Original Article

The Use of Ethnic Games and Facilities in the Conditions of the Middle Mountains to Improve the Physical Development and Physical Readiness of Adults (50-55 Years Old)

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Abstract

Aim. Design of a program for the use of ethnic games and means to improve the physical development and physical fitness of residents of the middle mountains of 50-55 years of age in gender division.

Methods. The survey involved 45 people. In the group of ethnic games - 16 people (8 men and 8 women), in the group of modern physical culture (MFE) - 29 people (17 men and 12 women). Standard methods were used to determine anthropometric indicators. A set of tests for the study of physical qualities was used to assess general fitness levels. According to Student's t-test, mathematical and statistical methods were applied.

Results. Comparative analysis of the results showed that the data of the 2nd survey are ahead of the results of the initial measurement in terms of chest circumference, body weight in men (reliability - P <0,05). In women in the group of modern physical education, the indicators are higher than in the 2nd survey, which indicates the effectiveness of the physical activity used. In terms of speed, speed-power qualities, and endurance, there is a significant increase in results (P <0,05); (P <0,01); (P <0,001) and positive dynamics in the 2nd survey in the gender division. Between the results of the 2nd survey and the group of modern physical culture in men, the endurance indicator is significantly higher (P <0,05). The indicators of speed-strength qualities and endurance of women have a significant difference (P<0,05), (P <0,001). The indications in males at the second examination and in the group of modern physical culture in both groups are rated as "high" based on the results of maximum oxygen consumption. The level of physical fitness according to K. Cooper is assessed as “high” and “excellent”.

Conclusion. The use of ethnic games and modern means of physical culture contributes to the improvement of physical activity in the age group of 50-55 years.

Keywords: Kyrgyz ethnic games, gender characteristics, physical development, physical fitness, midlands.

INTRODUCTION

The choice for the study of the age group of people 50-55 years old is justified by the fact that the pre-retirement age, as noted by scientists, is a critical period in the full life cycle of a person. As the researchers of ethnic games A.H. Karasaeva et al. (2013) note it is the period when it is necessary to support the physical qualities of the person not to lose high productivity and creativity and not to become a dependent 11.

According to some researchers, it is also necessary to take into account the fact that physical activity is a socio-biological phenomenon that integrates endogenous and exogenous objects, their social and biological determinants, with an emphasis on the social essence and role of physical culture and sport18. The results of observations and surveys of this age group indicate

that with the onset of natural age-related changes, people limit their physical activity and gradually give up running, jumping, and lifting weights. Consequently, as a result, according to L.I. Lubysheva and L.D. Nazarenko (2020), without training load the muscles weaken, the indices of muscular strength, speed, endurance, agility and other qualitative aspects of motor activity decrease15. These ratios are the result of morphofunctional changes in the organism during aging, which reduce the capabilities of its adaptation-regulatory mechanisms. According to foreign scientists, the "price" of aging is similar to that of hypokinesia2.

As noted by a number of researchers, limitation of motor activity with age significantly affects the functional state of the elderly. However, it is at the late stages of ontogenesis that general biological regularities of long-term adaptation to physical activity play an important role. Muscle activity, by activating processes in the body that are opposite to those in aging, is a means of increasing the vitality of older people. Dynamic exercise types that activate large muscle masses should be preferred in old age12, 4, 23,27,28 . The state of health of the adult population without daily motor activity decreases with time, which is confirmed by both statistical data and numerous studies by V.N. Kremneva and L.A. Nepovinnykh (2021)13. In addition to its role in sport-specific postural control, balance is also known to be a fundamental phenomenon in many athletic activities. And it should be noted that the relationship between balance, physical activity and performance is very specific26.

As a result, systematic exercise for the elderly can improve the overall endurance of the body: strengthen the cardiovascular and respiratory systems, individual muscle groups, and coordination of movement. Agility, flexibility and strength increase, speed of motor reactions increases, etc. As researchers underline, systematic physical exercises with the use of mobile games improve the functional state of the central nervous system, neuromuscular system, vegetative functions, blood circulation, breathing and musculoskeletal system of the elderly7.

V.G. Shilko, N.L. Gusev, V.S. Kolpashnikov (2019) confirm that the optimal levels of health and physical fitness achieved through physical exercise prolong the working ability of people 50-55 years old20. In this regard, according to O.G. Lyzar, V.T. Isaeva, E.V. Bratko (2017), it is necessary to stimulate the expansion of applied means of recreational physical culture16. It is proposed to pay attention to walking, Nordic walking, skiing and others in old age based on the observations of scientists on long-livers10.

