

Efficiency of using cheerleading for flexibility development at female students of teacher training college

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Abstract.

Purpose: to define dynamics of indicators of flexibility development at female students of 15-17 year old after using cheerleading exercises. **Material and methods:** researches were conducted on the basis of teacher training college of Kharkiv humanitarian-pedagogical institute. 385 female students of the I-III courses of non-sports profile took part in them, from whom 3 control and 3 experimental groups were created. Cheerleading elements (basic movements, jump elements, stunts and so forth) were included in educational process of female students of experimental groups during the experiment. The following methods of the research were applied: theoretical analysis and generalization, pedagogical experiment, pedagogical testing, methods of mathematical statistics. The development level of flexibility was determined by indicators of mobility of a backbone at bending (cm), backbone mobility at arching (cm), mobility in a coxofemoral joint (degrees), and mobility in a shoulder joint (degrees). **Results:** it is defined that the development level of flexibility of female students, on average, answers assessment "unsatisfactorily"; positive dynamics of indicators of flexibility after using cheerleading exercises is established. **Conclusions:** application of cheerleading elements in educational process positively affected the development level of flexibility of 15-17 year old female students. Indicators of active mobility in a shoulder joint most essentially improved, and the greatest gain in indicators of the development level of flexibility is recorded at 15 year old girls.

Keywords: physical education, motive qualities, students, flexibility.

Introduction

The education system needs constant improvement which is caused by social changes which happen in society. Modern society needs healthy people who actively develop their individual abilities in the corresponding kind of activity, capable to self-actualization, self-improvement, optimum and rational realization of their biological and social functions (Muskharina et al., 2013). However, health of the Ukrainian nation has worsened for years of independence what point data of the last researches to. So, the "low" level of physical development of 15-17 year old persons is established at a research of influence of cheerleading exercises on physical development of female students (Maslyak & Krivoruchko, 2016); the "average" level of functioning of cardiovascular system at pupils of middle school at a research of cardio system at 13-14 year old pupils (Kuzmenko, 2017); the "average" level of physical health at 7th grade pupils and "below the average" at 8th grade pupils at a research of state of health at pupils of middle school (Mameshina, 2016); the "average" level of physical health at 10-16 year old schoolgirls (Krivoruchko et al., 2018); the insufficient level of functional state of vestibular, acoustical and visual analyzers (Maslyak et al., 2016; Shesterova et al., 2017; Azhippo et al., 2017). It is established by numerous researches that effective, operative and available way of strengthening of health is physical education classes (Andrieieva et al., 2017; Druz et al., 2017; Quennerstedt, 2008; Leifa & Zheleznyak, 2017; Podrigalo et al., 2016, 2018).

At the same time physical activity has the considerable potential for public health in the conditions of low physical activity of teenagers which developed through intensification of educational process (Andrieieva et al., 2017). Druz et al., 2017 investigated questions of keeping healthy lifestyle by students for the purpose of improvement of their physical health as integral indicator of viability. Quennerstedt, 2008 considers physical activity as protection against diseases or excess weight. Leifa & Zheleznyak, 2017 focuses attention on purposeful and regular physical activity of pupils for improvement of quality of life of younger generation. Podrigalo et al., 2016, 2018 note positive dynamics of indicators of physical development at sports activities.

At the same time a number of researchers indicate the need for using innovative means, forms and methods in educational process of physical education because traditional approach isn't always of interest to the younger generation. So, Danylevych et al., 2017, established the insufficient level of introduction of innovative technologies in educational process of students in the branch of physical education and sport. Braga et al., 2017, claim that innovative content at physical education classes can provide introduction by continuous professional development of physical culture teachers. Aghyppo & Krivoruchko, 2011, 2016, established by questioning that students have interest in more modern and nonconventional types of physical activity.

Numerous researches proved positive influence of nonconventional means and physical education methodologies. Practicians of Pranayama Bhastrika (Baljinder Singh Bal, 2015), rugby-5 (Filenko et al., 2013), Bodyflex and Pilates exercises (Kozina et al., 2014), Hatha yoga exercises (Tolchieva, 2015) and a lot of another relate to them.

Important indicator of health is the development level of physical qualities; flexibility takes the special place among them. The sufficient flexibility of the articular-ligamentous apparatus allows doing rather easily different movements with the largest speed, expressiveness and efficiency. The insufficient mobility in joints limits the level of force manifestation, has negative effect on high-speed and coordination abilities, doesn't allow creating effective technique of motor action, reduces profitability of work and is often the reason of ligament and muscle damage.

