

THE ROLE OF FLEXIBILITY OF THE SPINAL COLUMN ON THE BELT WRESTLERS AND ITS IMPACT TO THE EFFECTIVENESS OF THROWING

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ABSTRACT

The article has analyzed the results of a study to determine the role of flexibility of the spinal column on the belt wrestlers in the manifestation of throwing of the opponent to the right and left. It has been established that for wrestlers with a high level of development of flexibility of the spine, the time of a 5-fold throw is shorter, and the number of throws is longer. In wrestlers with a low level of development of flexibility of the spinal column - on the contrary.

Keywords: Belt wrestlers, flexibility, spinal column, throwing to the right, throwing to the left, time of throws, number of throws, weight category.

The actuality of the research. National types of wrestling, having deep ethnic roots and developing within the framework of a peculiar social way of life of many peoples and nationalities of different countries, and especially among the peoples of the CIS countries, have been unified in recent years by the structural content and rules of the duel, which made it possible to hold World Championships and international Tournaments in the form of belt wrestling. There can be no doubt that this type of struggle, which is called differently by various peoples (for example, among the Uzbeks - white-boiled kurash, among the Kyrgyz - alish and Kazakhs - kures, among the Russians - belt wrestling, etc.), sooner or later, under the general name wrestling on belts will be included in the program of the Olympic Games. All these circumstances oblige specialists and trainers involved in the development of this type of wrestling and training highly qualified wrestlers on belts to integrate efforts in terms of scientific and theoretical justification of the training processes, improvement and training of wrestlers of this style. This need is extremely important also because the technical and tactical actions and physical qualities corresponding to them are manifested in conditions when both hands of the wrestlers are constantly "busy" with a grip on the belt of their opponent. In this context, it is important to note the fact that among other varieties of physical qualities (maximum, explosive and speed strength and strength endurance, dexterity), which determine the effectiveness of belt wrestling techniques, a special role belongs to flexibility or the range of interarticular mobility, from the level of development of which depends on the amplitude of the movement [1,2,3,4,5,6]. Almost all of these authors believe that insufficient development of flexibility or a small amplitude of mobility in the joints, and especially the spinal column, blocks the path to the full assimilation of the technical structure of techniques, and even limits the speed of their implementation, upsets the coordination of movements, increases the risk of injury during training and competitions. Despite this, scientifically based information reflecting the above-mentioned properties of flexibility on the basis of actual research was extremely insufficient in the periodical literature.

The aim of this research is to study the nature of the influence of different levels of development of flexibility in "belt wrestlers" on the manifestation of quantitative and temporal parameters of the performance of some methods of throwing an opponent of the corresponding weight category. "Belt Wrestlers" of the highest ranks of different weight categories were

chosen as the object of study, and the subject of the study was to study their level of development of flexibility and its influence on the quantitatively-temporal parameters of a series of throwing actions.

In the work, flexibility was studied using the following methodological tests, which were used to measure: the width of the arms and legs in the gymnastic “bridge” position - the same, only the height between the back and floor was measured; the height of the nape of the head from the floor in the deflection position back; the width of the legs with longitudinal twine; the width of the legs with transverse twine; height from the surface of the frontal part of the head to the knees of the legs in a sitting position with an inclination forward. The range of the range of the minimum and maximum values of flexibility, the average statistical value (\bar{x}), and the standard deviation (σ) were estimated. In addition, by the example of “belt wrestlers” of the weight category 73 kg. with low and high levels of flexibility development, according to model tests, the throwing efficiency of an opponent of their weight category was studied. Wrestlers with a low and high level of flexibility development were defined as follows: from the average statistical value (\bar{x}) of all data on flexibility up to its minimum values were considered as indicators of a group of wrestlers with a low level of flexibility development, and down to maximum values - as indicators with a high level of flexibility development.

The result and discussion of the research. It was noted above that the flexibility that determines the amplitude of mobility between the joints is of particular importance in the practice of training athletes, representatives of martial arts, including in all types of sports. However, despite this, according to the results of our studies involving wrestlers on higher-level belts, the flexibility indicators turned out to be extremely low and a trend was revealed where mobility in the joints decreased as their weight category increased. In particular, the value of the level of development of flexibility of the spinal column in wrestlers of the weight category of 60 kg. according to the length of the arms and legs in the pose of the “gymnastic bridge” averaged 57.7 ± 5.47 cm. (tab).

