

POSSIBILITIES OF SYMMETRIZATION OF THROWS PERFORMED BY YOUNG WRESTLERS ON THE RIGHT AND LEFT WITH A SUBSEQUENT DECREASE IN THE LEVEL OF THEIR HYPOXIC VALUE

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ABSTRACT

The following article highlights research into the possibility of symmetrization of young wrestlers' throws on the right and left with a consecutive decrease in the level of their hypoxic value during a 6-month experience. A program of conjugate exercises was developed and used in the course of the experiment with the help of which a certain symmetrization of the performance of wrestling techniques to the right and left was achieved followed by a decrease in their hypoxic value.

Keywords: Wrestlers, throws on the right and left, symmetrization, hypoxic value.

INTRODUCTION

As a rule, a wrestler throws his or her opponent with the help of his or her arms, shoulders and legs depending on whether he/she is right-handed or left-handed in single combats, especially in wrestling. Naturally, it is extremely problematic to retrain or improve the speed-power, coordination or biomechanical parameters of wrestlers on the right and left within the framework of their symmetrical implementation in trained throws. However, with a directed organization of the process of symmetric training and improvement of the right-handed and left-handed wrestlers using evenly distributed exercises at an early stage of preparing throws, a useful result can be attained. [В.А.Москвин, Н.В.Москвина, 2008, с.484; Н.Н.Николаенко, 2001, с.68-75; К.Д.Чермит, 1994, с.29-32]. It should also be noted that the repeated performance of technical and tactical techniques during practice and single combats at a high-speed rate leads to a violation of the coordination structure of the wrestler's movements. It can result in such consequences under the influence of following factors:

- insufficient development of anaerobic endurance;
- increasing fatigue;
- unstable mental state;
- development of other physical qualities insufficiently.

[Г.С.Туманян, 2006,с.592; А.А.Карелин,2002, с.480; В.Ф.Бойко, Г.В.Данько, 2004, с.46-148]. On the other hand, as these authors put, a wrestler's well-formed technique helps to save the consumption of energy resources for performance. Nevertheless, a number of experts note that the stable display of anaerobic endurance which is extremely important for wrestlers is associated with the ability to continue to perform under the conditions of acute hypoxia. [А.Ш.Шишкина, М.А.Дерябина, 2008, с.117-120; Е.Ф.Мясникова, Е.В.Головихин, Т.Б.Зорина, 2009, с.59-63; Н.Норпельер, М.Воqt, 2001, р.61-73].

It is assumed that the implementation of throwing techniques in wrestling with a comfortable (familiar) side requires less energy consumption and hypoxic stress than their implementation from the unusual sides of body parts.

The aim of this work is to investigate the possibility of symmetrization of the young wrestlers', aged 15-16, throwing their opponents over the right and left shoulder with the subsequent determination of their hypoxic value.

To attain the object of the research the following pedagogical and physiological tests were used:

- to determine the total number of the opponent's throws over the right shoulder in 10 seconds;
- to determine the total number of the opponent's throws over the left shoulder in 10 seconds;
- to determine the duration of 10 throws of the opponent over the right shoulder;
- to determine the duration of 10 throws of the opponent over the left shoulder;
- to determine breathing rate (BR);
- to determine the duration of breath holding on inspiration – Stange's test
- to determine the duration of breath holding on expiration – Stange's test

Note: the breathing rate was determined before and after the opponent's throws and the opponent's throws were executed with the wrestler's corresponding weight category. 16 young wrestlers participated in the research without taking into account their weight categories. The study was conducted before the start of three consecutive training sessions. $n = 16 \times 3 = 48$ and the mean values were counted; hypoxic stability was assessed in terms of the difference in the results of the respiratory response recorded before and after the test load; all tested wrestlers were "right-handed".

