PHYSICAL EDUCATION OF STUDENTS

EVALUATION OF FRESHMEN COORDINATION ABILITIES ON PRACTICAL TRAINING IN GYMNASTICS

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Annotation. Measured coordination abilities (baseline) to the static and dynamic equilibrium of the body, the space-time orientation on the support and in unsupported position, proprioception sense, vestibular stability, vestibular sensitivity, coordination limbs symmetrical and asymmetrical. Coordination abilities were also measured under difficult conditions. The study involved 238 students aged 17 - 18 years. Registered a positive trend of improving performance motor tests, development of educational material. Students who specialize in difficult to coordinate sports had significantly better performance. Found that the content of the material work programs of sports and educational disciplines helps improve sensorimotor coordination tasks students. It is noted that the content of the training material is the basis for efficient formation of motor skills and motor skills development of gymnastic exercises. Recommended ways to increase sports and technical and professional skills of students.
Key words: students, exercises, tests, ability, learning, motor, skills, score.

Introduction

The process of human coordination abilities' development and improvement takes an important place in physical education and sports [6, 8, 11, 12, 14, 16, 21]. The conducted sensomotor coordination researches of Polish students of Academy of physical education in Belaya Podlyaska, which laste for two years, permitted to establish a correlation dependence of theoretical; and practical material's efficient mastering by the students , with consideration their level of sensomotor coordination development and its improvement by means of sports-pedagogical disciplines [16, 17]. In this connection let's consider some key scientific facts, revealing terminology and content of the subject of our research.

Coordination. In monograph by N.A. Bernstein "On dexterity and its development" the following is written: "Coordination is nothing less than overcoming of excessive degrees of freedom of our movements organs, i.e. their transformation into controlled systems". "Entering of continuous corrections into movements on the base of sense organs' reports is called by us "principle of sensor corrections". "Sensor" (in Latin) means "relating to susceptibility", "basing on perception" (p. 54).

As per Bernstein coordination of movements ensures interaction of levels of movements' construction at the expense of central nervous system (CNS) structures' integration. The results of American scientists' researches [18, 19] also witness that sensomotor coordination is development, control and correction of movements by means of sense organs: visual sensor system, movements' sensor system, vestibular, hearing sensor systems and so on.

Correcting relations, which result from interaction of versatile analyzers' cortex ends effectively develop, facilitate successful execution of movements, actively participate in formation of motion skills of people doing physical training and sports and characterize positively human abilities [20].

Sensomotor coordination is a complex movements' skill, which is the base of dexterity and distinguishes the skills of master of sports from the beginner's skills. At initial stages of training, the actions, which compose sensomotor coordination, can consist of a chain of separate sensomotor responses, each having its own beginning and end. In the process of training they unite into flexible, soft system of sensomotor corrections of the fulfilled movement, which realizes general target of whole sport exercise. The further complication of sensomotor coordination occurs if it becomes necessary to control multi connecting system [9].

Term "abilities" is regarded as manifestation of personality's individual properties and capabilities, which are subjective conditions of successful motion activity's fulfillment. They are not reduced to already available knowledge and skills. Abilities are revealed in quickness, profoundness and strength of mastering of motion actions means and techniques; they are constructed psycho- physiological regulators, conditioning the opportunities for their acquiring and realization. Inclinations are the bas of them [2, 10].

Motion-coordination abilities are understood as human capability to quickly, accurately, bio mechanically purposefully and promptly solve any movements tasks [1, 2].

The specificity of motion activity in sports greatly influences on the process of coordination abilities' development, which are the product of sportsman organism's psycho-physiological and functional capabilities development. This process goes under the influence of planned training loads, which are directed to formation of motion skills in a certain kind of sports [9].

Achievement of high sport results is possible only if abilities to evaluate and precisely regulate dynamic, time and space parameters of movements are highly developed. The level of sportsman's coordination abilities development is determined by his ability to process information from different sensor systems (visual, vestibular, hearing, tactile and other). Considering sports activity, it is necessary to regard specific coordination abilities, which, like motion sports skills, are CNS multi-level, hierarchic, arranged structures, ensuring, in combination with sense and movements organs, optimal solution of motion task [11].

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A lot of scientific works are devoted to description of significant coordination abilities in different kinds of sports. Some negligible discrepancies, existing in these works, only affirm the specificity of certain ability's development and individual distinctions of its dominating in related group of kinds of sports or in separate kind of sports.

Gymnastics exercises were created artificially [10]; they practically are not used in everyday life. At the same time, in the world there exist unique systems of exercises in gymnastics, calisthenics, acrobatics, which successfully develop and are demonstrated as compositions at competitions of different scale, including Olympic Games. In connection with it requirements to physical, functional (sensomotor), coordination and technical training and preparedness of trainees are being developed and improved. The key trend is still coordination complexity of competition programs as well as their difficulty as per LI table of difficulty.

Professor V.N. Boloban [6, 7] systemized twelve coordination abilities, which must positively characterize efficient control of sportsman's movements, serve as the base of technical preparedness. With their detail analysis and evaluation, it turned out, that in many cases of gymnastics training process and competitions, sensomotor coordination indicators manifest weakly and "work" inefficiently in phase structure of sports technique of exercises, executed by a sportsman. It leads to great number of technical mistakes, like loss of static-dynamic stability of sportsman's body and the system of bodies, loss of time and space orientation, distortion of exercise tempo-rhythm and etc.

