

## PHYSICAL EDUCATION AND SPORT

## METHODOLOGY IMPROVEMENT SPEED-STRENGTH FOR YOUNG ATHLETES

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## ABSTRACT

The paper discusses the current views on the methodology of development of special speed-strength in the physical education of children 9-10 years engaged in the fight. We used specially selected traditional speed-strength exercises are bringing "explosive" muscle power. These indicators allowed defining options for the development of explosive strength of muscles in young athletes using shock method.

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**Introduction.** Among the most urgent problems in the field of physical culture at the present stage of development of the first face the problem of improving the physical education of future generations. An important problem of the preparation of young athletes is the development of physical qualities that enhance the level of physical fitness. At present, the issue of improving methods of physical education is very important.

It is known that in the age of development of physical abilities have periods (sensitive age periods), when the conditions are favorable for the purposeful formation of motor skills, enhance the level of development of physical properties under the influence of physical exercise [1,3]. In this regard, it is relevant scientific research and development of new programs and procedures aimed at rapid development of physical qualities and increase the level of physical fitness, specifically designed to impact on certain physical abilities concentrated in the "sensitive" periods of their natural development [2].

This topic is relevant, since studies have focused on developing methods of explosive strength of leg muscles in children of primary school age, which helps educate power-speed with relatively less time and effort.

The purpose and objectives of the study. The purpose of this study is to develop a method of explosive force that would increase the level of speed-strength training young athletes. To implement the objectives of the study were as follows:

1. Identify and state of physical fitness of children of primary school age.
2. An experimental technique to justify the development of explosive power, aimed at improving the speed-strength training of young athletes.

**Methods and organization of the study.** In a study to determine the level of speed-force readiness, we used an instrumental technique (Universal dynamographic stand – UDS). Join the characteristics of a speed-force preparedness made by the UDS. The stand consists of three main units: measuring, recording and functional.

The study recorded the efforts of school characteristics in isometric and explosive conditions. We determined the absolute, the blast, the starting and accelerating forces of the extensor muscles of legs. The angle of the knee when assessing isometric leg extensor strength was equal to 120 degrees. Determined by the following options:

$P_o$  - the maximum, an arbitrary strength of the muscles in the isometric mode;

$F_{max}$  - the maximum quantity of the explosive force of muscles during explosive isometric mode (kg);

J - coefficient characterizing the explosive muscle strength in isometric mode;  $J = F_{max} / t$  (kg/s).

Q - factor characterizing the starting strength of muscles in the isometric mode;  $F_{max} 0,5 / t_1$  (kg/s).

G - coefficient characterizing the accelerating force of muscle in isometric mode;  $0,5 F_{max} / t_2$  (kg/s).

$t_{max}$  - time to reach maximum value of the explosive force in isometric mode (s).

$t_1$  - the time to reach the starting effort (s).

$t_2$  - time to reach the accelerating force (s).

Lab tests, measurements were made at the beginning of the pedagogical experiment and at the end of studies based on scientific and methodological laboratory The Uzbek State University of Physical Culture and Sport.

**The results of the study.** Results of studies on UDS speed-power performance in young athletes control and experimental groups are shown in Tables (1, 2, 3, 4). We have analyzed 13 indicators of the speed and power potential of young athletes, however, for comparative analysis, we used the following most significant parameters:  $P_o$ ,  $F_{max}$ , J, Q and G. Comparative statistical analysis we performed using Student's t-test.

Table 1. Comparative statistical analysis of the averages in the UDS layer in the experimental groups at the beginning of the pedagogical experiment in boys

| No | Indicators of speed-force readiness | The experimental group | Control group | Level of significance |
|----|-------------------------------------|------------------------|---------------|-----------------------|
| 1. | $P_o$                               | 42,3±3,46              | 43,3±3,3      | $P>0,05$              |
| 2. | $F_{max}$                           | 25,9±3,85              | 27,1±2,47     | $P>0,05$              |
| 3. | J                                   | 162,9±30,82            | 187,2±51,1    | $P>0,05$              |
| 4. | Q                                   | 222,6±54,53            | 245,6±70,5    | $P>0,05$              |
| 5. | G                                   | 132,5±30,92            | 155,2±50,2    | $P>0,05$              |

