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Applying physical exercises for enhancing general physical fitness of female students of Vinh university, Vietnam

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Abstract

This article is aimed to select and apply some physical exercises to enhance general physical fitness of female students of Vinh University, Vietnam. Ninety participants were randomly chosen for intervention, aged 18 to 20. Subjects were divided into two groups, Intervention and Control. After 3 months of practicing with these physical exercises, participants in intervention group reported better significantly improvement in physical fitness which approved by 6 tests with $p < .005$.

Keywords: Physical education, physical fitness, students, Vinh university

1. Introduction

Physical education (PE) plays an important role for enhancing general physical and mental health of people. Regular exercise is also an important part of a healthy lifestyle and have a number of benefits for health ^[1]. There are studies show that PE is not only beneficial for physical health but also for academic improvement of students ^[2, 3]. Physical exercises and physical activities help students to be more concentrated in studying and have better behaviours. In addition, sport activities also help to reinforce knowledge learned in other subjects ^[4]. It proved that students can have better absorption in any subjects when they have good physical fitness state.

With the purpose of using exercises to promote physical fitness of female students, the results would also be expected to help student to have good results in academic performance.

2. Methods and design

Ninety participants were randomly chosen at age 18 to 20. Subjects were divided into two groups – Intervention and Control. Participants in Intervention group were assigned to practice physical exercises. Participants in control group were instructed to maintain their daily physical activities. Statistical analysis using an independent simple t-test was performed to analyze the differences between groups. A $p < .05$ was considered to be statistical significant. In order to determine the effectiveness of physical exercises, in this study, participants were divided into two group and examine at two phases (baseline & endpoint). Physical Fitness Tests used in this research are taken from Decision No.53 of Ministry of Education and Training of Vietnam (METV) ^[5], as followed:

- Test 1: Dominant hand grip (kg)
- Test 2: 30 seconds Sit-ups (times)
- Test 3: 30m high start running (s)
- Test 4: Standing long jumping (cm)
- Test 5: 4x10m Shuttle running (s)
- Test 6: Free 5-minute running (m)

2.1 Protocol of study

Participants in intervention group were instructed to do physical exercises in 12 weeks. Subjects were also instructed to do exercises three times a week out of class time. Each training session contained of warm-up and cool down time. Safety of training is also provided.

2.2 Physical exercises

The system physical exercises used for this intervention were

taken from previous studies [6-8], the following is the list of selected exercises.

Table 1: Selected exercises and purposes

Exercises		Purpose assessment
1	30m Running	Speed strength
2	60m Running	Agility
3	800m Running	Mixed physical movement qualities
4	15s Stand thighs up running (times)	Agility and strength of lower limbs
5	15m Skipping	Muscles strength of thighs and abdomen
6	Uninterrupted standing high jump	Explosive strength
7	Abdominal crunches	Abdominal strength
8	Standing long jumping	Strength of lower limbs
9	20m Zigzag running	Agility, balance, dexterity
10	4x10m Shuttle running	Movement coordination
11	2-minute skipping rope	Movement coordination of body part
12	Push ups	Muscular strength of upper limbs and chest

Subjects in Intervention group were well instructed with all procedures of doing these 12 physical exercises by teachers and trainers.

3. Results

3.1 Survey of current state of PF of female student at Vinh University

Table 2: Current state of PF of female students at Vinh University in comparison to the norms of PF of METV [5]

Subjects	Physical Tests	Assessment levels					
		Good		Medium		Under medium	
		n	%	n	%	n	%
Female students (n=550)	Dominant hand grip (kg)	145	29	275	55	70	14
	30s Sit ups (times)	170	33	280	56	55	11
	30m high start running (s)	120	24	220	44	160	32
	Standing long jumping (cm)	75	15	250	50	175	35
	4x10m Shuttle running (s)	130	26	270	54	100	20
	Free 5-minute running (m)	80	16	235	47	185	37

The results of table 2 indicated that the PF level of female students of Vinh University is generally lower than that in the comparison to the PF criteria (norms) of METV in all physical tests.

