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CONDITION OF PHYSICAL DEVELOPMENT OF THE SCHOOLBOYS IN CHRONIC ACHION NITRATES

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The article examines features of physical development of the schoolboys of various age in conditions of chronic action nitrates. The comparative analysis of physical development of the schoolboys with parameters schoolboys of control group.

THE BODY TISSUE COMPOSITION AMONG WOMEN PRACTISING WEIGHT LIFTING BASED ON THE METHOD OF BIOELECTRICAL IMPENDANCE*

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Cognition of dependences among the body tissue components broadens the somatic characteristics of a man in an essential degree. It is also particularly crucial from the point of view of physical education and sport. The defining of the body tissue composition, and next in turn, monitoring the changes it undergoes under the influence of physical effort makes it possible to examine the impact of the said process upon a human organism. Many methods are at the disposal to control the changes within proportions of particular tissue components. Side by side with the traditional measurement of thickness of skin folds (Piechaczek 1975) there are also more complex techniques relying on the achievement of physics, anthropometry and related sciences. At the same time the repertoire of more traditional approaches seems to vanish and more technologically advanced measurements relying on electronic equipment, eliminating the errors in measurements as well as providing more complex data take over. One of such methods is Body Impendance Analysis (BIA). While applying this method it is possible not only to define the level of two basic components i.e. lean body mass (LBM) and a fatty tissue, but also to be provided with the information on cellular and extra- cellular elements.

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* The study was conducted in frames of an own research nr VII/155 financed by KBN in the years 2003-2005

The objective of this study is to define body tissue components of Polish female national weight lifting representation.

Material and methods

The research accounted for 14 female Polish representatives of national weight lifting team. The measurements of height and body mass as well as the analysis of body tissue components were made on the grounds of the BIA method in April 2002, after the training for Europe Championship in Turkey had been completed. By application of this method the information on absolute and percentage values of water, fat and LBM was collected. Furthermore, the ratio between LBM to fat, cell mass, body density and basic metabolism was assessed. The detailed description of the BIA method can be found in works of Bergman and Janusz (1992) and Heyward and Stolarczyk (1996). The material was calculated on grounds of basic statistical methods such as the average mean and the measure of dispersion. The results collected by us were matched to the results of girls practising eastern martial arts (Grabarczyk et al. 2001) and judo (Burdukiewicz et al. 2001). The essence of statistical differences among the different groups were evaluated on the grounds of the test t Student.

Findings and discussion

General characteristic qualities under research are presented in the Chart I. The average age was 19,64+/-2,27 years old. The average body height equaled to 161,78 cm, body mass 65,31 kg. The resistance in the group under the research reached the level of 524,3 W and the reactation - 64,21 W The content of water in body mass of the weight lifting competitors was 43,81 l i.e. 54,55%. The fatty tissue was 17,42 kg which is 25,47%. LBM respectively 47,58 kg and 74,52%. The quotient value of the last two qualities represents their mutual proportion among the components, and it reached the value of 3,15. The increase of this indicator reveals the tendency of a fall of relative fatty tissue in the body mass, and at the same time the rise of LMB. The cellular mass understood as the total number of metabolically active body cells equaled 27,76 kg i.e. 43,38%. Body density reflects internal relations among particular components i.e. a fatty tissue and LBM. The value of this quality is proportionally reversed to the amount of a fatty tissue, and proportionally direct to LBM. The denser the body is the less fatty tissue the body contains, and it is LMB which takes over. The average density among our competitors was 1,04 g/cm3. Basic metabolism is understood as the amount of energy necessary to maintain organism alive in the state of rest. Then the energy is used to maintain basic life processes such as heart beating, digestion, breathing etc. The basic metabolism depends upon many factors: climate, season, health condition, lifestyle, body height and mass, nutrition style among others. On the basis of the BIA method it was stated that the average value of basic metabolism among our competitors was 1530,50 kcal (Table I).