Analysis of scientific research literature, practical experience witness that up to the present time technologies of trainees sensor systems in combination with indicators of technical, physical, psychological and other kinds of training have not been developed yet. There is a deficit of scientific-methodological works oriented at grounding of purposefulness of exercises programs application in practical training on students physical education.

The researches have been presented within the frames of subject 2.15 of Combined plan of scientific & research works in the sphere of physical culture and sports for 2011-2015.

Purpose, tasks of the work, material and methods

The purpose of the research: evaluation of indicators characterizing coordination abilities of National university of physical education and sports of Ukraine (NU PESU) first year students on gymnastics practical training.

The tasks of the researches.

1. Systematization of motion tests for estimation of NU PESU first year students' coordination abilities.

2. Research the level and dynamics of NU PESU first year students' coordination abilities' development level on gymnastics practical training.

Material of the research. 238 (142 male and 96 female) of NU PESU first year students of 17-18 years old took part in the researches. They specialized in the following kinds of sports: outdoor games, cyclic, sports with complex coordination and martial arts. From them there were 78 masters of sports (MS) and candidates master of sports (CMS), I-II grade sportsmen - 111 persons, students with no sports grade – 49 persons.

Testing was conducted in three stages. On the first stage (from 10^{th} to 26^{th} of September, 2011) initial level of NU PESU first year students' coordination abilities (initial indicators) were measured during practical training in the course of general gymnastics.

On the second stage (October – December 2011) students executed practical material form academic courses in gymnastics ç field and tracks sports, outdoor games, in compliance with academic time-table of the University (once a week). The greatest part pf the program was oriented on studying of gymnastics theory, methodology of teaching rank and applied exercises as well as exercises of general physical development.. In all these programs there was no material, directed to improvement sensomotor coordination of the trainees. B At the end of the second stage the repeated pedagogical testing of coordination abilities of the tested eas carried out to control the influence of academic programs' content on the students' sensomotor coordination level rising.

On the third stage, which took five months (January – May 2012), as per the first year program the students fulfilled applied and general physical exercises, vaults, acrobatic exercises, hang and rest exercises, exercises for improvement of the trainees' sensomotor coordination and for development of physical capabilities (strength, flexibility, spring ability, dexterity). At the end of the third stage summarizing pedagogical testing was carried out by all indicators, which determine coordination abilities of the tested for checking the influence of practical trainings on the trainees' sensomotor coordination development, in particular, on vestibular and motion analyzers (final indicators).

The methods of the researches. Analysis of scientific-methodological literature, comparison-analogy method, the methods of testing, the method of academic material programming, mathematical statistics.

The method of testing. For solution tasks and aims of the research we selected and systemized nine tests, indicators of which characterize coordination abilities of the tested. The tests/ safety factors are: 0.490-0.990 [3, 4, 6, 11]. The sign (evaluation criterion), which was the base of selection and systematizing of tests for measurement and evaluation of coordination abilities is sensomotor coordination, as an indicator of integral functioning of organisms' sensor systems of the tested [18, 19].

Testing of body static balance (test 1, Biruk's test). Exercise: vertical posture on tiptoe, arms are raised up, eyes are closed (see fig.1). Body position shall be maintained for long time (without stepping). This test characterizes the level of static body balance maintaining skill in complicated conditions.

Fig. 1. Biruk's test

The study of vestibular balance by the indicators of dynamic balance (test 2, Barany's tets). Exercise: sitting in Baraby's armchair with head bent to chest (by 30°), eyes are closed. Ten rotations of the armchair round the clock for 10 seconds (frontal semi-circumferential channels of vestibular analyzer are in the plane of stimulation. After stopping of the armchair it is necessary to stand up and go five meters by straight line, looking forward, arms downward (see fig.2). Six greatest body deviations to the right and to the left when passing five meters segment are to be analyzed. After this, arithmetic mean of six body deviations from the straight line shall be calculated (sm).

Fig.2 Barany's test

Testing of static-dynamic body balance (test 3, spin ahead test). Exercise: from sitting posture with hands resting on floor, fulfill five grouped spins forward for 5 seconds and then, immediately, ten maximally high jumps in place in the center of calibrated circumference (fig. 3). Mainly sagittal semi-circumferential channels of vestibular analyzer and otolithic system are stimulated. Jumps shall be carried out with closed feet, hands on the belt and eyes look forward. Three greatest deviations from the center of calibrated circumference shall be evaluated.

Test 3. Spin forward test

Study of coordination abilities' development level (test 4, coordination test) with the help of exercise for coordination. Exercise: from initial position (main posture): 1. Left hand on the belt; 2. Right hand on the belt; 3. Left hand to shoulder; 4. Right hand to shoulder; 5. Left hand upward; 6. Right hand upward; 7-8. Two claps over the head; 1-6. Hands motion downward in reverse order; 7-8. Two claps by hands on hips (see fig.4).

Fig.4. Coordination test

The exercise was evaluated by ten-point system. For every wrong movement 0.5 points were deducted. After showing of the exercise, trial attempt was executed and only after this the exercise was fulfilled for its evaluation.

