# HYDRO AEROBICS AS MEANS FOR PHYSICAL STATE IMPROVEMENT OF FEMALE STUDENTS

Balamutova N.M., Babadganjan V.V.
National university "Law academy of Ukraine, named after Yaroslav Mudriy"
National technical university "Kharkov polytechnic institute"

**Annotation.** The questions of organization and conducting studies were considered by using system of hydro aerobics exercises for improving physical training of female students. Sixty female students took part in the experiment. All the tested girls were divided into two groups, 30 persons each. The tested group of female students made aerobic exercises on the dry land according to a plan. The female students of experimental group made hydro aerobics exercises according to the programme. Several methods were used: anthropometry, control methods of the functional parameters of the body, testing of the physical training indicators, methods of mathematical statistics. The reliable positive improvements of cardiovascular and respiratory systems were in the experimental group of the girls. The effect of the reliable decrease of fat mass of the tested female students was exposed among anthropometrical characteristics.
**Key words**: female students, health, physical state, hydro aerobics**.**

**Introduction**

Many researchers (4) in their works note that the health of graduates of humanitarian and technical higher educational institutions (future specialists and future parents) is worsening. Physical state of girls, which determines the health of future child by 80%, is of special concern.

We have to state that there s a problem, connected with the necessity to improve physical state and health of female students and with the difficulties of its solution within the frames of traditional physical education system, existing in higher educational institutions (1, 2). It is not easy for the teachers of higher educational institutions to involve female students in physical trainings, which, by its form and content, do not differ from traditional ones. Non traditional kinds of sports are now very popular among young people (8). An increased interest of female students to different trainings in water is now being noted (3, 5 , 6, 7). They are: walking and jogging in water, power training in water, hydro aerobics, aqua fitness, aqua building etc.

Hydro aerobics should be understood as different exercises in water to the music with elements of gymnastics, athleticism, yoga, choreography and acrobatics. The main task of hydro aerobics is reaching of health improvement effect of the disciples, improvement of cardiac and respiratory systems, rising of physical level: endurance, flexibility, strength and co-ordination.

Simultaneously with this it is necessary to note the lack of scientifically grounded data about influence of water gymnastics exercises, as a complex of exercises, on physical state and health of girls-students. That is why we put forward a hypothesis about the possibility of hydro aerobics exercises complexes' efficient application as a mean of 17-20 years old female students' physical state and health improvement.

The research has been fulfilled as per plan of scientific & research works of National university "Law academy of Ukraine, named after Yaroslav Mudriy".

**Purpose, tasks of the work, material and methods**

*The purpose of the research* – experimental foundation of female students' physical state improvement on the base of hydro aerobic means application.

*Organization of the research.* 60 female students of 1 – 3 years of study took part in experiment. All tested were divided into two groups: 30 persons in each. Control group was trained as per traditional aerobics' program out of water. Female students of experimental group took part in systematic hydro aerobics trainings, which were conducted by specially developed program.

*The methods of the researches:* anthropometry, control of organism's functional indicators, physical level testing, mathematical statistics methods.

**Results of the researches**

On the stages of experiment all tested were medically examined and had no contra indications to health improving aerobics and hydro aerobics trainings. Both of the groups had two trainings a week with training duration one hour. The program included three complexes of exercises in water: introductive with weakened intensity of exercises, main with increased intensity and training complex with high intensity of exercises. On all stages the tempo of exercises was controlled by music accompaniment. On the first stage of the experiment, introductive part of training was 10-12% of all training time, with music tempo of 128-135 beats p. min. and the duration of the whole period of training – 1 month. The main part took 80% of training time, tempo -130-146 beats p. min., the duration of the whole period of training – 2 months. The training part of complex: 8-10%, tempo – 128- 135 beats p. min., the duration of the whole period of training – 3 months. On the second stage introductive complex was shortened up to 2 weeks, main complex – up to one month and the duration of training complex was consequently increased up to 4.5 months. Music accompaniment tempo remained the same as on the first stage.


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On the third stage of the research we executed the second (main) stage of pedagogical experiment with application of increased physical loads parameters.

Hydro aerobics trainings were conducted as per curriculum schedule. Warming up exercises included smooth rhythmic movements with gradually increased amplitude. Main part was the so-called "cardio-training", which consisted of different active movements, engaging different muscles' groups, and "power" training oriented on load of mainly torso muscles. The final part of a training included rhythmic, smooth movements, relaxing muscles, followed by stretching. Exemplary schema of training main parts' distribution is shown in table 1.