Therefore, a comprehensive study of the phenomenon of health of people 50-55 years old from the position of forming a balance between the expenditure of health and replenishment of its potential in the mountain climate throughout the full life cycle of men and women is necessary.

Kyrgyzstan has sufficient experience in forming and maintaining human health in middle mountain conditions, using not only the potential of medicine and health care, but also the whole complex of natural and socio-economic conditions of life. A.V. Kabachkova and S.N. Kapitanov (2020) note that middle mountain conditions influence the functional state of the organism and trigger a number of adaptation changes, which are associated with adaptation to a relative decrease in oxygen9.

In particular, as evidenced by the results of our research, the motor activity of adults of preretirement age (50-55 years), improve health, prolongation of social activity and, ultimately, improve the quality of life effectively influenced by the use of ethnic Kyrgyz movement games, as one of the means of physical culture to improve physical development and physical fitness.

Research objectives are to develop a program of using ethnic games to improve the physical development and physical fitness of adults 50-55 years old in the gender division in the middle mountain conditions and to identify its effectiveness.

Materials and methods used in the study

Forty-five people participated in the survey, including: in the ethnic games group - 16 people (8 men and 8 women), in the modern physical culture (MPC) group - 29 people (17 men and 12 women). The first survey of the group of respondents engaged in ethnic mobile games was conducted at baseline, the 2nd survey - after regular training in ethnic mobile games. The research was conducted in the middle mountains (Republic of Kyrgyzstan, Issyk-Kul region, and 1700 m above sea level). The age of the subjects was 50-55 years old.

The task of the study included the selection and experimental identification of the effectiveness of the use of ethnic movement games, their impact on physical development and physical fitness.

The parameters of physical activity in the form of ethnic games, determining the development and formation of motor skills, were established at the first stage of the study. Lesson plans on ethnic movement games have been prepared, along with a database of ethnic games. A set of tools for physical development and physical fitness was developed.

19 kinds of mobile ethnic games for people of pre-retirement age (50-55 years old) were selected from the scientific works of Kyrgyz academics - experts in the field of national sports (D. Omurzakov, S.M. Saipbaev, H.F. Anarkulov, M.K. Saralaev, Arstanbek Kasen, etc.). Participants played the following ethnic mobile games: At minip alys zherge baruuu (long horseback riding), Basty-basty (pile mala), Kap menen urushuu (sack fighting), Kar atyshmai (snowball game), Kar menen uruuu (snowball fights), Korkok batyr (fearful hero), Nayza yrgytmay (javelin throwing), Sөk sondyrmay (bone breaking), Togo chyguuu zhana tushүuu (climbing up and down the mountain), Balta yrgytmay (axe throwing), Suunu tash menen urup chachyratuu (splashing a stone on water), Bel karmashyp zherden kötörüshmöy (pulling each other off the floor by grasping the belt), Bel karmashyp tartyshuu (pulling each other by grasping the belt), Kalmak kötörüsh (lifting a kalmak), Arkan tartysh (rope pulling), Ashkabak chapmay (hitting a pumpkin), Döngök jaruu - (splitting a log), Bash ailanma (spinning), Tez atka minүү zhana tүshүu, (Fast boarding and unloading from a horse). F. Anarkulov (2003) in his work "Kyrgyz folk games and physical exercises" gives a classification of more than 100 Kyrgyz national games and competitions1.

Participants in the experimental group were engaged in ethnic games under the guidance of a physical culture instructor 3 times a week for 6 months.

Respondents of the second group (modern physical culture, MFC) were engaged in physical exercises 3 times a week to develop all muscle groups (walking, riding a bike, etc.). The duration of the classes was 60 minutes.

The second stage involved measurements aimed at determining the state of physical development and physical fitness of adults in the initial state, as well as after performing motor tasks in the form of ethnic games and modern means of physical culture.

Research methods:

Anthropometry, mathematical-statistical methods (T-Student test). Testing of general physical fitness was carried out using a complex of tests in accordance with the recommendations of the Commission on standardization of tests. A set of tests for the study of physical qualities (speed, strength, speed-power qualities) included: 1) running for 60 meters (sec); 2) 12 min walking (m); 3) bending arms in the prone position (times); 4) long jump from a place (cm).

