

# SELECTING PHYSICAL EXERCISES ON PRECOR MACHINE TO DEVELOP DELTA MUSCLE GROUP FOR FIRST-YEAR SPECIALIZED STUDENTS OF GYMNASTICS, HANOI UNIVERSITY OF SPORTS AND PHYSICAL EDUCATION

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## Abstract:

On the basis of theoretical research and the status of the importance of developing Delta muscle group with first-year PE students, Hanoi University of Sports and Physical Education, we conducted nine selected exercises on the Precor machine to develop Delta muscle group for male students, helping diversify training facilities, create excitement, thereby improve learning efficiency for students of the university.

Keywords: Exercise, strength training machine, Precor machine, Delta muscle group, students, physical training, first-year students, Hanoi University of Sports and Physical Education.

## INTRODUCTION

In order to learn and improve the skills in Gymnastics, gymnastics trainers are required to be well-developed in physical fitness. In Gymnastics, most of the techniques performed include the involvement of hand and shoulder muscles. Especially, the Delta muscle group is used a lot in difficult movements such as: "Pulling bananas", folding and stretching, etc. Therefore, the exercises of developing Delta muscle group for the students of Gymnastics is extremely important and premise to learn how to perfectly implement skills and techniques. However, the current methods of exercise are less effective in developing the Delta muscle group.

At present, Hanoi University of Sports and Physical Education has a high-tech training machine system being put into use under the Education and Training development project of the Ministry of Education and Training. However, in fact, Gymnastics students only practice with the old methods emotionally and due to the lack of suitable exercises and detailed instructions. Therefore, choosing the exercise on Precor machine to develop delta muscle group for students is a matter of need and practical

significance.

## RESEARCH METHODS

The research process uses these following methods: Methods of analyzing and synthesizing documents; Interview method; Pedagogical observation method and Statistical mathematical method.

The research is conducted on Precor high-tech fitness machine which is a specialized multi-function machine helping the trainer to easily develop muscle groups such as chest muscles, shoulder muscles, thigh muscles

## RESULTS AND DISCUSSION

### 1. Assessing the importance of Delta muscle group in the process of performing the professional exercise of fitness

Conducting a survey of the importance of Delta muscle group in the process of performing the professional task of the Gymnastics through interviews by questionnaires to 13 long-term Gymnastics experts, 02 doctors, 09 masters and 2 bachelors. The results are presented in Table 1.

Table 1 shows: Delta muscle group has an important position in performing the task of intensive student's movement. That is a major muscle group involved in supporting, overcoming weight and stabilizing the body

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Machine 6: S3OP



Machine 7: S3LATP



Machine 10: S3RDPF



Machine 13: S3VC



Machine 14: S3PF



Machine 15: S3IP



Machine 18: S3SD



Machine 19: S3OP



Frecor NS4000 machine (Multipurpose)

Table 1. Interview results of the importance level and necessary capacity of Delta muscle group in physical training with intensive gymnastics students of 1st year (n = 13)

No	Level of points Content of questions	Level 1 (3points)		Level 2 (2points)		Level 3 (1 point)		Total point
		m <sub>i</sub>	%	m <sub>i</sub>	%	m <sub>i</sub>	%	
		1	The importance of the Delta muscle group in intensive gymnastics training	13	100.0	0	0.00	
2	The importance level of strength, Delta motor group speed strength of Delta muscle group	11	84.61	2	15.3	0	0.00	37
3	The importance of the strength of the Delta muscle group	7	53.84	4	30.76	2	15.3	31
4	The importance of the stamina of the Delta muscle group	5	38.46	4	30.76	4	30.7	27
5	The importance of flexibility of Delta muscle group	10	76.92	3	23.07	0	0.00	36

when performing movements with tools.

The necessary competencies for development are speed, endurance strength, which are considered to be the most important by experts. Endurance is noticed as the second priority for the first year students.

**2. Reality of developing muscle groups of 1st year intensive P.E students in the curricular and extra-curricular hours**

Using the pedagogical observation method to gather information in the physical development research of intensive gymnastics students, pedagogical observation is conducted on 2 areas of practice. Content of observation: Observing the training including in the main program (Total observation time 180 minutes of exercise

in 10 lesson plans) and observe the fitness training of intensive students during the elective training session and extra-curricular activities (Total observation time is 360 minutes of physical exercise).

Factors observed during the session were the forms of exercises used by teachers in physical development for major muscle groups

Factors observed during extracurricular activities are time related to physical development training for each muscle group of intensive students.

Observed results are recorded and processed by statistical maths presented in Table 2. for the curricular hours and Table 3 for the extra-curricular hours.