Study of coordination abilities' development level of the tested with the help of coordination exercises in hampered conditions (test 5, coordination test in jumping). Exercise: from initial position: jump on two legs, left hand on belt; 2. Jump on two legs, right hand on belt; 3. Jump on two legs, left hand to shoulder; 4. Jump on two legs, right hand to shoulder; 5. Jump on two legs, left hand upward; 6. Jump on two legs, right hand upwards; 7-8. Two claps over the head; 1-6. Movement of hands downward, in the reverse order; 7-8. Two claps by hands on hips (see fig.5).

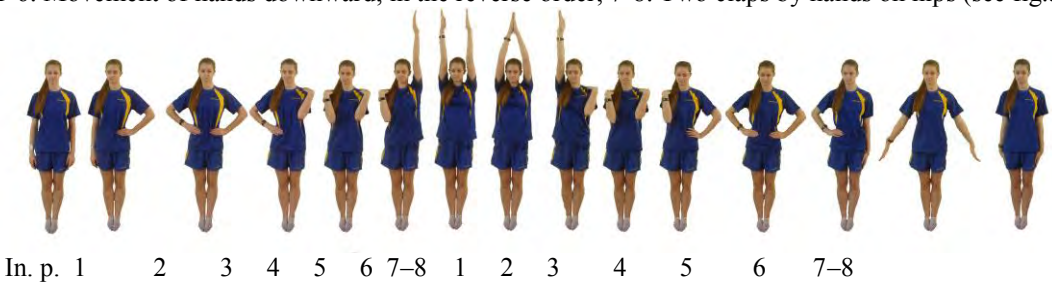

Fig. 5. Coordination test in jumping.

The exercise was evaluated by experts as per ten-point system. For every wrong movement 0.5 points were deducted. After showing of the exercise, trial attempt was executed and only after this the exercise was fulfilled for its evaluation.

Study of firm landing with depth jump (test 6, landing test). Exercise: Jump from the height of 3 meters on foam rubber mats, in the center of circle in straightened position (see fig.6). In the tests the quantity of landings and the character of landing mistakes were determined by 10 points scale: little mistake – 0.2 point, mean – 0.5 points, falling – 1 point. The mark was mean value of mistakes of three attempts.

Fig. 6. Landing test with depth jump

Study of space orientation in conditions of relatively short-term weightlessness (test 7, space orientation test). Exercises: squeeze force gage by any had with force of 200 N (for girl – 100 N). Three attempts shall be executed with visual control (to remember the applied force) and three attempts without visual control, but with depth jump in straightened position from the height of 3 meters on foam rubber mats (see fig.7). Stimulation of otolithic analyzer dominates. Mark: mean value of three attempts shall not exceed 10N.

Fig.7. Space orientation test

The study of proprioceptor sensitiveness in varied thermodynamics conditions and stimulation of otolithic analyzer (test 8, proprioceptor sensitiveness test). Exercise: squeeze force gage by any hand with the force of 200 N (for girl – 100 N). Three attempts shall be executed with visual control (to remember the applied force) and three attempts without visual control with fulfilling of bent legs hang on lower (boys on upper) bar of different level bars (conditions of varied thermodynamics), see fig.8. Mark: mean value of three attempts shall not exceed 10 N.

Fig.8. Proprioceptor sensitiveness test.

Study of dynamic balance when passing polygon perimeter (test 9, dynamic balance test). Exercise: place one foot on one of the polygon's face (hands on the belt) and start moving on faces. Every step covers only one face, eyes are directed forward (see fig. 9). Movement shall be fulfilled up to the first loss of balance (movements of arms, body, touching support with leg). The quantity of passed faces shall be considered.

Fig.9. Dynamic balance test.

Results of the researches

The obtained initial body balance maintaining indicators (test 1, Biruk's test, participants – first year students of NU PESU, at academic classes in general gymnastics) witness that the tested did not manifest sufficient body balance (see fig.10).

Average group time of body posture maintaining is 7.40 – 7.41 seconds ± 0.42 – 0.58 seconds. Time indicators of steady body balance of boys, having no sports degree and boys, doing outdoor games are: (6.12 – 6.607 ± 0.51 – 0.55 seconds). Girls showed the time of body posture maintaining a little higher than boys but their indicators do not exceed 7.5 s (6.75 – 7.55 ± 2.10 – 0.81 seconds). A little better indicators were registered for kinds of sports, requiring complex coordination, martial arts sportsmen and masters of sports (7.97 – 8.16 ± 0.60 seconds). Indicators of body balance maintaining time for calisthenics (sportsmen of 1st degree, candidates masters of sports) as per Biruk's test are 15-20 seconds [3, 4, 6].