Table 1

*Distribution of hydro aerobics training time by main parts*

| Parts of training | Description of parts | Duration depending on training period | |
|---|---|---|---|
| | | In relation to the time of the whole training, % | Absolute indicators, min. |
| Introductive | Warming up | 15 | 5-7 |
| Main | "Cardio - training" | 45 | 13-20 |
| | "Power" training | 25 | 7-11 |
| Final | Relaxation | 15 | 5-7 |

Stage-by stage control of experiment participants' physical state was organized on the base of testing method with registration of anthropometric, power and functional indicators.

By anthropometric data (table 2) considerable results of both groups were obtained on the third stage of researches.

Table 2

*Dynamics of girls' anthropometric indicators*

| Indicators | Stages | Experimental group | | Control group | |
|---|---|---|---|---|---|
| | | X | s | X | s |
| Mass of body, kg. | 1 | 54,8 | 6,9 | 54,2 | 7,4 |
| | 2 | 54,2 | 6,1 | 53,1 | 7,2 |
| | 3 | 54,5 | 6,8 | 59,0 | 7,9 |
| Hip circle, m. | 1 | 92,4 | 6,3 | 92,9 | 4,7 |
| | 2 | 92,0 | 5,9 | 92,2 | 5,2 |
| | 3 | 93,3 | 6,1 | 97,2 | 6,1 |
| Abdomen circle, m. | 1 | 79,4 | 8,7 | 81,4 | 5,9 |
| | 2 | 75,4 | 6,7 | 79,2 | 5,6 |
| | 3 | 76,2 | 9,6 | 83,3 | 8,8 |
| Waist circle, m. | 1 | 69,6 | 5,3 | 69,6 | 5,3 |
| | 2 | 68,0 | 5,8 | 68,0 | 5,8 |
| | 3 | 68,6 | 6,2 | 72,4 | 4,9 |

The indicators of body mass, hip circle and waist of experimental group's girls statistically did not change, except "abdomen circle", which reduced already on the second stage and remained statistically unchanged on the third one. Concerning the control group, all indicators, without exception, authentically worsened after finishing of experimental trainings.

The results of physical preparedness indicators are given in table 3.

Table 3

*Dynamics of girls' physical preparedness*

| Indicators | Stages | Experimental group | | Control group | |
|---|---|---|---|---|---|
| | | X | s | X | s |
| Squatting, q-ty, | 1 | 67,9 | 27,9 | 64,7 | 20,1 |
| | 2 | 78,6 | 21,5 | 84,1 | 24,8 |

| | | | | | |
|---|---|---|---|---|---|
| | 3 | 79,6 | 16,0 | 63,6 | 12,0 |
| Press ups, q-ty. | 1 | 3,7 | 3,5 | 3,1 | 3,8 |
| | 2 | 12,6 | 3,8 | 13,4 | 3,8 |
| | 3 | 11,5 | 3,7 | 7,6 | 2,6 |
| Standing jump upward, m. | 1 | 0,30 | 0,04 | 0,30 | 0,04 |
| | 2 | 0,30 | 0,04 | 0,32 | 0,06 |
| | 3 | 0,30 | 0,04 | 0,235 | 0,03 |

From this table it is seen that positive changes are in both groups, however, the level of their levels maintaining up to the third stage was authentically higher in experimental group.

The dynamics of functional indicators of experimental and control groups' girls are presented in table 4.

Table 4

*Dynamics of functional indicators of experimental and control groups' girls*

| Indicators | Stages | Experimental group | | Control group | |
|---|---|---|---|---|---|
| | | X | s | X | s |
| GSTI, conv. units | 1 | 66,4 | 14,0 | 74,7 | 18,0 |
| | 2 | 80,7 | 15,2 | 84,9 | 16,5 |
| | 3 | 68,2 | 14,5 | 72,9 | 17,8 |
| Shtange's test, s | 1 | 54,5 | 17,0 | 47,7 | 11,2 |
| | 2 | 62,1 | 11,1 | 56,2 | 12,5 |
| | 3 | 61,6 | 8,5 | 44,8 | 11,7 |
| VCL, ls. | 1 | 2,4 | 0,45 | 2,5 | 0,26 |
| | 2 | 3,1 | 0,39 | 3,0 | 0,52 |
| | 3 | 3,0 | 0,39 | 2,9 | 0,44 |

Notes: GSTI – Garvard step test index, VCL – vital capacity of the lungs.

