

Selection of exercises for physical development for first-year male students of Duy Tan University in Danang, Viet Nam

Nguyen Xuan Hung^{1*}, Nguyen Huu Anh Khoa²

¹ Danang University of Physical Education and Sports, Viet Nam.

² Duy Tan University in Danang, Viet Nam.

* Correspondence: Nguyen Xuan Hung; nguyensexuanhung.volley@gmail.com

ABSTRACT

This study aimed to select and evaluate exercises for the physical development of first-year male students at Duy Tan University in Da Nang, Vietnam. Utilizing an experimental design, documentary analysis, interviews, and pedagogical testing, the study involved 32 experienced physical education lecturers to ensure exercise reliability. The experimental phase included 46 first-year male students, who were divided into two groups: a control group (n = 23) following the standard curriculum and an experimental group (n = 23) incorporating 19 additional exercises categorized into five groups: rapid strength development (4 exercises), strength development (6 exercises), endurance (4 exercises), flexibility (3 exercises), and dexterity (4 exercises). Over five months, both groups attended 36 classes. Statistical analysis revealed significant differences between the groups ($p < 0.05$), indicating that the experimental group showed notable improvements in physical fitness due to the newly selected exercises. As a result, the selected exercises were highly effective in developing the physical fitness of first-year male students at Duy Tan University in Da Nang, Vietnam.

KEYWORDS

Physical Development Exercises; Male Students; Duy Tan University; Da Nang City

1. INTRODUCTION

According to WHO (2024), physical activity offers considerable advantages for both physical and mental health. In adults, engaging in physical activity helps prevent and manage noncommunicable diseases like cardiovascular diseases, cancer, and diabetes. It also alleviates symptoms of depression and anxiety, boosts brain health, and enhances overall well-being.

Numerous studies have been conducted to understand in more detail the importance of physical education for students (Duong, 2007; Tuyen., 2006; Le et al., 2000; Le et al., 1999; Nguyen, 2000; Nguyen, 2018; Vo, 2015; Vo, 2021).

Duy Tan University in Da Nang city has fully implemented the regulations of the Ministry of Education and Training on the content of the physical education program. (Ministry of Education and Training, 2015, 2006). The current state of teaching at the university indicates that the quality of physical education in recent years remains limited, particularly regarding the general physical condition of students across various faculties and majors, which is still low. One of the primary reasons affecting the development of the overall physical fitness of first-year male students at Duy Tan University in Da Nang City is the lack of appropriate exercises and the absence of science-based research. Therefore, conducting research on the selection and application of exercises aimed at improving general fitness for first-year male students at Duy Tan University is essential.

The aim of this study is to select exercises for the physical development of first-year male students at Duy Tan University in Da Nang, Vietnam, and to evaluate the effectiveness of these exercises. This study will not only provide valuable insights into effective training methods but also contribute to fostering a culture of physical fitness and well-being among students, ultimately enhancing their academic performance and overall quality of life.

2. METHODS

This study employed an experimental process, alongside documentary analysis, interviews, and pedagogical testing. A total of 32 experienced physical education lecturers currently teaching at Duy Tan University in Da Nang City participated to ensure the reliability of the exercises (further details will be provided later).

The experimental phase involved 46 first-year male students, divided into two groups:

- Control Group: 23 students following the university's standard physical education curriculum.
- Experimental Group: 23 students following the same curriculum but incorporating additional selected exercises.

Both groups participated during the second semester, with the experimental phase lasting five months (2 classes per week, 4 weeks per month, totaling 36 classes). The experimental group engaged in new exercises tailored to the lesson's main content.

Before the experiment commenced, an initial assessment was conducted using six tests to evaluate the general physical fitness of both groups, in accordance with Decision 53/2008/QĐ-BGDDT. The effectiveness of the physical fitness development exercises was measured through various tests administered prior to the experiment, establishing a baseline for the participants' fitness levels.