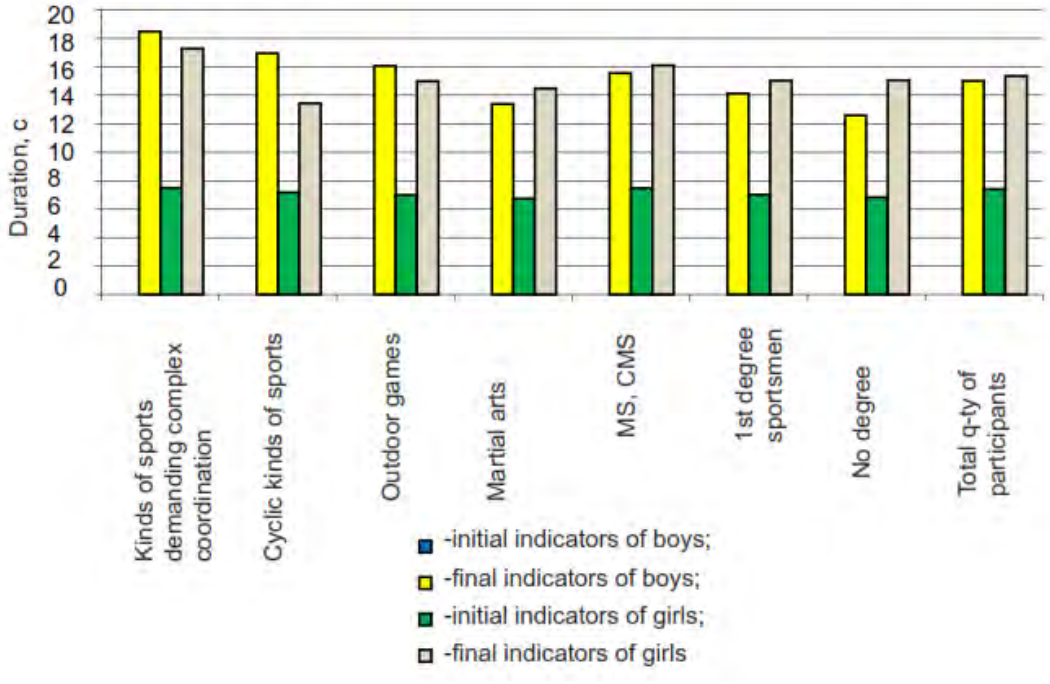

Fig. 10. Indicators, which characterize coordination abilities to maintaining of static balance by first year students of NU PESU

Notes: Kinds of sports, quantity of the tested.
Kinds of sports, requiring complex coordination: boys-6, girls -27 persons.
Cyclic rinds of sports: boys – 20, girls – 33 persons.
Outdoor games: boys -28, girls – 8 persons. MS and CMS: boys – 75, girls – 34 persons.
Students, having no sports degree: boys – 32, girls – 10 persons .
Total quantity of the tested: boys – 142, girls – 96 persons.

After finishing of general gymnastics course, by the results of test 1, Biruk's test (see fig.10) it possible to make conclusion that the tested gained ability to keep firm body vertical position on tiptoe with closed eyes for longer time. The boys – representatives of kinds of sports requiring complex coordination and outdoor games improved the time of vertical position on tiptoe maintaining by 8.0 -10.33 seconds (p<0, 041), the representative of cyclic kinds oif sports and martial arts – by 5.0 -9.40 seconds (p>0, 056), MS and CMS – by 7.60 seconds (p<0,001), sportsmen of I-II degree – by 7.48 s. (p<0, 001), boys, having no sports degree – by 6.46 s. (p<0, 005). The similar, authentic changes of mean group body balance indicators were manifested by girls as well, in test 1. девушек. Final indicators improved by 7, 94c (p<0, 001). Sportswomen from kinds of sports requiring complex coordination and doing outdoor games improved the time of vertical body position on tiptoe keeping by 8.0 – 9.74 seconds (p<0, 041). The cyclic kinds of sports and martial arts representatives – by 6, 27 – 7, 75c (p>0, 056). MS and CMS – by 8, 62c (p<0, 001), sportswomen of I – II разряда – by 8, 02c (p<0, 001), female students, having no sports degrees- by 8, 22c (p>0, 005).

The results of vestibular body balance study, by the indicators of dynamic balance are given in fig. 11. With stimulating of vestibular analyzer vegetative and somatic responses appear, re-distribution of skeleton muscles' tone occurs, reflexive responses, required for keeping body balance in space are manifested. Results of test 2, Barany's test witness that after rotation, most of the tested feel coordination disorder when walking. So, when passing five meters segment, after rotating in Barany's armchair, the tested deviated from axial line to the left and to the right by 15 – 30 cm. Some sportsmen completely lost balance and even fell down, after one or two steps.

