



International Journal of Physiology, Exercise and Physical Education

ISSN Print: 2664-7249
ISSN Online: 2664-7257
IJPEPE 2024; 6(1): 102-104
www.physicaleducationjournals.com
Received: 03-04-2024
Accepted: 04-04-2024

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Application of exercises to improve general physical fitness for male students of Thai Nguyen University

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DOI: <https://doi.org/10.33545/26647249.2024.v6.i1b.102>

Abstract

Through basic scientific research methods in Sports and Physical Education. Research to evaluate the current status of factors ensuring physical education for students of Thai Nguyen University. We have selected 23 exercises and 04 tests with high reliability and informativeness to evaluate the general physical fitness level of male students of Thai Nguyen University, contributing to improving the academic and physical quality of students throughout the university.

Keywords: Current status, physical fitness level, students, physical education, Thai Nguyen University

Introduction

Physical education and sports in schools are an important and inseparable part of educational and training goals. Therefore, physical development and sports in schools are very necessary, closely linked and located in the general context of education and training. The cause of industrialization and modernization of the country is placing urgent demands on intellectuals, human resources, and talents-Workers are highly developed intellectually, physically strong, morally pure, and can meet the new requirements of the socio-economy. Therefore, developing and improving the quality of education and training in general, and physical education in particular for adolescents, is an urgent and objective issue.

Currently, the work of physical education in schools of Thai Nguyen University still has many limitations, students' awareness of the role and effects of physical education is not complete. The program content and teaching plans are not yet synchronized, the exercise and sports movement is still spontaneous. Therefore, the application of exercises to improve general physical fitness for male students of Thai Nguyen University is an urgent issue.

Research Methods

During the research process, we use the following methods: Document synthesis and analysis; Interviews; Pedagogical observations; Mathematical statistics.

Research Results and Discussion

Assessment of the current state of general physical fitness level for male students of Thai Nguyen University: To solve this problem, we conducted physical fitness test results of 1500 first-year, second-year and third-year male students according to the set of fitness assessment standards with 4 Tests prescribed by the Ministry of Education and Training. The results are presented in table 1. The results in Table 1 show: The rate of meeting the physical fitness assessment standards of students in the first to third years is below 50%. However, in the 5-minute running at your own pace, the second-year and third-year students' scores were higher than the remaining indexes (51.8% -52.13%). Thus, it can be seen that the general physical fitness of male students of Thai Nguyen University is still low compared to standards.

Selection and application of exercises for male students of Thai Nguyen University

Selection of exercises to develop general physical fitness for male students of Thai Nguyen University: Based on the requirements for choosing exercises, through consulting professional documents, and through the results of testing and surveying teaching work at Universities. We conducted interviews with teachers and experts and selected 23 exercises with high priority as follows:

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Table 1: Results of testing the current state of general physical fitness of male students at Thai Nguyen University (n=1500)

No	Content	Criteria for assessing physical fitness (Passed level)	$\bar{X} \pm \delta$	Cv %	Number of students passing the Physical Fitness Assessment	Ratio %
First-year male student (n= 550)						
1	Squeezing force of dominant hand (kg)	40.7 - 47.2	41.3±2.41	2,32	260	47.27
2	Long jump on the spot (cm)	205 - 222	212,2 ± 21,3	5,41	245	44.55
3	30 m running (second)	5.8 - 4.8	5,74 ± 1,22	5,24	180	32.73
4	5-minute running at your own pace (m)	940 - 1050	996,5 ± 76,1	5,73	253	46.00
Second-year male student (n= 470)						
1	Squeezing force of dominant hand (kg)	41.4 – 47.5	45.4±2.53	3,62	220	46.81
2	Long jump on the spot (cm)	207 - 225	219,5 ± 22,2	6,1	211	44.89
3	30 m running (second)	5.7 – 4.7	5,24 ± 1,26	6,32	179	38.09
4	5-minute running at your own pace (m)	950 - 1060	976,7 ± 77,5	8,03	245	52.13
Third-year male student (n= 480)						
1	Squeezing force of dominant hand (kg)	42.0 – 48.7	47.1±2.56	9,03	231	48.13
2	Long jump on the spot (cm)	209 – 227	225,7 ± 21,8	3,25	204	42.50
3	30 m running (second)	5.6 – 4.6	5,04 ± 1,21	5,37	202	42.08
4	5-minute running at your own pace (m)	960 - 1070	998.5 ± 76,4	4,37	245	51.8

1. Exercises for rapid strength development

1. Running on high knee for 5", when given the signal, fast running 5-6 steps x 5 times, resting 1'/time
2. High-speed 20 m running
3. Running on high knee on the spot for 5-10" x 2 times, resting 1-2'/time
4. Low starting 30 m running
5. Acceleration running 60m x 2-3 times, last 20 meters reaching maximum speed, resting 3'/time

2. Exercises for strength development

1. Lying on the stomach and stretching the arms 5 times, resting 2'/time
2. Running on high knee on the spot 5 times, resting 3'/time
3. Leapfrogging 3 × 20m, resting 3'/time
4. Continuously jumping on the sand pit 3 × 20 times/set, resting 2'/set
5. Push-up 3 × 10 times/ set (male); 3x5 times/set (female), resting 2'/set
6. Back muscles + abdominal muscles 3 sets x 10 times/set, rest 2'/set

