

## STUDY OF SPECIAL CAPACITY IN BOXERS WITH DIFFERENT STYLES OF FIGHT

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**Annotation.** *Purpose:* the determination of tendency in boxer to a certain style of fight is important at all stages. *Material:* The special capacity in boxers with different styles of fight were studied. The special capacity and the impact force were studied by special training equipment among 23 boxers of higher qualification. The absolute and the relative strength of serial and single strikes were studied. *Results:* the results indicated that the absolutely impact force, the total tonnage and the relative strength of his right hand of strikes in boxers-“strongman” are more higher than in boxers with different styles. In boxers-“player” the power-hitting left-handed is more increasing for different styles. This fact indicates the presence among boxers-“player” the left-handed persons. *Conclusions:* the presented data are indicated about more higher of special endurance in boxers-“fastest”. This group of boxers differs from other of more higher development speed endurance

**Key words:** boxers, capacity, styles, fight, force.

### Introduction

It is known that different people have different “sets” of abilities. Individual combination of abilities is formed during all life and determines personality’s features [1,2]. Successfulness of functioning is ensured by presence of one or another combination of abilities, favorable for desired result [3,4]. In actual conditions one kind of abilities can manifest together with other, similar by their manifestation, but different by their origin. Successfulness of one and the same functioning can be determined by different abilities that is why absence of some skills can be compensated by presence of other skills. That is why individuality of certain skills, ensuring successful fulfillment of certain action is usually called “individual style of functioning” [5,6]. In modern psychology competences, as integrated qualities (skills), aimed for achievement of results, are more often mentioned.

At present stage of boxing style of bout is a characteristic feature of every boxer-professional [7,8]. For example there are boxers with high power vigor in bout. They have strong blows; they strive to suppress adversary with power. Some boxers conduct bout constantly varying their actions, striking in the most sudden moments. There are boxers, who “exhaust” adversary with high temp during many rounds and win, when adversary can not endure enforced temp. The most effective variant is ability to combine different styles and show different manners of bout’s conducting in different duels [9]. However, the most characteristic features of sportsmen’s movements remain unchanged that permits to speak about prevailing style [10,11].

Determination of boxer’s bent to certain style of boxing is an actual task as far as style of functioning is manifested, as a rule, on the stage of maximal realization of sportsman’s potentials, though, for increasing of boxers’ training efficiency, determination of sportsmen’s bents to certain styles of boxing is greatly significant on all stages of training [12,13]. For this purpose, it is necessary to use informative indicators, which are easily detected and do not require long time for registration; which would be relatively unchanged in ontogeny. In connection with the above said we think it urgent to analyze special workability of boxers with different styles of boxing.

### Purpose of the work, material and methods

*The purpose of the work* is analysis of special workability of boxers with different styles of boxing.

*Material and methods of the research:*

Determination of special workability and power of strikes was conducted on special stimulator. We registered absolute and relative strength of single, serial and double blows, in particular, left-side and right-straight blows; gradients of different blows’ effectiveness; quantity of blows for 8 seconds and for 40 seconds; coefficients of different blows’ quickness; gradients of different blows’ endurance; total “tonnage” of blows for 8 sec. and for 40 sec. In total, 24 indicators of special workability and power of blows were registered. In the research 23 highly qualified boxers took part: candidate masters of sports and masters of sports of Ukraine.

### Results of the research

For analyzing of boxers’ distinctions depending on style of boxing, we analyzed mean mass of sportsmen’s bodies.

In table 1 we give mean body masses of boxers with different styles of boxing.

Table 1

*Body masses of boxers with different styles of boxing.*

Style of boxing	Body mass, kg
“variable style” boxers	66.31±5.34
“power style” boxers	86.14±8.52*
“quick” boxers	72.80±7.65*

\* -  $p < 0.001$ , comparing with “variable style” boxers

The data of table 1 witness that “power style” boxers have the biggest mass of body, while “variable style” boxer have the least mass. It is connected with “power style” boxers having big muscular mass. Besides, actually “power style” boxers belong to heavy weight categories, while “variable style” boxer – to light categories. Accordingly, “quick” boxers belong to middle weight categories.

In table 2 we give mean values of blow absolute power of different styles’ boxers.

Table 2

*Mean values of blow absolute power of different styles’ boxers.*

Style of boxing	Power, manifested in technical blows, kg			
	Left side	Right straight	Left-side, single	Right straight, single
“variable style” boxers	114.81±9.73	115.73±8.02	181.38±7.32	179.19±7.94
“power style” boxers	138.71±8.47*	137.86±4.83*	211.71±8.34*	234.29±6.75*
“quick” boxers	92.00±6.53***	85.00±7.94***	179.80±8.64**	169.80±8.31**

\* -  $p < 0.05$ , comparing with variable style” boxer; \*\* -  $p < 0.05$ , comparing with “power style” boxers.

