

UDC 796.01

DOI: 10.14526/2070-4798-2023-18-1-89-93

Constitution culture: theory and practice

Nikolay G. Mikhailov¹, Asya M. Agakishieva², Ekaterina V. Zhebeleva^{3*}

¹Moscow City Pedagogical University
Moscow, Russia

ORCID: 0000-0003-4101-0910, michailovn@mgpu.ru

²School No. 158
Moscow, Russia

ORCID: 0009-0003-0244-9530, asya245479@gmail.com

³Russian State Humanitarian University, Moscow, Russia

ORCID: 0000-0003-1306-8488, e-mail: k.jebeleva2010@yandex.ru*

Abstract: The rapid spread of a sedentary lifestyle among students motivates specialists in the sphere of physical culture and sport to look for new solutions in a steady habit formation for physical exercises mastering, as well as to reveal innovative methods in physical education. **Scientific novelty.** The work reveals the meaning of “constitution culture” notion from the point of view of physical culture modernization. We define the criteria and indices of constitution culture assessment in the practice of physical culture classes using modern fitness technologies. **Practical significance.** The materials can be useful in the practice of physical culture specialists. They work with students. **Material.** We describe the methodology of constitution culture formation among the pupils of the 10th-11th grades with the help of fitness-aerobics exercises. We considered the indices of psychological readiness of teams for fitness aerobics competitions. **Research methods:** theoretical analysis of constitution culture indices, substantiation of the criteria system for constitution culture assessing, pedagogical experiment, methods of mathematical statistics. **Results.** We revealed the possibilities of assessing constitution culture formation among senior school-children (the pupils of the 10th-11th grades) with the help of Quetelet, Pignet, Brugsch and Rufier indices. **Conclusion.** We created the methodology of constitution culture formation with the help of fitness aerobics exercises and substantiated the evaluation criteria for this index among senior schoolchildren.

Keywords: constitution culture, body culture, fitness aerobics, the methodology of constitution culture formation, innovative physical culture.

For citation: Nikolay G. Mikhailov, Asya M. Agakishieva, Ekaterina V. Zhebeleva*. Constitution culture: theory and practice. Russian Journal of Physical Education and Sport. 2023; 18(1): 74-77. DOI: 10.14526/2070-4798-2023-18-1-89-93.

Introduction

Recently there appeared a new notion “constitution culture” in physical culture practice. It presents the part of physical culture [2, 7]. As sociological research works show (carried out at schools in Moscow), for the girls of mid and senior school age the motive of nice, well-formed body shape formation is very important [3]. It is a well-known fact that fitness-aerobics exercises help to form body shape with well-developed muscular system, provide proportional constitution formation by means of muscle mass increase, locomotor apparatus development [1, 4, 5]. At the same time attention focusing on individual characteristics of constitution gives an opportunity to form the definite constitution among senior schoolchildren.

At fitness-aerobics lessons girls of senior school age gain the skills of aerobic exercises independent use during the day, during free time and master the principles of such exercises selection and their

dosage, activate self-actualization processes [3]. It provides constitution formation and makes this research work extremely urgent.

The aim of the research is to substantiate scientifically and experimentally check the effectiveness of the constitution culture formation methodology among the girls of the 10th-11th grades.

Materials and methods

Theoretical part of the research included “constitution culture” notion specification in terms of innovative physical culture, offered in earlier carried out research works [2, 6].

The experimental part of the present research work was held on the basis of the State budgetary general education establishment in Moscow “School No 158” in Levoberezhny district of Moscow. The research was carried out during 3 months. The lessons were held twice a week, 45 minutes each.

Two equal groups took part in the pedagogical experiment: experimental (n=18) and control (n=18) groups of senior school-girls. They have the problems with constitution formation.

In the experimental group one physical culture lesson was held according to the traditional program, during the second lesson the complex of strength-oriented fitness-aerobics exercises were used. During the main part of the experimental lesson we used the exercises with weight and the objects, the exercises were directed toward muscles power of different segments of the body development. During the final part we used stretching for the main muscle groups of the body, legs and hands relaxation.

The control group trained according to the traditional complex program by V.I. Lyakh. At the beginning and in the end of the pedagogical experiment we revealed Quetelet, Pignet, Brugsch and Rufier indices.

Results and discussion

Constitution culture formation is realized among senior schoolgirls at physical culture lessons according to the definite specialized methodology using fitness-aerobics exercises.

In order to develop the body harmoniously it is necessary to develop muscular system of the definite muscle groups. For example, positive evaluation in girls' constitution get abdomen muscles relief

and well-formed buttocks. That is why for their harmonious constitution formation it is important to develop abdomen and spine muscles. It is a well-known fact that abdomen muscles mainly influence the constitution of girls, spine muscles make bearing better, form proportional constitution. For their development special exercises are used with the weight and different objects. They are used in fitness-aerobics.

