

**MENTAL ENLIGHTENMENT SCIENTIFIC –
METHODOLOGICAL JOURNAL****MENTAL ENLIGHTENMENT SCIENTIFIC –
METHODOLOGICAL JOURNAL**<http://mentaljournal-jspu.uz/index.php/mesmj/index>**FOR ASSESSING STRENGTH ENDURANCE IN COMBAT SPORTS
USING DIGITAL MEASURING EQUIPMENT*****Bobirjon Dekhkanboyevich Ergashov****PhD, Senior Lecturer**Uzbekistan State Physical Education and Sports University**Chirchik, Uzbekistan**E-mail: bobirjonergashov786@gmail.com***ABOUT ARTICLE**

Key words: struggle, static force, dynamic force, absolute force and relative force. reactive power, explosive power, inertial power, tourniquet, drill and mannequin.

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Abstract: The article reveals the semantic essence and content of the types of power attributes typical of athletes engaged in all types of wrestling. It can be considered that the use of specialized situational and modeled exercises that develop all types of strength qualities in the training of highly qualified athletes in wrestling sports will lead to a beneficial result. Classification schemes of differentiated and specialized exercises are used for purposeful development and improvement of strength qualities of athletes in wrestling sports, and the priority of strength endurance is based on it.

INTRODUCTION

Unique from the long past and becoming more and more popular as a martial arts sport in recent years, the types of wrestling are fundamentally different from other sports with their unique technical and tactical actions. In particular, in wrestling, competitors perform all movements and techniques with their hands holding each other. In this type of fight, it is forbidden to use the methods of "knock down" or "kick down" the opponent. Such types of wrestling are widely popular in the life, lifestyle and culture of almost all peoples, although they are called under different names (in Russians - borba, in Kazakhs - kures, in Tatars - kuresh, in Europe and in other countries - v wrestling), but they are all types of wrestling differ from each other. Today, national, world and Asian championships in wrestling, various prestigious international competitions are held regularly. The theory and methodology of

formation of physical qualities and physical training, technical-tactical skills specific to wrestling sports are scientifically based to a certain extent. In multi-year sports training cycles, the number of hours, normative requirements and assessment criteria have been developed, which determine the volume and intensity of training sessions for teaching the secrets of wrestling, forming types of training for wrestlers of different ages and sports skills. In this regard, textbooks, training manuals, programs, scientific-methodological resources have been created, dissertation studies have been conducted and put into practice. [Kerimov F.A., 2008, 100 p.; Tastanov N.A., 2017, 112 p.; Bakiev Z.A., 2011, pp. 30-39; Sh.S. Mirzanov, 2021, 132 p.; G.S. Tumanyan, S.K. Kharatsidis., 2012, p. 59-61.; M.A. Pravdov and Dr., 2013, p. 37-49; Ergashov, 2022, pp. 25-27].

The purpose of the study. The specific role and importance of strength and endurance in combat sports devoted to the study of the effect of technical methods on efficiency.

