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DIE BEZIEHUNG ZWISCHEN DEN KÖRPERTYPEN IM SPORT SPEZIALISIERUNG JUNGER AKROBATTEN

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Anmerkung: Der Beitrag stellt Versuchsmaterialien zur Eingliederung junger Akrobaten in den Trainingsprozess unter Berücksichtigung der differenzierten Einschätzung des körperlichen Status der typbedingten Konstitutionsmerkmale Thorax, Muskulatur, Asthenoid und Verdauung im Anfangsstadium ihrer sportlichen Ausbildung vor.

Schlüsselwörter und Ausdrücke: Überwachung, Intensität, Körpertypen, Mikrozyklen, Stadien des Sporttrainings, Abstufung der körperlichen Qualitäten, Intergruppenindikatoren, Gesamtkörpergröße.

The relationship between body types in the sports specialization of young acrobats

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Abstract: The article presents experimental materials on the introduction of young acrobats into the training process, taking into account the differentiated assessment of the physical status of the type-determined constitutional signs as thoracic, muscular, asthenoid and digestive, at the initial stage of their sports training.

Keywords and expressions*:* monitoring, intensity, body types, microcycles, stages of sports training, gradation of physical qualities, intergroup indicators, total body size.

Group acrobatics, as a complex coordinated sport, is particularly important in the study of the studied factor in determining the "lower" or "upper", The study of the parameters of physical development, where genetic conditioning is used, such as body length and weight, chest circumference and proportions of their body, becomes essential. The study of the studied signs was considered separately and in interrelation, which made it possible to establish indicators of individual signs of physical development of acrobats at the initial stage of sports improvement. having significant differences. There is a need to take into account the heterochronous development of the body before the end of puberty, when the linear dimensions of the body increase, affecting the characteristics of body weight, which leads to functional changes in the body. (1, 3)

Monitoring of the questionnaire survey data of the coaching contingent working with young acrobats revealed the expediency of developing a differentiated assessment of motor fitness and physical development with the need to distribute them at the initial stage of their sports training according to the type of constitutional features.

In adolescence, the most important indicators of the maturity of the adolescent body are body length and weight, which change unevenly in the process of ontogenesis, where the difference between the individual phases is quantitative and qualitative. (2)

The analysis of the scientific literature on the problem under study revealed that no comprehensive studies were found on the contingent of young acrobats at the initial stage of sports training, but there are fragmentary works and gives grounds for conducting a study of motor abilities.

Pedagogical testing of the motor abilities of young acrobats was determined on the basis of a specially selected battery of tests, which included: 100 m running, 3000 m cross-country, 3x10 m shuttle running, long jumping from a standstill, flexion and extension of the arms lying down, pulling up on the crossbar and throwing grenades.

The study of the level of development of motor abilities in young acrobats, such as absolute strength, mobility in joints, speed and strength qualities, stability of the vestibular analyzer - allowed us to identify specific features in their development.

The analysis of the average absolute strength indicators of two large groups of acrobats of narrow specializations “upper” and “lower” allowed us to establish that the representatives of the "upper" are significantly inferior to the "lower" in muscle strength, where the absolute strength of the "lower" muscles has a high correlation with body weight, the development of mobility in the joints is an integral part of special physical training of young acrobats, where, when evaluating the results of research, the peculiarities of the development of mobility of the spinal column, shoulder, hip joints were revealed.

Table 1

Intergroup indicators of absolute muscle strength
young acrobats of the “upper” and “lower”

The development of mobility in the joints is an integral part of the special

Indicators	"Upper"	"Lower"	Validity of differences	
	$X \pm S^x$	$X \pm S^x$	t	P
Right hand strength	38,59+	58,69+	10,	p<
Left hand strength	37,69+	56,45 +	9,5	p<
(kg) Dead weight (kg)	97,68 ±	156,18 +	7,9	p<
Total indicator (kg)	173,88 + 7,8	274,32 + 5,56	10, 48	p< 0,05

physical training of young acrobats, where, when evaluating the results of research,

the peculiarities of the development of mobility of the spinal column, shoulder, hip joints were revealed. It was revealed that all competitive exercises of pair-group types of acrobatics contain a large number of elements associated with the manifestation of the flexibility of the vertebral column, high mobility in the shoulder joints necessary when performing basic acrobatic elements - vertical balance (handstands) of the "upper" on the straight arms of the “lower” partners.