Table 1: Indicators of flexibility of the spinal column on belt wrestlers of different weight categories (min-max, $\bar{x} \pm \sigma$)

Weight categories Methodical test	60 n=33 min-max	66 n=48 min-max	73 n=50 min-max	81 n=34 min-max	900-100 n=29 min-max
The length of the arms and legs in the pose, “gymnastic bridge” (cm)	73-32 $57,1 \pm 5,47$	74-45 $58,7 \pm 5,53$	79-40 $61,9 \pm 6,14$	83-51 $64,5 \pm 7,05$	87-46 $67,7 \pm 7,79$
Height from the surface of the center of the spine to the floor in the pose of the “gymnastic bridge” back (cm)	73-52 $63,5 \pm 6,03$	71-47 $61,2 \pm 5,87$	64-45 $55,4 \pm 5,95$	68-41 $52,1 \pm 5,14$	66-46 $50,3 \pm 4,63$
Height from the surface of the nape of the head to the floor in the “deflection” back position (cm)	91-53 $72,1 \pm 7,11$	103-66 $77,3 \pm 8,09$	112-64 $83,4 \pm 9,76$	105-68 $85,2 \pm 10,13$	107-74 $88,2 \pm 11,56$
Height from the surface of the frontal part of the	2-12			3-21	8-22

head to the knees in a sitting position with forward tilt (cm)	7,15±2,56	0-16 10,9±3,47	2-19 11,5±3,69	12,5±3,93	13,4±2,17
Torso angle (degree) – to the right	27-65 39,8±5,73	25-63 37,3±5,06	23-60 35,4±4,97	21-56 34,2±4,53	20-55 33,4±4,08
Torso angle (degree) –to the left	29-67 39,3±5,65	23-59 37,9±5,08	20-55 36,2±4,97	19-51 35,7±4,68	19-53 34,5±4,87

The wrestlers of the weight category 66 kg- 58.7 ± 5.58 ; 73 kg- 61.9 ± 6.14 ; 73 kg- 64.5 ± 5.14 ; 90-100kg- 67 ± 7.79 cm.

The height of the surface of the center of the spine to the floor in the pose of the "gymnastic bridge"%.

Weight category 60 kg- 63.5 ± 6.03 ; 66kg- 61.2 ± 5.87 ; 73 kg- 55.4 ± 5.95 ; 81 kg- 52.1 ± 5.14 ; 90-100 kg- 50.3 ± 4.63 cm.

Height from the surface of the nape of the head to the floor in the "deflection" pose back: 60-kg- 72.1 ± 7.11 ; 66 kg - 77.3 ± 9.09 ; 73 kg - 83.4 ± 9.76 ; 81 kg- 85.2 ± 10.13 ; 90-100 kg- 88.2 ± 11.56 cm.

Height from the surface of the frontal part of the head to the "cup" of the knees in a sitting position with a slope in front: 60 kg - 7.15 ± 2.56 ; 66 kg - 10.9 ± 3.47 ; 73 kg- 11.5 ± 3.69 ; 81 kg - 12.5 ± 3.93 ; 90-100 kg- 13.4 ± 2.17 cm.

Torso angle to the left: 60 kg- 39.8 ± 5.73 °; 66 kg- 37.3 ± 5.06 °; 73 kg- 35.4 ± 4.97 °; 81 kg- 34.2 ± 4.53 °; 90-100 kg- 33.4 ± 4.08 °.

Torso angle to the right: 60 kg- 39.3 ± 5.65 °; 66 kg- 37.9 ± 5.08 °; 73 kg - 36.2 ± 4.97 °; 81 kg- 35.7 ± 4.68 °; 90-100 kg- 34.5 ± 4.87 °.

The above actual results of the study allow us to state the fact of distinctive features of the manifestation of the level of development of the flexibility of the spinal column of the examined fighters on the belts according to its comprehensive testing: - firstly, the flexibility of the spinal column as a single joint-ligamentous segment of the body that carries the main load when performing attacking and defensive actions , turned out to be insufficiently developed in almost all of the examined wrestlers; secondly, the level of development of flexibility of the spinal column is the lower, the higher the weight category of wrestlers; - thirdly, a large range of extreme values (min-max) of the manifestation of flexibility of the spinal column of wrestlers of all weight categories was discovered, which indicates their significant heterogeneity in terms of "plastic" preparedness; - fourthly, asymmetry or "predominant one-sidedness" is revealed in the development of flexibility of the spinal column.