The analysis of scientific literature showed the existence of rather large number of the works which are devoted to a question of a research of the development level of flexibility of different age contingent. So, Tolchieva, 2015, investigated efficiency of using the developed Hatha yoga program in out of school work of female students of higher educational institution. The scientist recorded percentage improvement of this indicator.

Pogrebniak et al., 2013 defined that the complex of special exercises during improving aerobics classes positively influences increase in indicators of flexibility. Reliable increase in results is traced in indicators of increase in mobility of backbone joints and mobility of shoulder joints.

The analysis of results of the researches received by Dakal, 2014 showed that complex performance of Callanetics exercises of static, dynamic and ballistic character significantly influences improvement of backbone mobility unlike coevals from the control group.

Aghyppo & Bala, 2017 defined that inclusion of cheerleading exercises in physical education process positively affected the development level of flexibility at pupils of middle school. The greatest gain in indicators is recorded at 10 year old pupils.

Cheerleading is one of innovative, effective and effective ways of strengthening of health and development of physical qualities. Cheerleading differs in staginess, variety and availability (Bala & Maslyak, 2014; Carrier & Mckay, 2006; Chappell, 2005). Cheerleading exercises effective influence on an organism, promote the different contingent to classes of those who are engaged: age, sexual, medical, with any level of physical fitness. Our previous researches proved positive changes in indicators of physical working capacity (Krivoruchko & Maslyak, 2015), force and endurance development of 15-17 year old students (Krivoruchko et al., 2013, 2018) and also in indicators of physical development of the studied at the age of 10-16 years under the influence of cheerleading exercises (Maslyak et al., 2018; Bala et al., 2018).

A number of scientists, introducing cheerleading in educational and training process of the different age contingent, note a wide range of positive aspects of cheerleading classes. So, Bykov et al., 2014, note positive influence of sports and health-improving cheerleading classes on development of physical qualities of younger pupils. Authors note that cheerleading exercises most significantly influenced development of flexibility, dexterity and force of separate muscles groups.

Shepelenko & Luchko, 2015, came to a conclusion in their researches that certain changes by anthropometrical indicators occur at female students-cheerleaders under the influence of systematic trainings, namely body weight, volume of hips and waist decrease, and volume of thorax increases, also it is established that cheerleading promotes increase in the general and motive culture, formation of various motive skills, development of coordination qualities and creative abilities.

Zinchenko, 2013, notes effective influence of the author's technique of cheerleading sports training on dynamics of indicators of the general physical, special physical and technical fitness of athletes at the stage of specialized basic preparation.

Shkola & Pyatnickaya, 2015, note positive influence of cheer-dance show exercises on a functional state of an organism and motive preparedness of 17-23 year old female students on out of school activities and also note considerable interest of investigated to physical education classes with use of the offered technique.

The Russian researcher Patrusheva provides similar data, 2014 which proves that activities in cheerleading sports section not only increase the interest of students-sportswomen but also carry out positive effect on their physical development and preparedness.

Thus, cheerleading is an effective mean of physical education of children and youth which influences a human body in a different way and promotes formation of harmoniously developed personality.

At the same time a question about influence of cheerleading on different parameters of flexibility manifestation at 15-17-year youth isn't studied. Therefore, we consider necessary to investigate this problem by

experimental introduction of cheerleading exercises in educational process on physical education of teacher training college students.

Material & methods

385 female students of the I-III courses of non-sports profile, age of 15-17 years participated in the research. The informed consent to participation in the research was received from all participants.

Researches were conducted on the basis of teacher training college of Kharkiv humanitarian-pedagogical institute. 3 control and 3 main groups were created: I group – female students of I course, II group – female students of the II course, III group – female students of the III course. All students who participated in the research were referred to the main and preparatory medical groups. During the experiment educational process of female students of control groups was based on types of motive activity, typical for these educational institutions (track and field athletics, volleyball, basketball). These classes included theoretical, technical and tactical training. And cheerleading (basic movements by hands and legs, jump elements, stunts, dancing combinations) was introduced in educational process of female students of the main groups. Duration of classes was 1 hour 30 minutes. Study was carried out in several stages: the 1st stage – study basic movements, the 2nd stage – study basic jumps, the 3rd – study stunts and pyramids, the 4th – combination of the studied elements in connections, combinations. Study was based on the principle from simple to difficult.

Research methods:

The development level of flexibility was defined behind results of backbone mobility when bending by performance of trunk inclination from situation forward, sitting (cm); backbone mobility at arching - "backbend" from situation, lying on a back (cm); mobility in a coxofemoral joint – straight leg raise from situation, lying (degrees); mobility in a shoulder joint – straight arm abduction from situation, lying on a gymnastic lava (degrees).