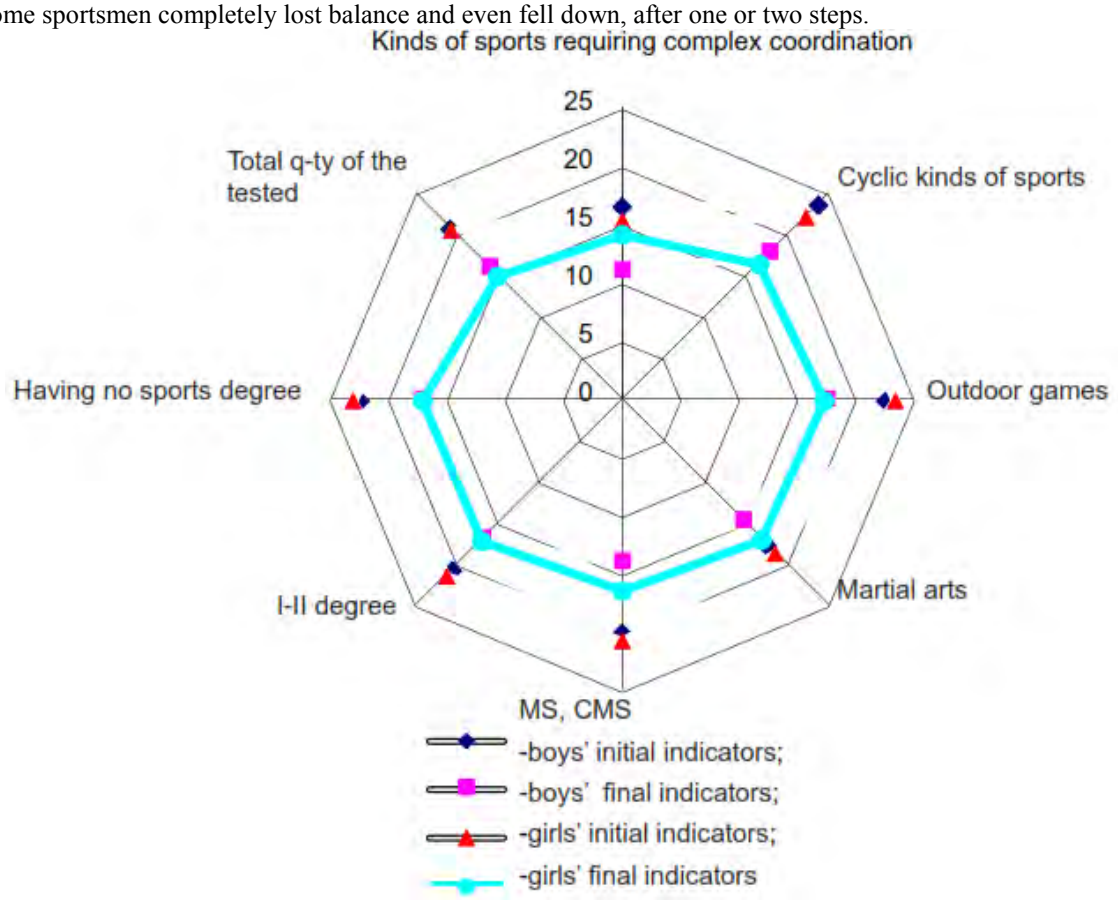

Fig. 11. Indicators, which characterize coordination abilities to vestibular balance of NU PESU first year students

Notes: see fig. 10

Mean group value of body deviation from contour line both for boys and girls is 20, 83, - 20, 70 ± 0.72 – 0.83 cm. The bests indicators of vestibular balance were showed by the sportsmen of kinds of sports, which require complex coordination and martial arts sportsmen 15.44 – 18.50 ± 1.18 – 3.42 cm. It is obvious than specific features of certain kinds of sports (rotating movements in different planes) influence positively on the level of vestibular analyzer's development. Vestibular analyzers indicators of sportsmen of cyclic kinds of sports and outdoor games as well as of students, having no sports degrees are within the limits of 23.75 – 22.24 ± 1.70 – 1.45 cm.

During one academic year the tested fulfilled practical material from academic programs in gymnastics, field and track sports, outdoor games, swimming as per academic time table (once a week). The greatest part of program in gymnastics was oriented on methodology of teaching and practical fulfillment of rank, applied exercises and exercises of general development, execution of vaults, acrobatic exercises; hang and rest exercises without special techniques,

directed to development of vestibular analyzer, excluding acrobatics, in which rotating movements were justified by exercise technique itself.

Evaluation of sports - pedagogical practical classes influence on students' vestibular balance was carried out at summarizing testing, at the end of academic year. When analyzing students' final indicators, improvement of vestibular balance becomes evident. Authentic stability og indicators has been registered. Test 2 was fulfilled by the tested with good coordination when passing five meter segment. The quantity of the tested, who passed test 2 without deviations from the straight line has been increased; falls down after rotating were absent. First of all it concerns the tested, having no sports degrees and sportsmen of cyclic kinds of sports. Mean-group indicators of deviations to the left or to the right when walking straight, both for girls and boys, have improved by 4 – 5 cm. (16.01 - 15.10 ± 0.64 – 0.83 cm); for outdoor games and cyclic kinds of sports indicators are as follows: 17.51 – 16.57 ± 1.057 – 1.42 cm.

That is, mean-group indicators of deviations to the left or to the right with walking straight, both for boys and girls, have improved by 4 – 5 cm. (16, 01 – 15, 10 ± 0, 64 – 0, 83 cm.); for outdoor games and cyclic kinds of sports mean-group indicators are: 17, 51 – 16, 57 ± 1, 057 – 1, 42cm.

Evaluation of static-dynamic body balance was carried out during fulfillment of ten maximally high jumps in the center of calibrated circle, after vestibular load (five grouped spins forward for 5 seconds). Arithmetic mean of three greatest body deviations from the center of calibrated circle was evaluated. The results of initial testing of vestibular development level are shown in fig. 12.

Analysis of test results witnesses that vestibular load significantly worsened dynamic body balance both of girls and boys. It lead to the fact that significant quantity of the tested (70%) could not jump in the center of calibrated circle, skipping the circumference, after fulfilling five spins. The worst indicators were sown by the sportsmen of cyclic kinds of sports and students without sports degrees 31, 30 – 34, 61cm. A little bit better results were manifested by the sportsmen of kinds of sports which require complex coordination: 25, 16± 3, 32 cm.

