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Research Paper

Developing a Stamina Training Program in Athletics for First-Year Students at Thai Nguyen University of Technology

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Abstract

Stamina training constitutes a vital aspect of university-level physical education, particularly for first-year students, as it aims to enhance physical fitness and cultivate lifelong exercise habits. Nonetheless, current observations reveal that many students have limited cardiovascular endurance. This study introduces a meticulously designed 10-week stamina training regimen within the Athletics curriculum at Thai Nguyen University of Technology, created through document analysis, pedagogical observation, and accumulated teaching experience. The program incorporates continuous running, variable-speed running, interval running, and movement-oriented games, adhering to principles of progressive training volume. Its implementation is expected to significantly improve the instructional efficacy within the Athletics curriculum.

Keywords
stamina training, athletics, physical education, university students, training program

I. Introduction

Physical education holds a critical place within the higher education framework, serving as a cornerstone for fostering physical fitness, promoting health, and cultivating sustainable lifestyle practices among students. In today's fast-paced society with mounting academic pressures, maintaining optimal health and physical conditioning is essential for students, enabling them to perform efficiently in both academic and future professional environments. Within the physical education syllabi, the discipline of Athletics is regarded as foundational due to its relevance in enhancing physical capabilities. Comprised of various dynamic activities such as running, jumping, and throwing, the subject places particular emphasis on endurance running for developing stamina. Stamina, defined as the ability to sustain prolonged activity without significant fatigue, is intrinsically linked to the functionality of cardiovascular and respiratory systems and plays a pivotal role in academic and social resilience. Developing stamina not only augments physical robustness but also bolsters mental well-being and equips students to better navigate academic demands and everyday challenges. However, empirical observations demonstrate notable deficiencies in students' current physical conditioning. Sedentary lifestyles influenced by extended periods of screen usage—whether for academic purposes or recreational engagement—have led to diminished physical activity among students. Consequently, they exhibit reduced mobility and adverse health implications. At Thai Nguyen University of Technology, efforts are made through physical education programs to address these concerns; however, challenges persist in cultivating resilience in first-year students, particularly in endurance running. Many learners struggle to complete medium- or long-distance running routines effectively, exhibiting signs of fatigue and disengagement from such activities.

II. Research Methods

The study employed an array of research methodologies integral to sports science to formulate an effective stamina training framework tailored for university students.

2.1. Document analysis method

This method entailed the collection and examination of theoretical and methodological literature on stamina enhancement within sports disciplines. Relevant resources included monographs, instructional textbooks on Athletics, and peer-reviewed studies in physical education and sports science. By synthesizing information from these sources, foundational principles were identified for designing a scientifically validated stamina training

curriculum. The insights derived were instrumental in developing exercises aligned with student capabilities and institutional infrastructure.

2.2. Pedagogical observation method

Direct observational tactics were employed during the instruction of Athletics coursework to evaluate student physical fitness levels and motor aptitudes in real-time training environments. Insights gained through this observational process highlighted weaknesses in endurance capacities as well as specific challenges faced by students during prolonged running exercises.

2.3. Teaching experience analysis method

In addition to theoretical inquiry, the study leveraged the practical expertise of instructors involved in teaching Athletics courses. Synthesizing observations from their teaching experiences allowed researchers to identify suitable training strategies that align with available institutional resources and the unique physical profiles of collegiate learners.

III. Theoretical Framework for Stamina Training

3.1 Defining Stamina

Stamina represents a fundamental attribute of human physicality and occupies a central role in sports performance and daily life functions. Scholars specializing in sports science delineate stamina as the capacity of an individual's body to sustain prolonged motor activity without substantial decline in overall efficiency. This characteristic is pivotal not only for athletic pursuits but also for routine occupational and recreational engagements. The development of stamina is contingent upon the harmonious functioning of key physiological systems, including cardiovascular circulation, respiratory dynamics, neuromuscular coordination, and muscular endurance. Extended motor activities demand substantial energy expenditure for maintaining muscle group performance over time. Consequently, systematic stamina training enhances physiological mechanisms such as oxygen supply efficiency and cardiac and pulmonary function, thereby facilitating improved motor competence during sustained activities.

3.2 Types of Stamina

In sports science, stamina is commonly categorized into two primary types:

- General Stamina: This refers to the ability to sustain motor activity over an extended period with the involvement of various muscle groups. General stamina plays a vital role in promoting overall health and physical fitness.
- Specific Stamina: This represents the capacity to maintain the distinct motor functions required in a particular sport for a prolonged duration. Specific stamina is typically enhanced through sport-specific training exercises tailored to that activity. For students enrolled in physical education programs, fostering general stamina is a key objective that focuses on improving overall fitness and well-being

3.3 Methods for Stamina Training

Sports training employs a variety of methods to build stamina effectively. The most common techniques include:

- Continuous Running Method: This involves running at a consistent pace for a designated time or distance.
- Variable-Speed Running Method: This approach alternates between fast and slow running intervals, which helps improve the body's adaptability to changing intensities.
- Interval Running Method: Characterized by high-intensity running segments followed by brief periods of rest, this method is effective for developing stamina. A strategic combination of these methods can optimize the outcomes of stamina training programs.