The received results were compared to a standard scale and estimated by a certain number of points.

Results

The analysis of the received results showed the lack of reliable differences between indicators of female students of the main and control groups ($p > 0,05$). It is revealed in age aspect that changes of indicators haven't certain system, have variable character and authentically don't differ ($p > 0,05$).

Comparing the obtained data with standards (Sergiyenko, 2010) it is defined that indicators of backbone mobility when bending answer assessment 3 points in the I age group, II – 4 points, III – 2 points; results of mobility in coxofemoral and shoulder joints equal to assessment 1 point at the investigated of all age groups. Thus, the development level of flexibility at female students of 1-3 courses on average answers assessment "unsatisfactorily".

Investigating the data obtained after introduction of specially selected cheerleading exercises in the system of physical education at students of 1-3 courses (tab. 1), it is defined that all indicators of the development level of flexibility considerably improved at the studied main groups, and these changes have reliable character ($p < 0,05-0,01$).

Table 1. Indicators of the development level of flexibility of female students of the main and control groups after the experiment

Groups	I group	II group	III group
Trunk inclination forward (cm)			
Main	14,33±0,54	14,33±0,54	14,33±0,54
Control	12,35±0,73	12,35±0,73	12,35±0,73
t	2,18	2,10	2,06
p	<0,05	<0,05	<0,05
Straight leg raise (degrees)			
Main	87,05±1,04	85,27±0,76	85,1±0,66
Control	81,13±2,76	81,32±1,24	82,44±1,11
t	2,01	2,71	2,02
p	<0,05	<0,01	<0,05
Arm abduction (degrees)			
Main	5,39±0,37	5,03±0,29	4,92±0,25
Control	4,00±0,42	4,00±0,40	3,94±0,39
t	2,48	2,09	2,10
p	<0,05	<0,05	<0,05
«Backbend» (cm)			
Main	51,19±1,90	47,41±1,72	48,98±1,30
Control	53,52±3,00	51,76±1,76	50,22±0,89
t	0,66	1,77	0,79
p	>0,05	>0,05	>0,05

So, results of the main group at female students of the 1st course improved by 22,3% (2,6 cm), the 2nd course – by 24,4% (2,7 cm), the 3rd course – by 21,8% (2,5 cm) according to backbone mobility when bending; behind results of mobility in a coxofemoral joint by 6,3% (5,2°); 5% (4,0°); 4,9% (3,9°) respectively; on mobility indicators in a shoulder joint by 48,4% (1,7°); 46,6% (1,6°); 50% respectively (1,6°); according to backbone mobility at arching by 9,3% (5,3 cm); 8,9% (4,6 cm); 7,2% (3,8 cm) respectively. Thus, indicators of active mobility in a shoulder joint most essentially improved, and the greatest gain in indicators of the development level of flexibility is recorded at 15 year old girls.

Considering the data obtained after the experiment of students of control groups it is defined that they also a little improved, but these changes inconsiderable and unreliable ($p>0,05$). So, results of backbone mobility when bending improved by 8,8% (1,0 cm) at the investigated of the I group; II – by 4,6% (0,5 cm); III – by 7,6% (0,9 cm); mobility indicators in a coxofemoral joint by 1,6% (1,3 degrees); 2,3% (1,8 degrees); 1,8% (1,4 degrees) respectively; results of mobility in a shoulder joint by 21,2% (0,7 degrees); 26,9% (0,8 degrees); 13,2% (0,4 degrees) respectively; indicators of backbone mobility at arching improved by 1,3% (0,7 cm); 2,5% (1,3 cm); 3% (1,5 cm) respectively.

The analysis of the repeated data in age aspect showed the lack of essential changes in comparison with initial researches.

Comparison of the repeated results of students of the main groups with standards (Sergiyenko, 2010) showed that it was occurred only at female students of the III group where results improved on 1 point and began to answer assessment 3 points not in view of a considerable and reliable gain of indicators of development of backbone mobility when bending on a rating scale. At female students of I and II groups results, as well as before the experiment, answer assessment 3 and 4 points respectively. Results of I and II main groups improved on 2 points and 3 points began to answer assessment in indicators of development of mobility in a shoulder joint. And results of the III group began to approach assessment 3 points. The lack of changes on a rating scale is revealed in indicators of development of mobility in a coxofemoral joint. That is the recorded considerable percentage gain of indicators wasn't displayed on estimated criteria and results as well as before the experiment answer assessment 1 point.

In our opinion improvement of results of the development level of flexibility wasn't practically displayed on a rating scale through imperfection of standard criteria.

