

PECULIARITIES OF ENDURANCE DEVELOPMENT FOR FIRST YEAR STUDENTSPochernina A.G.¹, Pochernina M.G.², Selivanov E.V.²Kharkov National Pedagogical University¹Kharkov National Medical University²

Annotation. *Purpose:* to determine the dynamics of the specific endurance first-year students in the classroom of physical education. *Material:* the study involved 20 students. Conducted educational testing: seed of lifting in supine position, hang on bent arms, jumping from sitting up with the stop, run 30m, bending and straightening the arms in emphasis lying, tilt forward from a sitting position, shuttle run, broad jump start. *Results:* found that the passage of the training module volleyball observed development of specific endurance and all motor abilities. Established that the manifestation and development of motor skills are interrelated. Since force is a functional foundation for the development of other skills, flexibility - the foundation of all mechanical movements. Without the development of strength, speed, coordination abilities impossible to develop endurance. Therefore, it is inappropriate and incorrect receipt of unidirectional only specific endurance (dynamic power and static, speed-power). *Conclusions:* indicated the need to achieve functional specialization of the body in the direction which is necessary for high-level manifestation of certain motor skills.

Keywords: students, fitness, health, aerobic, specific endurance.

Introduction

Nowadays a raising of educational task is conditioned by social order, this is a preparation of highly active person, professionally mobile specialist, who can feel comfortably under various conditions. Exceptionally in the age period of 17-18, the basics of person's physical culture are lied, person's motor and functional potential is forming, health preservation, which appear as a main means, supporting physical and psychological activity and which ensure the effective self-realization in the professional sphere.

Theoretical and methodical approach towards physical education for current young people indicate that, the physical condition of senior pupil and later on first year students is becoming worse each year. It is connected to new technologies application, study intensification, what need the nervous and emotional, physical loading and lead to essential rebuilding of physiological states. Especially the first course students are watched in the state of dramatic decrease of interest towards physical culture. Due to statistics, during the level of physical preparedness estimation for first course students, about 40% were transferred to special medical groups.

The rational mode of the day with sufficient motor activity can overcome the problem of young people's health worsening. Endurance determine the adaptation and firmness towards various destructive factors, support the possibility of person's creative uncovering and is important condition for professional orientation, especially at the stage of vital self-determination. Just the level of endurance indirectly and with outstanding precision is testifying about general health condition and functional possibilities of respiratory and cardiovascular system. That is why the work for endurance development, in a quality of working capability improvement and health strengthening should be of primary importance direction for teachers of physical education.

Peculiarities for endurance development of young people were enlightened in scientific works by Krutsevich T.Y. (2008), Gogin O.V. (2001), Samokish I.I., Bosenko A.I. (2011), Myakishev V.A. (1977), Ilyin Y.P. (2000, 2003), Shiyani B.M. (2004), Zemskov A.S. (2005), Hudoliy O.M. (2007), Kozlov I.S. (2009), Posohov D.V. (2009) and so on. But there is a need to mention that usual by content and intensity, monotonous class for endurance development becomes not interesting for first year students and this is not a factor which arise the positive changes in their organism.

Hereby, this turns to be a basic problem question, which should be researched in the field of physical education of young people.

The work is carried out due to the Master plan for research work of Ukrainian families, young people and sport ministry for period of 2011-2015.

Purpose, tasks of the work, material and methods

Purpose of research – to determine the dynamic for development of specific endurance of first year students during physical education classes.

Task of research: to generalize the theoretical questions regarding to the endurance development peculiarities of first year students and to analyze the dynamic for development of specific endurance during the time of physical education classes in the higher educational institution.

Subject of research – the process of physical education for first year students.

Object of research – the endurance development peculiarities for first year students.

Methods of research.

Research was conducted within six weeks at the base of Kharkiv national pedagogical university after G.S. Skovoroda. First year students (10 boys and 10 girls) took part in pedagogical testing. In order to determine the endurance level of examined students, we conducted following pedagogical tests: strength dynamical endurance we

determined with help of such exercise as taking sitting pose from position of lying on back (number of repetitions in 1 min.); strength static endurance – with help of bended hands hanging (keeping the position in sec.); speed and strength endurance – with help of vertical jump from sitting position (number of repetitions within 1 min.).

At the same time, with purpose to arrange well-grounded research of physical education influence onto development of first year student's physical qualities, we were determining level of rapidity development (30 m. run), strength (push-ups), flexibility (shuttle-run) and speed and strength abilities (long jump from the spot).

In order to identify the dynamic for level of endurance development changing and other physical qualities of students during the time of educational module "volleyball", two measurements towards all kinds of tests were conducted. Received results were treated by methods of mathematical statistics, in particular, truth for difference between the results of tests was calculated with help of t-criteria Student's finding.