3. RESULTS AND DISCUSSION

3.1. Exercise selection for developing physical strength in first-year male students

Through reviewing documents and consulting experts in physical education, the study synthesized 31 exercises into 5 groups. To ensure the reliability of these exercises, we interviewed 32 experienced physical education lecturers currently teaching at Duy Tan University in Da Nang City, along with a few trainers and lecturers specializing in physical education and sports. We gathered their opinions on whether they agreed or disagreed with the selected exercises. The study selected exercises that received 80% or more approval. The results of the selection interviews are shown in Table 1.

Table 1. Selection results for physical training exercises

	Exercise	Interview result			
		Agree to use %		Do not agree to use %	
Group Exercises develop strength quickly	1. Speed jump rope 30s. x 3 nest, rest 1 minute between nests, rest actively	30	93.7	2	6.25
	2. Jump adam 30s x 3 sets, rest 1 minute in between sets, rest actively.	29	90.06	3	9.37
	3. Run 30m starting high x 3 groups, rest 1 minute in between groups, rest actively	31	96.8	1	3.12
	4. Run 60m starting high x 3 groups, rest 2 minutes in between groups, rest actively	27	84.3	5	15.6
	5. Run with thigh raises in place for 1-2 minutes x 2 times, rest 1-2 minutes/time	17	53.12	15	46.87
	6. Run 100m at variable speed (50m fast - 50m slow) 2 times, rest 3 minutes/time.	16	50.0	16	50.0
Group of exercises to develop strength	7. Jump and pull high knees continuously for 30 seconds x 3 sets, rest 3 minutes in between sets, rest actively.	26	81.25	6	18.7
	8. Jump on the platform back and forth for 20 seconds x 3 groups, rest 3 minutes in between, rest actively	29	90.06	3	9.37
	9. Switch legs on the platform for 30 seconds x 3 sets, rest 3 minutes in between, rest actively	30	93.7	2	6.25
	10. Lie on your stomach and do 10 push-ups x 3 sets, rest 3 minutes in between, rest actively	28	87.5	4	12.5
	11. Run with thigh raises in place for 30 seconds	26	81.25	6	18.7

	x 3 sets, rest 3 minutes in between, rest actively				
	12. Jump 20m x 2 groups, rest 3 minutes in between groups, rest actively	32	100	0	0
	13. Back muscles + abdominal muscles 3 groups x 10 times/group, rest 2 minutes/group	14	43.75	18	56.25
	14. Run 50m and kick back (3 times, rest 3 minutes/time)	15	46.87	17	53.12
Group Exercises to develop endurance	15. Jump rope 2 minutes (do once)	30	93.7	2	6.25
	16. 3 x 400m relay race (done once)	28	87.5	4	12.5
	17. Run 400m (done once)	31	96.8	1	3.12
	18. Run 800m (done once)	29	90.06	3	9.37
	19. Run 1500m once	17	53.12	15	46.87
	20. Switch legs for 1 minute x 2 times, rest 3 minutes/time	13	40.6	16	50.0
Group Flexibility development exercises	21. Lie on your stomach and stretch your body 20 times x 3 sets, rest 2 minutes in between, rest actively	27	84.3	5	15.6
	22. Lie on your back and do 20 crunches x 3 sets, rest 2 minutes between sets, rest actively	29	90.06	3	9.37
	23. Hang the abdominal ladder 15 times in 3 groups, rest 2 minutes in between, rest actively.	14	43.75	18	56.25
	24. Deep crunches from a high platform 10 times (2 times, rest 1 minute/time)	17	53.12	15	46.87
Group Dexterity development exercises and games	25. Sit with your legs straight, bend your body deeply 10 times (2 times, rest 1 minute/time)	13	40.6	16	50.0
	26. Signal chasing game for 1 minute x 3 groups, resting for 2 minutes in between groups.	14	43.75	18	56.25
	27. 3rd leftover person game (play 5 - 10 minutes)	30	93.7	2	6.25
	28. Volleyball game 6 (play 5 - 10 minutes)	31	96.8	1	3.12
	29. Soccer crab game (2 rounds, 5 minutes each).	15	46.87	17	53.12
	30. Shuttle run 4x10m (times, rest 2 minutes / time)	16	50.0	16	50.0