IV. Development of the Stamina Training Program

4.1 Principles of Program Design

Creating an effective stamina training program for students must be grounded in scientific sports training principles alongside consideration of participants' physiological characteristics. In this study, the program was built upon these fundamental principles:

1. Suitability for First-Year Students:

The program should account for the physiological differences among students new to the university setting, stemming from variations in previous exercise habits. Therefore, it should begin with moderate-intensity activities to help students adapt progressively to training demands.

2. Gradual Progression:

It's essential to progressively increase both running distance and exercise intensity, allowing the body to adapt while minimizing the risk of overtraining or injury.

3. Comprehensive Training Methods: Incorporating diverse methods such as continuous running, variable-speed running, and interval running allows for well-rounded stamina development.

4. Safety and Engagement: To ensure safety and maintain interest, supplementary exercises and movement games should be integrated within the program.

4.2 Structure of a Stamina Training Session

A typical stamina training session as part of the Athletics coursework usually comprises three primary components:

1. Warm-Up: Focused on preparing the body for exercise and preventing injury.

2. Main Content: The core part of the session where targeted stamina training methods are applied.

3. Cool-Down: Designed to promote recovery and relax the muscles after intense activity. Each section serves specific objectives, ensuring both safety and effectiveness during the training session.

Table 1: Structural breakdown of a stamina training session

Training Part	Content	Time	Purpose
Warm-up	Light run 200–400m, joint rotation, stretching	10–15 min	Warm up the body, prevent injury
Main content	Continuous running, variable-speed running, interval running	25–35 min	Develop cardiovascular endurance
Movement games	Relay running, circle running	5–10 min	Increase training interest
Cool-down	Light walking, muscle stretching	5 min	Body recovery

The warm-up part plays an important role in preparing the body for higher-intensity motor activities. Warm-up exercises help increase body temperature, improve muscle and joint flexibility, and reduce the risk of injury.

The main content is the most important part of the session, in which students perform exercises to develop stamina. The exercises are designed with gradually increasing intensity to improve the functioning of the cardiovascular and respiratory systems.

The cool-down helps the body return to a normal state after training, reduces muscle tension, and supports the recovery process.

4.3. Content of the training program

The stamina training program was developed over a period of 10 weeks, with a frequency of 2–3 sessions per week. Dividing the program into stages helps students gradually adapt to the training volume and improve training effectiveness.

Table 2. Stamina training program by stage

Stage	Week	Training Content	Distance / Time
Adaptation stage	1–2	Slow-pace continuous running Running combined with walking	800–1000m 10 minutes
Initial development	3–4	Continuous running Variable-speed running	1200–1500m 100m fast – 100m slow
Advanced development	5–6	Variable-speed running Continuous running	200m fast – 200m slow 1500–1800m
Strengthening	7–8	Interval running Continuous running	300m × 4 times 1800–2000m
Consolidation	9–10	Long-distance continuous running Movement games	2000–2500m 10 minutes

During the adaptation phase in weeks 1 and 2, students focus on short-distance endurance running to gradually acclimate their bodies to sustained physical activity. The running speed is deliberately kept slow, allowing participants to complete the exercises without exhaustion or strain. In the initial development phase spanning weeks 3 and 4, the running distance is incrementally increased to enhance the efficiency of both cardiovascular and respiratory systems. Concurrently, students are introduced to variable-speed running, which fosters adaptability to shifts in intensity during exercise. By weeks 5 and 6, the advanced development phase begins. Training intensity and volume are further elevated as students engage in variable-speed running across extended distances while still incorporating continuous running to cultivate overall stamina. The strengthening phase occurs during weeks 7 and 8, where interval running techniques become the focus. This method is designed to bolster endurance for high-intensity physical activities. Finally, in the consolidation phase covering weeks 9 and 10, students undertake prolonged continuous running sessions aimed at refining and elevating their stamina to more advanced levels.

Table 3. Stamina development exercises in Athletics

No.	Exercise	Implementation Content	Objective
1	Continuous running	Running at steady speed	Develop general stamina
2	Variable-speed running	Alternating fast and slow running	Increase adaptability
3	Interval running	Running fast in segments	Improve speed endurance
4	Circle running	Running in groups	Develop stamina and coordination
5	Relay running	Team running	Increase training interest

The integration of various training methods offers a comprehensive approach to developing students' stamina while introducing diversity into their training routines. This diversity not only enhances the effectiveness of the exercises but also sustains the students' interest in learning.