3. Exercises for endurance development

1. 600 m fell running, 40-50% of maximum intensity
2. 1000 m fell running, 40-50% of maximum intensity
3. Running 2 x 500m at 75% of maximum intensity, resting 2-3'/time
4. 800 m running at 75% of maximum intensity
5. 1000 m running at 75% of maximum intensity

4. Exercises for flexibility development

1. Deep bending from a high platform 10 times x 2 sets, resting 1'/set
2. Sitting with legs straight and deep bending 10 times x 2 sets, resting 1'/set
3. Sitting with legs stretched out to the sides and deep bending 10 times x 2 sets, resting 1'/set
4. Standing with the leg on a high platform and deep bending, 10 times on each side

5. Exercises for skill development

1. Zigzag running and passing the poles, 5 times x 20 m, passing the pole in the first turn, and running straight in the return turn, resting 3'/time
2. Zigzag running and passing the poles, 5 times x 20 m, passing the pole in the first turn and in the return turn, resting 3'/time
3. Game "zigzag relay running", 2 times x 20m, resting 3'/time

Application and effective evaluation of selected exercises for male students of Thai Nguyen University**Organization of experiments on research subjects**

During the experiment, both control and experimental groups applied the same structure of preparatory and finishing exercises. The difference in the classroom process of the two groups is that in the basic part, the control group learns the content of the physical education class that the school is conducting, as for the experimental group, they also apply one of the selected exercise combinations in the beginning, middle or later part of the basic part.

The research on the application of exercises to develop general physical fitness for research subjects was conducted over a period of 3 months (12 weeks) 2 sessions per week during extracurricular time, the time for each exercise session is 45 minutes. Experimental subjects were randomly divided into 2 groups of 50 students each, of which the total participants were 100 male students.

The results of testing the initial physical fitness level of the two control and experimental groups at the time before the experiment showed that $t_{\text{calculated}} \text{ evenly} < t_{\text{table}}$ at the probability threshold $p > 0.05$. Thus, the difference between groups is not statistically significant. In other words, the general physical fitness level of the research subjects in the pre-experimental phase was equivalent. And the pre-experimental test results on the physical education subject rankings of the research subjects were at an average level for all 100 male students.

Post-experimental results of the two experimental and control groups

After 3 months, at the end of the experimental period, both the control group and the experimental group were tested on their general physical fitness level with 4 Tests as before the

experiment to evaluate the effectiveness of the selected exercises. The post-experimental test results of the two experimental and control groups are presented in Table 2.

Table 2. Comparison of test results of 4 tests of general physical fitness assessment of the experimental group and the control group after 3 months of experiment.

No.	Tests	Control group (n = 50)	Experimental group (n = 50)	Comparison	
				t	p
1	Squeezing force of dominant hand (kg)	42.5±2.42	46.8±2.56	5.54	<0.01
2	Long jump on the spot (cm)	219.7±14.5	226.2±14.6	2.38	<0.05
3	30 m running (second)	5.22±0.52	5.04±0.65	3.46	<0.01
4	5-minute running at your own pace (m)	997.2±70.1	1065.6±86.2	2.53	<0.05

The results in table 2 allow us to draw the following comments: After 3 months of experiment, the test results of the 2 experimental and control groups were significantly different in all tests, shown in $t_{\text{calculated}} > t_{\text{table}}$ at the

probability threshold $p < 0.05$ to $p < 0.001$. This proves that the general physical fitness development exercises for male students of Thai Nguyen University that we selected were much more effective than the currently applied exercises.

Table 3. Results of grading physical education scores of the two experimental and the control groups after the experiment

No.	Physical fitness assessment	Control group (n = 50)		Experimental group (n = 50)	
		Quantity	Ratio %	Quantity	Ratio %
1	Excellent	14	28	29	58
2	Good	36	72	21	42
3	Average	0	0	0	0

From the results obtained in Table 3, it can be seen that: Exercises to develop general physical fitness for male students of Thai Nguyen University developed after 3 months of experimentation have clearly shown their effectiveness in improving general physical fitness and learning outcomes in physical education. From the above results, we can come to the following comments: general physical fitness for male students of Thai Nguyen University can be effectively improved if practiced regularly and with reasonable teaching methods and means.

Through experiments, it has been proven that applying exercises to improve general physical fitness for male students of Thai Nguyen University is completely appropriate and capable of improving general physical fitness for first-year male students of Thai Nguyen University. After 12 weeks with a total of 24 training sessions, along with the use of 23 selected exercises, it is completely capable of developing general physical fitness for first-year male students at Thai Nguyen University.

Conclusion

Based on the scientific basis, principles of selection, interviewing, summarizing experience and using exercises to develop the general physical fitness of teachers and experts, 23 exercises were selected. Pedagogical experiments have proven that the exercises we selected to develop general physical fitness for male students of Thai Nguyen University are completely capable of improving general physical fitness for first-year male students of Thai Nguyen University. The differences after the experiment all reached the necessary statistical reliability.

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