**Table 2. Results of observing the reality of training to develop muscle groups of first-year specialized students**

No	Content of exercises	Result	Training stage			
			First year (1)		Second year(2)	
			$\bar{x} \pm \delta$	%	$\bar{x} \pm \delta$	%
1	Stretching to develop back muscles	6.7	7.38	3.37	3.78	
2	Abdominal muscle development exercises	5.21	5.74	4.16	4.67	
3	Delta muscle development exercises	3.38	3.72	3.56	4.07	
4	Exercises for developing thigh muscles	3.42	3.77	5.36	6.02	
5	Exercises for developing leg muscles	5.12	5.64	3.24	3.64	
6	Exercises for developing hand muscles	6.33	6.98	5.94	6.67	
7	25 kg weight lifting exercises	8.37	9.23	7.48	8.41	
8	Group integrated exercises with tools	13.31	14.67	17.31	19.46	
9	Group of continuous exercises.	3.76	4.14	5.12	5.75	
	Total	90.68		88.94		

Table 2 shows that: The rate of developing physical fitness for Delta muscle group increases from observation stage 1 to observation stage 2. The amount of exercises used to develop Delta muscle group is still small while this muscle group is very important in practicing practical skills of exercise with tools. Therefore, students need to strengthen training of this muscle group.

Table 3 shows: In extracurricular exercises, students use additional equipment to develop and strengthen general fitness. The proportion of time spent developing separate muscle groups does not account for this problem, possibly due to the limited amount of physical

development exercises for each muscle group.

**3. Selecting exercises to develop Delta muscle group using the Precor system with first-year students, Hanoi University of Sports and Physical Education**

In order to build the exercises in accordance with the object of the study and accurately impact the motor skills required of the Delta muscle group with the first-year PE students, we used results from this interview as a basis for research. The results show that: Delta muscle group's speed and strength power is the most important for 1st year students. Static strength, flexibility and endurance account for a low rate of 5 - 20% of the total votes.



Swimming pool of Bac Ninh Sport Universty (Photo by: upes1)

In addition, during the exercise selection process, the following requirements are also ensured:

**Requirement 1:** The exercises must be developed to ensure the orientation of development to prioritize key muscle groups participating in professional activities.

**Requirement 2:** The exercises must be built in accordance with the characteristics of the study object, practical conditions, professional training plan of the course.

**Requirement 3:** The exercises are interlinked with each other to fully impact the small muscles in the balance between positive muscle contraction and alternating relaxation.

On the basis of theoretical and practical basis, through interviews with experts, we selected 9 exercises to develop Delta muscle group on Precor exercise machine system with first year students, Hanoi University of Sports and Physical Education including:

**Frecor NS4000 machine (Multipurpose)**

**Exercise 1:** Sit on a prone chair with your arms stretched out continuously

Requirement: Traction force 75 to 85% of maximum pulling force; Motor intensity: under

Maximum; Time for 1 repetition: 20 - 30 seconds; Rest time between repetitions: 1 - 2 minutes and Number of repetitions: 3-5 times.

**Exercise 2:** Sit back with leaning angle: 90 degrees - 135 degrees push to control stick through to the top of the amplitude

Requirement: Perform 1 time with back angle of 90 degrees, 2nd time with the back of 135 degrees; the number of repetitions :3-5 groups.

**Machine 10: (S3RDPF). Machine 13: (S3VC)**

**Exercise 3:** Sitting on a chair with arms closed

Form of practice: sit straight with legs shoulder width apart, folded arms in front at 90-degree angle stretching and closing. Requirements: Performing continuously without stopping; The number of times is 35-40 times; The above weighted average 60% to 70% of the maximum and the number of repetitions (groups) 3-5 groups.

**Machine 14: (S3PF)**

**Exercise 4:** Sit with your hands pulled from the back to the front (Fold your elbows)

Requirement: Sit up. Performing all



**Exercise at Bac Ninh Sport University**

amplitude of fast moving frequency; Weight of 50 kg to 60 kg; Practising 3-4 teams, each group 30-40 times; Rest time between groups is 2-3 minutes.

#### **Machine 19: (S3OP)**

**Exercise 5:** Sit back leaning angle: 90 degrees - 135 degrees pull the upper high to lower down the amplitude

- Requirements: Perform 1 time with backrest angle of 90 degrees, 2nd time with backrest angle 135 degrees of repetition (nest) 3-5 groups.

#### **Coordinating machines with additional features**

**Exercise 6:** Coordinate exercises (2), with exercises (4) exercises (5)

Reduce extra weight to 50% to 60% of maximum exercise weight; Requirement: Perform continuously in 1 team at 1 rest position between positions 3 to 4 minutes. Repeat 3 groups.

**Exercise 7:** Coordinate exercises (1), with exercises (3) exercises (5)

Reduce extra weight to 50% to 60% of the maximum exercise weight. Requirement: Perform continuously in 1 team at 1 rest position between positions 3 to 4 minutes. Repeat 3 groups.

**Exercise 8:** Coordinate exercises (1), with

exercises (4)  
exercises (3)

Reduce extra weight to 50% to 60% of the maximum exercise weight.

Prerequisites:

Perform continuously in 1 team at 1 rest position between every 3 to 4 minutes. Repeat 3 groups

#### **Exercise 9:**

Coordinate exercises (2), with exercises (5) exercises (6)

Reduce extra weight to 70% to

80% of the weight of a single exercise; From the results of compiling the above mentioned exercises, we proceed to step 2.

#### **CONCLUSION**

The results of the thesis have shown the assessment of the importance of the Delta muscle group in exercise practice; assessing the situation of practice and development of muscle groups for first-year PE students, Hanoi University of Sports and Physical Education, based on which 9 physical exercises for developing Deltat muscle groups were selected using Precor machine system for the first year intensive students, Hanoi University of Sports and Physical Education.

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