According to Paul (2004), the core comprises the rectus abdominis, quadratus lumborum, transversus abdominis, internal and external obliques, and gluteus maximus, forming a stabilizing structure from the mid-thighs to the chest. Similarly, Li et al. (2008) define the core as the spine, pelvis, and hip joints, which serve as the critical link between the upper and lower limbs, playing a pivotal role in body stabilization. Research has demonstrated that core stability enhances postural control, balance, coordination, and injury prevention while also reducing the risk of musculoskeletal injuries (Chen, Fan, & Panda, 2021; Huang & Zhao, 2010; Liu, 2012).

Empirical evidence supports the effectiveness of Tai Chi in improving physical fitness. A study by Li and Ali (2024) found that a short-term Tai Chi Qigong exercise program effectively improved core strength, lower limb explosive force, and reduced anxiety levels among university students. Additionally, extensive research on the 24-style Tai Chi has highlighted its positive effects on immunity, balance, proprioception, and muscular strength among college students (Liu, 2013). While the benefits of Tai Chi have been widely acknowledged in martial arts and sports science literature, few studies have specifically examined its impact on core stability among college students.

Traditional Wushu emphasizes interconnected movement mechanics, treating the body as an integrated system. Tai Chi movements initiate power from the feet, transmit it through the waist, and release it via coordinated joint motion. From an experimental perspective, this study aims to assess the impact of Tai Chi training on core stability among college students, thereby aligning Chinese and Western understandings of core strength development. Therefore, this research investigates the efficacy of Tai Chi exercises in enhancing core physical fitness in college students.

Objectives

1. To design and develop a structured Tai Chi training program.
2. To evaluate the effectiveness of the Tai Chi training program through an experimental study.

Literature Review

Taichi Training to Improve Physical Fitness

Tai Chi, an ancient Chinese martial art, is widely recognized for its effectiveness in enhancing physical fitness, particularly in improving balance, muscular strength, flexibility, and cardiovascular

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endurance. According to Wayne et al. (2014), Tai Chi training involves slow, controlled movements combined with deep breathing and meditation, providing comprehensive physical benefits while minimizing stress on joints and muscles. This gentle approach makes it particularly beneficial for individuals across different age groups, including older adults and those with chronic health conditions.

Empirical research consistently highlights the impact of Tai Chi on muscular strength and endurance. A systematic review by Lan, Lai, Chen, and Wong (2013) demonstrated that regular Tai Chi practice significantly enhances lower limb strength and muscular endurance, crucial for daily activities and preventing falls among elderly populations. These benefits are attributed to Tai Chi's emphasis on weight-bearing movements, postural control, and gradual strengthening through sustained poses.

Tai Chi also substantially improves flexibility and joint mobility, critical aspects of overall physical fitness. Studies by Zou et al. (2019) have shown that Tai Chi practitioners experience marked improvements in joint flexibility, particularly in the hips, knees, and ankles. The smooth, flowing sequences characteristic of Tai Chi effectively elongate muscles and gently increase range of motion without the injury risks associated with high-impact exercise routines.

Cardiovascular fitness is another key physical component positively influenced by Tai Chi. Research conducted by Taylor-Piliae and Coull (2012) suggests that consistent Tai Chi training contributes to improved aerobic capacity, reduced resting heart rate, and enhanced cardiovascular efficiency. These cardiovascular improvements are largely due to the aerobic nature of continuous Tai Chi movements and controlled breathing, facilitating better oxygenation and circulation throughout the body.

Lastly, Tai Chi's role in enhancing balance and proprioception significantly reduces the risk of falls, particularly among older adults. The study by Li et al. (2012) found that older adults who engaged in regular Tai Chi exercises exhibited substantial improvements in balance control and postural stability. Enhanced proprioception—the body's ability to sense movement and position—further supports injury prevention, promoting overall physical resilience and functionality in daily life.