Table 2

Intergroup indicators of joint mobility young acrobats

Indicators	"Upper" "Lower" Reliability of differences	"Upper" "Lower" Reliability of differences	"Upper" "Lower" Reliability of differences	
	$X \pm S^x$	$X \pm S^x$	t	P
Forward tilt (cm)	16,33 ±0,65	17,71 ±	0,9	p > 0,05
Shoulder retraction (cm)	18,50 + 0,85	17,46+ 1,15	0,73	p > 0,05
Twine lengthwise (cm)	14,31 ± 1,31	25,58+ 1,36	5,96	p< 0,05

It was revealed that mobility in the hip joints in the upper group is higher than in the lower group ($p<0.05$), which is due to genetically determined mobility in these joints.

High-speed abilities are necessary for acrobats when performing dynamic exercises. Thus, in the representatives of the upper group, the speed of movement is especially evident when performing acrobatic elements, bundles with angular accelerations (4,11,12,13,14,15,16,17).

The assessment of speed-strength abilities revealed that when implementing the motor actions of young acrobats, the "lower" ones significantly exceeded the "upper" ones ($p<0.001$) and indicates that the competitive program of acrobats of the specializations of the "lower" groups is saturated with exercises with the manifestation of speed-strength abilities.

The vestibular analyzer plays an important role in the implementation of the motor function of young acrobats. In difficult-coordination sports, the load on the vestibular analyzer is very high, however, there was no significant difference in the test indicators for the “upper” and “lower” ones ($p > 0.05$).

Table 3

Intergroup indicators of vestibular analyzer resistance to the loads of young acrobats “upper” and “lower”

Indicators	"Lower"	"Upper"	Validity of differences	
	$X \pm S^x$	$X \pm S^x$	t	P
Romberg's sample (sec.)	15,71+2,01	20,03 ± 3,0	1,19	p > 0,05
Yarotskiy's sample A.I	2,37 + 0,22	4,67+ 0,81	2,74	p < 0,05

Dynamic load is better sustained by athletes of the "upper" group, whose result is significantly higher than the "lower" group ($p < 0.05$). In the competitive exercises of the "upper" there is a large number of elements with multiple rotations around the sagittal longitudinal and frontal axes, that acrobats of this group pay more attention to training the vestibular analyzer, which determines the performance of complex acrobatic elements (18,19,20,21,22,23).

Pedagogical observations and analysis of data from a questionnaire survey of the coaching contingent working with young acrobats revealed the feasibility of developing a differentiated assessment of motor fitness and physical development with the need to distribute young acrobats at the initial stage of their sports training according to the type of constitutional signs thoracic, muscular, asthenoid, digestive, taking into account the type of their development retarded, normal, accelerated.

The most important indicators of the maturity of the adolescent body are the length and weight of the body, which change unevenly in the process of ontogenesis, where the difference between the individual phases is quantitative and qualitative. (7,24,15,16,27,28)

The combination of the ratio of three total body sizes allows us to determine the type of physique of young acrobats of various specializations, which are presented in the table, where the average indicators of physical development of the “lower” and “upper” specializations indicate that young acrobats of the “lower” specialization have a significant superiority over the “upper” in all indicators of physical development ($P < 0.001$). Conventional units (indices) of the “lower” body types are significantly lower than the “upper” ones ($P < 0.001$).

A small index of the “lower” indicates an increase in the thoracic perimeter and weight in relation to the length of the body, which indicates an increase in the size characteristic resulting from an increase in body weight by changing the harmony of the relationship of these values of physical development towards a square body shape.

