



Effect Of Training According To The Elastic Resistance Platform (VertiMax) On Sensory And Motor Nerve Function And Explosive Power Strength In Young Fencing

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Abstract

The research phenomenon emerged with two questions whether the application of exercises according to the flexible resistance platform (VertiMax) affects the function of the sensory and motor nerves of the muscles of the lower limb and what kind of this effect is, as well as what is the size of the effect of applying these exercises with explosive power. The research aims to identify the effect of exercises according to the flexible resistance platform (VertiMax). in the sensory and motor nerves of the muscles of the lower limb and explosive power in young fencing players. The researcher used the experimental method and identified the research community, namely the players of Maysan governorate teams in fencing and the three weapons youth category, and some procedures were adopted to achieve the objectives of the study. The research came out with the following conclusions: The method of training was achieved according to the flexible resistance platform (VertiMax) improved the function of nerve signal velocity indicators of sensory and motor nerves, as well as effectively developing the explosive power of lower limb muscles in the research community.

Keywords: training according to the elastic resistance platform (VertiMax), Function of sensory and motor nerves, explosive power.

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1- Introduction:

The philosophy of modern training was not limited to providing training load as intensity, size and intensity, but on the contrary tended to diversify the means and methods and integrate them with training doses in order to return feasible benefits, so the researcher recently investigated to provide means with more effective visions and mixed with training doses athlete and events effects in the internal environment of athletes and raise the level of achievement.

In view of the importance of diversity in the methods and means of modern training and their application in the preparation of training programs, in achieving the desired goals for which they were set, it has become imperative for those concerned in fencing to use them in the implementation of training doses, hence the researcher has been shedding light on the application of muscular rhythm exercises composite according to the flexible resistance platform (VertiMax), which may reflect these exercises positively in the sensory and motor nerves functionally and the strength characteristic of the speed of the physical limb, as "fencing exercises affect the nervous system, which improves and facilitates the work of the sensory and motor nerves to achieve optimal arousal for the work of the required motor action duty." (1; 101)

For the events of functional adaptations in the internal environment of the tissues and cells of the working and opposite muscles in the lower limb of

young fencers as a result of external load, as well as the fact that this method is a form of modern training for fencers during the period of special preparation and from the foregoing research acquires that importance.

1-2 Research problem:

Many fencing players feel monotony and boredom in the implementation of training doses, and this is likely that most of them have become aware and familiar with the routine of training as a result of their exposure to an effect that follows at one pace, which makes them aware of the size of the training rhythm and to avoid the obstacle of this rhythm by replacing the training stimuli, to put the duelists in front of renewed challenges and motivate them with unusual stimuli, by including training doses in muscular work rhythm exercises resistance platform (VertiMax), as a training method that did not receive sufficient attention to those involved in fencing and are unaware of its functional and physical returns, so the phenomenon of research has emerged with two questions whether the application of exercises according to the flexible resistance platform (VertiMax) It affects the sensory and motor nerve function of the muscles of the lower limb and what kind of effect it is, as well as what is the size of the effect of applying these explosive power force exercises.

1-3 Research Objectives:

- 1- Identify the effect of exercises according to the flexible resistance platform (VertiMax) on the function of the sensory and motor nerves of the lower limb muscles in young fencing players.
- 2- Identify the effect of exercises according to the flexible resistance platform (VertiMax) on the explosive power of the muscles of the lower limb in young fencing players.

1-4 Research Hypothesis:

- 1- (VertiMax) exercises affect the improvement of sensory and motor nerves of the lower limb muscles in the research community.
- 2- (VertiMax) exercises affect the development of explosive power of the lower limb muscles in the research community.

2- Research Methodology and Field Procedures:

2-1 Research Methodology:

According to the nature of the problem, the researcher used the experimental method with one group as the best and easiest approach in achieving the objectives of the research.

2-2 Research Community:

The researcher identified the research community, who are the players of Maysan governorate teams in fencing and for the three weapons (fencing sword, shish weapon, Arab sword weapon), youth category under the age of (20 years) and registered with the lists of the Fencing Sub-Federation for the season 2023-2024, and by (4) players for each weapon, out of which their number reached (12) players, and their percentage was (100%). Where clinical examinations were conducted by a specialized medical staff at Al-Zahrawi General Hospital to ensure their safety and freedom from diseases that may affect the results of the research, Homogeneity has been done in (height, body mass, chronological age, training age), in addition to parity (speed of the nerve signal of sensory and motor nerves, strength characteristic of speed) on the members of the community and it was found that there is clear homogeneity and equivalence in these variables.