Results of the study and their discussion. As the concept, "physical development" includes not only morphological features of the structure and size of the body, but also the functional capabilities of the organism. A.G. Dembo (1975) points out that physical development has in the biological sense the meaning of the criterion of physical capacity of the organism. For adults, the indicators of growth, body weight, etc., determining the structural and mechanical properties of the body serve as a criterion of body strength. This is a process that continues throughout life - from birth to death. Since physical development is studied at different stages of his life, it is necessary to determine the correspondence of physical development to the stage of one's biological development. Body length is a fairly stable indicator reflecting complex physiological processes occurring in the human body6.

Test results show a low level of physical fitness in the elderly. The age group of people 50-55 years old is inclined to premature loss of performance and health problems. Consequently, practical measures proposed in the works of a number of researchers are necessary. They are aimed at maintaining physical fitness, stimulating the motor activity of people using physical exercises, which will maximize their potential in labor activity, reduce the burden on medical institutions, minimize the negative effects on the socio-economic development of the country21. Here we followed the statements of L.I. Lubysheva and A.I. Zagrevskaya (2016) that although the kinesiological potential of a person (psychophysical qualities, motor abilities, adaptive capabilities) is genetically determined, it can still be subject to certain adjustments during purposefully organized sports training and independent forms of physical culture and sports activities14.

Judging by the results of the study of the actual data on the indicators of physical development, presented in (Table 1), the body length of the 1st and 2nd examinations in both men and women practically did not change. In the MFC group, male body length indicators were 7.1 cm higher than in the 2nd examination group and were of a significant nature ($P<0.001$). In females the indices are higher by 0.6 cm. Body weight was significantly ($P<0.05$) lower in men in the 2nd examination compared to the 1st examination. In the MFC group the weight was 4,3 kg higher than in the men of the 2nd examination. The women of the 2nd

examination also showed a decrease of 2.4 kg compared to the results of the 1st examination. In the MFC group the body weight is higher by 3.1 kg compared to the results of the 2nd examination (Table 1).

Table 1: Indicators of physical development of people 50-55 years old (M±m)

Average data	Body length	Weight (kg)	Chest circumference (cm)	Body length	Weight (kg)	Chest circumference (cm)
	Males (n=33)			Females (n=28)		
1st Survey						
X	165,3	81,1	90,2	156,5	68,0	79,7
σ	30,3	7,7	6,9	8,8	11,5	19,9
mx	5,5	1,4	1,6	1,6	2,1	4,6
V%	19,7	9,4	6,6	5,6	16,9	23,3
2nd Survey						
X	165,1	71,5*	104,7*	156,7	65,6	85,6
σ	4,4	16,2	18,3	30,4	15,6	25,5
mx	0,8	3,0	4,2	5,6	2,8	5,9
V%	2,5	22,7	20,3	21,4	23,8	32,0
Modern Physical Culture						
X	172,2***	75,8	100,0	157,3	68,7	87,3
σ	2,1	8,2	4,7	2,8	14,1	6,4
mx	0,4	1,5	1,1	0,5	2,6	1,5
V%	1,2	10,9	4,7	1,7	19,7	8,4

Note: * - reliable at (P <0.05); *** - significant for (P <0.001) in relation to the 1st survey and between the indicators of the 2nd survey and the group of modern physical culture.

The pectoral circumference is one of the important indicators of physical development and depends on the volume of the pectoral cavity, the development of pectoral muscles and the subcutaneous fat layer. According to (Table 1) we can see that in men of the 2nd examination the indices are significantly higher (P<0,05) than in the 1st examination. In the MFC group the indices are lower by 4,7 cm than in the 2nd examination. And in women of the 2nd examination - higher by 5.9 cm, in the MFC group more by 1.7 cm than in the 2nd examination.

Thus, the indicators of physical development at the 2nd examination were significantly higher than those of the 1st examination in men in terms of weight and thorax circumference. In women, the change in the ability-to-duty indices for the better was observed. In the MFC group the indicators in women are higher than in the 2nd examination, which indicates a good effect of physical activities used in the group of modern physical education.

According to physical fitness indexes we can say that practically all indexes of the 1st and 2nd examination show positive dynamics and the differences are reliable at P<0,05); (P<0,01); (P<0,001) in gender division (Table 2).