The methodology of constitution culture formation included aerobic exercises of strength orientation:

- exercises with dumbbells: spreading arms with dumbbells sideways lying on a gymnastic bench; barbell bent-over rowing; bent-over lateral raise;
- exercises with a fitball: pelvis raise with legs support on a fitball; legs raise with a fitball sideways in prone position; body twisting with a fitball between the legs in a prone position; body lifting lying on a fitball; body bend-over with hands raise with the ball upward; legs straightening with the ball and ball roll-over from hand to hand in a prone position;
- exercises with weight: lying on abdomen legs swings backwards; lying on back straight legs lifting by turns.

The results of the initial indices estimation, which characterize constitution, are presented in table 1.

Table 1
Constitution indices estimation in the experimental and control groups at the beginning of the pedagogical experiment

Index	EG(n=18)	CG(n=18)	t-criterion	Validity, p
Quetelet	26,6±3,0	25,8±1,6	0,99	>0,05
Pignet	25,0±1,3	24,85±1,4	0,33	>0,05
Brugsch	435,8±37,3	441,9±32,4	0,52	>0,05
Rufier	5,1±0,8	4,85±0,7	1,00	>0,05

Body mass index was 26,6±3,0 kg/m² in the experimental group (EG) and 25,8±1,6 kg/m² in the control group (CG). Such value varies within the limits of a normal ratio of proportions between weight and height of senior schoolgirls. At the same time, we didn't reveal valid differences of Quetelet index between CG and EG (p>0,05).

The value of Pignet index is 25,0±1,3 cm in EG vs 24,85±1,4 cm in CG. It defines the girls' constitution as the average level. We didn't reveal valid differences in the value of this index in EG and CG (p>0,05).

Brugsch index in EG is 435,8±37,3, in CG is 441,9±32,4, and also doesn't demonstrate valid differences between the indices of both groups (p>0,05). The value of this index characterizes the girls as belonging to the group of those. They have excess weight.

Rufier index values don't validly differ between EG and CG (p>0,05). The index value characterizes girls of both groups as those, who are in a good physical shape.

Thus, the comparison of the analyzed indices among the girls of EG and CG doesn't show valid differences at the beginning of the pedagogical experiment. It helped to start comparative pedagogical experiment for the research hypothesis check concerning the effectiveness of the created methodology of constitution culture formation.

For the problems of incorrect constitution solution, the reasons for which are the following: overweigh, metabolism disorder, insufficient motor activity and others, we used fitness-aerobics exercises. Such choice is conditioned by a wide spectrum of exercises of this kind of motor activity and strength oriented fitness-aerobics exercises use is

directed toward muscle groups shape of the separate body segments formation and functional abilities of schoolgirls development. Aerobic exercises, included into the methodology, their intensity and volume were chosen taking into account individual characteristics of schoolgirls. They were revealed during the preliminary questionnaire survey.

We used specialized exercises with the weight and different objects in the methodology in order to develop the body harmoniously. In practice it meant hands, legs and body muscle groups development. Strength oriented aerobic exercises

provided exercises with dumbbells, with fitball and exercises with bodybars fulfillment. Aerobic exercises with bodybars were given to the girls during the complexes fulfillment at the 4th-6th lessons of strength orientated exercises of fitness-aerobics. Then we used the complexes of exercises with fitballs. They were fulfilled during the 7th till the 12th lessons.

Table 2 presents the results of constitution formation estimation among the girls from the experimental group during the period of the experimental methodology use.

Table 2

The tests results comparison in the experimental group before and after the pedagogical experiment

Index	EG before	EG after	t-criterion	Validity, p
Quetelet	26,6±3,0	23,57±0,20	3,93	<0,01
Pignet	25,0±1,3	22,18±0,52	4,6	<0,01
Brugsch	435,8±37,3	411,13±22,4	3,7	<0,01
Rufier	5,1±0,8	3,82±0,16	4,87	<0,01

It turned out that Quetelet index values validly decreased from 26,6±3,0 till 23,57±0,20 kg/m². It reflects the girls transfer from the group of the first degree of obesity into the group of normal weigh (p<0,01). Valid improvement showed the dynamics of Pignet, Brugsch and Rufier indices change (table 2). It proves transfer of the girls from the group of

overweight into the group of girls with correct weight according to Brugsch index and from the group of the girls, who have good physical fitness into the group of the girls with a perfect physical fitness.

In the end of the pedagogical experiment the indices in EG validly differed from CG indices in terms of validity level p<0,05 (table 3).

Table 3

The results comparison in the EG and CG in the end of the pedagogical experiment

Index	EG	CG	t-criterion	Validity, p
Quetelet	23,57±0,20	24,4±0,33	2,14	<0,05
Pignet	22,18±0,52	23,720,48	2,16	<0,05
Brugsch	411,13±22,4	421,08±4,39	2,24	<0,05
Rufier	3,82±0,16	4,53±0,22	2,5	<0,05

It means that the girls from the experimental group became closer to normal weight and height ratio according to Quetelet index, and became closer to the average constitution according to Pignet index, lost weight till the limits of “good” weight according to Brugsch index and demonstrated good physical fitness according to Rufier index. The girls from the control group remained in the group with the first degree of obesity according to Quetelet index, were close to the average constitution according to Pignet index, remained in the group with overweight according to Brugsch index, but demonstrated good fitness, close to “satisfactory shape” group, according to Rufier index.