Table 2. Comparative statistical analysis of the averages in the UDS layer in the experimental groups at the end of the pedagogical experiment in boys

| No | Indicators of speed-force readiness | The experimental group | Control group | Level of significance |
|----|-------------------------------------|------------------------|---------------|-----------------------|
| 1. | $P_o$                               | 44,5±4,5               | 44,2±4,9      | $P>0,05$              |
| 2. | $F_{max}$                           | 26,6±4,2               | 27,2±4,9      | $P>0,05$              |
| 3. | J                                   | 170,6±48,9             | 188,2±59,1    | $P>0,05$              |
| 4. | Q                                   | 227,5±84,05            | 224,2±82,2    | $P>0,05$              |
| 5. | G                                   | 139,5±41,39            | 165±51,5      | $P>0,05$              |

Comparing the studied parameters in the experimental groups at the end of the pedagogical experiment (Table 2), we observe that the four parameters ( $P_o$ , J, Q and G) boys in the experimental group showed better results, as evidenced by the arithmetic mean of these values. However, significantly statistical differences were found in only two terms Q and  $P_o$  in ( $P < 0,05$ ).

Table 3. Comparative statistical analysis of the averages in the UDS layer in the experimental groups at the beginning of the pedagogical experiment in girls

| No | Indicators of speed-force readiness | The experimental group | Control group | Level of significance |
|----|-------------------------------------|------------------------|---------------|-----------------------|
| 1. | $P_o$                               | 48,5±4,5               | 44,7±4,55     | $P<0,05$              |
| 2. | $F_{max}$                           | 28,7±4,24              | 28,9±5,01     | $P>0,05$              |
| 3. | J                                   | 217±56,2               | 202,2±36      | $P>0,05$              |
| 4. | Q                                   | 286,1±54,1             | 243,8±44,7    | $P<0,05$              |
| 5. | G                                   | 179,6±61,6             | 174,4±35      | $P>0,05$              |

As seen in Table 3 at the beginning of the experiment teaching girls of the control group showed better results in the studied parameters, however, the comparative analysis of the arithmetical

mean value indicates that the differences between the groups are not significant ( $P > 0,05$ ). This indicates a uniformity of selected children, in particular girls, for the experiment.

Table 4. Comparative statistical analysis of the averages in the UDS layer in the experimental groups at the end of the pedagogical experiment in girls

| №  | Indicators of speed-force readiness | The experimental group | Control group | Level of significance |
|----|-------------------------------------|------------------------|---------------|-----------------------|
| 1. | Po                                  | 48±3,36                | 44±3,46       | $P < 0,05$            |
| 2. | Fmax                                | 28,2±4,14              | 28±2,47       | $P > 0,05$            |
| 3. | J                                   | 206,1±21,4             | 185,8±19,7    | $P < 0,05$            |
| 4. | Q                                   | 305±42,05              | 239,4±49,9    | $P < 0,01$            |
| 5. | G                                   | 161±36,1               | 153±29,2      | $P > 0,05$            |

By the end we organized pedagogical experiment, we observed a high average value of the four indicators of girls in the experimental group. Significant statistical differences were found in the following terms: Po ( $P < 0,05$ ); J ( $P < 0,05$ ) and Q ( $P < 0,01$ ). The above mentioned results also reveal the effectiveness of the developed method of speed-strength training of young athletes.

### Conclusions.

1. The research allowed determining the state of the physical fitness of young athletes. Comparing Figures boys studied experimental groups after pedagogical experiment we observe that the four parameters (Po, J, Q and G) boys in the experimental group showed better results, as evidenced by the arithmetic mean of these values. However, significantly statistical differences were found in only two terms Q and Po in ( $P < 0,05$ ).

2. At the end of the experiment normal significantly statistical differences girls experimental groups were detected in the following terms: Po ( $P < 0,05$ ); J ( $P < 0,05$ ) and Q ( $P < 0,01$ ).

3. Use of the method aimed at developing explosive power and increased speed-force readiness of young athletes of primary school age, efficiently and consistently manage the process of physical education.

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