Our analysis showed that “power style” boxers have indicators of blows’ “absolute strength” higher than “variable style” and “quick” boxers. At the same time, “quick” boxers are characterized by decreased indicators of blows’ “absolute strength” (see table 2). However, it is valid only for left side and right straight blows. Concerning left side and right straight single blows we did not find any confident differences between “variable style” boxers and “quick” boxers (see table 2). It is evidently connected with specificity of single blows’ technique.

According to commonly accepted definition strength of blow in boxing is a value, with which boxer impacts the body of his adversary. This value requires application of different forces and comprehensive boxer’s fitness. But actual manifestation of blow’s strength depends on boxer’s body mass.

In table 3 we provide values of blows’ relative strength (in relation to body mass) of different styles’ boxers. The data of table 3 witness about absence of confident differences between different styles’ boxers.

Table 3

*Relative strength of blow of different styles’ boxers*

Style of boxing	Power, manifested in technical blows, conv.un.	
	Left side, single	Right straight, single
“variable style” boxers	2.72±0.37	2.62±0.34
“power style” boxers	2.51±0.73	2.80±0.83
“quick” boxers	2.48±0.36	2.35±0.75

Thus, we can say that relative strength of blow in boxing does not depend on sportsman’s body mass.

In boxing, like in other contact martial arts, blow’s power is connected with explosive power. Explosive power is ability of sportsman’s body to increase muscular forces within the shortest possible time, during which enormous energy releases. As a result of such action boxer is able to fulfill a series of sudden, very strong and quick blows. Exactly explosive power is the most suitable aspect of strength in boxing; however, maximal manifestation of explosive power hinders accurate movements and reduces variability of movements. Power, explosive power in particular, is the most characteristic feature of “power style” boxers.

In table 4 we give calculated coefficients of blows of different styles’ boxers.

Analysis of results, given in table 4, witnesses that blows' coefficients of “power style” boxers and “variable style” boxers are rather close by their values. At the same time coefficients of “quick” boxers rather differ. It is seen in gradient of effectiveness of left and right side blows as well as in gradient of blows’ effectiveness (see table 4).

Table 4

*Calculated coefficients of blows of different styles' boxers*

Style of boxing	Calculated coefficients of technical blows, conv.un.			
	Gradient of left side blow's effectiveness	Gradient of right straight blow's effectiveness	Gradient of blows' effectiveness, 8 seconds' work	Coefficient of endurance, 8 seconds' work
"variable style" boxers	0.34±0.03	0.37±0.02	0.83±0.05	0.89±0.08
"power style" boxers	0.32±0.07	0.37±0.06	0.78±0.08	0.77±0.03
"quick" boxers	0.25±0.04*	0.25±0.02***	0.57±0.02***	0.92±0.05**

\* -  $p < 0.05$ , in comparison with "variable style" boxers; \*\* -  $p < 0.05$ , in comparison with "power style" boxers.

Thus, "power style" boxers and "variable style" boxers have close by values coefficients, while "quick" boxers are characterized by lower values that is in compliance with absolute results of blows' strength (see table 2).

However, "quick" boxers have higher coefficient of endurance than "power style" and "variable style" boxers.

So, we can conclude that boxers with prevailing power characteristics ("power style" boxers) have lower values of endurance. In their turn "variable style" boxers are characterized by better endurance.

Physiological mechanisms of manifestation of muscular strength and quickness are determining foe formation of boxing style. Speed of muscular contraction (i.e. value of its contraction per unit of time) depends on value of external load, which it has to overcome. The less is the load the higher is speed of contraction. It is explained by the fact that with increasing of muscle's contraction speed, time of interaction of actin and myosin fibers, sliding in respect to each other, shortens. By this reason the quantity of simultaneously interacting cross bridges and manifested by a muscle force is less than with its slow contraction. This complex of bents is realized in formation of certain style of functioning, including boxing.

#### Conclusions:

"Power style" boxers have not only absolute strength of blows higher but also total tonnage of blows as well as relative power of right blow. "Variable style" boxers have left side blow stronger. It points at the fact that among "variable style" boxers there is bigger quantity of lefthanders. Besides, it stresses that boxers with better coordination, which is characteristic for "variable style" boxers, have blow with not guiding arm is stronger.

The received data witness about higher special endurance of "quick" boxers. This group of boxers differs from other groups by better speed endurance.

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