Conclusion

In order to form constitution culture among schoolgirls we created the methodology. It helps

to correct girls’ constitution by means of fitness-aerobics exercises of strength orientation:

- with dumbbells for hands and shoulder girdle muscles development;
- exercises with a fitball for abdomen and spine muscles development;
- exercises with bodybars for the structure of legs muscles formation.

Carried out pedagogical experiment showed that the values of Quetelet, Pignet, Brugsch and Rufier indices among the girls from the experimental group underline positive dynamics in body shape formation. They became closer to normal weight and height ratio according to Quetelet index, entered the group of the average constitution. It is close to a harmonious constitution according to the indices, according to Brugsch index lost weight till the limits of “good” weight and demonstrate

good physical fitness according to Rufier index. The results comparison showed that the values of Quetelet, Pignet, Brugsch and Rufier indices among the girls from the experimental group validly changed during the pedagogical experiment in terms of validity level $p < 0,01$, and turned out to be validly different from the values of these indices among the girls from the control group. They trained according to the standard physical culture program at school ($p < 0,05$). It means that the offered methodology of fitness-aerobics exercises use provides constitution culture formation improvement among senior schoolgirls, taking into account their body type.

References

1. Mingalishева I. A. The peculiarities of expressiveness means use in fitness-aerobics. *Pedagogiko-psihologicheskie I mediko-biologicheskie problemy fizicheskoy kul'tury i sporta = The Russian Journal of Physical Education and Sport*. 2018; 13(3): 49-57. DOI: 10.14526/2070-4798-2018-13-3-49-57 [In Russ., In Engl.]
2. Mikhaylov N.G., Matveev A.P. The Approaches to the system of physical culture lifelong education formation in State educational establishment "Elementary school-kindergarten". *Teoriya i praktika fizicheskoy kul'tury = Theory and practice of physical culture*. 2009; 9 [In Russ., In Engl.]
3. Mikhaylov N.G., Mikhaylova E.I. and others Aerobics in the system of physical upbringing of children, teen-agers, students in educational establishments. *V sbornike materialov XXIX Mezhdunarodnoj nauchno-prakticheskoy konferencii po problemam fizicheskogo vospitaniya uchachihnya "Chelovek, zdorov'e, fizicheskaya kul'tura I sport v izmenyayuchemsya mire"* [In the collection of materials of the XXIX International scientific-practical conference concerning the problems of physical upbringing of students "Human being, health, physical culture and sport in a changing world"]. 2019: 100-115 [In Russ.].
4. Mikhaylova E.I., Mikhaylov N.G., Derevleva E.B. Aerobics in terms of Moscow City Pedagogical University. *Innovacionnye tehnologii v sporte I fizicheskom vospitanii podrastayuchego pokoleniya: sbornik statej po materialam X nauchno-prakticheskoy ronferencii s mezhdunarodnym uchastiem, Moskva, 14-15 maya 2020 goda* [Innovative technologies in sport and physical upbringing of the oncoming generation: collection of the articles according to the materials of the X scientific-practical conference with the International participation, Moscow, May, 14-15, 2020]. Moscow: Moscow City Pedagogical University. 2020: 198-201 [In Russ.].
5. Lyudmila D. Nazarenko, Irina V. Astrakhantseva, L.I. Sharafutdinova. Health – improving orientation of sports aerobics lessons. *Pedagogiko-psihologicheskie I mediko-biologicheskie problemy fizicheskoy kul'tury I sporta = Pedagogico-psychological and medico-biological problems of physical culture and sport*. 2017; 12(4): 72-81. DOI: 10/14526/04_2017_267.
6. Saraf M.Ya., Stolyarov V.I. Philosophy of sport and a person's corporeity. Book 1. Introduction into the world of philosophy of sport and a person's corporeity. Moscow: University book, 2011. *Voprosy filosofii*. 2012; 8: 188-190 [In Russ.].

Submitted: 20.02.2023

Author's information:

Nikolay G. Mikhaylov – Candidate of Pedagogics, Associate Professor, Moscow City Pedagogical University, 129226, Russia, Moscow, the 2nd Selskokhozyaistvenny lane, House 4, block 1, e-mail: michailovn@mgpu.ru

Asya M. Agakishieva – Lecturer-coordinator, School №158, 125445, Russia, Moscow, Valdayski lane, House 14, e-mail: asya245479@gmail.com

Ekaterina V. Zhebeleva – Senior Lecturer, Russian State Humanitarian University, 125993, Russia, Moscow, Miuskaya square, House 6, e-mail: k.jebeleva2010@yandex.ru