Preliminary research was conducted on October, 2017. When the research was completed from November, 2017 till April, 2018 trial experiments were carried out with this group of wrestlers to investigate the possibility of symmetrization throws on the right and left followed by determining their hypoxic value through the systematic use of the complex hypoxic breathing exercises developed by us.

Respiratory-hypoxic exercises:

1. In a sitting position with straightened legs the maximum tilt to the side of the knees fixing this pose-holding breathing on inspiration;
2. The same exercise is performed is done holding breath while exhaling;
3. In a sitting position turning the body to the left maximally with hands behind the head in the lock taking this position holding breath while inhaling;
4. The same exercise is done holding breath while exhaling;
5. The same exercise is done with turning the body to the right and holding breath while inhaling;
6. The same exercise is done with breath holding while exhaling;
7. In the position of wrestling bridge with breath-holding while inhaling;
8. The same exercise is done with breath holding while exhaling;
9. Exercises 1 and 2 are performed in a standing position with the maximum forward and downward bend of the torso to the knees.
10. Exercises 1 and 2 are performed in a standing position with the maximum inclination of the trunk forward and down to the knees;
11. Exercises 1 and 2 are performed in a standing position with the maximum inclination of the torso to the right and left.
12. In a forward tilt position with the partner on the back holding breath on the inhale.
13. The same exercise is performed with the partner on the back while exhaling.

Note:

1. Breath and expire forcedly 5 or 6 times between exercises.

2. Hold breath while inspiring and expiring to the limit.
3. A set of these exercises is performed every morning during morning jerks and after every training.
4. Trial exercises and other techniques of throwing to the right and left were regularly practiced in training as a way of the wrestler's experience.

RESULTS AND DISCUSSION

Результаты и их обсуждение. Preliminary investigation carried out prior to the experiment showed that the quantitative and time parameters of young wrestlers' throws over the right and left shoulders of the weight category differed with a clear asymmetry of their manifestation with a corresponding difference in the results of testing the function of external respiration (Table 1). In particular, the total number of the opponent's throws over a right shoulder for 10 seconds was 5.4 ± 0.89 times. At this breathing rate before the test the load was equal to 14.9 ± 1.15 times per minute. and then it increased to 35.7 ± 3.09 times per minute. The difference in the increase of the breathing rate after the test was 23.5 times per minute. The duration of breath-holding while inspiring according to the data of the Stange's test was 35.6 ± 4.36 and 28.2 ± 3.11 per second before and after the test correspondingly and the time of breath-holding while exhaling was 17.3 ± 3.06 and 14.2 ± 2.37 per second. It can be seen that under the influence of the test load, young wrestlers' actual hypoxic capability was reduced significantly according to Stange's test.

Table 1: The results of the final preliminary investigation of the quantitative and time parameters of young wrestlers' throws to the right and left considering their hypoxic value before the start of the experiment

$n=16 \times 3=48 (\pm\sigma)$

| Tests | Test results by throws | Respiratory tests | | |
|---|------------------------|-----------------------------------|-------------------------|-------------------------|
| | | Breathing rate (times per minute) | Stange's test (seconds) | Genchy's test (seconds) |
| Throwing the opponent over the right shoulder for 10 seconds (quantity) | $5,4 \pm 0,89$ | $14,2 \pm 1,15$ | $35,6 \pm 4,26$ | $17,3 \pm 3,06$ |
| | | $35,7 \pm 3,09$ | $28,2 \pm 3,11$ | $14,2 \pm 2,37$ |
| The same exercise over the left shoulder | $3,1 \pm 0,57$ | $13,9 \pm 1,13$ | $34,7 \pm 3,95$ | $18,5 \pm 3,12$ |
| | | $38,2 \pm 2,51$ | $26,3 \pm 2,87$ | $13,3 \pm 2,13$ |
| The time of 10 throws over the shoulder (seconds) | $18,7 \pm 3,18$ | $13,8 \pm 1,17$ | $37,4 \pm 4,59$ | $19,5 \pm 3,19$ |
| | | $39,5 \pm 2,58$ | $23,1 \pm 2,15$ | $10,1 \pm 2,02$ |
| The same throws over the left shoulder | $23,5 \pm 4,02$ | $13,5 \pm 1,18$ | $36,6 \pm 4,03$ | $18,7 \pm 3,03$ |
| | | $41,3 \pm 2,77$ | $21,4 \pm 2,07$ | $15,2 \pm 2,67$ |

