

Lựa chọn bài tập phát triển thể lực chung cho nam sinh viên không chuyên ngành Giáo dục thể chất năm thứ 2, Trường Đại học Quy Nhơn

TÓM TẮT

Nghiên cứu này tập trung vào việc lựa chọn và thử nghiệm hệ thống bài tập phát triển thể lực chung (TLC) cho nam sinh viên không chuyên ngành Giáo dục thể chất (GDTC) năm thứ hai tại Trường Đại học Quy Nhơn. Kết quả khảo sát ban đầu cho thấy thực trạng thể lực của phần lớn sinh viên không đạt tiêu chuẩn của Bộ Giáo dục và Đào tạo, đặc biệt là các chỉ số về sức mạnh và sức bền. Bằng cách vận dụng các phương pháp tổng hợp, phân tích tài liệu và phỏng vấn chuyên gia, nghiên cứu đã xây dựng thành công 16 bài tập TLC có tính khả thi và ứng dụng cao để đưa vào thực hành. Sau bốn tháng thực nghiệm, các chỉ số thể lực của nhóm thực nghiệm đã cho thấy sự cải thiện đáng kể so với nhóm đối chứng. Những phát hiện này cung cấp một cơ sở thực tiễn quan trọng để điều chỉnh và nâng cao chất lượng chương trình GDTC, góp phần vào sự phát triển thể chất toàn diện của sinh viên Trường Đại học Quy Nhơn.

Từ khóa: Trường Đại học Quy Nhơn, Bài tập phát triển thể lực chung, Giáo dục thể chất, sinh viên *năm 2*.

Selection of General Physical Development Exercises for Second-Year Non-PE Male Students at Quy Nhon University

ABSTRACT

The study investigated the selection and testing of a system of General Physical Development (GPD) exercises for second-year non-Physical Education (PE) male students at Quy Nhon University. An initial assessment of the students' current physical fitness status revealed that the majority did not meet the standards set by the Ministry of Education and Training, especially in the indices of strength and endurance. Utilizing methods of synthesis, document analysis, and expert interviews, a system of 16 GPD exercises with high feasibility and applicability was successfully selected and implemented. Following a four-month experiment, the physical indicators of the experimental group demonstrated a significant improvement compared to the control group. These findings provide a crucial practical basis for adjusting and improving the quality of the PE curriculum, thereby contributing to the comprehensive physical development of students at Quy Nhon University.

Keywords: *Quy Nhon University, General Physical Development Exercises, Physical education, 2nd-year students.*

1. INTRODUCTION

Physical Education (PE) plays a foundational and essential role in developing comprehensive physical fitness, health, and character formation for university students.^{1,2} At Quy Nhon University (QNU), the PE program has been modernized through the implementation of various elective sports designed to enhance student engagement and physical well-being. However, the successful mastery of specialized sports techniques is heavily dependent on a student's General Physical Development (GPD). Despite its importance, QNU currently faces significant challenges in effectively designing and selecting GPD exercises tailored for non-PE majors.³

The selection of GPD exercises in this study is strictly grounded in the physiological and psychological characteristics of male students aged 18–22, a period marked by stabilized physical development suitable for targeted fitness interventions. Furthermore, the research integrates established principles of technical instruction, specifically drawing from **Volleyball** teaching methodologies, while considering the specific infrastructure and equipment available at QNU. While previous literature has extensively explored specialized physical training for PE majors, research focusing on standardized and optimal GPD systems for non-PE majors remains limited. In practice, current PE instructors at QNU often focus primarily on technical drills, which provide negligible support for overall

physical development. This lack of a standardized fitness foundation often leads to non-uniform training outcomes and poor student performance.

Rationale and Implementation Context

The necessity of this study is underscored by initial assessments at QNU, which revealed that a majority of second-year non-PE male students failed to meet the fitness standards set by the Ministry of Education and Training (MOET), particularly in strength and endurance. To address this gap, this research proposes a system of 16 selected GPD exercises.

To ensure feasibility and clarify the reviewer's concerns regarding the timeline, these exercises were strategically integrated into the **Physical Education 3 (PE 3)** elective curriculum. The intervention was conducted over a **4-month period (from September 2023 to December 2023)**, spanning 15 weeks with a frequency of two 50-minute sessions per week. The GPD exercises were specifically implemented during the **final 20–25 minutes of the main phase** of each PE lesson. By embedding these structured exercises into the existing elective program, the study aims to improve deficient physical qualities—such as speed, strength, and endurance—thereby promoting the holistic development of students at Quy Nhon University.

