

FEATURES OF DISPLAYING SPEED AND POWER CAPABILITIES OF GIRLS AGED 10 YEARS WITH DIFFERENT LEVEL OF PHYSICAL DEVELOPMENT.

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Annotation. The sizes of increase of indexes of speed and power capabilities are considered for girls ages 10 years with the different level of physical development as a result of the directed pedagogical influences. 64 girls took part in an experiment. It was conducted for 15 trainings employments in every group in the conditions of health camp. Employments were conducted 5 times per week by duration 45-55 minutes and directed on the increase of level of speed-power preparedness. Playing material made over 50% - from general duration of employments. It is well-proven that girls substantially differentiate on the level of indexes of speed and power capabilities. It is shown that as a result of leadthrough of trainings employments on the standard program (identical for all) increase of result in at run on speed for girls differ substantially. Application of the program results in the substantial increase of result from at run on speed for 15 trainings employments.

Keywords: speed, power, capabilities, physical, development, girls.

Introduction

The problem of age differentiation of training loads for many years remains relevant. The effectiveness of physical education and athletic training is significantly higher if the emphasis of training effects reflect the nature of the individual natural biological rhythms of the age of children and adolescents [1, 2, 8, 9]. Stages of ontogenetic development of a man has been studied by A. Huzhalovski [4]. The basis of his proposed chronology periods characterized by high sensitivity to the selective formation of directed physical abilities in school-age children were laid particular age of the children and adolescents.

We also know that within the same age period there are significant differences in the rates of physical development, the level of biological maturity and level indicators of physical abilities. Differences between biological and passport age in some cases reach 4-5 years [1, 3]. In this regard, many authors [2, 3] indicate the need of typologization of children and adolescents. They believe that the allocation of typological features of the age development of the specific indicators in children and adolescents will allow to clearly plan long training process, closely approaching the implementation of the principle of individual approach.

Age changes of speed-power abilities were considered in work of I. Kovalenko [6], N. Oganovska [8], H.Krotova [7] etc. As a result of studies it is found uneven nature of their age formation. According to many authors children and teens age is the most important stage of individual development, which distributed all general laws and regulations specific to the development of the body and at the same time observed many kind of peculiar only to this age period. At this age, most clearly is shown signs of growing body parts: body growth in length dominates the increase in width [3, 5, 7, 9, 10]. On the influence of anthropometric characteristics that define together physical development (length and weight, neighborhood thorax), the performance of motor skills described in the works of H. Krotov [7], R. Oleynik [9], M. Popycheva [10] and others.

The most clear relationship between the level of physical development and motor skills seen in puberty period. Development of tools and methods of pedagogical influence aimed at raising physical abilities of children and adolescents, involves the use of data-critical sensitive periods of development of strength, speed, agility, endurance and flexibility [1, 2, 3, 11-12].

In connection with the foregoing, in our opinion, reasonable is allocation of typological features of the age of children and adolescents. The most simple and affordable for practice criteria are pervasive body size, which according to many authors closely related to biological age and the level of manifestation of motor skills and reflect to a large extent the pace of the age of the individual [2, 9].

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Purpose, tasks of the paper, material and methods.

Purpose of research – to examine the magnitude of growth performance of speed-strength qualities in girls aged 10 years with different levels of physical development as a result of targeted educational influences.

Tasks:

- Conduct comparative analysis of indexes of physical preparation of 10 years girls with different levels of physical development
- To study the characteristics of speed and power abilities in different typological groups of girls aged 10 years, under the influence of standardized training program.

Methods and organization of study. To address the objectives were used: analysis of literature on the issue of research, teaching experiment, testing, mathematical and static analysis.

Pedagogical experiment using a standard training program (the same for all subjects) was organized in camp during the summer.

The basis of the program was made general physical training of children involved in sports. Game material amounted to 50% of the total duration of employment. It was used motive outdoor games with running direction (“Fisherman and the Fish”, “Wolf in the ditch”) and sports game (basketball, football).

As specific exercises are used running movements of the arms and legs, change feet jump from position lunges, jumping up from squatting and raising knees, running in place, running with high thigh lifting, running on straight legs, re-acceleration in pairs. In relays is used different starting positions: sitting emphasis, sitting feet forward, sitting to heel, the emphasis lying. Running task alternated jumps.

Training sessions were conducted 5 times a week lasting 45-55 minutes. During the whole period of experiment was conducted for 15 training sessions in each group. The syllabus is the same for all involved groups. At the beginning and end of the experiment were conducted a test. A total of pedagogical experiment involved 64 girls.

For determination of conditional typological groups were used standards of physical development of pupils according to V. Aref'ev [1].

Results of the research.

In our case, all investigated girls were divided by the length of the body into three groups. As expected, representatives of different typological groups significantly differ from each other not only in terms of physical development (body weight, breasts girth, hand dynamometry), but also in terms of physical preparation (Table 1, 2). Thus, if girls of first and third groups have differences in body length over 15 cm ($P < 0.05$), then they also significantly differ by body weight (up to 9 kg) and girth breasts over (3 cm) and power of arm (3,5 kg). At the same time representatives of the second typological groups by all indicators clearly occupy an intermediate position.