Women who practise weight lifting in comparison to girls practicing eastern martial arts were characteristic of a lower body height and lower percentage values of water, fatty tissue and cellular mass. On the contrary, their body mass and absolute values of water, fatty tissue and cellular mass as well as higher in both percentage values and absolute average values of the amount of LBM were noticed. Moreover, a high value of the relation between LBM and a fatty tissue confirmed the greater composition of LBM in an organism. Moreover, to the judo competitors, the weight lifters examined by us were heavier and their body contained a higher absolute value in kg of water in the organism and LMB .The level of fatty tissue was also higher. Considering other components, the females practising weight lifting presented lower values than the judo players (Chart 1).

Table I.

Body tissue composition among female practising weight lifting and martial arts competitors

qualities	Weight lifting Own study (n 14) (group I)		Eastern martial arts Grabarczyk et al.(2001) (n 15) (group II)		Judo Burdukiewicz et al. (2001) (n 29) (group III)		Value of the test t Student	
	x	SD	x	SD	X	SD	I-II	I-III
Calendar age	19,64	2,27	21,53	1,73	17,89	1,15	2,53*	3,38**
Body height	161,78	6,64	164,73	9,06	165,30	7,53	0,99	1,49
Body mass	65,31	17,60	59,49	6,85	59,58	7,62	1,19	1,50
Resistance	524,36	66,95	-	-	-	-	-	-
Reactation	64,21	7,72	-	-	-	-	-	-
Water (l)	34,81	5,56	32,82	4,31	32,86	3,27	1,08	1,45
Water (%)	54,55	4,81	55,32	4,92	55,44	3,60	0,43	0,68
Fatty tissue (kg)	17,42	10,33	15,81	2,60	14,68	4,46	0,58	1,22
Fatty tissue (%)	25,47	6,57	26,58	3,28	24,24	4,93	0,58	0,69
LBM (kg)	47,56	7,57	43,69	5,48	44,89	4,45	1,59	1,46
LBM (%)	74,52	6,57	73,42	3,28	75,75	4,94	0,58	0,69
LBM/fatty tissue	3,15	1,00	2,82	0,60	-	-	1,09	-
Cellular mass (kg)	27,76	5,09	24,14	3,95	-	-	2,15*	-
Cellular mass (%)	43,38	3,20	55,19	4,86	-	-	7,67**	-
Body density g/cm3	1,04	0,01	-	-	-	-	-	-
Basic metabolism	1530,50	280,45	-	-	-	-	-	-