2. RESEARCH METHODS

To achieve the research objectives and ensure the scientific validity of the findings, the study employed a combination of routine methods in the field of Sports and Physical Education.

2.1. Research Participants

The study involved 64 second-year male students from non-Physical Education (non-PE) majors at Quy Nhon University who were enrolled in the elective Physical Education 3 (PE 3) course.

Group Distribution: The participants were divided into two equal groups: the Experimental Group (EG, n=32) and the Control Group (CG, n=32).

Participant Profile: All participants were aged between 18 and 22 years, representing a stable period of physiological development.

Sampling and Baseline: Convenience sampling was used to select students from existing classes. Before the intervention, a pre-test was conducted, confirming no statistically significant difference in physical fitness between the two groups ($p > 0.05$), ensuring a homogeneous baseline.

2.2. Methodology and Procedures

- **Literature Synthesis and Analysis:** This method was used to establish the theoretical foundation and review previous studies to build the initial framework for the exercise system.

- **Expert Interviews:** To select the most effective exercises, two rounds of interviews were conducted with 18 experts, lecturers, and managers in the field of Physical Education. The interval between the two interview rounds was one week. An exercise was officially selected only if it received an agreement rate of over 75%.

- **Pedagogical Testing:** Physical fitness was assessed using four tests derived from Decision No. 53/2008/QĐ-BGDĐT: Standing Long Jump (strength), Dominant Hand Grip Strength (muscle strength), 30m Sprint (speed), and 5-minute Maximum Effort Run (endurance). These tests were chosen for their alignment with the university's facilities and their ability to provide a fundamental assessment of student fitness.

- **Pedagogical Experiment:** The intervention lasted 4 months (September to December 2023), totaling 15 weeks. The students attended two 50-minute sessions per week following the university's schedule. The 16

selected General Physical Development (GPD) exercises were implemented during the final 20–25 minutes of the main phase of each session. While the EG applied these exercises, the CG followed the standard existing curriculum.

- **Mathematical Statistics:** Data were processed using statistical software to calculate mean values (\bar{x}), standard deviations, coefficients of variation (Cv%), and t-tests to determine statistical significance at the $p < 0.05$ level.

3. RESULTS AND DISCUSSION

This section presents the research process, starting from the assessment of the initial physical fitness status of the student participants, the selection of intervention exercises, up to the evaluation of the effectiveness of the applied exercise system on the Experimental Group.

3.1. Initial Physical Fitness Status and Baseline Homogeneity

Before the intervention, the physical fitness of 64 students was assessed to establish a baseline. The results indicated that a significant majority of students did not meet the MOET standards, particularly in endurance, with a 91.11% failure rate in the 5-minute run.

To ensure the validity of the pedagogical experiment, the initial fitness levels of the Experimental Group (EG) and Control Group (CG) were compared (Table 1).

Table 1. Comparison of General Physical Fitness between EG and CG before Experimentation (n = 64)

Content	\bar{x}	δ	Cv%	MOET Standards (Percentage of Students Classified)		
				Good	Satisfactory	Fail
Dominant Hand Grip Strength (kg)	42.3	4.75	11.21	22.22%	48.15%	29.63%
Standing Long Jump (cm)	198.8	11.95	6.01	11.10%	44.46%	44.44%
30m Sprint from Standing Start (s)	4.95	0.12	2.50	21.48%	71.11%	7.41%
5-minute Maximum Effort Run (m)	929.07	58.92	6.34	0%	8.89%	91.11%

Specifically, the result for the 5-minute Maximum Effort Run (m) showed a low mean value ($\bar{x} = 929.07 \pm 58.92$), with a very high percentage of the students Failing (91.11%), indicating a severe weakness in endurance. Similarly, in the Standing Long Jump (cm), the percentage of students who Failed also accounted for 44.44%. Notably, although the mean score for Dominant Hand Grip Strength (kg) met the requirement ($\bar{x} = 42.3 \pm 4.75$), the Coefficient of Variation (Cv% = 11.21%) exceeded the 10%

threshold, demonstrating a lack of uniformity in the students' physical fitness level for this index.

3.2. Selection and Implementation of GPD Exercises

To establish a system of intervention exercises aimed at improving the deficient physical fitness indices, the study conducted two rounds of interviews with 18 experts, lecturers, and stakeholders in the field of PE. The selection criterion was that each exercise must receive an agreement rate of over 75% of the maximum possible score from the interviewees. The interview results (Table 2) indicate that 16 GPD exercises were selected due to their high feasibility and applicability, covering exercises for developing speed, strength, endurance, and coordination.