Conceptual Framework

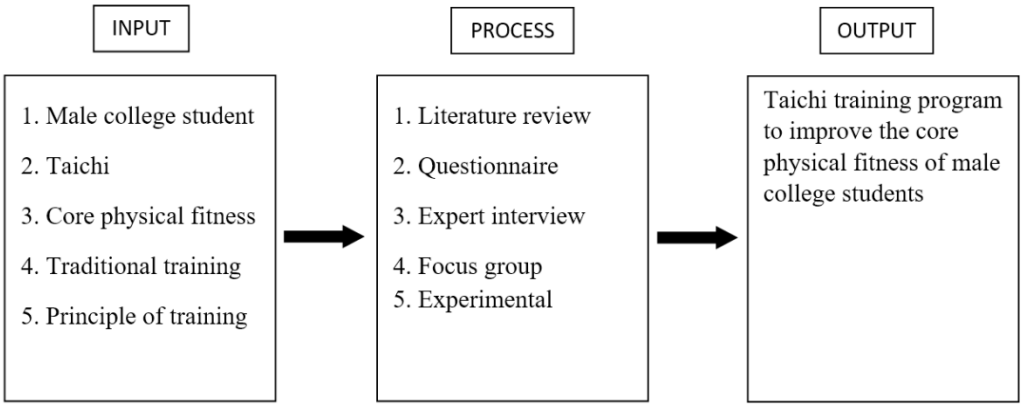

Figure 1 Conceptual Framework

Methodology

Population

The target population for this study comprises Tai Chi club members at Henan Institute of Industry and Information Technology. A total of 120 male college students, aged 18 to 22 years, were identified as potential participants.

Sample Group.

This study employs systematic sampling to select participants. A total of 40 male college students who voluntarily agreed to participate and met the inclusion criteria were recruited for the study. To

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minimize variability, all selected participants underwent a core physical fitness test, and their scores were recorded. Following the initial testing phase, 40 students who met the test criteria were further screened. Participants were sequentially numbered from 1 to 60 in descending order of their core physical fitness scores. Using a systematic sampling method, they were then randomly assigned into two groups: Experimental group (n = 20) – participants who underwent the Tai Chi training intervention. Control group (n = 20) – participants who did not participate in the Tai Chi training but continued their regular activities. Random allocation was further ensured using a lottery method to confirm group assignments.

Inclusion Criteria.

To be eligible for participation, students had to meet the following criteria:

1. Voluntary participation and willingness to adhere to the Tai Chi training program.
2. Medical clearance confirming fitness for physical activity.
3. No prior professional sports training experience.
4. Good overall health, with no significant family medical history.
5. No history of major surgery or trauma affecting the spine or lower limbs.

Exclusion Criteria.

Participants were withdrawn from the study if they met any of the following exclusion criteria:

1. Failure to attend at least 90% of the training sessions.
2. Inability to complete both pre-test and post-test assessments as scheduled.
3. Health issues or injuries sustained during the study that prevented continued participation.
4. Recent medication use that could interfere with physical performance.
5. Persistent or severe bodily pain.
6. Evident lower limb joint or muscle damage that could impact training.

Research Methodology.

This study employed a randomized controlled trial (RCT), dividing 40 male college students into two groups (n = 20 per group). The experimental group followed a Tai Chi training program, while the control group participated in a general physical education program. Participants were randomly assigned to minimize bias. To ensure validity, purposive sampling was used to select expert evaluators. Three experts assessed the Item-Objective Congruence (IOC) of the training program, including one professor in physical education, one associate professor in physical fitness, and one professor in Tai Chi. Five experts participated in semi-structured interviews to compare Tai Chi with traditional training methods. A focus group discussion with seven experts refined the program, while a connoisseurship evaluation by five experts validated the final Tai Chi training program.

Data Collection.

The data collection process in this study involved multiple methods to ensure validity and reliability. First, a self-administered questionnaire was distributed to 40 students, with its content evaluated by three experts using the Item-Objective Congruence (IOC) index to confirm its validity. Additionally, five experts were invited for face-to-face discussions to identify the essential elements of the Tai Chi training program. Following this, seven experts participated in a focus group discussion to refine the draft Tai Chi training program for improving core physical fitness. Once the program was developed, five experts were invited to validate the final Tai Chi training program, ensuring its effectiveness and applicability. The experimental process consisted of two groups: Control Group – Engaged in a traditional training program. Experimental Group – Followed the newly developed Tai Chi training program. The study employed pre-test and post-test assessments. The pre-test collected baseline data, including age, height, weight, strength, endurance, flexibility, coordination, and core functionality. Additionally, an initial assessment of Tai Chi skills was conducted, evaluating technical proficiency and performance time. After completing the training program, the post-test measured changes in core physical fitness using standardized tests: Core Stability – One-Leg Jump Test, Core Strength – Sit-Up Test, Core Flexibility – Sit-and-Reach Test.

Data Analysis.

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The collected data were analyzed using both quantitative and qualitative methods. Questionnaire responses were subjected to statistical analysis using software packages, incorporating descriptive statistics such as the mean ($\bar{x}$) and standard deviation (SD). For qualitative data, interviews, focus groups, and connoisseurship evaluations were analyzed using content analysis to extract meaningful insights. The IOC (Inter-Observer Consistency) results were considered valid if they ranged between 0.6 and 1, ensuring high reliability. Experimental data were analyzed using t-tests: Independent t-test – To compare differences between the experimental and control groups. Dependent t-test – To evaluate within-group differences before and after the intervention.