Table 2: Physical fitness indicators of people aged 50-55 years (M±m)

Group Name	60 m running	Long jump from the spot (cm)	Flexion of the arms in the lying position (several times)	12 min walking (m)	VO2 max, ml / min-kg	The level of physical fitness (according to K. Cooper)
Males (n=33)						
1st survey	10,2±0,4	187±1,2	33±1,1	2100±14,6	33,8—42,5 average	High
2nd survey	9,9±0,3	191±1,1*	38±1,2**	2650±15,7***	42,6—51,5 high	Excellent
Modern Physical Culture	9,7±0,3	189±1,3	38±1,1	2700±16,1*		
Females (n=28)						
1st survey	18,8±0,7	120±1,5	18±1,5	2030±23,4	33,8—42,5 High	Excellent
2nd survey	15,8±0,2***	148±1,1***	24±1,3**	2180±16,7		
Modern Physical Culture	14,8±0,3	152±1,4*	25±1,2	2300±13,5***		

Note: * - reliable at (P <0.05); ** - significant at (P <0.01); *** - significant for (P <0.001) in relation to the 1st survey, also between the 2nd survey and the group of modern physical culture.

With the exception of the men's 60m running result, there are changes in the positive direction. The results of the 12m walk in women in the 2nd survey group are higher by 150 meters. This indicates positive dynamics of changes in physical fitness of adults. Between the indicators of the 2nd examination and the MFC group the men's 60-meter run result is 0.2 sec faster than that of the 2nd examination. The results of the long jump from a place in the MFC group are less by 2 cm, the indices of bending arms in a lying position are the same between the two groups. The 12-minute walk in the MFC group was significantly longer (P<0.05) than in the 2nd examination. In women the result of 60m running in the MFC group is 1 sec faster than in the 2nd examination group, the result of long jump from the place in the MFC group is 4 cm bigger, which is significantly (P<0,05) than in the 2nd examination group. Arm bending score is more than 1 time, 12 minute walk for 120m is significantly more (P<0,001) in MFC group.

To determine physical performance according to K. Cooper's test, we calculated the VO2 indices, which G.S. Nikiforova "considers an integral index of health"17. The VO2 indices in men at the 1st examination correspond to the assessment "average", at the 2nd examination and in the MFC group - "high", in women in all examined groups it is also assessed as "high". The level of the state of physical fitness according to C. Cooper in men is assessed as "high" in the 1st examination and "excellent" in the 2nd examination and in the MFC group. In females in all groups - as "excellent". These results testify to the fact that dosed physical training in old age has a pronounced hepatoprotective property.

The implementation of the wellness program developed by us with the use of ethnic movement games and means of physical culture changed the typical age dynamics of morphofunctional indicators of the body of older women, shown by I.A. Vlasova (2011), T.I. Hilgenkamp, R.V. Wijck, H.M. Evenhuis (2012) adding "quantity" of somatic health24,8.

Conclusion

Therefore, the comparative indicators of the results of our survey confirm the earlier conclusions of experts that systematic physical exercise and mobile ethnic games for people of pre-retirement age (50-55 years) in the middle mountains of Kyrgyzstan are quite effective; increase physical and emotional tone, immunological reactivity of older people, being a means of disease prevention and extending the quality of life.

As shown by the results of the survey, exercises in ethnic games and modern means of physical culture in both groups of respondents have a positive effect of health-improving physical culture and ethnic movement games on the state of the body in general: stabilization and tendency to increase physical fitness of older men and women, reflect a statistically significant correlation between the volume of physical training and the level of mastering of motor tasks using ethnic games, as well as the development of physical qualities of the participants.

Therefore, "habitual motor activity for the aging organism loses its stimulating effect"22,1, the use of ethnic movement games significantly increased the motor activity of people of preretirement age. The program developed by us, as it is possible to believe, is a preventive means, versatile supporting motor activity, increasing an emotional background of occupations. Changing the level of load, intensity, and constant maintenance of mobility at the same time does not cause the habit of a certain kind of movement, which has a positive effect on the physical condition. The proposed tasks of using ethnic games improve physical fitness in elderly people, especially strength and aerobic ability, contribute to bone mineralization, increase bone density and thus reduce the risk of destruction. The results of our research confirm the data obtained earlier by D.M. Buchner et al. (1992)3. At the same time, according to E.H. Wagner et al. (1992) even a small increase in the level of physical activity in the elderly can have great health benefits25. In addition, according to scientists, systematic physical activity increases the physical and emotional background and improves the immune system19.

Like other programs of recreational physical training developed by V.V. Cherkasov, A.A. Lapaeva, I.A. Ilyinykh (2021)5, our classes of ethnic mobile games showed a positive effect on the normalization of body weight, the functioning of the cardiovascular system, increasing the work capacity of persons of pre-retirement age.

Furthermore, the developed program of using ethnic games to improve the physical development and physical fitness of adults 50-55 years old in the middle mountain conditions proves that the tools used have a good effect on increasing motor activity, prolongation of work activities, and contribute to the health strengthening. They create favorable prerequisites for the full solution of the various tasks of physical culture of the adult population.

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