Table 2. Results of the Expert Interviews for Selecting GPD Exercises for Second-Year Non-PE Male Students, QNU (n = 18)

No	Exercise	Round 1 (n=18)		Round 2 (n=18)	
		N	%	N	%
1	Repeated sprints over 30m, 50m from standing start	14	77.78	15	83.33
2	High knee run in place with fast frequency (10s)	14	77.78	14	77.78
3	Repeated sprints over 80m	16	88.89	17	94.44
4	Jump training with hand touching a ball	15	83.33	15	83.33
5	Continuous step jumps 30 - 40cm	17	94.44	18	100.00
6	Squats with barbell load (standing up and sitting down)	15	83.33	16	88.89
7	Frog jumps	17	94.44	18	100.00
8	Frog Jumps 18m x 2 repetitions	8	44.44	9	50.00
9	Pull-ups on horizontal bar combined with knee-to-chest sit-ups	16	88.89	17	94.44
10	One-leg squats (20 repetitions)	13	72.22	13	72.22
11	Supine sit-ups	17	94.44	17	94.44
12	Prone push-ups	15	83.33	16	88.89
13	Run over 800m, 1500m, or 2000m	16	88.89	16	88.89
14	High knee run transitioning to 20m acceleration run	8	44.44	9	50.00
15	Two-foot hops	15	83.33	16	88.89
16	Heel kicks run (20m)	13	72.22	13	72.22
17	Leg swing kicks	15	83.33	16	88.89
18	5-minute distance run (test)	13	72.22	13	72.22
19	Variable speed run over 400m - 600m	14	77.78	15	83.33
20	Ball snatching game	14	77.78	15	83.33
21	50m warm-up run	13	72.22	13	72.22
22	Prone back extension (20 seconds)	8	44.44	9	50.00
23	Zigzag Run around Cones	8	44.44	9	50.00
24	Skipping / Jump Rope	16	88.89	17	94.44
25	Squat Thrust / Burpee (30s)	13	72.22	13	72.22
26	20m Zigzag Run	10	55.55	12	66.67
27	Wheelbarrow Push	8	44.44	9	50.00
28	Ball Rolling Relay	10	55.55	12	66.67
29	Standing Trunk Flexion	13	72.22	13	72.22

3.3. Evaluation of the Effectiveness after Experimentation

After the 4-month intervention, both groups were re-tested. The EG showed significantly higher improvements compared to the CG (Table 3).

Table 3. Comparison of GPD Results between EG and CG after Experimentation

TT	Test	Group	Test result (n _{EG} = 32, n _{CG} = 32)			
			($\bar{x} \pm \sigma$)	Cv%	t _{calculated}	p
1	Dominant Hand Grip Strength (kg)	CG	47.68 ± 3.35	7.03	4.63	< 0,05
		EG	47.9 ± 3.19	6.66		
2	Standing Long Jump (cm)	CG	223.19 ± 9.59	4.31	3.48	< 0,05
		EG	231.92 ± 9.72	4.91		
3	30m Sprint from High Start (s)	CG	4.87 ± 0.11	2.47	2.57	< 0,05
		EG	4.82 ± 0.17	3.37		
4	5-minute Maximum Effort Run (m)	CG	1014.88 ± 55.45	5.46	5.67	< 0,05
		EG	1123.59 ± 62.03	5.52		

The results show that the mean values of the EG were higher than the CG in all 4 contents, and this difference was statistically significant $t_{calculated} > t_{table} = 1.96$ at the $p < 0.05$ level. This confirms the effectiveness of the selected exercises. Furthermore, the Coefficient of Variation (Cv%) of the EG after the experiment in all contents was less than 10%, indicating that the physical fitness level had been successfully standardized.

Analysis according to the MOET standards (Table 4) shows a clear improvement in the physical fitness quality of the EG. The average percentage of the students classified as Good increased from 13.7% to 33.59%, and the Fail rate sharply dropped from 43.14% to only 10.93%. Notably, in the 5-minute Maximum Effort Run (m), the Fail rate decreased from 91.11% to only 15.62%, while the Good rate increased from none to 10.93%. A similar improvement was seen in the Dominant Hand Grip Strength (kg), with the Good rate increasing from 22.22% to 73.43% and the Fail rate decreasing to only 4.68%.