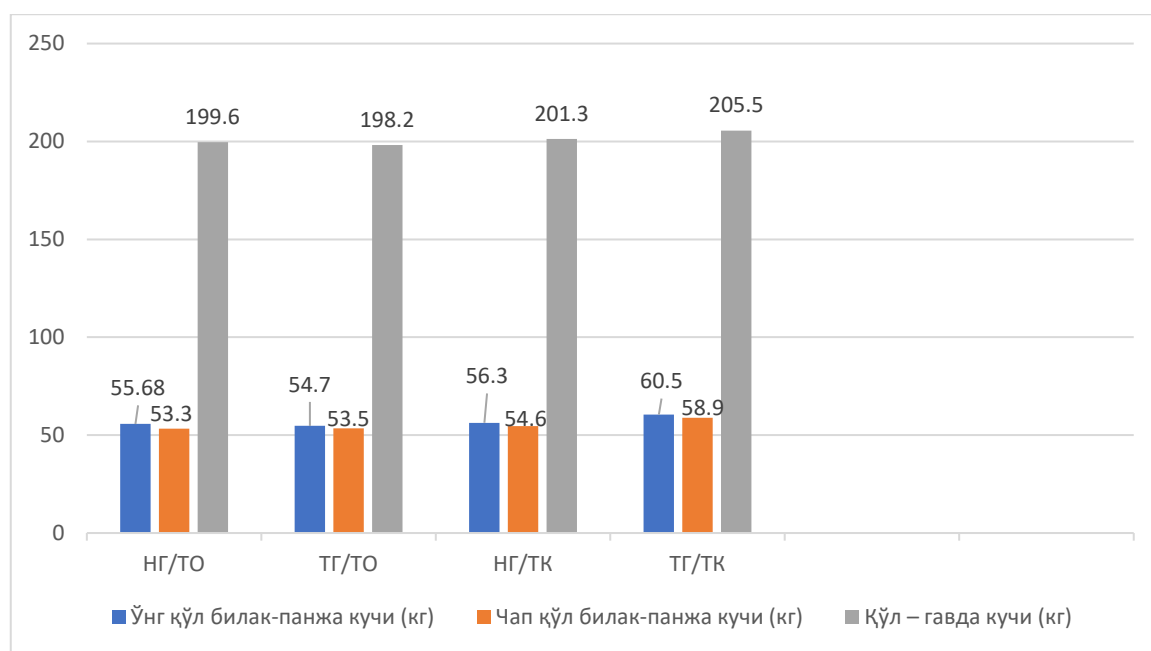
Object, methods and organization of research. As an object of research, it is studying wrestling (wrestling, belt wrestling, judo, sambo, freestyle and Greco-Roman wrestling) at the State University of Physical Education and Sports of Uzbekistan. students are taken. The quality of strength required in the practice of wrestlers and all its types differ in their own characteristics. In the published scientific-methodical and educational literature on wrestling, very little attention is paid to the classification essence of the types of strength that play an important role in this sport, as well as to special situational and modeled exercises that develop them. Based on the experience of training highly qualified wrestling athletes, champions of national and world championship competitions, including the use of physical, technical and tactical exercises in training, it can be noted that in these wrestling sports, regardless of the weight category of wrestlers, strength qualities, especially explosive (quick)) and inertial force is of primary importance, but this opinion does not mean that other types of power quality (absolute, relative, static and reactive power types) are not of decisive importance. On the contrary, such types of strength also enrich the kinematics, techniques and tactics of the fight in the execution of almost all methods of training, thus expanding the comprehensive (universal) range of skills of the wrestler. Thus, the strength of the right hand wrist-paw of wrestlers in wrestling sports was 55.63 ± 4.77 kg before the experiment, and by the end of the experiment, this indicator was 58.08 ± 4.74 kg. ($R < 0.05$) or its absolute growth rate was found to be equal to 2.45 kg (4.40%). During the experiment, TG, who was engaged in training based on the experimental approach, these indicators were correspondingly: 54.73 ± 5.38 - at the beginning of the experiment; 60.56 ± 5.47 - at the end of the experiment - 5.83 kg; ($R < 0.001$): 10.65%. Left-hand wrist-paw strength was

shown to be weaker in both groups compared to right-hand wrist-paw strength, indicating a certain asymmetric difference between these parameters. For example, at the beginning of the experiment, the left hand wrist-paw strength in NG was 53.34 ± 4.06 kg. 09 kg. represented by (3.92%). (Table 1).

1. table

**Rate of growth of arm-body strength during the experiment in wrestlers NG –
n= 10; TG – n= 10;**

Tests	group	The beginning of the experiment			End of experience			Growth		t	R
		\bar{X}	σ	V,%	\bar{X}	σ	V,%	abs	Ratio, %		
Right hand wrist-paw strength (kg)	NG	55,63	4.77	8.57	58.08	4.74	8.16	2.45	4.40	2.06	<0.05
	TG	54.73	5.38	9.83	60.56	5.47	9.03	5.83	10.65	4.30	<0.001
Left hand wrist-paw strength (kg)	NG	53,34	4.06	7.61	55.43	3.98	7.18	2.09	3.92	2.08	<0.05
	TG	53.98	4.84	8.97	59.14	4.78	8.08	5.16	9.56	4.29	<0.001
Arm strength (kg)	NG	198.24	11.24	5.67	202.95	10.54	5.19	4.71	2.38	1.73	>0.05
	TG	197.34	13.74	6.96	208.72	13.06	6.26	11.38	5.77	3.40	<0.01



Note: NG – control group; TG - research group
TO – before research; TK – after research