Table 1

Indexes of physical development of girls aged 10 years ($M \pm m$)

Typological group	Length of body, cm	Mass of body, kg	Girth breasts, cm	Dynamometry of arm, kg
1	125,1 ± 3,36	25,5 ± 1,14	5,96 ± 2,18	13,1 ± 0,59
2	132 ± 3,72	28,6 ± 1,02	60,5 ± 2,21	14,4 ± 0,64
3	140,6 ± 3,79	34,2 ± 1,16	61,3 ± 2,23	16,6 ± 0,8

A similar trend was observed when comparing indicators of physical preparation. In all cases (Table 2) girls of third typological group significantly outperform their peers in the first and second groups. This advantage is evident in all indicators that reflect the level of speed-strength training (with a jump from a place, running at 30 m from the start and 10 hours of course).

Table 2

Indexes of speed and power preparation of girls aged 10 years ($M \pm m$)

Typological group	Broad jump from a place, cm	Running on 30 m from a start, sec	Running on 30 m, sec
1	128,6 ± 3,37	6,5 ± 0,16	1,89 ± 0,05
2	130,3 ± 3,46	6,4 ± 0,14	1,84 ± 0,05
3	132,0 ± 3,51	6,2 ± 0,12	1,83 ± 0,04

The greatest difference between selected typological groups is in the results of running on 30 m from start (the difference is 0,3 sec.).

Thus, a comparative analysis of indexes of physical development and physical preparation of girls aged 10 years distributed in different typological groups showed their significant differences. Our data largely confirm the findings of many authors [1, 2, 3, 8] indicate that children with different level of physical development are significantly differ in terms of physical preparation.

In this regard, we can predict that children, adolescents and youths significantly different among themselves for total body and differ in the level of biological maturation and hence on the rate of physical development. This in turn necessitates differentiation of pedagogical influences.

Change of indexes studied during the period of pedagogical experiment is shown in Table 3. As it provided change of results in running at representatives of different typological groups during the experiment is varies. Thus, the greatest increase of results in running on 30 meters from the start marked in girls off first and third group (0,3 sec), besides the differences are statistically significant ($P < 0,05$). Girls of second typological group during 15 training sessions the result is also improved, but only by 0,1 sec ($P < 0,05$). A similar pattern is observed in the change of results in running on 10 m from the move. Growth in first and third group is more significant than second one (Table 3).

Table 3

Change of indexes of speed and power preparation of girls aged 10 years during the period of pedagogical experiment ($M \pm m$)

Typological group	Running on 30 m from a start, sec	Running on 10 m, sec	Broad jump from a place, cm
1	6,5 ± 0,16	1,89 ± 0,05	128,6 ± 4,37
	6,2 ± 0,15 P < 0,05	1,80 ± 0,05 P < 0,05	136 ± 4,5 P > 0,05
2	6,4 ± 0,14	1,84 ± 0,05	130,3 ± 4,46
	6,3 ± 0,14 P > 0,05	1,77 ± 0,04 P > 0,05	137 ± 4,5 P > 0,05
3	6,2 ± 0,12	1,83 ± 0,04	132,0 ± 4,51
	5,9 ± 0,1 P < 0,05	1,72 ± 0,04 P < 0,05	141 ± 4,6 P < 0,05

Recorded us to compare results in jumping from a place at the beginning and end of the experiment did not change. In all three groups increase is not significant so relevant ($P > 0,05$). This is due to orientation of training program on development of running speed and its low duration.

Significant growth of result in running on 30 meters from the start of the girls of first (4,6%) and third (4,8%) typological groups indicates, in our opinion, the more relevant of training program to biological rhythm of the age development of those studied in compared with the representatives of the second group, where the growth was only 1,5%.

Thus, as a result of conducted researches can be stated that conditionally allocated typological groups by body length is differ among themselves and in terms of speed and power indicators. The developed standard training program is very effective and leads to substantial improvement in the increase of the running in speed during 15 training sessions. A significant increase was observed in girls of first and third conditional groups, respectively 4,6 and 4,8%. In this regard, we can assume that age period of 9-10 years for girls who are behind the tempo of age development (body length below the $X-0,5\sigma$) and those who are ahead of their peers (body length above $X-0,5\sigma$) are more favorable for development of running speed than for girls, with average indexes of total body size.

In this regard can be justified allocation of typological groups for total body size to age differentiation of training funds. You can also anticipate that the development of a similar standard training programs designed to enhance specific motor abilities will help to correct the current major educational emphasis in the many years of athletic training.

Conclusions

1. 10 years girls with different levels of physical development are differ significantly in terms of performance and speed-strength abilities.

2. Age period of 10 years for girls who are behind the tempo of age development (body length below the $X-0,5\sigma$) and ahead of their peers (body length above $X-0,5\sigma$) is more favorable for the development of running speed than for girls who occupy intermediate position for total body size.

3. At different typological groups of the same age as a result of 15 training sessions for the standard program is marked significant differences in the growth of results in the speed running, which confirms the assumption of the existence of different rates of development in children of the same age and passport on uneven degree of adaptation to exercise.

4. Use of short training program of game orientation in the conditions of healthy camp is largely justified, because it facilitates a marked increase in indicators of physical preparedness in a short period of time.

The conducted study does not cover all aspects of the problem of development theoretical and methodological foundations for differentiated approach to building a long process of physical education and sports training. Therefore, there is a necessity for further research to justify new methods and criteria for evaluation of individual tempo of age development and formation of the entire functional system that provides effective management of random motor actions.

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