Through the results in Table 1, a total of 19 exercises are selected to develop physical strength for first-year male students at Duy Tan University in Da Nang City, with approval ratings ranging from 81.25% to 100%. The exercises are categorized into the following groups:

Group of exercises to develop strength quickly (4 exercises):

1. Jump rope at speed 30s x 3 groups, rest 1 minute in between, rest actively
2. Jump adam 30s x 3 sets, rest 1 minute in between sets, rest actively.
3. Run 30m starting high x 3 groups, rest 1 minute in between groups, rest actively
4. Run 60m starting high x 3 groups, rest 2 minutes in between groups, rest actively

Group of exercises to develop strength (6 exercises):

5. Jump and pull high knees continuously for 30 seconds x 3 sets, rest 3 minutes in between, rest actively.
6. Jump back and forth on the platform for 20 seconds x 3 groups, rest 3 minutes in between, rest actively
7. Switch legs for 30 seconds x 3 sets, rest 3 minutes in between, rest actively
8. Lie on your stomach and do 10 push-ups x 3 sets, rest 3 minutes in between, rest actively
9. Run with thigh raises in place for 20 seconds x 3 sets, rest 3 minutes in between, rest actively
10. Jump 20m x 2 groups, rest 3 minutes in between, rest actively

Group of exercises to develop endurance (4 exercises):

11. Jump rope for 2 minutes (do once)
12. 3 x 400m relay race (done once)
13. Run 400m (done once)
14. Run 800m (done once)

Flexibility Development Exercise Group (3 Exercises):

15. Lie on your stomach and stretch your body 20 times x 3 sets, rest 3 minutes in between, rest actively
16. Lie on your back and do 20 crunches x 3 sets, rest 3 minutes in between, rest actively
17. Hang the abdominal ladder 15 times in 3 groups, rest 3 minutes in between, rest actively.

Group of dexterity development exercises and games (4 exercises):

18. Volleyball game 6 (play 5 - 10 minutes)
19. Soccer crab game (2 rounds, 5 minutes each).

3.2. Application and evaluation of selected physical fitness exercises

3.2.1. The experimental process

To evaluate the effectiveness of physical fitness development exercises for research subjects, the study conducted an experimental process for 5 months. Experimental time (2 classes/1 week x 4 weeks/1 month = 8 classes/1 month x 5 months = 36 classes). Thus, the time of each group is 36 hours during the experiment. The content of the process is presented in detail in Table 2.

Table 2. The experimental process

Lesson Plan	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36			
I GROUP OF EXERCISES FOR QUICK STRENGTH DEVELOPMENT																																							
1 Jump rope at speed 30s x 3 groups	+																																						
2 Jump adam 30s x 3 groups		+																																					
3 Run 30m starting high x 3 groups			+																																				
4 Run 60m from high start x 3 groups				+	-																																		
I I STRENGTH DEVELOPMENT EXERCISES GROUP																																							
5 Jump and pull high knees continuously for 30 seconds x 3 nests		+																																					
6 Turn the platform back and forth for 20 seconds x 3 groups			+																																				
7 Switch legs on the platform for 30 seconds x 3 nests				+																																			
8 Lie on your stomach and do 10 push-ups x 3 nests		+																																					
9 Run with thighs elevated in place for 20s x 3 nests					+																																		
10 Turn on 20m x 2 nests																																							
I I I ENDURANCE DEVELOPMENT EXERCISES GROUP																																							
11 Jump rope 2 minutes (done once)			+																																				
12 3 x 400m relay race (done once)		+	+																																				

