

THE EFFECT OF USING EDUCATIONAL TRAINING IN STEP LENGTH FREQUENCY TO DEVELOP SPEED RATE FOR VAULTING HORSE EVENTS

Iqbal Ammar lafta

Ministry of Education – Faculty of Open Education

akpalammar6969@gmail.com

Abstract:

The importance of the study lies in the focus on measuring speed, its rates and depending on two mechanical characteristics: step length and frequency. The study aims to define the amount of development in speed rate for vaulting horse event after preparing educational exercises for step length and frequency and then application on a sample of vaulting horse athletes. After conducting the empirical method with the design of a single group, the method related to step frequency training was applied using the rising regression as it was applied for eight weeks. Next, the researcher conducted pre and post-tests in the period from 15/01/2015 to 15/04/2015. After data processing, the researcher concluded that consistency of the exercises used for the sample of the study contributed to develop speed rates. In addition, various training methods using means such as regression play an important role in developing the level of physical potentials and, in return,, skill performance on vaulting horse jumping.

Keywords: step length, speed rate, vaulting horse jumping

1. INTRODUCTION & SIGNIFICANCE OF THE STUDY:

Gymnastics occupy an advanced position among various types of sport activities. This is because it builds human correctly and relevantly. It also contain plenty of rewards that equal double rewards in other individual and team sports, especially in Olympic or regional tournaments as it includes multiple appliances. Moreover, the developed levels witnessed in this sport lately, represented in reducing age ranges of champions at the world level, was not coincidental, but it came as a result of continuous planning between trainers and using innovative scientific methods in education and training. Educational training plays an important role in gymnastics in general and in vaulting horse jumping event in particular as this event has an effect on step length and frequency in order to achieve the best levels as it is one of the factors that accelerate learning process if used well. In addition, it simplifies learning, movement performance and plays an important and basic role in learning for the purpose of improving skills. Approaching the form of optimal performance and method is a basic task of learning process. The element of speed is one of the important elements with effective impact on players. Thus, “trainers should focus on it and develop it as gymnastic athletes should possess speed (speed means individual’s ability to perform certain moves at the least possible time) as speed goes through four interrelated stages: response speed, speed increase, maximum speed and speed endurance”. From previous we can notice that speed and its type play an important role in contribution to prepare players physically and skillfully as the vaulting horse event needs high speed and players’ movement is characterized by continuous change and requires muscular work with high intensity and explosive speed. Here, the importance of the study emerges with the focus on measuring this speed and its level to build a special educational training for it using a training method to develop speed and its rates depending on mechanical principle of developing speed. This principle means the ratio between distances made by body to the time in which this distance was made. Fast running is affected by two main mechanical characteristics: step length and frequency (repetition rate) and they can be developed. This motivated the researcher to study the effect of educational training on developing skill performance of step length speed rate in the vaulting horse event.

Problem of the Study:

Developing any element cannot be done unless for cases and situations which occurs during performing gymnastics which makes players relatively suffer from a malfunction in this element during playing. Speed plays a decisive role at cases which require achieving the highest rate of speed for the purpose of achieving suitable jump on the vaulting horse. Thus, developing all types of this characteristic requires concentration and consideration on learning it and training with all means that help in this development in skill performance.

Since rising and falling regression training contributes to develop speed rates with all it types, the problem of the study lies at studying the effect of using educational training to develop skill performance of speed rate, step length and frequency at the vaulting horse event.

Objectives of the Study:

1. Preparing educational training for step frequency by regression training method.
2. Defining the effect of educational training on step length and frequency using rising and falling regression training to develop speed rates of the vaulting horse athletes.

Hypothesis of the Study:

Step length and frequency training has a statistically significant effect on developing skill performance speed of the vaulting horse players.

2. METHODOLOGY & FIELD PROCEDURES:

Methodology: The researcher used the empirical method by the single group design as it is proper for the nature of the study problem.

Population & Sample of the Study:

One of the important things for the researcher is to determine sample and population of the study. Therefore, the population was determined purposively represented in (6) players from Al Amana Club representing 100% of the study population.