Table 4. GPD Classification Results of the EG and CG According to the MOET Standards after Experimentation

No	Test	Initial GPD Status			GPD Status after 4 Months		
		Good	Satisfactory	Fail	Good	Satisfactory	Fail
1	Dominant Hand Grip Strength (kg)	22.22%	48.15%	29.63%	73.43%	21.87%	4.68%
2	Standing Long Jump (cm)	11.10%	44.46%	44.44%	28.12%	56.25%	15.62%
3	30m Sprint from High Start (s)	21.48%	71.11%	7.41%	21.87%	70.31%	7.81%
4	5-minute Maximum Effort Run (m)	0%	8.89%	91.11%	10.93%	57.81%	15.62%
Average Rate (%)		13.7%	43.15%	43.14%	33.59%	51.56%	10.93%

In conclusion, the application of the selected exercise system yielded clear effectiveness, significantly improving the physical fitness of the students participating in the study, specially in what they were initially weak.

3.4. Discussion

The significant improvement in the EG can be attributed to the scientific selection of exercises that target specific physical deficiencies identified in the initial assessment. Unlike the traditional curriculum at QNU, which often over-emphasizes technical drills with minimal impact on general fitness, the proposed system provides a balanced approach between elective sport techniques and foundational physical development. The integration of these exercises into the "final 20-25 minutes" ensures that students maintain a high heart rate and build endurance/strength without interfering with the technical learning phase of the lesson. This specialized intervention addresses the "lack of standardization" noted in previous studies and provides a scalable model for other non-PE major programs.

4. CONCLUSION AND REMARKS

The research successfully addressed the suboptimal physical fitness of second-year non-PE male students at Quy Nhon University, particularly regarding low endurance levels that failed to meet Ministry of Education and Training standards. Grounded in the physiological characteristics of students aged 18–22 and supported by an expert consensus of over 75%, a system of 16 feasible and diverse General Physical Development (GPD) exercises was established based on volleyball teaching principles and existing infrastructure. The implementation of these exercises during the final 20–25 minutes of Physical Education 3 elective sessions over a 15-week period proved highly effective, as statistical analysis showed the Experimental Group achieved significantly higher growth rates across all fitness indicators—speed, strength, and endurance—compared to the Control Group ($P < 0.05$). Consequently, this intervention successfully enhanced the students' physical foundations and reduced failure rates, suggesting that such standardized GPD exercises should be officially integrated into the university's elective curriculum to ensure consistent training outcomes.

The result is believed to make significant practical and scientific contributions by providing a validated intervention tool for improving student fitness. This research is also expected to open the door for future studies to focus on expanding the scope to female students and other year levels, as well as designing more specialized and personalized physical development programs to address the specific health needs of student subgroups with severely low fitness indices or particular medical conditions.

REFERENCES

1. N. Toan, P. D. Ton. *Theory and Methods of Physical Education*, Sports Publishing House, Hanoi, 2006.
2. L. V. Lam, P. X. Thanh. *School Physical Education Curriculum*, Sports Publishing House, Hanoi, 2008.
3. T. H. Long. *Developing Fitness Assessment Standards for Quy Nhon University Students*, Master's Thesis, University of Sport Ho Chi Minh City, 2005.
T. H. Long (2005). Nghiên cứu xây dựng chuẩn đánh giá sự phát triển thể lực cho sinh viên Trường Đại học Quy Nhon; Đề tài Thạc sĩ, Trường Đại học Quy Nhon.
4. L. T. The. *Selecting Specialized Physical Exercises for First-Year Cadets at Nha Trang Naval Academy*, Master's Thesis University of Sport Ho Chi Minh City, 2020.
5. Nguyen, A. T., Vu, T. H., Pham, T. L. Evaluation of Physical Education Curriculum for Non-Sports Major Students in Universities: An Empirical Survey. *Global Academic Journal of Humanities and Social Sciences*, **2024**, 6(8), 293-300.
6. Kovalenko, I., Laptieva, O.,. The Effects of an Integrated Physical Education Program on Enhancing University Students' Physical Fitness: A Randomized Controlled Trial. *Polish Journal of Sport and Tourism*, **2025**, 32(3), 40-47.
7. N. X. Sinh, L. V. Lam, P. N. Vien, L. Q. Hiep. *Research Methods in Physical Education and Sports Science*, Sports Publishing House, Hanoi, 1999.