Results

Expert Focus Group Evaluation of the Tai Chi Training Program.

The focus group discussion, involving seven experts with extensive experience in Tai Chi and physical fitness, provided critical insights into refining the Tai Chi training program to optimize its effectiveness in enhancing core physical fitness. The expert panel included professors, associate professors, and a Tai Chi coach, ensuring a multidisciplinary evaluation. Key findings from the discussion highlight that Tai Chi's controlled, deliberate movements contribute significantly to core stability, flexibility, and muscle endurance. Experts emphasized that integrating breath control (dantian breathing techniques) with movement enhances postural stability and neuromuscular coordination, making Tai Chi a valuable training method for developing core strength and functional balance. The experts recommended progressive training intensity, suggesting that the first four weeks should focus on fundamental Tai Chi postures and movement fluidity, while the latter four weeks should incorporate increased repetitions and complex movement sequences to further challenge muscle endurance and coordination. Additionally, concerns were raised about adaptability for different fitness levels, leading to adjustments in movement modifications for beginners to ensure safety and accessibility. From a sports science perspective, the experts advocated for integrating biomechanical principles into the program, ensuring optimal joint alignment and injury prevention. Furthermore, they recommended slight modifications to stance widths and transitions to maximize core engagement and reduce excessive strain on lower limbs.

The focus group validated the program's structure and confirmed its alignment with modern exercise science principles, ensuring its effectiveness in improving core stability, strength, and flexibility among male college students. This expert feedback reinforced the scientific rigor of the Tai Chi training program, making it a credible intervention for core fitness development.

15-Step Tai Chi Training Program.

The 15-Step Tai Chi Training Program was developed as a structured intervention to improve core physical fitness among male college students. The program focuses on core strength, stability, flexibility, and coordination through progressive training using Tai Chi postures. The 15 steps include controlled movements, breath synchronization, and biomechanical alignment, ensuring a systematic approach to core engagement and injury prevention. Key Features of the 15-Step Tai Chi Training Program: 1) Progressive Training Approach. The program gradually increases intensity by adjusting repetitions, stance durations, and movement complexity. The initial weeks focus on foundational movements, while later stages incorporate a greater range of motion and core engagement. 2) Core Strength & Stability Development. Each movement engages deep core muscles such as the rectus abdominis, transverse abdominis, and obliques, enhancing postural control and muscle endurance. Balance-focused movements activate stabilizing muscles, improving coordination and functional strength. 3) Integration of Breath Control & Coordination. Controlled breathing enhances oxygen utilization and muscle relaxation, reducing fatigue. Breath synchronization with movement improves neuromuscular efficiency and reduces injury risk. 4) Biomechanical Efficiency & Injury Prevention. The program emphasizes proper joint alignment, ensuring spinal health and lower limb stability. Modifications allow for individualized progression, accommodating different fitness levels. 5) Holistic Physical & Mental Benefits. The integration of Tai Chi principles fosters

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mental focus, stress reduction, and overall well-being. Slow, controlled movements promote mindfulness while still providing functional strength training.

8-Week Tai Chi Training Program

The 8-Week Tai Chi Training Program was designed as a structured intervention to progressively enhance core physical fitness in male college students. The program integrates traditional Tai Chi principles with modern sports science to develop core strength, flexibility, stability, and neuromuscular coordination. Training was conducted 3–4 days per week, following a progressive intensity model that increased repetitions and complexity over time.

Table 1 8-Week Tai Chi Training Structure

Training Phase	Duration & Frequency	Focus Areas
Warm-up	5–10 minutes/session	Activates blood circulation, prepares muscles & joints.
Weeks 1-4	3 days/week (Mon, Wed, Fri)	Master fundamental Tai Chi postures, develop breath control & basic core activation.
Weeks 5-8	4 days/week (Mon, Wed, Fri, Sun)	Increase training intensity, improve core endurance, balance, and flexibility.
Cool-down	5–10 minutes/session	Gradually lowers heart rate, enhances muscle recovery.

Key Features of the 8-Week Tai Chi Training Program

1. Progressive Intensity & Core Engagement: Initial weeks focus on fundamentals, slow-controlled movements, and breathing techniques to build core strength & flexibility. Later weeks introduce increased repetitions, longer stance holds, and dynamic movement transitions to develop muscle endurance & coordination.