The number of throws over the left shoulder in 10 seconds was only 3.1 ± 0.57 times. The breathing rate was 13.9 ± 1.13 and 38.2 ± 2.51 times per minute before and after the test load

respectively. Delayed breathing on inhalation was 34.7 ± 3.95 and 26.3 ± 2.87 seconds respectively and while exhaling it was 18.5 ± 3.12 and 13.3 ± 2.13 seconds.

The time of 10 throws over the right shoulder was 18.7 ± 3.18 seconds at which Breathing rate varied from 13.8 ± 1.17 times per minute before the test up to 39.5 ± 2.58 times per minute after it. The duration of breath-holding during inhalation and exhalation was 37.4 ± 4.59 , 23.1 ± 2.15 , 19.5 ± 3.19 and 10.1 ± 2.02 seconds respectively. Throwing times over the left shoulder averaged 23.5 ± 4.02 seconds in which the studied respiratory parameters before and after the test load were 3.5 ± 1.08 and 41.3 ± 2.77 times a minute; 36.6 ± 4.03 and 21.4 ± 2.07 seconds; $18.7 = 3.03$ and $15.2 = 2.67$ seconds respectively.

The comparative analysis of the data obtained before the start of the trial experiment allows us to determine a number of extremely important factors that are directly related to the problem of the versatility of the manifestation of quantitative and time parameters of throwing skills of young wrestlers aged 15-16 considering their hypoxic value.

Firstly, a clear asymmetry was established when performing throws over the right and left shoulders which was noted both in their quantitative and time parameters.

Secondly, trial throws over the left shoulder for both time and quantity parameters were accompanied by a significant increase in the values of the breathing rate and a decrease in the duration of breath-holding during inhalation and exhalation, while when performing throws over the right shoulder, a relatively moderate manifestation of respiratory reactions was observed.

It should be noted that the technique of throwing worked out to perfection does not require excessive energy costs and a large respiratory potential.

Nevertheless, in modern types of wrestling where a single combat is executed on a severe competition for attaining a distinct result, it is extremely important that the wrestler should have many-sided skills in performing throws both on the right and left saving the consumption of energy resources.

On the basis of this, we made an attempt to investigate the possibilities of symmetrization the asymmetrically manifested throws over the right and left shoulder of wrestlers aged 15-16 with the corresponding improvement of their hypoxic component through the above-mentioned exercises the total effectiveness of which was determined after a 6-month experience.

The findings of the study conducted at the end of the experiment showed that the number of throws over the right shoulder for 10 seconds performed by young wrestlers, the average was 6.9 ± 0.52 times, whereas at the beginning of the experiment, this value was 5.4 ± 0.89 (Table 2). The difference in increasing number of throws is 1.5 times. The breathing rate before checking the test load significantly decreased compared to its initial value ($14.9 = 1.15$ times/min.) and increased to $11.5 = 1.09$ times/min. After this test, the value increased to 31.3 ± 2.15 times/min which is significantly less than its initial value (35.7 ± 3.09 times/min.) The duration of breath holding after the experiment before the test load was 47.9 ± 5.03 seconds (initial value was 35.6 ± 4.26 per second). Immediately upon completing the test the figure was 45.5 ± 4.27 per second against the initial value of 28.2 ± 3.11 per second. The breath-holding time while exhaling is 25.2 ± 4.11 per second. (The background value was 17.3 ± 3.06 per sec.). After the test it was 22.1 ± 3.34 sec. (before the experiment the value was 14.2 ± 2.37 seconds). Breathing