1	Run 400m																			
3	(done once)	+		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	Run 800m																			
4	(done once)	+		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FLEXIBLE DEVELOPMENT																				
I V EXERCISES GROUP																				
Lie on your stomach and																				
1	stretch your																			
5	body 20	+		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
times x 3 sets																				
Lie on your back and do																				
1	20 crunches	+		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	x 3 sets																			
Hang the abdominal																				
1	ladder 15																			
7	times in 3	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
groups																				
GROUP OF SKILLS DEVELOPMENT																				
V EXERCISES AND GAMES																				
Volleyball																				
1	game 6 (play																			
8	5 - 10	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
minutes)																				
Soccer crab																				
1	game (2																			
9	rounds, 5	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
minutes each round).																				

3.2.2. Evaluating the effectiveness of physical fitness exercises

Table 3 outlines the general physical fitness levels of the two research groups prior to the commencement of the experimental process.

Table 3. General physical fitness of the two groups before the experiment

Order	Test Content	Control group (n = 100)	Experimental group (n = 100)	t	P
1	Force of squeezing with dominant hand (kg)	40,03 ± 7,12	40,93 ± 7,77	0,40	P > 0,05
2	Lying between crunches (repeat)	18,40 ± 4,73	18,22 ± 4,45	0,13	P > 0,05
3	Jump far in place (cm)	203,82 ± 29,24	206,5 ± 26,67	0,32	P > 0,05
4	Run 30m starting high (s)	5,22 ± 0,48	5,17 ± 0,51	0,34	P > 0,05
5	Shuttle run 4 x 10m(s)	11,82 ± 0,74	11,85 ± 0,73	0,14	P > 0,05
6	Run at your own pace for 5 minutes (m)	1017,73 ± 70,79	1005,23 ± 55,13	0,77	P > 0,05

The results obtained in Table 3 show that all 6 tests have a t count less than the t table at a probability threshold of $P > 0.05$. Thus, the difference in general physical fitness between the two groups is not significant. In other words, before the experiment, the general physical fitness levels of the two groups were equivalent. After 8 months of study and practice, the topic assessed the achievements of the two groups. The results obtained are presented in Table 4.

Table 4. General physical fitness test results of both groups after the experiment

Order	Test content	Control group (n = 100)	Experimental group (n = 100)	t	P
1	Force of squeezing with dominant hand (kg)	42,91 ± 6,98	46,59 ± 5,4	2,42	< 0,05
2	Lying between crunches (repeat)	19,78 ± 2,92	22,45 ± 2,04	2,30	< 0,05
3	Jump far in place (cm)	210,35 ± 20,57	218,14 ± 25,21	2,77	< 0,05
4	Run 30m starting high (s)	5,12 ± 0,33	4,75 ± 0,5	2,71	< 0,05
5	Shuttle run 4 x 10m(s)	10,9 ± 0,91	10,56 ± 0,78	2,59	< 0,05
6	Run at your own pace for 5 minutes (m)	1036,96 ± 73,7	1063,18 ± 71,21	3,01	< 0,05

There are statistically significant differences between the control and experimental groups after the experiment ($p < 0.05$), confirming the reliability of the findings and highlighting a notable improvement in the physical fitness of the experimental group following the implementation of the newly selected exercises.

4. CONCLUSIONS

In conclusion, a total 9 general physical fitness development exercises were carefully selected for first-year male students at Duy Tan University in Da Nang City. These exercises were categorized into five groups: rapid strength development (4 exercises), strength development (6 exercises), endurance (4 exercises), flexibility (3 exercises), and dexterity (4 exercises). Following the experiment, significant improvements were observed in various aspects of physical fitness. These positive outcomes highlight the effectiveness of the selected exercises in enhancing the overall fitness levels of the students. Furthermore, this research demonstrates that the applied exercises not only promote general fitness development but also contribute to the long-term physical health and performance of first-year male students at Duy Tan University in Da Nang City.

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AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

FUNDING

This research received no external funding.

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