A significantly higher index of the “upper” shows a decrease in the thoracic perimeter and weight to the body length of young acrobats, which changes the harmony in the opposite direction, towards a more elongated, rectangular body shape. The differences in all these characteristics were the result of selection for sports

acrobatics requiring a high degree of development of complex coordinated abilities and was carried out at all stages of initial training. Coaches of this sport, who have extensive practical experience working with this contingent of young acrobats, pay special attention to the search for gifted children with certain morphological characteristics, offering them to choose a narrow acrobatic specialization.

Table 4

Intergroup indicators of individual signs of physical development of young acrobats

Indicators of physical development	"Lower"	«Upper"	Reliability	
	$X \pm S^x$	$X \pm S^x$	Difference%	P
Body length (kg)	146,4 ±0,7	127,2 ±0,6	13,11	P< 0,001
Body weight (cm)			38,54	P<
Chest circumference	78,7		19,44	P<
Type of addition (index)	75, 8		11,21	P<

The large body size of the "lower ones" allows in static exercises to overcome large physical loads falling on them while holding one or more partners. In dynamic exercises, the "lower" ones, having great strength and weight, are able to throw the "upper" partners at a considerable distance from the support. Numerous experimental studies have revealed that the insignificant weight parameters of the "upper" contribute to the development of complex acrobatic elements. Small indicators of the weight characteristics of the "upper" significantly contribute to an increase in the flight path, which creates the effectiveness of spatial and temporal parameters to increase the complexity of exercise performance and aesthetic perception.

In order to effectively monitor the indicators of the length and body weight of young acrobats, A.K. Eshtaev (5) recommends using indicators of arithmetic mean values and data of the quadratic deviation in the direction of lagging or increasing. By tracking changes in height and weight characteristics over the years, the coach has the opportunity to develop an individual schedule reflecting the dynamics of the morphological and physical status of young acrobats. A large number of gymnastic elements are similar in kinematic characteristics of the technique of execution. which is quite typical for acrobats?

Monitoring studies have revealed that the indicators of physical development of young acrobats are interdependent with each other and are confirmed by high correlations between the studied morphological indicators.

The indicators of the studied connections in the "upper" group fluctuate within (g=0.591-0.785), in the representatives of the "lower" group-within (g=0.640-0.832). Among the studied signs, high correlations were noted among themselves in the "upper" group, which, according to A.K.Eshtaev (5,6,7,8,9,10), reflects separately or in a relationship the mass, density and shape of the body, characterizing the structural and mechanical properties of the organism.

From the presented groups of specializations of "lower" and "upper" young acrobats, typical groups of motor actions are characteristic, differing in the structure of movements and the conditions for their performance. The analysis of experimental studies revealed that the number of subjects with a normosthenic type of physique

turned out to be different in all specializations: for example, “upper in male fours” - 78.85%; “second-average” - 94.24%; “first-average” - 87.86%; “lower” - 59.27% of the total number of young examined acrobats.

Experimental data obtained during the one-year training cycle revealed a tendency of multidirectional results in determining body types. Thus, the representative of the specialization of the "upper" group does not have a pycnoid body type, and the asthenoid body type of the first degree (5.7%) and second degree (15.81%) have “upper representatives in male fours”. The shift of the indicators of the physique of the “upper” to the asthenoid type of physique is due to the fact that they have a miniature elongated body shape, which is most preferable for specific groups inherent in the “upper”.

As a result of the conducted research, not a single acrobat from the “lower” specializations has an asthenoid body type. Experimentally revealed that a significant number of young acrobats - “lower” have a pycnoid body type. Among the “first-middle fours”, 13.24% have a pycnoid body type, and 44.87% of young acrobats have the “lower fours”.

The pycnoid body type of the “lower ones” creates a general idea of a certain massiveness of the figure, the fundamental strength of the body of young acrobats belonging to this group. Such a combination of the physique of the anatomical signs of physical development under consideration creates prerequisites for the successful development of other complex coordinated motor actions, unlike the "upper" ones, where, when performing exercises together with the whole group, they allow you to withstand significant power loads on the musculoskeletal system of young acrobats.

The analysis of the results of the pedagogical experiment revealed that the bulk of acrobats of various narrow specializations have a normostenoid type of physique harmoniously combining them with signs of physical development.

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