2-3 Tools, devices and means used in research:

2-3-1 Research tools: (tests and measurement, neuromagram device (NCS), Arab and foreign references and sources)

2-3-2 Measurements and tests used in research:

Measurement of sensory and motor velocity of nerve conduction: (9; 201-204).

Explosive power test for the two men: (17; 10186-10192).

2-4 Field Procedures for Research:

After obtaining all the original approvals from the sub-federation of fencing in Maysan, and the members of the research community got acquainted with the importance of the study and the extent of its benefit, they expressed their consent to cooperate with the researcher and implement his research procedures, and after completing all the preliminary procedures, measurements and pre-tests were conducted in the fencing hall of the Faculty of Physical Education and Sports Sciences - Maysan University, starting with the explosive force test of the muscles of the lower limb (for two men) at nine o'clock in the morning on Thursday, 29/2/2024, as well as measuring the speed of the nerve signal of the sensory and motor nerves of the muscles of the lower limb in the clinic of a doctor specializing in brain and nerve planning, at exactly ten in the morning on Friday, 1/3/2024, after which the researcher prepared the muscular work rhythm exercises installed according to the flexible resistance platform (VertiMax), as it continued to be applied in the special preparation stage within the trainer's curriculum for a period of (8) weeks and by (24) training units, and at a rate of (3) training units per week on (Sunday, Tuesday and Thursday), where the first training unit was applied on Sunday 25/4/2024 and the last training unit was on Thursday, 3/3/2024, and the partial stress of the exercises was calculated by (the maximum repetition of each exercise \times the required intensity / 100) and according to the capabilities of

the fencers Youth, and it was controlled to raise the intensity of the training units gradually by increasing the intensity of performance according to the flexible strength platform and reducing rest periods, and the rest period between exercises was determined according to the work-to-rest ratio (5:1) so that the player can reach the recovery stage, through the return of the player's pulse (110-120) n / d to not reach the stage of overload, and the researcher used the method of high and low intensity interval training in the stage of implementing the exercises After the prescribed period of its application, the process of measurements and post-tests was carried out under the same conditions on Sunday and Monday, corresponding to 28-29/4/2024 at ten o'clock in the morning.

2-5 Statistical Methods: The researcher used the statistical bag (SPSS) version (23).

3- Results:

Table (1) shows the arithmetic means, standard deviations, value of (T) and (sig) and significant differences in measuring the speed of the nerve signal of the sensory and motor nerves of the lower limb and the test of the strength characteristic of the pre-dimensional speed of the research community

Statistical Treatments		Unit of measurement	M	SD	T	Sig
Measuring the velocity of the nerve signal of the sensory nerves						
Right	Pre-trial	M/s	65.08	1.52	18.42	0.000
	Post-trial		53.78	1.09		
Left	Pre-trial		65.48	1.63	27.59	0.000

	Post-trial		54.58	1.68		
Measuring the velocity of the neural signal of the motor nerves						
Right	Pre-trial	M/s	53.18	1.63	19.36	0.000
	Post-trial		43.35	1.16		
Left	Pre-trial		53.99	1.22	21.63	0.000
	Post-trial		43.95	1.45		
Test the characteristic strength of the explosive power						
Pre-trial		Poison	1.62	0.13	14.15	0.000
Post-trial			1.98	0.71		

3-1 Discussion:

3-1-1 Discussion of the results of measuring the speed of the nerve signal of the sensory nerves of the lower limb:

The researcher attributed this improvement to the speed of the nerve signal of the supplied sensory nerves, to the nature of the adaptations that were acquired due to the regularity in the muscular work rhythm training according to the flexible resistance platform (VertiMax) for the requirements of technical performance in fencing, which was clearly reflected in the adaptation of the nervous system to that condition, which led to the emergence of neurological indicators, as the function of the During these exercises, sensory impulses are transported from the ascending receptors to the lower limb, towards the control center of the central nervous system represented by the brain, as its main function is to analyze, process and issue commands to carry out an appropriate motor action. "Sensory nerves transmit sensory information from the receptors to the central nervous system for analysis and processing there, which are the same as the ascending nerves." (19; 20 & 21; 242-249) and "The adaptations in

the nerves in general in the speed of the nerve signal are consistent with the need for speed of performance and arousal required to achieve the required motor action duty." (22; 313-318 & 2; 79) and "the level of nerve signal velocity of sensory nerves increases with increasing frequency of passage of nerve impulses through them". (4; 602) "Exercise affects the activation of sensory nerves from active muscles to the spinal cord and increases the activity of muscle sensory fibers during exercise". (15; 8473–8478)