3.2 Selecting physical exercises for enhancing PF of female students at Vinh University

After using 6 tests for examining the PF of female students and comparing to the norm of PF of METV (results in table 1), physical exercises were applied based on results of previous studies [6-8].

3.3 Applying physical exercises for enhancing PF for female students of Vinh University

Before applying physical exercises for enhancing PF, research subjects were examined with 6 tests in order to determine if there is any difference about PF between two groups

Table 3: Results of physical tests between Intervention and Control groups at baseline

Tests	Groups	Control (n=45)	Intervention (n=45)	t	p
		\bar{X}	\bar{X}		
Dominant hand grip (kg)		28.30	28.63	0.97	>.05
30s Sit ups (times)		12.90	13.04	0.75	>.05
30m high start running (s)		6.06	6.11	1.11	>.05
Standing long jumping (cm)		161.50	161.56	0.53	>.05
4x10m Shuttle running (s)		12.20	12.14	0.85	>.05
Free 5-minute running (m)		836.5	839.1	0.19	>.05

Results of table 3 indicated that there are no significant differences in all tests between two groups determined with p

> .05. This proved that the physical fitness of two groups is at the same level at the baseline.

Table 4: Results of physical tests of Control group after 3 months

Tests	Groups	Control (n=45)		W%	t	p
		Baseline	Endpoint			
Dominant hand grip (kg)		28.30	29.10	2.79	2.49	<.05
30s Sit ups (times)		12.90	13.55	4.97	5.97	<.05
30m high start running (s)		6.06	6.09	-0.46	1.96	>.05
Standing long jumping (cm)		161.50	160.94	-0.35	2.01	>.05
4x10m Shuttle running (s)		12.20	12.01	-1.57	8.11	<.05
Free 5-minute running		836.5	842.3	0.69	0.54	>.05

The results of tests of Control group were tendentiously improved after 3 months. The highest improvement is 30s Sit ups test with $W = 4.97\%$; the lowest improvement is 30m

high start running test with $W = -0.46\%$. No significant changes for 30m high start running test, Stand long jumping test, and Free 5-minute running test.

Table 5: Results of physical tests of Intervention group after 3 months applied physical exercises

Physical tests	Groups		W%	t	P
	Baseline	Endpoint			
Dominant hand grip (kg)	28.63	29.97	4.57	12.82	<.001
30s Sit ups (times)	13.04	14.10	7.81	7.13	<.001
30m high start running (s)	6.11	5.65	-7.81	14.25	<.001
Standing long jumping (cm)	161.56	163.23	1.03	5.95	<.001
4x10m Shuttle running (s)	12.14	11.68	-3.85	4.64	<.001
Free 5-minute running	839.1	860.1	2.47	2.94	<.05

Results of table 5 showed that there are significant differences in all tests between of two groups with $p < .05$. It means that physical fitness of female students have remarkably improved after applying physical exercises.

4. Discussion and Conclusion

Results of this study indicated that after 3 months applying and training with system of selected physical exercises, physical fitness of female students was significantly improved. It is clear that participating regularly in physical activities and doing physical exercises can be beneficial for our life [9]. Previous findings also revealed that regular participation in physical activities and exercises are associated with better quality of life and reduce the risk of chronic diseases for people [10-12].

This results is also in accordance with the results of previous studies, which proved that physical exercises can be the means to develop students' physical strength [6, 7]. Physical activities may influence the physical health of youth, including students. In other findings indicated that physical activities and exercises may be linked to the outcomes of academic performance of students [3, 13]. Physical activities and exercises are not only beneficial for physical fitness of students but also make students more motivated and inspired in studying other subjects. This study reported the effective physical exercises may enhance physical fitness of female students. As aforementioned explanations, it can be concluded that regular participations improve physical fitness. Good physical fitness may lead to good impact on the outcomes and academics achievements of students. The limitation of this study is small sample size, and intervention group were assigned to follow physical exercise program practicing whereas control group were not. Therefore, this may cause the biased results of study. Further suggestion, researches should be more than one group of interventions and may focus on the effects of exercises on mental problems of university students.

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