

## Effect of Specific Trainings and Some Gym Skills on Learning Pole Vault Competition for Girl Students of Faculty of Physical Education, Minofeya University

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**Abstract:** This investigation aims to identify influences of specific exercises and skills of gymnastics on learning the pole vault competition. The researchers used the experimental design with pre and post-measurements for both experimental and control groups. 30 excellences gymnastic players of girl students of the 4<sup>th</sup> grade, Faculty of Physical Education, Minofeya University, Egypt were premeditatedly sampled. They were arranged into two groups: experimental and control group. Both groups included 15 students. Results showed that specific training related to gymnastic skills had a positive effect on learning pole vault competition. Moreover, gymnastic skills have a positive effect on learning pole vault competition. So, researchers recommended: 1- Developing the level of skill performance through using exercises which performs the same path way to the muscle performance. 2- Using specific exercises of gymnastic skills to develop the performance level of pole vault competition. 3- Designing and preparing programs between gymnastics and field – track games to develop the skill performance.

**Key words:** Specific exercises % Gymnastic skills % Pole vault competition

### INTRODUCTION

Scientific athletic training derives a large part of its theories, foundations and principles which support the implementation of its operations through several aspects of science include theoretical and practical knowledge, including of setting skills and physical preparation sciences. So, specific training used in the field of athletic training in both stages of preparation and in the competitions and have two primary duties are: developing the art of optimal performance and improve the functional aspects and essential physical abilities. The performance of each motor skill requires a certain physical abilities and thus special specific exercises, in order to develop the level of performance [1].

Allawi [2] and Abd ElKhaliq [3] demonstrated that specific training is the movements that are similar in its kinetic composition with the movements performed by the player within a sporting competition in terms of strength and the time path of the strength, as well as the direction of the muscle work of the movements which performed at the technical performance.

Therefore, it is considered to be a straightforward way to main prepare for the player in terms of synergy and the sequence of kinetic performance path and its direction.

In the view of researchers that the specific training involves methods used in teaching and training of a lot of skills, especially if it has been selected carefully and be similar in composition and requirements and on the same direction of the skill type to be learned. While, Saleh [4] confirmed that specific training is used to setup and boot of teaching the movements and skills of various sport activities and primarily serve the kinetic technique. On the same line, Mohamed [5] showed that pole vault for the women's competition is newly added to a schedule of athletics at the domestic, international and global categories. Therefore, of the difficulty of technique performance in this competition and for its performance involves complex movements which require physical, skillfully and psychological preparations of its practitioners. So, few athletes especially those who are familiar with the exercise of gymnastics could follow them.

Hommel [6] studied the characteristics of the technical performance of Sergei Bubka. He reported that the pole should be vertical at the beginning of the approach to reduce the weight on the hands and it should be characterized with balance during the approach. He added that hand should rise directly above the head in upgrading to create a greater angle to the pole with the ground. At the same time, Gross and Wolff [7] identified the dynamic characteristics of the pole vault for the players of 14<sup>th</sup> world championship of athletics. He showed that the average of height records was 5.87 m and the average of vertical velocity was 4.62 m/s, while the average of horizontal speed reached to 3.62 m/s. Moreover, the average of distance between the bar and the maximum height of the center of gravity was 0.16 m and the average height of the gravity center at maximum flexion of the pole was 2.50 m. The average height of gravity center was 5.95 m, while the average of upgrading angle was 51°. Grabner [8] studied the kinetic analysis for the pole vault for women. The results showed that the horizontal speed was decreased at the moment of upgrading foot putted on the ground, while the vertical velocity increased until the moment of leaving the ground. She added that the high of gravity center of the body at a moment of upgrading above the ground positively affected the performance.