V. Results and discussion

The creation of a stamina training program tailored for first-year students in the Athletics curriculum holds significant importance for improving overall physical fitness, promoting health, and fostering lifelong exercise habits. Observations from physical education classes at Thai Nguyen University of Technology indicate that most first-year students exhibit low baseline physical fitness, particularly regarding endurance during running exercises. One key reason for this trend is that many students had limited or no exposure to regular physical activities during high school, leading to their reduced ability to adapt to stamina-based exercises upon entering university. When high-intensity endurance running drills were introduced early in the academic year, many students reported rapid fatigue and a decline in motivation, with some unable to complete the required running distances. Hence, designing a systematic training program following a principle of gradual increases in exercise volume and intensity became essential. The proposed stamina training program in this study was structured into three progressive stages—adaptation, development, and consolidation—aimed at enhancing the cardiovascular and respiratory endurance of students over time. During the foundation stage (weeks 1–2), students were gradually introduced to short-distance endurance running at a slow pace. This was critical for acclimating their bodies to extended physical activity while reducing the likelihood of injury or excessive strain. Practical teaching experiences reveal that employing methods such as alternating jogging with walking or slow-paced running on shorter routes significantly boosts students' comfort levels and improves their ability to complete the exercises successfully. In the intermediate development stage (weeks 3–6), the focus shifted toward increasing training

volume through continuous running and variable-speed exercises. These activities strengthened cardiovascular functions, enhanced oxygen exchange, and contributed to overall stamina development. From a practical standpoint, students expressed higher levels of engagement and found variable-speed runs more stimulating than monotonously running at a steady pace. This increased interest and active participation enhanced their training experience. The final stage of strengthening and consolidation (weeks 7–10) aimed at further building endurance through longer-distance continuous runs and interval running that alternated fast bursts with brief recovery periods. These exercises improved cardiovascular efficiency and elevated speed endurance. Observations showed that by weeks 6 to 8, many students exhibited significant progress. Those who initially struggled to run continuously for 800 to 1,000 meters were able to cover 1,800 to 2,000 meters without much difficulty. An insightful observation during teaching at Thai Nguyen University of Technology revealed that incorporating movement-based games into lessons kept students motivated and enthusiastic. Without such interactive elements, purely focusing on stamina-building activities often led to boredom and diminished motivation among students. Games like relay races, group circle runs, or team running competitions not only energized the atmosphere but also encouraged active participation. This approach enhanced both physical training outcomes and the development of teamwork skills. Furthermore, psychological factors play a vital role in the success of stamina training for first-year students. Transitioning into university often brings new academic pressures and unfamiliar learning methods. A training program that fails to accommodate the initial physical capabilities of first-year students risks creating undue stress and reducing their motivation for physical education. The proposed training program focuses on tailoring exercise volumes to align with the students' fitness levels, ensuring they can sustain regular and effective participation without feeling overwhelmed. Teaching observations also underscore the effectiveness of a structured stamina training program in boosting students' performance in final physical fitness assessments. Students showed marked improvements not only in endurance running but also in related physical abilities such as leg strength, movement coordination, and post-exercise recovery rates. These findings highlight the practical value of implementing a thoughtfully designed stamina training program in Athletics courses at technical universities. Such programs not only elevate the quality of physical education but also equip students with improved health and fitness for their academic journey and beyond.

From the above analysis, it can be seen that developing a suitable stamina training program for the physical characteristics of first-year students is a necessary requirement in teaching the Athletics subject. The training program not only needs to ensure the scientific principles of sports training but also must be suitable for the actual conditions of students and the university's facilities. Applying the stamina training program according to stages from adaptation to development and consolidation can help improve the effectiveness of physical education teaching while contributing to improving students' health and overall physical fitness.

VI. Conclusion

The study has developed a 10-week stamina training program in the Athletics subject for first-year students at Thai Nguyen University of Technology. The program was designed based on the scientific principles of sports training, suitable for students' physical characteristics, with diverse training content such as continuous running, variable-speed running, interval running, and movement games. The application of this program not only helps improve cardiovascular endurance and comprehensive physical fitness but also contributes to improving the teaching effectiveness of the Athletics subject in the physical education curriculum. To maximize effectiveness, the study recommends applying the program in official teaching and encouraging students to participate in extracurricular sports activities to maintain exercise habits. In addition, it is necessary to continue researching, adjusting, and perfecting the program in the future to make it more suitable for various groups of students, thereby improving the quality of physical education in the university.

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