In TG, before the experiment, the left hand wrist-paw strength increased to 53.98 ± 4.84 kg. After the experiment, this indicator increased to 59.14 ± 4.78 kg. ($R < 0.001$), or its

growth rate was 5.16 kg. represented by (9.56 %). The comparative analysis of these indicators shows that before the start of the experiment, the left hand wrist-paw strength in NG was 2.29 kg less than the right hand wrist-paw strength. In TG, the difference between left and right hand wrist-paw strength was shown to be 0.75 kg in favor of "right hand wrist-paw strength". However, by the end of the experiment, the initially asymmetric difference (2.29 kg) between right and left hand wrist-paw strength in NG increased to 2.65 kg. In TG, this asymmetric difference was 1.42 kg. Right and left hand wrist-paw strength increased by 4.40% and 3.92%, respectively, in NG by the end of the experiment. It was observed that these indicators were equal to 10.65% and 9.56% in TG. It is known that arm-body-abdominal muscle strength is important in belt wrestling, like all types of wrestling. However, the results of the research showed that this muscle strength was not recorded at the required level in both groups before the experiment, and accordingly: in NG - 198.24 ± 11.24 kg.; TG was 197.34 ± 13.74 kg. However, at the end of the experiment, the muscle strength increased to 202.05 ± 10.54 kg ($R < 0.05$) or 2.38% in NG, who continued to engage in traditional training during the experiment. It was found that this indicator increased to 208.72 ± 13.06 kg ($R < 0.001$) or 5.77% in TG who performed experimental exercises. Their absolute growth rate was 4.71 kg in NG and 11.38 kg in TG.

One of the indicators representing static and dynamic strength is 31.53 ± 3.02 s before the experiment in NG. by the end of the experiment, this indicator increased by 33.09 ± 3.03 s. ($R < 0.05$), or its absolute difference in elongation was 1.56 s. - 4.95% (Table 4.2.). In TG, these indicators are correspondingly: $30.88 \pm 3.38 - 34.66 \pm 3.52$ s.; ($R < 0.001$) 3.78 s.; It is represented by 12.24%.

The maximum retention time in the position of hanging on the turnstile and raising the legs to 90° is 29.53 ± 2.57 s in NG. from 30.85 ± 2.93 s. ($R < 0.05$) or the difference in elongation was 1.32 s. in absolute terms (4.47%). In TG, these parameters were correspondingly prolonged from 28.74 ± 3.14 s to 32.23 ± 3.26 s ($R < 0.001$) or absolute prolongation time was 3.09 s. represented by (12.14%).

The time in the position of 50% flexion of the arms while resting on the bench is 32.68 ± 2.85 s in NG to 34.13 ± 2.82 s. extended to ($R < 0.05$) or the extension time was 1.45 s. in absolute terms - 4.44%. TG was correspondingly prolonged from 33.39 ± 3.33 s to 37.06 ± 3.43 s ($R < 0.001$) or its absolute prolongation time was 3.67 s. represented by - 10.99%.

The maximum retention time of resting legs in the position of 90° flexed legs in Brusia increased from 26.92 ± 2.04 s. to 27.79 ± 1.98 s. in NG ($R < 0.05$), or its absolute prolongation time was 0.87 s. which is equal to - 3.23%. In TG - from 27.79 ± 2.49 s. to 29.89 ± 2.44 s. ($R < 0.01$) or the absolute extension period was equal to 2.10 s. - 7.56%. Holding a 30-kg mannequin on the shoulders and keeping the