It is assumed that such a low and asymmetric level of development of the flexibility of the spinal column can negatively affect the amplitude of the implementation of technical-tactical actions in general, and the effectiveness of the opponent's shots, in particular. Based on this version, we conducted a study to determine the role of the flexibility of the spinal column when practicing wrestling on belts and its effect on the effectiveness of throws using the example of higher category wrestlers of the 73 kg weight category, the results of which confirmed the validity of this version (Table 2). So, for example, the time of a 5-fold throw through the thigh

of an opponent of his weight category to the left for wrestlers with a “low” level of development of flexibility of the spinal column was on average 17.3 ± 2.35 sec., And for wrestlers with a “high” level of development of flexibility it was noticeably shorter and amounted to 13.7 ± 1.64 sec. The execution time of the same volume (number) of throws to the right was 18.7 ± 2.47 and 14.5 ± 1.74 sec. respectively.

The number of throws through the hip to the left in 15 seconds among wrestlers with a "low" level of development of flexibility of the spinal column was 3.6 ± 0.07 times, and among wrestlers with a "high" level of development of flexibility of the spinal column was 5.9 ± 0.13 times. And when doing the same rolls in 15 seconds. to the right, their number was 3.1 ± 0.06 and 4.5 ± 0.09 times, respectively. It is seen that the time and volume of throws for wrestlers with a "high" level of development of flexibility of the spinal column is much better than for wrestlers with a "low" level of development of flexibility of the spinal column.

The time of a 5-fold throw through the chest to the left for wrestlers with a "low" level of flexibility of the spinal column was 18.5 ± 2.43 sec., And for wrestlers with a "high" level of development of flexibility, this value was $15.4 \pm 2, 17$ sec Throws to the right are 19.8 ± 2.55 and 16.6 ± 2.23 sec. respectively.

The number of throws through the chest to the left for 15 seconds. for wrestlers with a “low” level of flexibility it was 3.2 ± 0.05 times, and for wrestlers with a “high” level of flexibility – 4.6 ± 0.10 times. Throws time – 2.7 ± 0.04 and 3.8 ± 0.07 times, respectively.

Table 2: Throwing efficiency indicators for belt wrestlers of the weight category 73 kg, depending on the development of flexibility of their spinal column ($\bar{x} \pm \sigma$)

	Low level wrestlers' flexibility	Highly flexible wrestlers	Difference of indicators
5 times of hip throwing: - to the left (sec.)	$17,3 \pm 2,35$	$13,7 \pm 1,64$	3,6
5 times of hip throwing: - to the right (sec.)	$18,7 \pm 2,47$	$14,5 \pm 1,74$	4,2
The number of throwing through the thigh in 15 seconds - to the left (quantity)	$3,6 \pm 0,07$	$5,9 \pm 0,13$	2,3
The number of throwing through the thigh in 15 seconds - to the right (quantity)	$3,1 \pm 0,06$	$4,5 \pm 0,09$	1,4
Time of a 5-fold throwing through the chest –to the left (sec)	$18,5 \pm 2,43$	$15,4 \pm 2,17$	3,1
Time of a 5-fold throwing through the chest - to the right (sec)	$19,8 \pm 2,55$	$16,6 \pm 2,23$	3,2
The number of throwing through the chest in 15 seconds - to the left (quality)	$3,2 \pm 0,05$	$4,6 \pm 0,10$	1,4
The number of throwing through the chest in 15 seconds - to the right (quality)	$2,7 \pm 0,04$	$3,8 \pm 0,07$	1,1

CONCLUSION

The analysis of the above results of the research allows us to conclude that the relatively “high” level of development of flexibility of the spinal column on the belt wrestlers positively affects the volume and time of throwing the opponent both to the right and to the left, and the “low” level of development of flexibility of the spine is vice versa. Moreover, among the wrestlers of both categories according to the level of development of flexibility of the spinal column, such indicators were also revealed that indicate the presence of pronounced asymmetry when performing throws to the right and left, which significantly limits the range of methods of attacking actions.

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