Abd ElKhalig [9] concluded that the most important characteristics of dynamic exercises were speed, change in the center of gravity, time of upgrading, upgrading angle of the foot, the upgrading angle of gravity center and height of gravity center at the moment of upgrade. While, Farid [10] studied entitled "Proposed Program for teaching pole vault for the students of the Faculty of Physical Education" and the investigation was aimed to identify the impact of special educational exercises on the recorded level. Results showed that experimental group had more physical fitness of the pole vault skill than control group. There was a correlation between the acquisition of physical fitness and the recorded level improvement during the program. Additionally, Ahmed [11] studied the influences of a proposed program of specific training on the performance level of inverted pronation skill on a horizontal bar for young men in gymnastics. Through cinematography, he demonstrated that specific trainings involved in the proposed training program developed the level of physical attributes that contributed in the achievement of inverted pronation skill. Moreover, the proposed training program using specific exercises positively affected on the level of skill performance and flexibility. on the same hand, Abd

Elfattah [12] showed that method of learning using educational packages on the pole vault achieved better results than the traditional method in the effectiveness of the skill level and the record level.

Hence, the importance of the research problem where researchers noted that the physical setup of skill performance in pole vault competition is a non-regulated for fourth grade girl students, Faculty of Physical Education, Minofeya University, Egypt. It was clear that it was not dependent on the scientific bases and principles in determining the most important specific training, which takes the correct form of skill. Consequently, the specific physical setup does not meet the purpose of perfecting performance skills, especially of complex ones. Those confirmed the importance of having a special quality of the physical setting which characterized by understanding the exact moments of the performance and the needs of the of special muscle work.

Additionally, teaching pole vault competition has been included in the field and track events for girl students of the fourth grade, Faculty of Physical Education, Minofeya University. At the same time, pole vault competition is not study at most faculties of physical education for girls which enriches the importance of the research problem until it is taught in the rest of the universities. It will give a good chance to develop girl students level in all competitions newly listed in the program of the International Federation of Athletics which involves pole vault competition.

The study represents a systematic attempt to develop the kinetic performance in the pole vault competition through the adaptation capabilities of girl students using the specific training of some gymnastic skills that contribute to the learning stages of the technical performance of the pole vault competition.

**Aim of Research:** This investigation aims to identify influences of specific exercises and skills of gymnastics on learning the pole vault competition for girl students of the Faculty of Physical Education, Minofeya University, Egypt.

**Research Hypothesis:** There are significant differences between averages of post measurements in learning pole vault competition of experimental group and control one and significance is positive for the experimental group.

#### **Research Terms**

**Specific Training:** Training exercises which care for instantaneous or interim progress with the same nature of

the performance skill and its minute details while training includes all the moments of actual performance [13].

**Skill:** An essential kinetic performance, which aims to achieve a particular purpose of a specialized sport, according to the rules of competition [4].

### MATERIALS AND METHODS

**Method of the Research:** The researchers used the experimental design with pre and post-measurements for both experimental and control groups.

**Research Population:** The fourth grade girl students of the academic year 2008 / 2009, Faculty of Physical Education, Minofeya University, Egypt represents the research population. They were 57 students and were arranged in three departments.

**Research Sample:** 30 students of two departments were premeditatedly sampled. They were arranged into two groups: experimental and control groups. Experimental group included 15 students and they were subjected to a specific training program, some gymnastic skills and the recommended faculty program (gradually learning of pole vault competition, pole vault competition video vision and specific running training). Control group included 15 students and they were subjected only to the traditional faculty program (gradually learning of pole

vault competition, pole vault competition video vision and specific running training (ABC)).

Statistically, results of Table 1 showed that there were no significant differences of pre- measurements between the experimental group and control one in determined variables, which indicates the equality of the two groups.

#### Tools and Equipment:

- C Restameter apparatus.
- C Bar – Wall ladder
- C Mattresses
- C Measure tape
- C Stopwatch
- C Chalk
- C Ruler
- C Whistle
- C High jump apparatus
- C Barriers
- C Pole stick
- C Beam
- C Divided box
- C Field of athletics

#### Research Procedures

**Pre-Measurements:** Pre- measurements of physical variables for research sample were conducted on 14 April 2009 while technical performance of

Table 1: Statistical characteristics of age, tall and weight for sample individuals

Variables	Unites	Average	Standard deviation	Skewness coefficient	Kurtosis coefficient
Age	Year	21.27	0.53	1.04	1.19
Tall	cm	162.87	2.79	1.32	1.71
Weight	Kg	65.5	7.11	1.28	1.68