Similar comparison of results in control groups demonstrates that changes in assessment of the studied indicators didn't take place.

Thus, more considerable percentage dynamics of positive estimates in comparison with estimates of control groups is observed after the experiment at students of the main groups.

Therefore, it is possible to summarize that application of specially selected cheerleading exercises in the course of physical education of teacher training college female students of 1-3 courses positively affected the development level of flexibility. The most essential gain of results is noted, generally at 15 year old girls.

Discussion

The theoretical analysis and generalization of experimental data allowed establishing effective influence of cheerleading exercises on separate parameters of motive preparedness of student's youth. Inclusion of cheerleading exercises in process of physical education of 15-17 year old students considerably supplements the existing data according to application of cheerleading in educational and training process of the younger generation.

So, positive dynamics of indicators of the development level of flexibility at pupils of middle school under the influence of cheerleading exercises is defined by the researches of Aghyppo & Bala, 2017. The greatest gain in indicators is recorded at 10 year old pupils. According to our researches the gain in indicators of flexibility of 15-17 year old students was also essential and these changes have reliable character ($p<0,05-0,01$). So, results of students of the I main group improved by 21,58%, II – for 21,22%, III – for 20,97%. The received results are confirmed by the data submitted to Platonov, 2004 which notes that high rates of flexibility are noted at the age of 15–17 years and also is explained by data of Zhukov & Yezhova, 2004, Zilov & Smirnov, 2008, Krutsevich, 2008, Kholodov & Kuznetsov, 2008, according to which skeleton ossification isn't completed at the studied age yet which provides rather high level of mobility and there are considerable reserves for improvement of flexibility, especially if to be engaged in physical exercises systematically and correctly.

Zinchenko, 2013, investigated influence of cheerleading on athletes who are engaged according to the author's program. The scientist established positive dynamics of indicators of the development level of coordination, high-speed and power and high-speed abilities, flexibility and force. Shkola & Pyatnickaya, 2015, defined positive influence of one of types of cheerleading – cheer-dance on physical development and motive preparedness of 18-23 year old female students during its introduction on out-of-school activities (sections). Patrusheva, 2014, established that activities in cheerleading sports section increase the interest of students-sportswomen and positive effect on their physical development and preparedness. Unlike the noted scientific works, our researches are focused on using cheerleading not in training process, and in educational process. Also our researches are accented on age of 15-17 years whereas above-mentioned are guided by more senior age

group of students. It is essential difference and considerable addition to the existing researches in professional cheerleading sphere. The obtained data experimentally confirm efficiency of using cheerleading not only in training process, but also in teaching and educational process.

Studying of experimental data of Bikov et al., 2014 showed a gain of indicators of physical fitness at 1-4th grades pupils as a result of visiting an addition cheerleading sports section. The greatest gain of physical qualities is observed in indicators of flexibility, dexterity and force of separate muscular groups. However, unlike these researches, we elected other age category of the investigated and researched different parameters of flexibility manifestation (backbone mobility when bending, mobility in a shoulder joint, backbone mobility at arching). It gives the chance more widely to estimate influence of the system of cheerleading exercises on flexibility indicators.

Considering the data of students of control groups received after the experiment, it is defined that they also a little improved, but these changes are less considerable and unreliable ($p > 0,05$). Results of students of the I control group improved by 8,22%, II – by 9,07%, III – by 6,4%.

Thus, cheerleading exercises positively affected extent of flexibility manifestation which indicators considerably and authentically raised at the studied experimental groups. This explained from the fact that a significant amount of exercises with manifestation of the maximum amplitude were used in the experimental period on introduction of cheerleading exercises in process of physical education.

Conclusions

Using cheerleading elements in educational process positively affected the development level of flexibility at female students of teacher training college. So, reliable improvement of backbone mobility during bending, mobility in a coxofemoral joint, mobility in a shoulder joint, backbone mobility at arching is revealed after using cheerleading. The noted changes demonstrate increase in the development level of all forms of flexibility manifestation. Reliable increase in amplitude of performance of motor actions is recorded causes increase in elasticity of muscles and ligaments, mobility of joints, central nervous regulation of muscles tone, confirms development of active flexibility.

The noted changes demonstrate that the applied system of cheerleading exercises is the effective means of physical education allocated for increase in the development level of physical qualities.

Thus, the conducted by us researches allow recommending to teachers of physical training of colleges to complement the content of studies with cheerleading exercises for the purpose of development of the main physical qualities, in particular flexibility.

The subsequent researches in this direction can be conducted by definition of influence of cheerleading exercises on the level of physical fitness at 18-21 year old female students.

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The conflict of interests

The authors note that there is no conflict of interests.

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