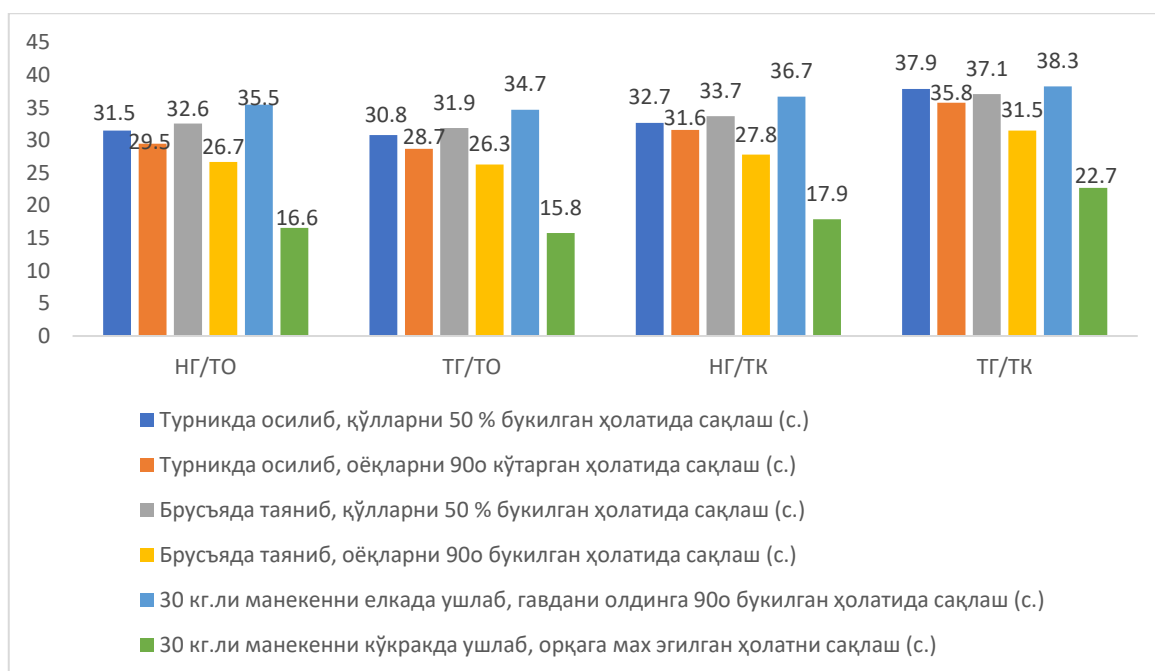
body bent forward 90 degrees for the maximum time in NG increased from 35.53 ± 3.75 s to 37.48 ± 3.83 s ($R < 0.05$) or absolute the extension time was 1.95 s. - 5.49%. At TG – from 34.84 ± 4.16 s to 39.47 ± 4.39 s. ($R < 0.001$) or the absolute elongation time is 4.63 s. represented by - 13.29%.

Holding a 30-kg mannequin on the chest, the time to maintain the position of maximum backward tilt increased from 16.64 ± 1.61 s. to 17.48 ± 1.62 s. in NG ($R < 0.05$) or absolute extension time 0. It was 84 percent - 5.05%. At TG – 17.42 ± 1.91 s. to 19.52 ± 1.98 s. ($R < 0.001$) or the absolute elongation time is 2.10 s. recorded with - 4.32%. Based on the comparative analysis of the results of this study, it can be recognized that the endurance of static tension of the muscles in the isometric mode in different states of the body segments was not recorded at the level of requirements set for qualified wrestlers in both groups at the beginning of the experiment. For example, hanging on the horizontal bar and keeping the legs bent at 90 ° is 59.67 ± 1.44 – 60.83 ± 1.03 s in skilled wrestlers. should continue until [V.A. Abramenko, 2013 p. 13 – 19]. (Table 2).

2. table

**Rate of increase in static and dynamin strength during the experiment in
wrestlers. NG – n = 10; TG – n = 10;**

Tests	group	The beginning of the experiment			End of experience			Growth		t	R
		\bar{X}	σ	V,%	\bar{X}	σ	V,%	abs	Ratio, %		
Hanging on the bar, keeping the arms in a 50% flexed position (p.)	NG	31.53	3.02	9.58	33.09	3.03	9.16	1.56	4.95	2.06	<0.05
	TG	30.88	3.38	10.95	34.66	3.52	10,16	3.78	12.24	4.38	<0.001
Hanging on the bar and keeping the legs in a 90 ° position (p.)	NG	29.53	2.57	8.70	30.85	2.53	8.20	1.32	4.47	2.07	<0.05
	TG	28.74	3.14	10.93	32,23	3.26	10,11	3.49	12,14	4.36	<0.001
Resting on the bench, keeping the arms in a 50% flexed position (s.)	NG	32.68	2.85	8.72	34,13	2.82	8.26	1.45	4.44	2.05	<0.05
	TG	33,39	3.33	9.97	37.06	3.43	9.26	3.67	10.99	4.34	<0.001
Resting on a brusya, keeping the legs in a 90 ° bent position (s.)	NG	26.92	2.04	7.58	27.79	1.98	7,12	0.87	3.23	1.73	>0.05
	TG	27.79	2.49	8.96	29.89	2.44	8.16	2.10	7.56	3.41	<0.01
Hold a 30 kg mannequin on the shoulder and keep the body bent forward 90 ° (s.)	NG	35.53	3.75	10.55	37,48	3.83	10.22	1.95	5.49	2.06	<0.05
	TG	34.84	4.16	11.94	39,47	4.39	11,12	4.63	13.29	4.33	<0.001
Hold a 30 kg mannequin on the chest and keep the position bent back as far as possible (s.)	NG	16.64	1.61	9.68	17.48	1.62	9.27	0.84	5.05	2.08	<0.05
	TG	17.42	1.91	10.96	19.52	1.98	10,14	2.10	12.06	4.32	<0.001