2. Holistic Core Stability Development: Emphasizes deep core muscle activation (rectus abdominis, transverse abdominis, obliques, pelvic stabilizers). Combines weight shifting, controlled breathing, and stance endurance for neuromuscular adaptation.

3. Breath Control & Coordination Integration: Breath-synchronized movements improve oxygen efficiency, focus, and stress reduction. Enhances muscle relaxation & core activation, preventing fatigue & injuries.

4. Scientific Approach & Injury Prevention: Training progression aligns with biomechanics principles, ensuring joint alignment & spinal health. Adjustments allow beginners to progress safely, while advanced practitioners can increase movement intensity.

5. Comprehensive Physical & Mental Benefits: Tai Chi's meditative aspect reduces stress, enhances focus, and promotes mental well-being. The program bridges traditional Tai Chi principles with modern exercise science, making it accessible for non-athlete college students.

Table 2 Weekly Training Progression

No.	Tai Chi Pose	Week 1-2	Week 3-4	Week 5-6	Week 7-8
1	Prepare Your Breath	8 reps	10 reps	12 reps	15 reps
2	Inhale	8 reps	10 reps	12 reps	15 reps
3	Exhale	8 reps	10 reps	12 reps	15 reps
4	Right Reverse Breathing	8 reps	10 reps	12 reps	15 reps
5	Left Reverse Breathing	8 reps	10 reps	12 reps	15 reps
6	Absorb Energy	8 reps	10 reps	12 reps	15 reps
7	Seek Light	8 reps	10 reps	12 reps	15 reps
8	Push the Clouds	8 reps	10 reps	12 reps	15 reps

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No.	Tai Chi Pose	Week 1-2	Week 3-4	Week 5-6	Week 7-8
9	Sweep the Breath	8 reps	10 reps	12 reps	15 reps
10	Punching Power	8 reps	10 reps	12 reps	15 reps
11	Push the Curtain	8 reps	10 reps	12 reps	15 reps
12	Open the Curtain	8 reps	10 reps	12 reps	15 reps
13	Power of Enduring	8 reps	10 reps	12 reps	15 reps
14	Unleash Power	8 reps	10 reps	12 reps	15 reps
15	Reduce the Breath	8 reps	10 reps	12 reps	15 reps

The results from Table 3 confirm that the Tai Chi training program significantly improved core strength among male college students in the experimental group. The statistically significant increase in sit-up performance ($p = 0.03$) highlights the effectiveness of Tai Chi in strengthening core muscles. This supports the scientific validity of Tai Chi training as a functional method for enhancing trunk stability, endurance, and neuromuscular efficiency.

Table 3 Comparison of Core Strength Test Results Before and After the Experiment (Experimental Group)

Test Indicator	Pre-Experimental (M±SD) (N=20)	Post-Experimental (M±SD) (N=20)	P-Value
Sit-ups	28.25 ± 3.21	34.40 ± 5.51	0.03*

$p < 0.05$

Conclusion

This study successfully developed and tested a Tai Chi training program designed to enhance core physical fitness in male college students. The results confirmed that an eight-week Tai Chi intervention led to significant improvements in core strength, flexibility, balance, and functional stability, aligning with prior research on Tai Chi's physiological benefits. The controlled, low-impact movements of Tai Chi provided an effective approach to muscle endurance, postural control, and neuromuscular efficiency, making it an accessible training method for college students.

The experimental group showed statistically significant improvements in muscular endurance ($p = 0.03$), flexibility ($p = 0.002$), and balance ($p = 0.02$), while no notable improvements were observed in the control group, validating the effectiveness of the intervention. These results are consistent with previous studies on core stability and postural control in Tai Chi practitioners.

This study establishes Tai Chi as a scientifically supported training approach that can be integrated into college sports programs to enhance students' athletic ability and physical health. The results advocate for the wider adoption of Tai Chi in physical education curricula to promote core stability, flexibility, and functional strength among young adults.

Discussion

This study found a statistically significant improvement in core strength in the experimental group, as evidenced by a 6.15-rep increase in sit-up performance ($p = 0.03$). These findings align with research by Liu et al. (2022), which demonstrated that Tai Chi's slow, controlled postures effectively engage deep core muscles, particularly the rectus abdominis, obliques, and erector spinae, leading to enhanced core endurance and muscle activation. Tai Chi's rotational and stance-based movements, such as Wild Horse Splits Mane and Knee-Wrapping Stance, contribute to greater core stability and strength (Zhu & Wang, 2021). This supports previous research by Huang et al. (2020), which identified that Tai Chi's gradual weight shifts and postural control exercises lead to stronger trunk muscles and improved core endurance. Furthermore, the breath control techniques emphasized in Tai Chi—particularly diaphragmatic breathing—were instrumental in core engagement and endurance enhancement (Chen et al., 2021). Diaphragmatic breathing

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increases intra-abdominal pressure, which contributes to spinal stabilization and more efficient muscle activation during movement execution (Shaofeng, 2024). The current study's findings confirm this mechanism, demonstrating that Tai Chi's controlled breathing practices improved neuromuscular coordination, leading to greater core strength gains.