Results of the research

Due to result of research, girls have statistically trustworthy differences appeared as test results: in 30m. run ($t=2,4$ with $p<0,05$), shuttle run ($t=2,3$ with $p<0,05$), vertical jumps from sitting position ($t=2,3$ with $p<0,05$). It should be noted that the improvement of testing results in 30m run (11,90 %), shuttle run (7,21%) and vertical jumps from sitting position (12,42%). This gives evidence about the development of such motor abilities as speed, agility with speed and power endurance. Received figures given in table 1.

Table 1.

Indices of physical qualities test for students under study (girls n=10)

Pedagogical tests	First test (4-12.10.2012p.)	Second test (28.11-9.12 2012p.)	t	p	%
Rapidity (30m run), c.	5,4 ± 0,18	4,8 ± 0,19	2,4	p<0,05	11,9
strength dynamical endurance (take sitting pose from position of lying on back (number of repetitions)	42,4 ± 1,62	43,7 ± 1,62	0,6	p>0,05	2,97
Flexibility (bending forward from sitting position), sm.	17,5 ± 1,62	18,1 ± 1,52	0,3	p>0,05	3,31
Strength (pull-ups on the low bar), number of repetitions	19,3 ± 1,30	20,8 ± 1,62	0,7	p>0,05	7,21
Agility (shuttle-run), s.	10,8 ± 0,16	10,2 ± 0,19	2,4	p<0,05	5,56
Speed and power abilities (long jump from the spot), sm.	189,3 ± 3,79	196,9 ± 4,44	1,3	p>0,05	3,86
Strength static endurance (bended hands hanging), sec.	42,2 ± 3,25	44,0 ± 3,25	0,4	p>0,05	4,09
Speed and strength endurance (vertical jump from sitting position), number of repetitions	27,5 ± 1,08	31,4 ± 1,30	2,3	p<0,05	12,42

The comparison of two selective medium connected samples showed that boys statistically reliable peculiarities appeared in the results of tests in 30m run ($t=2,3$ with $p<0,05$) and shuttle run ($t=2,3$ with $p<0,05$). The test results improved in vertical jumps from sitting position ($t=1,0$ with $p>0,05$). The improvement of test results in speed was noted (6,21%), agility (2,84%) and speed and power endurance (5,84%).

Received figures showed in table 2.

Table 2.

Indices of physical qualities test for students under study (boys n=10)

Pedagogical tests	First test (4-12.10.2012p.)	Second test (28.11-9.12 2012p.)	t	p	%
Rapidity (30m run), c.	4,5 ± 0,09	4,2 ± 0,07	2,3	p<0,05	6,21
strength dynamical endurance (take sitting pose from position of lying on back (number of repetitions)	48,3 ± 0,90	49,0 ± 0,80	0,6	p>0,05	1,48
Flexibility (bending forward from sitting	11,1 ± 0,60	11,5 ± 0,70	0,4	p>0,05	3,17

position), sm.					
Strength (pull-ups on the low bar), number of repetitions	12,5 ± 0,90	12,8 ± 0,80	0,2	p>0,05	2,13
Agility (shuttle-run), s.	9,5 ± 0,10	9,3 ± 0,06	2,3	p<0,05	2,84
Speed and power abilities (long jump from the spot), sm.	218,9 ± 4,49	223,0 ± 4,49	0,6	p>0,05	1,83
Strength static endurance (bended hands hanging), sec.	40,8 ± 2,39	42,7 ± 2,49	0,6	p>0,05	4,47
Speed and strength endurance (vertical jump from sitting position), number of repetitions	45,5 ± 1,60	48,3 ± 2,19	1,0	p>0,05	5,84

Thus, during the module "volleyball" for students under study the improvement of test results took place in 30m run, shuttle run and vertical jumps from sitting position. There were developed the motor abilities which satisfy the specific of sport games. So, for first year students, the execution of movements in sports ground, elements of attacking and defensive technique leads to speed, agility, speed and strength endurance development. Because the game of volleyball is different from other playing kinds of sports by considerable percentage of upward jumps, for example, in the third zone (near the wall) the most of jumps are performed in order to simulate or to perform the attacking strike or block, in the second and forth – attacking strikes are performed. It is the great number of jumps and speed-ups is a basic characteristic of motor competitive activity for young volleyball players.

In order to ascertain the connection between student's test results we used the correlation analysis. After initial measurement of boys, there was revealed a strong correlation connection between strength dynamical endurance and rapidity ($r=-0.74$), strength dynamical endurance and flexibility ($r=-0.75$), strength dynamic endurance and agility ($r=-0.70$), strength dynamic endurance and strength static endurance ($r=-0.88$). during the ascertaining of correlation between strength static endurance and other motor abilities, there were revealed strong correlation connections between strength static endurance and flexibility ($r=0,75$).