* a difference statistically signifficant at the levle of $p<0,05$

** a difference statistically signifficant at the levle of $p<0,01$

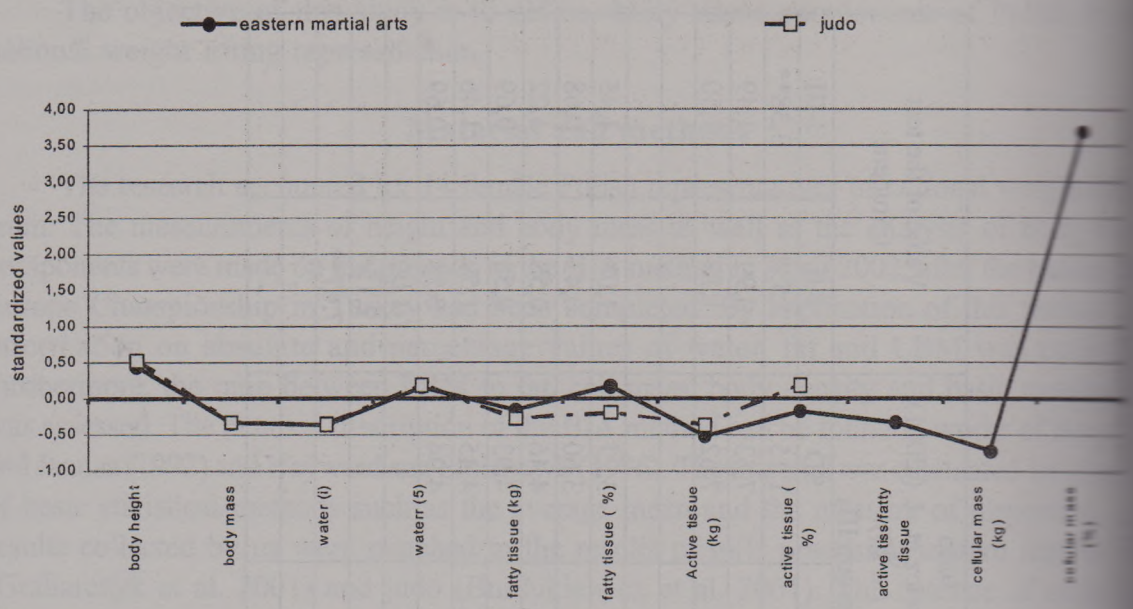


Chart 1. Standardised values of somatic qualities and tissue components among female competitors practising matrial arts at arithmetic mean, and standard deviations of Polish national female represetatives in weight lifting.

Conclusion

The comparative analysis of the tissue components of Polish national weight lifting female representatives and girls practising other sports disciplines let us evaluate the potential of the women under research to practise this sports discipline. The findings presented above indicate that weight lifting women in comparison to other female competitors were characteristic of a lower body height and high body mass. If differentiations in particular tissue components (percentage values) are considered, these were relatively slightly marked. The only difference can be related to the cellular mass, which was significantly lower in the groups tested by us. The differences in the absolute values are probably due to the general disproportions in body size. Physical activity seems to be factor indispensable to ensure appropriate tissue proportions. Yet, the significant share of the fatty tissue in the body construction among the competitors under the research may indicate that a sports selection does not account for this particular quality in an important way and thus the sports training does not model it sufficiently enough.

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Summary

The body tissue composition of women practising weight lifting on the grounds of the bioelectrical impendance method.

The research accounted for the definition of the body tissue composition among the Polish national weight lifting female representatives. It focused on the measurements of body mass and height as well as the tissue composition obtained from 14 national female representatives by means of the BIA method .The competitioners practising weight lifting matched to those prastising eastern martial arts are characteristic of lower value of height as contrasted to the large body mass. The differentiation in particular tissue components was relatively slightly marked.

ДИНАМІКА СПОРТИВНИХ РЕЗУЛЬТАТІВ, ПОКАЗНИКІВ ВЕГЕТАТИВНОЇ КАРДІОРЕГУЛЯЦІЇ І ГЕМОДИНАМІКИ У ЕЛІТНИХ СТРІЛЬЦІВ З ЛУКА В РІЗНИХ КЛІМАТО-ГЕОГРАФІЧНИХ УМОВАХ

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Встановлено, що переліт зі зміною 7-8 годинних поясів викликає терміновий десинхроноз, який характеризується загальним дискомфортом, порушенням сну, напруженням гормональних і вегетативної систем, зниженням спортивних результатів, порушенням біологічних ритмів [2, 8, 9]. Період адаптації до цих умов є різним для різних показників. Так, частота серцевих скорочень (ЧСС) нормалізується протягом 6-8 днів, розумова працездатність – через 2-7 днів, швидкість зорово-моторних реакцій – через 2-3 дні [2, 7, 8, 9]. Причому при перельоті на захід нормалізація відбувається швидше (92 хв. за добу), ніж при перельоті на схід (57 хв. за добу) [3]. Повторні зміни годинних поясів скорочують час адаптації у спортсменів [2].

Питання впливу трансмеридіонального перельоту на 7-8 годин на захід і на схід з основної бази в Новогорську на функціональні показники серцево-судинної системи і спортивні результати в стрільбі з лука не вивчено, хоча міжнародні змагання і Олімпійські Ігри (ОІ) проводяться в різних країнах зі значною різницею у часі (Сеул, Барселона, Австралія), де вищі спортивні результати виказують непередбачені явища.

Метою нашого дослідження було вивчення динаміки спортивних результатів на міжнародних змаганнях у 1988р. в різних клімато-географічних зонах з різницею у 7-8 годин у членів збірної команди СРСР зі стрільби з лука, залежність їх від стану центральної гемодинаміки, кардіорегуляції і деяких показників розумової працездатності.