By the data of table 4 we can see, that for the female students of experimental group improvement of all studied indicators both by two and by three stages of the experiment are authentic. In control group such distinctions were registered on the third stage of researches, like significant worsening of Shtange's test, i.e. in several months after finishing of experimental trainings.

At the same time the test values of experimental group's girls maintained on the same level under the same conditions. By VCL indicator all average-group data are not authentic, while in experimental group a positive dynamics was registered.

Thus, we have al the grounds to affirm that hydro aerobic influences very positively on organism's functional state of the tested from experimental group in comparison with control group.

**Summary**

The conducted researches resulted in establishing of authentic positive average-group indicators' shifts pf cardiac and respiratory systems of experimental group girls. In control group the same shifts turned out to be significantly weaker.

Among anthropometric indicators there was found effect of authentic reduction of fatty mass indicator of experimental group girl; in control group this effect was not established.

The results of specially organized comparative experiment demonstrated incomparably positive influence of just water medium on physical and psychic state of the tested during fulfilling of physical exercises by them. That is why it should be considered that systematic hydro aerobics trainings can be an effective mean of female students' health and physical state improvement.

*The prospects of further researches* presume studying of hydro aerobics training's influence on female students of special health groups.

**References:**

1 Bal'sevich V.K. *Fizicheskaia kul'tura: vospitanie, obrazovanie, trenirovka* [Physical culture: upbringing, education, training], 1996, vol.1, pp. 23-27.

2 Bondarenko E.V. Problema formirovaniia motivacii vnutrennej napravlennosti k zaniatiiam fizicheskoj kul'turoj u studentov vuza [Problem of formation internal motivation orientation to physical training of students of the university]. *Aktual'nye voprosy bezopasnosti, zdorov'ia pri zaniatiiakh sportom i fizicheskoj kul'turoj* [Topical issues of safety, health, in sports and physical activities], Tomsk, Center of educational methodical literature TSPU, 2003, pp. 329-335.

3 Bulgakova N.Zh., Lysova I.A. Obosnovanie metodiki zaniatij aerobikoj [Justification techniques aerobics]. *Zdorov'e i fizicheskoe sostoianie naseleniia Rossii na rubezhe XXI veka* [Health and physical condition of the Russian population at the turn of the XXI century], Moscow, 1994, pp. 15-17.
4 Evseev Iu.I. *Fizicheskaia kul'tura: vospitanie, obrazovanie, trenirovka* [Physical culture: upbringing, education, training], 2005, vol.1, pp. 47-50.
5 Lisickaia T.S., Sidneva L.V. *Aerobika: teoriia i metodika* [Aerobics: theory and methods], Moscow, Aerobics Federation of Russia, 2002, 232 p.
6 Nasonova L. *Fizkul'tura i sportv* [Physical education and sport], 1995, vol.6, pp. 10-12.
7 Polukhina T.G. *Klassifikaciia i tipologiia uprazhnenij v akvaaerobike kak osnova dlia razrabotki tekhnologii obucheniia* [Classification and typology of aerobics exercises as a basis for the development of learning technologies], Cand. Diss., 2003, 22 p.
8 Rusiaeva A.A., Kolomejceva E.B., Cherkasova L.S. Sposoby privlecheniia studentok k zaniatiiam fizicheskoj kul'turoj [Ways to attract students to physical training]. *Klassicheskij universitet v rossijskom obrazovatel'nom prostranstve* [Classic university in the Russian educational space], Perm, Perm University publ., 2006, 420 p.
9 Rendi M. et al. Acute psychological benefits of aerobic exercise: A field study into the effects of exercise characteristics. *Psychology, Health & Medicine*, 2008, vol.13(2), pp. 180–184.
10 Aguiló A. et al. Antioxidant diet supplementation enhances aerobic performance in amateur sportsmen .*Journal of Sports Sciences*, 2007, vol.25(11), pp. 1203–1210.

**Information about the authors:**

**Balamutova N.M.**: Fizvyh3@nulau.edu.ua;National University «Legal academy of Ukraine»; Pushkin str., 77, Kharkov, 61024, Ukraine.

**Babadganjan V.V.:** Fizvyh3@nulau.edu.ua; National Technical University of Ukraine «KPI»; Frunze str., 21, 61002, Kharkiv, Ukraine

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