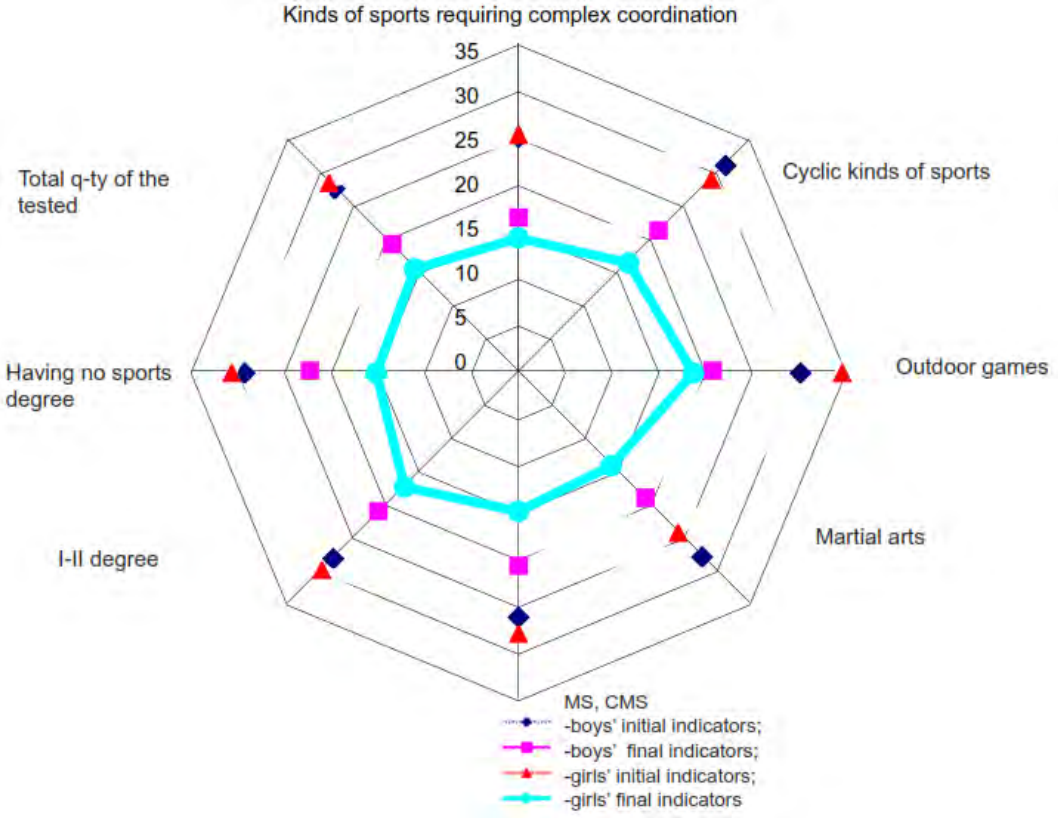

Fig. 12. Indicators, which characterize coordination abilities to static dynamic balance of NU PESU first year students

Notes: see fig. 10

Analysis of final indicators of static-dynamic balance of students' bodies after vestibular load permitted to affirm that static-dynamic balance of body became steadier. The quantity of the tested, who executed high jumps within ten centimeters calibrated circle, increased (29%). Jumps out of circle and, especially falls down, were absent after rotational load. Mean-group indicators of boys and girls improved by 10-16 cm, in comparison with initial indicators, with it, mean group indicators of girls were from 14.0 to 18.69 cm ($p<0, 001$).

The tested coordination ability's development level, who were tested for coordination in place (test 4), is characterized as medium and higher than medium and it was in compliance with the results of researches of Polish first

year students [17]. Average group marks for test 4, both for boys and girls, were 9.3 – 9.5 points. It witnesses that by the indicators of test 4, students (male and female) are on the same level of coordination abilities' development.

With complicating control task for coordination (coordination jump test, test 5) most of the tested showed significant worsening of the quality of this test's fulfillment, see fig. 13.