3-1-2 discuss the results of measuring the speed of the nerve signal of the motor nerves of the lower limb:

The researcher knows this functional improvement of the speed of the nerve signal of the issued motor nerves, as its main function is to deal and control the various activities of the body, including motor, and whenever the flow is regular and sequential, its action will be reflected on optimal performance, by stimulating the largest number of motor units to cause the maximum response to the contraction of muscle fibers by the descending receptors of the lower limb, and these adaptations were acquired as a result of waiting. In the rhythm of muscular work exercises according to the flexible resistance platform (VertiMax) for the requirements of technical performance in fencing. "Motor nerves transmit signals and commands from the central nervous system to the muscles and are the same emitting nerves." (14; 465–481 & 13; 388) and "during regular training strength development occurs and the adaptation of the nervous system appears in the case of increased muscle strength by the speed of nerve signal delivery to mobilize the largest number of muscle fibers to participate in contraction as well as the ability of the working solidarity of motor units to work simultaneously". (8; 1-10 & 3; 1-12) "The adaptations in the nerves in general in the speed of the nerve signal are

consistent with the need for speed of performance and arousal required to achieve the desired motor action." (18; 194 & 7; 59–71)

3-1-3 Discuss the results of the test for the strength characteristic of the explosive power:

The researcher attributes this development of the explosive power of the working and opposite muscles in the lower limb to the adoption of the formation of complex muscular work rhythm exercises, which resembled and symmetrically performed the basic skills of fencing, and work to mix them with the training method implemented according to the flexible resistance platform (VertiMax), which is an effective and effective way to increase the intensity of the exercises, which formed resistances. This explanation was consistent with all previous studies (11; 299 & 12; 321–325) "It is noted that devices that provide flexible resistance such as the VertiMax training device) affect the increase of resistances. The more resistant the system that the muscle is acting against, the more strength and speed the athletes develop than classic training methods." It also agrees with previous studies (5; 84–94 & 20; 731–734) in his study "The (VertiMax) Training Apparatus has positive effects on the explosive force parameters of the lower limb during training." Also, the training method according to the flexible resistance platform (VertiMax) is characterized by the nature of suspense and excitement to avoid boredom and routine exercise in the overall training process to motivate fencers by changing stimuli and putting them in front of constantly renewed challenges without causing muscle strains, which resulted in the development of muscle efficiency in terms of function to improve its strength and speed and gain. Behold the explosive power. This is consistent with what he pointed out (16; 141 & 10; 521–534 & 23; 10–20) "The process of mixing the physical and skill aspects

contributes to the development of special physical abilities that are trained according to the motor paths of the required performance. By using different types of resistors to train this muscle".

4- Conclusions and recommendations:

4-1 Conclusions:

- 1- The results of all measurements of the speed of the nerve signal of the sensory and motor nerves of the lower limb showed that they are within normal limits.
- 2- The (VertiMax) training method achieved an improvement in the function of the nerve signal speed indicators of the sensory and motor nerves of the lower limb muscles in the research community.
- 3- Training according to the flexible resistance platform (VertiMax) affected the effective development of explosive power of the muscles of the lower limb among members of the research community.
- 4- The effect of improving the speed of nerve signal delivery of sensory and motor nerves of the muscles of the lower limb on the development of explosive power among members of the research community.

4-2 Recommendations:

- 1-Adopting exercises according to the flexible resistance platform (VertiMax) and the means to help develop other physical abilities in fencing.
- 2- Adopting the functional indicators that have been reached as an indication in the development of the training status of fencing.
- 3- The need to adopt medical examinations to show the efficiency of the nervous system to confirm the health status of the athlete.
- 4- The need to use modern and innovative training methods in developing the training situation of fencing and other sports.

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