Note: NG – control group; TG - research group

TO – before research; TK – after research

It should also be recognized that every coach conducting training sessions with highly qualified athletes in wrestling must have mastered the neurophysiological nature of all types of strength qualities in detail. That's the only way a coach can effectively train his student to use the quality of power or a combination of several types of power in a specific situation, depending on the opponent's tactical plan.

The term "strength" refers to the physical quality aimed at overcoming internal and external resistance during muscle activity. In other words, "quality of power" is a bioenergetic and spiritual source of integral nature that drives all kinds of actions (skills and physical qualities, technical-tactical actions). Explosive power is a power that is expressed at maximum speed in a short period of time. Inertial force refers to the additional inertial free force that occurs during sharp active movement of the body, body parts and joints from a relative rest. Static strength is the strength that allows the wrestler to lift himself or his opponent during the takedown and maintain balance during the use of the technique. In the manifestation of this type of strength, the corresponding muscle group is in a tense state.

Absolute strength - this reflects the maximum muscular strength that a wrestler can exert regardless of his weight class.

Relative strength is the maximum muscle strength of a wrestler, depending on his weight class.

Reactive force means the force of moving the body or parts of the body sharply from a certain position. The concept of "strength endurance" represents the ability to maintain

various strength qualities developed to a certain degree (explosive, inertial, static strength, etc.) over a long period of time during training or competition. Taking into account the tactical behavior of the opponent and his strategic plan during the use of the above-mentioned types of force creates the possibility of their purposeful use. Noticing the opponent's tactical behavior and his strategic plan based on rapid prediction and making a counter-action decision depends on the control functions of the sensor centers (analyzers) located in the cerebral hemispheres. Therefore, the coach is required to know the neurophysiological laws of peripheral receptors that receive external information, afferent nerve fibers that transmit it to the center, and efferent nerve fibers that transmit it from the center to the receptors.

Having such knowledge plays an important role in the professional-pedagogical activity of the coach, it is very important to correctly choose exercises that develop the types of strength and use them in a stratified manner depending on the age and physical capabilities of the wrestler. Based on our experience and scientific research, we have developed classification models of exercises used in the development of types of strength, and they can be introduced into the professional-pedagogical activities of wrestling coaches.

According to the classification patterns of strength types and recommended exercises for their development, it can be recognized that the mentioned priority types of strength quality are the main subject of the process of forming physical, technical and tactical training in all types of sports wrestling, including wrestling, and lead to high results. plays a fundamental role in growth. In addition, most experienced trainers pay special attention to improving the effect of weight (muscle contraction) and static and dynamic strength, which are part of the discussed types of strength.

Absolute power is strictly excluded from the category of power. Relative strength - strength exercises to be performed without muscle exercises for the weight category. Explosive strength - strength exercises to be performed with quick swings. Static strength - inertial exercises that return to standing in a certain position, resistance to internal and external influences is shown. Reactive force is a force acting on a specific object. Dynamic force is a force that can be exerted in different directions. Strength endurance is the strength aimed at performing various strength qualities for a maximum period of time.

CONCLUSION

Strength and power endurance is based on the fact that in wrestling, lifting the opponent or not being able to lift using force (if the muscles are shortened, the work is not done) or lifting the opponent and keeping it in one position is often encountered in competitions.

Mentioned above, it is possible to put forward such an opinion that the regular use of various directional strength exercises in a specialized and differentiated order in the development of strength types and strength endurance, especially the qualities of strength specific to fighting, is the basis for the purposeful formation of not only physical, but also technical and tactical capabilities..

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