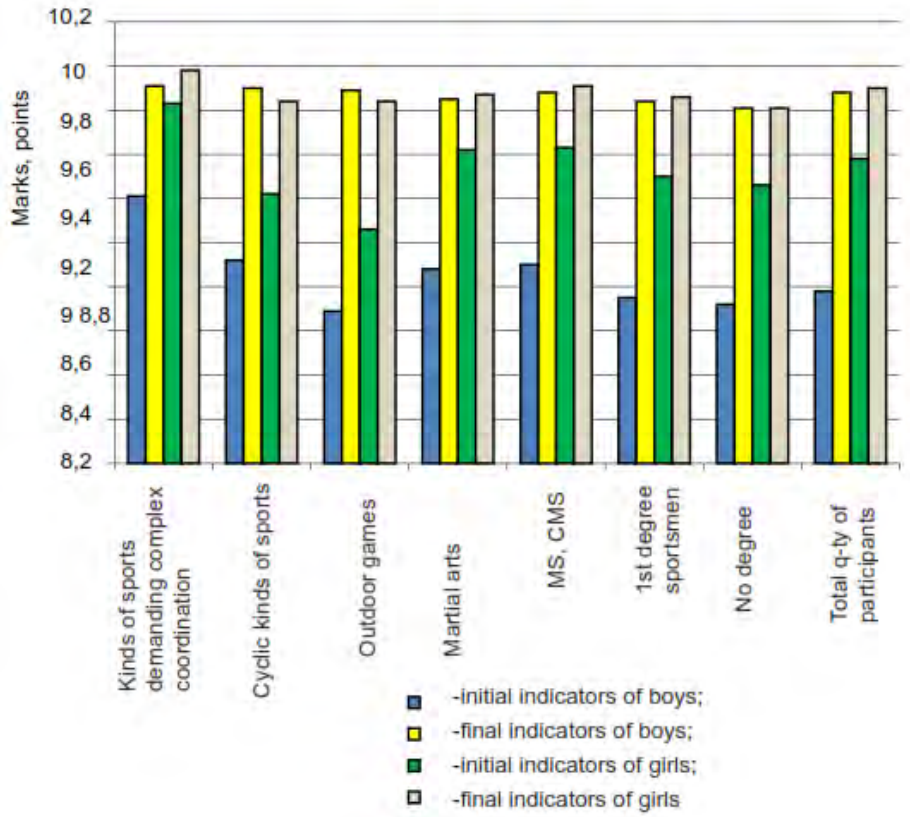

Fig. 13. Indicators, which characterize coordination abilities to execution of exercises for symmetric and asymmetric coordination by first year students of NU PESU

Notes: see fig. 10

For example, test 5 marks of students – representatives of outdoor games kinds of sports reduced by 0.5 – 0.8 points. It is significant that the representatives of kinds of sports requiring complex coordination manifested no coordination disorders in test 5. This indicator remained on the level of test 4. At the end of experiment, indicators of tests 4 and 5 improved in average by 0.5 – 0.7 points and became 9.82 – 10.0 points (of sportsmen of kinds of sports, requiring complex coordination). It witnesses that execution of sports-pedagogical academic disciplines by first year students facilitated improvement of coordination abilities of the tested and, as a result, coordination exercises were fulfilled on higher technical level.

Test 6, landing test, is fulfilled for determination of balanced landing quality with depth jump, from the height of 3 meters with upright position of body. The analysis of the obtained results witness, that most of the tested (86.5%) fulfilled the test with balance disorders at landing. 20% of the tested executed landing with little mistakes, 45% - with rather significant mistake and 21.5% - with rough mistakes. But, alongside with it, after one year of training the indicators of this test noticeably improvedFor example girls' average group mark for this test increased by 0.4 – 0.6 points and became equal to 9.53 - 9.81; the same of boys became equal to 9.67 – 9.83 points due to decreasing of rough and significant mistakes by 15%.

Tests 7 and 8 were used for determination of space orientation and proprioceptor sensitiveness.

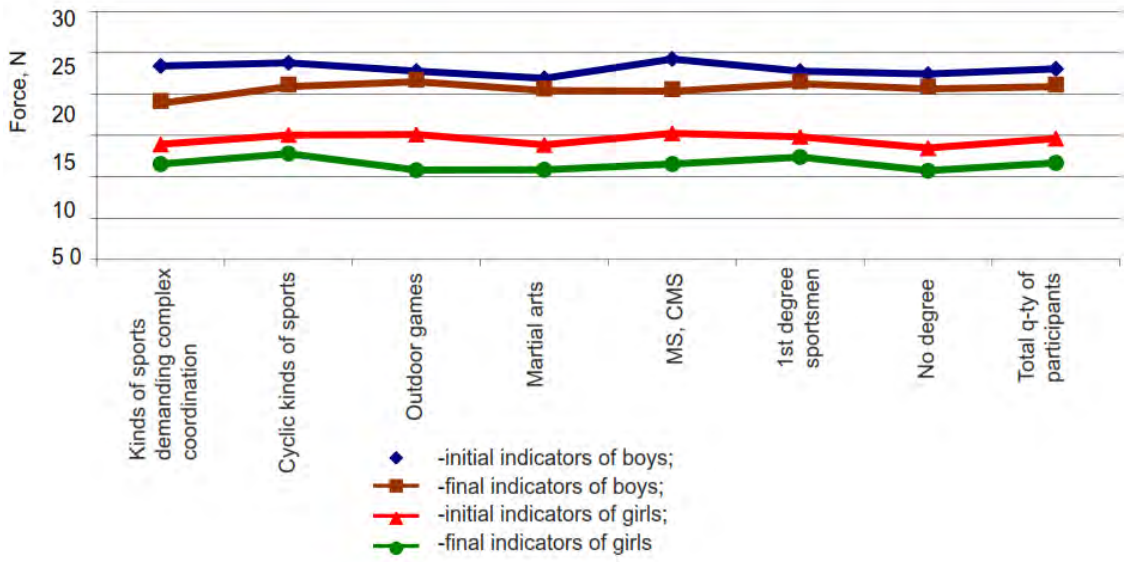

Fig. 14. Indicators, which characterize coordination abilities to evaluation of proprioceptor sensitiveness, under changed hemo dynamics of first year students of NU PESU

Notes: see fig. 10

The results of the research, presented in fig.14 witness, that during fulfillment of this test, the tested, in most cases, applied excessive muscular force due to overestimation of the required indicator. So, mean group indicators of boys differed from initial indicators by from 20 - to 30 N and girls' difference was by from 20 to 35N. Practicing of academic sports-pedagogical disciplines, at the end of researches resulted in significant improvement of space orientation indicators as well as indicators of proprioceptor sensitiveness and they reached to the pre-set conditions, in which mistake did not exceed 7.8-19.7N for boys and 7.8 – 16.4 N for girls ($p<0, 005$).