Despite the improvement in core strength, this study found no significant difference in core endurance between the experimental and control groups. Research suggests that core endurance is influenced by aerobic metabolism, muscle fiber type, and neuromuscular efficiency (Paillard, 2012). Tai Chi predominantly engages slow-twitch muscle fibers, which are essential for sustained muscular contractions, but the intensity in this study may not have been sufficiently high to yield significant endurance adaptations (Wang et al., 2020). However, research by Cao (2020) suggests that Tai Chi's controlled movements and postural endurance exercises can enhance slow-twitch muscle efficiency over extended training periods. While 8 weeks may not have been sufficient for endurance adaptations, longer training durations—12 to 16 weeks—may yield more noticeable improvements. Additionally, studies by Azimzadeh et al. (2015) indicate that progressive overload principles should be incorporated into Tai Chi to improve muscular endurance outcomes, supporting the need for gradual intensity adjustments in future Tai Chi interventions.

The experimental group showed significant improvements in core flexibility ($p = 0.002$), which aligns with previous findings by Wehner et al. (2021) that Tai Chi enhances joint mobility and muscular elasticity through large-amplitude, controlled movements. This improvement was particularly evident in the sit-and-reach test, where participants exhibited a greater range of motion in spinal and hip flexibility. Research by Fu (2015) confirms that Tai Chi's dynamic stretching postures, such as Left & Right Wild Horse Splits Mane, Needle Under the Sea, and High Pat on Horse, contribute to enhanced ligament elasticity and greater trunk flexibility. Additionally, Li (2013) found that Tai Chi's fluid motion patterns promote spinal mobility, reducing muscle stiffness and enhancing overall movement efficiency. Moreover, Thoracolumbar spinal flexibility was identified as a key contributing factor to improved postural balance (Zhao et al., 2019). These findings suggest that Tai Chi is an effective training modality for increasing flexibility and mobility in college-aged students, making it an ideal intervention for reducing the risk of musculoskeletal injuries.

The results demonstrated significant improvements in balance and coordination, as assessed by the dominant-side single-leg stance test. This supports research by Li (2024), which found that Tai Chi enhances proprioceptive feedback mechanisms, vestibular control, and neuromuscular coordination. Biomechanical analysis indicates that Tai Chi's gradual weight shifts and single-leg stance postures, such as Downward Independent Stance and Golden Rooster Stands on One Leg, strengthen postural awareness and lower limb stability (Cao, 2020). These findings align with studies by Azimzadeh et al. (2015), which suggest that Tai Chi's emphasis on postural transitions leads to improved core control and balance stabilization. Furthermore, Li (2013) identified that Tai Chi's conscious movement practice enhances neuromuscular sensitivity, reinforcing balance maintenance through continual proprioceptive adjustments. The findings from the current study validate these prior results, confirming that Tai Chi is an effective coordination training method, particularly for non-athlete populations.

The experimental group exhibited significant improvements in core functionality, as measured by the one-legged jump test ($p = 0.02$). This supports prior research by Fu (2015), which found that Tai Chi improves power transmission efficiency and lower limb explosiveness. The improvements can be attributed to: 1) Footwork mechanics in Tai Chi, which enhance ankle stability, knee alignment, and hip joint mobility (Li, 2024). 2) Gradual stance progression, reinforcing explosive strength in lower limb movements (Zhu & Wang, 2021). 3) Increased neuromuscular efficiency, allowing for better synchronization between muscle contraction and force application (Wang et al., 2020).

Additionally, a meta-analysis by Li (2024) confirmed that Tai Chi training improves motor function, balance, and jump performance due to its emphasis on core stability and functional movement control. This

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study's findings align with these results, highlighting that Tai Chi training can significantly enhance core stability and functional athletic performance.

Recommendation

1. Integration of Tai Chi into College Sports and Physical Education Programs: The 15-step Tai Chi training program demonstrated measurable benefits for core strength, flexibility, and coordination.

2. Emphasizing Long-Term Core Stability Development: Core stability requires consistent and progressive training. To optimize the benefits of Tai Chi

3. Conducting Longitudinal Studies on Tai Chi's Impact on Core Fitness: This study demonstrated significant short-term benefits of Tai Chi training

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