Sample Homogeneity:

In order to determine sample homogeneity in some variables that affect results of the study, the researcher derived skewness coefficient for (training weight, length and age), arithmetic mean, standard deviation and standard error for (training weight, length and age) related to the study. The following table shows skewness coefficient values (-3 and +3). Thus, the sample of the study is homogeneous in the said variables.

Table (1): statistical factors of measuring units for arithmetic mean, standard error, standard deviation and skewness coefficient:

Statistical description Variables	Mean	Standard Deviation S.D	Median	Standard Error	Skewness Coefficient	Type of discharge
Age	12.11	1.05	12	0.33	0.23	Random
Weight	33.11	6.70	33	2.20	0.32	Random
Total length	130.46	4.56	133	1.49	0.45	Random
Training age	6.32	1.04	6	0.34	0.45	Random

Tests of the Study:

30 m dash test (Hanafy Mahmoud, 1980, p. 73)

Test of skill performance on the vaulting horse jump

Exploratory Trial

The exploratory trial is a small trial to test validity of the main trial. The researcher determined original population, test type or items and a small sample of the population for trial (Wagih Mahgoub, 1995, p. 235). Therefore, the researcher performed its trial on a sample consisting of three players. The trial was on Thursday 08/01/2015 at 10:00 am to determine efficiency and validity of devices for tests and the needed time with concentration on camera locations in performing tests, training the assistant work team and determine accurate needs of tests.

Pre-Tests:

After setting study tests with 60% agreement among experts and specialists, the researcher conducted maximum speed test for the sample of the study on Thursday 15/01/2015 at the indoor hall of Al Amana Sporting Club at 10:00 am.

Video Recording of the Study Sample:

The researcher used video recording for the sample on Thursday at 10:00 am. The goal of recording maximum speed test is to extract biomechanical variables related to players’ speed rate: step length and step frequency. After measuring total distance of test (30 m), a Sony video camera, made in Japan, was fixed on a triple stand on terrace to cover complete body of players with focal height of (1.80 m) and on a distance of (6.50 m) from players vertically on player’s side during long distance running. With approval of the last 10 meters to extract variables and considering the first 20 meters as (10 x 10) as acceleration distance to reach maximum speed in the last 10 meters, after determining distance and fixing performance time for each player, speed rate for each player was extracted through the following equations:

$$\text{Speed rate} = \text{step length} \times \text{step frequency} \text{ (Sarih El Fadly, 2010, p. 58).}$$

Then

$$\text{Step length} = \frac{\text{Distance}}{\text{steps number}}$$

$$\text{Step frequency} = \frac{\text{steps number}}{\text{distance time}}$$

The Empirical Method:

The researcher considered the main conditions to set the educational course to serve the goal for which they were set. The course included some exercises related to rising and falling regressions with the help of references. The course consisted of eight weeks (3 educational units weekly).

Post-Tests

The researcher conducted post-tests and measurements on Tuesday 17/03/2015 at 10:00 am. The same procedures of pre-tests were applied with the attempt to control all previous conditions of pre-test whether spatial or temporal ones but with validity in results.

3. DISCUSSION & ANALYSIS OF RESULTS

Analysis of Results of Players’ Speed Rate for Pre & Post-Tests of the Study Sample:

Table (2): Arithmetic Means and Standard Deviations S.D for pre and post-tests of speed rate variable:

Statistical Description	Pre-test		Post-test	
	Mean	SD ±	Mean	SD ±
Speed Rate	5.57	0.62	6.87	0.67
Skill performance on vaulting horse jump	5.34	1.23	7.21	0.967

Table (3): difference averages, standard deviation S.D, standard error, counted T value, error percentage and significant for pre and post tests for speed rate variable:

Statistical Description Variables	Difference average	Difference S.D	Standard Error	Counted T Value	Significance
Speed Rate	1.3	0.05	0.267	4.86	Significant for the post-test
Skill performance on vaulting horse jump	1.87	0.263	0.765	3.34	Significant for the post-test