rate was $10,8 \pm 1,01$ times per minute (The background value was $13,9 \pm 1,13$); after the test load it was $32,2 \pm 2,19$ times per minute. (The background value was $38,2 \pm 2,51$); the breath-holding time on inspiration was $48,7 \pm 4,89$, after the test it showed $45,3 \pm 3,17$ (before the experiment, these values were equal showing $34,7 \pm 3,95$ and $26,6 \pm 2,87$ respectively). Breath holding on exhalation was $27,5 \pm 4,22$ and $24,3 \pm 3,89$ correspondingly against their background values being $18,5 \pm 3,12$.

Table 2: The results of the final preliminary investigation of the quantitative and time parameters of young wrestlers' throws to the right and left considering their hypoxic value before the start of the experiment

$n=16 \times 3=48 (\pm\sigma)$

| Tests | Test results by throws | Respiratory tests | | |
|---|------------------------|-----------------------------------|-------------------------|-------------------------|
| | | Breathing rate (times per minute) | Stange's test (seconds) | Genchy's test (seconds) |
| Throwing the opponent over the right shoulder for 10 seconds (quantity) | $6,9 \pm 1,12$ | $11,5 \pm 1,09$ | $47,9 \pm 5,03$ | $25,2 \pm 4,11$ |
| | | $31,3 \pm 2,15$ | $45,5 \pm 4,27$ | $22,1 \pm 3,34$ |
| The same exercise over the left shoulder | $4,6 \pm 0,83$ | $10,8 \pm 1,01$ | $48,7 \pm 4,89$ | $27,5 \pm 4,22$ |
| | | $32,2 \pm 2,19$ | $45,3 \pm 3,17$ | $24,3 \pm 3,89$ |
| The time of 10 throws over the shoulder (seconds) | $17,2 \pm 2,78$ | $10,6 \pm 0,93$ | $49,1 \pm 4,72$ | $26,6 \pm 3,92$ |
| | | $31,7 \pm 2,12$ | $46,3 \pm 3,08$ | $23,2 \pm 3,53$ |
| The same throws over the left shoulder | $19,6 \pm 3,27$ | $11,3 \pm 0,95$ | $46,5 \pm 3,23$ | $28,7 \pm 4,09$ |
| | | $33,7 \pm 2,31$ | $43,2 \pm 2,75$ | $24,9 \pm 3,61$ |

It should be noted that the indicators of the duration of 10 throws of the opponent over the right and left shoulder, their hypoxic stability according to breathing rate (BR) data, the breath-holding time while inspiring and exhalation of young wrestlers before and after the experiment also differed in the progressive manifestation of the reaction of the studied motor and vegetative functions.

Hereby, on the basis of the comparative analysis of the actual research conducted before and after a 6-month experience with young wrestlers aged 15-16, we can assume that the symmetrization of throws to the right and left with a consequent increase of hypoxic resistance to the effects of high-speed load characteristic of a struggle can be achieved through using specifically designed exercises.

CONCLUSION

1. It is established that young wrestlers aged 15-16 have a clear asymmetry in executing throws over the right and left shoulder which can be observed both in time and quantitative parameters of their implementation. Moreover, such an asymmetry of throws is accompanied

by an appropriate level of the hypoxic component, i.e. the technique of throws selected does not require excessive consumption of oxygen resources.

2. It is revealed that through regular symmetric practicing throws over his right and left shoulders using specialized exercises not only their symmetrization can be achieved, but also it is possible to enhance hypoxic resistance the result of which is equivalent to save in the consumption of respiratory source.

3. It should be assumed that the findings of the study and the conclusions drawn on the basis of the analysis are only a preliminary stated chain link to make up a final objective conclusion on this problem. Nevertheless, the results of the research reveal the availability of studying this issue and outline the need for further experimental studies.

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