Evaluation of dynamic body balance in passing the polygon's faces, with limited support (see fig.15) gave the following results: 50% of the tested fulfilled the task successfully, keeping balance up to certain quantity of cycles (40). The other part of the tested (40%) executed 25-29 cycles of faces' passing and then lost balance. The least part (10%) lost balance after 10 – 15 cycles of faces' passing.

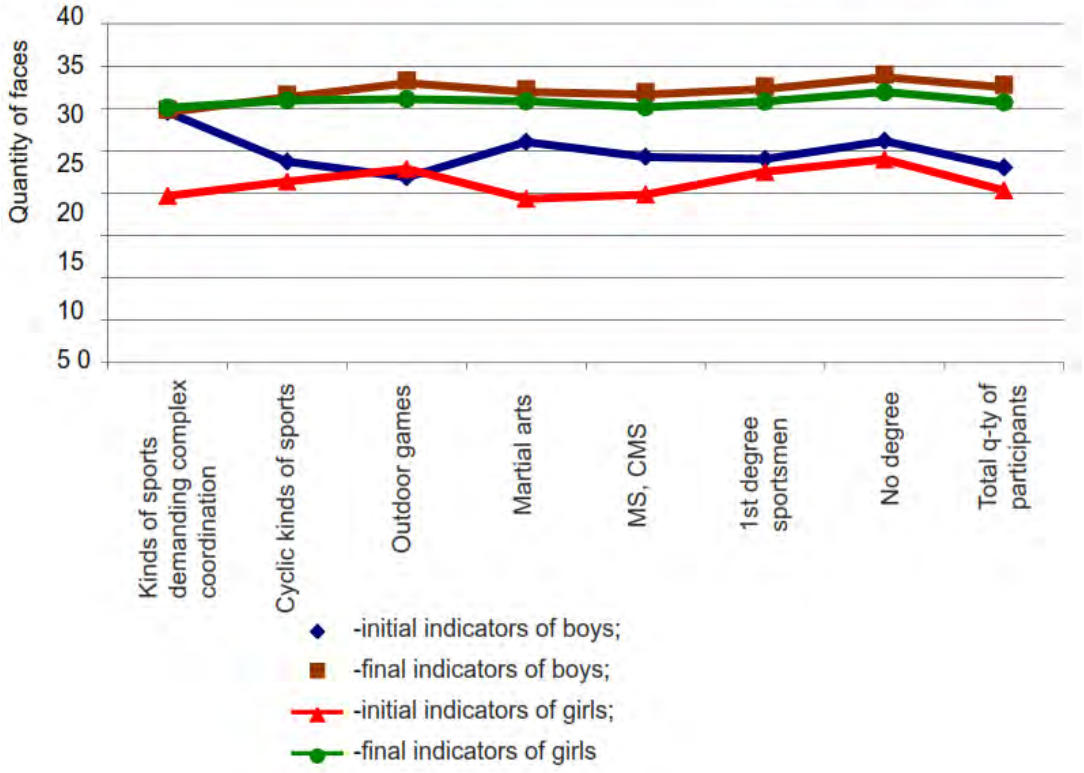

Fig. 15. Indicators, which characterize coordination abilities to maintaining of dynamic balance by first year students of NU PESU

Notes: see fig. 10

At the end of experiment, in practical classes on gymnastics, indicators of body dynamic balance maintaining of first year students authentically improved by 10% in comparison with initial data, which were obtained before experiment ($p<0, 005$).

Summary

1. The tests for measuring, analysis and control of coordination abilities' of 17 – 18 years old boys and girls, (doing and not doing sports) been studied and systematized. Indications for systematizing of tests were indicators of sensor systems' functioning in the process of the tests' execution.

2. The realized at practical classes in gymnastics of NU PESU first year students tests (safety factor 490 – 0.990), which were developed for evaluation of coordination abilities, gave positive results. Initial level of coordination abilities (initial indicators) has been established. They have individual character and are different in connection with the specificity of the selected for specialization kind of sports, the level of qualification, technical skills, sex,, specificity of tests and the fact if students go in for sports or not.

3. Practical classes in gymnastics during year (fulfillment of academic program in general gymnastics), and in other sports-pedagogical disciplines (field & track sports, swimming, outdoor games) facilitated positive dynamics of improvement of NU PESU first year students' coordination abilities' indicators, considering their peculiarities and characteristic features. Steady formation of the students' motion skills in mastering gymnastic exercises, stability of their execution (final indicators) have been fixed.

4. The students (boys and girls) specializing in kinds of sports, which require complex coordination, have confidently more efficient qualitative increment of indicators, characterizing coordination abilities of the tested. It especially distinguishes the girls – representatives of sport kind of gymnastics (MS & CMS) by tests 1, 3, 4, 5, 9) ($p<0, 003$).

The tests, which were used in the researches and their indicators, characterize specifically coordination abilities of trainees. Coordination abilities developed the most qualitatively in coordination test, with symmetric and asymmetric movements of limbs, with fulfillment of static-dynamic and dynamic balance exercises; to a less extent it developed in the tests, which characterized proprioceptor sensitiveness and space orientation.

5. The results of the researches witness that academic programs of sports-pedagogical disciplines contain academic material, which comply with the tasks of improvement of sensomotor coordination and, on the base of this, improvement of motion skills' formation when mastering gymnastics exercises, that must facilitate the growth of students' technical and professional skillfulness.

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