Table 2: Data of pre- measurement differences between experimental and control group.n = 30

Measurements	Experimental group		Control group		Differences	Calculated t
	Ave.	sd	Ave.	sd		
Foot power (m)	2.90	0.94	2.95	1.14	- 0.05	- 0.12662
Arms power	25.48	4.28	24.94	4.85	0.54	0.312361
Stomach muscles power	22.67	4.26	22.86	3.57	- 0.19	- 0.12791
30 m running (s)	6.25	0.83	6.22	0.92	0.03	0.090592
Spinal column flexibility	19.47	1.59	19.84	1.67	0.37	0.60039
Back roll	5.12	1.28	5.24	1.14	- 0.12	- 26195
Round off	7.59	1.65	7.66	1.97	- 0.07	- 0.10192
Balance	8.57	1.34	8.49	1.52	0.08	0.147722
Back roll balance	6.87	1.84	6.57	1.57	0.3	0.464076

Indexed t value at 0.05 significance level= 2.05

gymnastic skills will be held on 16 April 2009 to determine the parity of the research sample.

**Basic Experiment of Research:** The determined program of the investigation has been applied within the Lectures of athletics (three Lectures per week with 90 minutes for each) on track and field of Faculty of Physical Education, Minofeya University, Egypt during the period from 21 April 2009 to 14 May 2009. On the same way, module has been divided into:

**The Introductory Section Is Divided Into:**

- C General warming-up, it aims to prepare the body.
- C Special warming-up that was designed to apply specific exercises which performance-related of skills of the pole vault competition.

**The Main Part Aims To:**

- C Gradually learning of the pole vault competition.
- C Implementation of specific running trainings (ABC).
- C Video show of the gymnastics skills.
- C Video show for the pole vault competition.
- C Application of specific exercises
- C Performance of gymnastic skills (back roll - balance-cart wheel- round off – back roll balance).
- C Final part: It aims to calm the body.

**Post-Measurements:** Post- measurements of physical variables and the level of performance for the pole vault competition for individuals of search sample were held on 19 and 20 May 2009.

**RESULTS AND DISCUSSION**

Data of post- measurements presented in Table 3 showed that physical variables of experimental group were positively significant than of the control.

Data of performance level of pole vault competition when assessed through post- measurements were presented in Table 4. Statistical analyses of data showed that performance level of pole vault competition of experimental group were positively significant than control one.

**DISCUSSION**

Data presented in Table 3 and Diagram 1 showed that physical variables of experimental group were positively significant than control one. It could be a result of applying specific exercises which affected the performance of skills of pole vault competition. These results are in line with those of Abd Elqader [1] and Abd Elrahman [14] that specific exercises had a positive effect on improving basic physical abilities. On the same way, Abd ElKhalik [9] showed that specific exercises are the most important constituent of the training module which the pole vault player depends upon. He added that specific exercises constitute an important part of the training program which develop the technical performance and lead to the development of the motor performance of the pole vault competition.

Data of Table 4 and Diagram 2 showed that post-measurements of performance level of pole vault competition for experimental group were positively significant than control one. Therefore, researchers

Table 3: Data of physical variables differences between experimental and control group at post- measuring. n = 30

Physical variables	Experimental group		Control group		Differences	Calculated t
	Ave.	sd	Ave.	sd		
Foot power (m)	4.10	0.58	3.5	0.82	0.6	2.24
Arms power	45.16	1.28	32.94	2.91	12.22	14.45
Stomach muscles power	35.67	1.84	17.53	3.27	8.14	8.16
30 m. running (s)	6.10	0.56	5.30	0.91	0.8	2.82
Spinal column flexibility	17.23	1.58	12.15	1.97	5.08	7.06

Indexed t value at 0.05 significance level=2.05

Table 4: Data of performance level of pole vault competition differences between experimental and control group at post- measuring.n = 30

Physical variables	Experimental group		Control group		Differences	Calculated t
	Ave.	sd	Ave.	sd		
level of pole vault competition	1.95	0.15	1.65	0.32	0.30	3.19

Indexed t value at 0.05 significance level= 2.05

regarded these results to the learning improvement of pole vault competition through use of some skills of gymnastic which used as an experimental variable included in the teaching module. Thus, the relationship between skills of gymnastics and learning of pole vault competition was cleared. These results are in harmony with those of Allawi [15] who reported that the effect of training was positive when motor skill components to be learned are similar with motor skill has already learned. He gave an example that learning running had a positive effect in the case of learning drawing closer for the long jump or get closer to jump on the jump table jump, as well as learning the skills of gymnastics contribute to learn the skill of diving.