This testifies that the strength dynamic endurance development of first year boys (17-18) can support the development of rapidity, agility and strength static endurance. That is to say, during the educational process planning, there is a need to develop the rapidity and strength dynamic endurance in particular classes. Strength dynamic and strength static endurance should be developed at the same class period, in consecutive order by performing exercises of static and dynamic character.

Between received results of second test for boys, there were revealed more strong, compare to first measurement, correlative connections between strength dynamic endurance and speed ($r=-0.79$). Between strength static and strength dynamic endurance there were revealed strong correlative connections ($r=0,87$). Between strength dynamic and speed and strength endurance was also revealed strong correlative connection ($r=0,74$) in contrast to first measurement. During the ascertainment of connection between strength static endurance and other motor abilities, there were revealed strong correlative connections between strength static endurance and speed ($r=-0,85$), between strength static endurance and agility ($r=-0.73$). Average statistical correlations were revealed between strength static endurance and flexibility ($r=0,57$), between strength static and speed and strength endurance ($r=0,54$). During the ascertainment of correlation between speed and strength endurance and other motor abilities, there were revealed strong correlative connections between speed and strength and strength dynamic endurance ($r=0,74$).

Due to results of correlation analysis facts of first measurement for girl's pedagogical testing, we ascertained that first year girl's indices of strength dynamic endurance have strong correlation with strength ($r=0,80$), agility ($r=-0,81$), speed and strength abilities ($r=0,72$), strength static endurance ($r=0,84$) and speed and strength endurance ($r=0,60$). Indices of strength static endurance have strong correlation with strength ($r=0,693$), flexibility ($r=0,71$), agility ($r=-0,82$). There was also revealed the correlation between speed and strength endurance and speed ($r=0,69$), strength ($r=0,69$), speed and strength abilities ($r=0,70$).

After analysis of second measurement results for girls, there was revealed the more stronger correlative connection, compare to first results of correlative analysis, between strength dynamic endurance and strength ($r=0,85$), agility ($r=-0,97$), speed and strength abilities ($r=0,74$), strength static endurance ($r=0,95$) and flexibility ($r=0,88$), between strength static endurance and strength ($r=0,75$), between strength static endurance and flexibility ($r=0,92$), strength static endurance and agility ($r=-0,93$), strength static endurance and speed and strength abilities ($r=0,72$). During the ascertaining of correlation between speed and strength endurance and other motor abilities, there were revealed strong correlative connections between speed and strength endurance and speed and strength abilities ($r=0,88$).

Hereby, while studying the educational module "volleyball" by first year students there was revealed not only development of specific endurance but also the development of all motor abilities in a varying degree of priority. Received results allow to resume that manifestation and development of motor abilities are correlative. The strength is a functional basis for development of other abilities, the flexibility is a mechanical basis of all motion. It is impossible

to develop the endurance without development of strength, speed, coordinating abilities. That is why it is unsuitable and wrong to get unidirectional development only for specific endurance (Strength dynamic and static, speed and strength). The achievement of organism's functional specialization in the direction which is necessary for manifestation level of certain motor ability is possible.

Conclusion:

1. Conducted research allowed to determine the dynamic of specific endurance development for first year students during the physical education classes.
2. Analysis of received results demonstrated that during the studying of the module "volleyball", the students under study (girls and boys) got statistically trustworthy increase of motor abilities, which fulfill the purpose of sport games, especially agility and speed and strength endurance.

In a perspective of following researches we are planning to design a program for endurance development of first year students. In our opinion, programming is an effective and rational form for organization of educational and training process in the University. Purpose-oriented model will allow to concretize the concept, to find the means, methods, the volume and intensity of loads adequately to individual peculiarities for first year students. The programming will allow us to bring to effect the plan (to reach the planned level of endurance) with taking into account the specific conditions and present condition of students, to increase their activity towards physical education classes, to realize the contribution to effectiveness of educational management, will allow to individualize the educational and training process for group method of class conducting.

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Information about the authors:

Pochernina A.G.: ORCID: 0000-0002-9630-5639; triolan.anastasiia@mail.ru; Kharkov National Pedagogical University; Artema str. 29, Kharkov, 61002, Ukraine.

Pochernina M.G.: ORCID: 0000-0002-8525-5867; mawkagri@rambler.ru; Kharkov National Medical University; Lenina boulevard 4, Kharkov, 61022, Ukraine.

Selivanov E.V.: ORCID: 0000-0003-1662-470X; yes_i_come@mail.ru; Kharkov National Medical University; Lenina boulevard 4, Kharkov, 61022, Ukraine.

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