Discussing Results:

Table (2) shows the effect of the used educational training on the study (rising and falling regression) in increasing speed through the increase insteps frequency. Sarih Al Fadly, 2010, p. 366 refers that training of rising regression benefits in increasing speed through increasing steps frequency. Here, it is possible to use regressions with different skewness degrees not more than 3.5 degrees. In consistency with the previously used mechanical rule by the researcher, there is a direct relation between speed rate, step length and frequency after focusing on educational units for the sample of the study for any of these two variables (step frequency) using regression

with a length of 20 – 30 meters as a start to run with maximum speed. Skewness degree should not be more than 2.5 degrees to avoid injury. This was considered as when a player increases his speed he should increase heart rate on the expense of length and this was asserted by (Ibrahim Salem El Sakkar et al, 1998, 309) agreeing with the view of Sadek Farag who says that: “to follow rising training is the efficient mean to enhance achievement”. Running in rising regression sloping benefits in increasing speed through the increase in step frequency against gravity and regressions with various skewness degrees can be used to allow starting running with maximum possible speed and benefit from ground response (sloping surface) and kinetic flexibility of general joints. Running on rising slopes forces the athletes to make flexibility in leg joints more than as usual. This was reflected on movements of players during performing maximum speed on normal surface and enhanced skill performance due to this kinetic task. This agrees with what was said by (Abu El Ela, 1997) as kinetic units participate to muscular contraction due to resistance amount faced by muscles. In case of low resistance, less kinetic units operate with less muscular tissues. In case of high resistance, the participation of kinetic units increases and, in return, muscular tissues in producing necessary strength to face resistance or overcome it (Abo El Ela Ahmed Abdelfattah, 1997, p. 15). Thus, muscular tissues participate due to load intensity in results of post-test as the development of player’s ability to perform similar moves in the shortest possible time means development of its maximum speed through running on the slope. The use of sloping angles from 2 to 5 degrees and a distance 20 – 30 meters is considered one of the best methods to enhance legs movement. Such angles and distances allow free fast movement of legs better than the rest of angles. In addition, step length with a very small amount with each increase in step frequency refers that those two factors have efficiency in speed and strength endurance which the study worked to develop due to previously mentioned training to keep the highest rate of step frequency with goof percentage of lengths. As a result, this leads to speed with all its types and maximum speed in particular for field referees which necessitate players to move with maximum speed as shown by (Hanafy Mahmoud, 1980, p. 180).

4. CONCLUSIONS:

In the light of results reached by the researcher, it can be concluded that:

1. Consistency of training used on the sample of the study contributed to applying them correctly and suitably.
2. The prepared training has a positive effect on developing speed rate and frequency on vaulting horse jumping event.

Recommendations

1. It is necessary to use training on slopes to develop skill performance of other events.

5. REFERENCES:

- Ibrahim Salem El Sakkar et al. (1998): “Encyclopedia of Track Competitions Physiology”, 1st Edition, Cairo, Book Center Press.
- Abu El Ela Mohamed Abdelfattah. (1997): “Sport Training – Physiological Basics”, Dar Al Fikr Al Arabi, p. 15.
- Hanafy Mahmoud Mukhtar. (1980): “Football for juniors”, 1st Edition, Cairo, Dar Al Fikr Al Arabi.
- Risan Kherbit (1989): “Encyclopedia of Measurements & Tests in Physical & Sport Education”, 1st Part, Basra, Higher Education Press.
- Sarih Jalil El Fadly (2010): “Bio-mechanic Applications in Sport Training & Kinetic Performance”, 2nd Edition.
- Mohamed Abdu Saleh El Wahsh & Mofty Ibrahim Mohamed (1994): “Basics of Football”, 1st Edition, Cairo, Alam Al Maarefa Press.
- Abstracts of Researches in Sport Sciences & Physical Education, Baghdad University, Faculty of Sport Education for Girls.
- Wagih Mahgoub (1995): “Methods & Means of Scientific Research”, Baghdad, Dar Al Hekma Press.