### CONCLUSION

- C Specific training related to gymnastic skills had a positive effect on learning of pole vault competition.
- C Som gymnastic skills have a positive effect on learning of pole vault competition.

### Recommendation:

- C Developing the level of skill performance through using exercises which performs the same path way to the muscle performance.
- C Using specific exercises of gymnastic skills to develop the performance level of pole vault competition.
- C Designing and preparing programs between gymnastics and field, track games to develop the skill performance.

### REFERENCES

1. Abd Elqader, R.Y., 2001. Specific proposed exercises in the light of kinematical characteristics of the skill jump with rotation in the air of Karate players. Master Thesis, Faculty of Physical Education, Minofeya University, Egypt, pp: 28. (In Arabic).
2. Allawi, M.H., 1990. Science of Sports Training. Dar Elmaaref, tenth edition, Cairo, Egypt, pp: 294. (In Arabic)
3. Abd ElKhaliq, E., 1994. Sport Coaching - Theories and Applications. Dar Elmaaref, seventh edition, Cairo, Egypt, pp: 18. (In Arabic).
4. Saleh, Y.M., 1983. Purposed special exercises and their impact on the level of performance in gymnastics. J. Helwan University, 2: 6.
5. Mohamed, B.A.A., 2003. The biological and physical determinants of women pole vault players. Ph.D. Thesis, Faculty of Education for Girls, Helwan University, Cairo, Egypt, pp: 3. (In Arabic).
6. Hommel, H. and M. Houvion, 1994. NSA Photosequence 32 – pole vault: Sergey Bubka. New Studies in Athletics, 9: 59-64.
7. Gross H., H. Adamczewski and J. Wolf, 1995. Biomechanical Aspects of the pole-vault analysis of the TAAF world championship. 12<sup>th</sup> International society of biomechanics in sport, Budapest, Hungary.
8. Grabner, S., 1996. Kinematische Analyse des Stabhochsprungs der Frauen, Diplomarbeit. Deutsche Sporthochschule, Köln.
9. Abd ElKhaliq, H.M.A., 1999. Dynamic characteristics of the specific exercises and their relationship to the dynamic characteristics in the record level of pole vault. Ph.D. Thesis, Faculty of Physical Education for Boys, Helwan University, Cairo, Egypt. (In Arabic).
10. Farid, M.M., 1977. Proposed program for teaching pole vault for the students of the Faculty of Physical Education. Master Thesis, Faculty of Physical Education for Boys, Helwan University, Cairo, Egypt. (In Arabic).
11. Ahmed, A.M.A., 1987. The impact of a proposed program of specific training on the performance level of inverted pronation skill on a horizontal bar in junior gymnastics. Master Thesis, Faculty of Physical Education for Boys, Helwan University, Cairo, Egypt. (In Arabic).
12. Abd Elfattah, A.M., 2002. The effectiveness of educational packages on the pole vault for the students of the Faculty of Physical Education. Ph.D. Thesis, Faculty of Physical Education for Boys, Helwan University, Cairo, Egypt. (In Arabic).
13. Abd Ellateef, A.M., 1987. Dynamic characteristics of skillful performance on bar as a base to design specific proposed exercises. Master Thesis, Faculty of Physical Education for Boys, Helwan University, Cairo, Egypt. (In Arabic), pp: 7. (In Arabic).
14. Abd Elrahman, M.M.S., 2003. Characteristic curve of the skill forward grand circle to end work on the beam as a function of specific training. Ph.D. Thesis, Faculty of Physical Education, Minofeya University, Egypt, pp: 108. (In Arabic).
15. Allawi, M.H., 2002. Training and Athletic Competition Psychology. Dar Elfekr Elaraby, Cairo, Egypt. (In Arabic).