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Dynamics of physical and psychoemotional condition of women under the influence of swimming occupations

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Purpose: *to reveal influence of occupations in recreational swimming on the psychoemotional sphere and the general indicators of women's health.*

Material & Methods: *52 women at the age of 25–40 years have participated in research. Data collection was carried out in recreational groups of author's swimming school of Y. Bliznuk and the pool "Pioneer". Methods applied: poll, testing, instrumental methods of cardiovascular system and anthropometry research; indicators of physical, mental and social health were determined by S. Stepanov's technique; assessment of health, activities and moods was carried out by means of questionnaire "HAM". The obtained quantitative data were processed by methods of mathematical statistics.*

Results: *conducted research demonstrates that recreational swimming occupations cause positive changes in physical development, physical fitness and psychoemotional condition of women; improvement of indicators of physical and psychoemotional state is most explicitly revealed after 2 years of occupations.*

Conclusions: *it is established that occupations in recreational swimming for 2 years have positively affected on the psychoemotional sphere and the general indicators of women's health.*

Keywords: *swimming, physical development, psychoemotional sphere, women, health, indicators.*

Introduction

Scientific and technical and social progress promotes to change not only the environment, but also way of life. The mass physical culture gains great value in the current social life of our country due to increase in labor productivity and strengthening of defense capability, as well as to the change of living conditions of people which are characterized by deterioration in social and economic level. More than ever the problem of strengthening of health of the population by physical culture is particularly acute. The physical culture and mass sport gain paramount role in defining the optimal level of vital activity of human body [1; 8].

Decrease in resilience of organism, loss of stamina, degradation of systems which provide those functions – all these are the effects of hypokinesia and hypodynamia. And consequences of it are very negative: excessive body weight, increased fatigue, apathy and rapid growth of sickness rate of various systems of human body. So, according to the researches conducted in the 2005–15 in Ukraine deterioration in health of able-bodied population was observed. Chronic diseases prevailed among other diseases. Prevalence of cardiovascular pathology has increased by 1,9 times; oncological – for 21 %; bronchial asthma – for 39,3 %; diabetes mellitus – for 11,4 %; every fifth has arterial hypertension [2; 3; 5; 8].

A possible counterbalance to the negative factors above can be introduction of various recreational systems designed to increase muscular activity. One of such systems is recreational swimming. According to a number of authors the value of swimming is that while being a perfect means of general fitness it also makes a complex impact on the human organism. Swimming strengthens all groups of muscles, develops mobility in joints, promotes increase in elasticity of sheaves and sinews; strengthens cardiovascular and respiratory systems, increases the vital capacity of lungs and mobility of thorax, strengthens respiratory muscles, increases the level of development of aerobic opportunities; develops force, flexibility coordination of movements; trains the general and power endurance; promotes increase in metabolism, the best adaptation of organism to change of temperature of the external environment to increase in level of physical fitness; positively influence nervous system [3; 4; 6; 10].

The recreational effect of swimming is in prevention of cardiovascular diseases, posture correction, prevention of diseases of musculoskeletal system, positive influence on the psychoemotional state of the engaged [1; 2; 4].

Most of the researches are focusing on swimming as the recreational factor, and much less attention is paid to studying of dynamics of the changes occurring under the influence of recreational swimming, whereas they appear as one of the main conditions not only physical, but also mental health of the person [6; 7; 10].

It is the fragmentariness of data about positive changes of physical and mental health of women under the influence of recreational swimming that has encouraged us to carrying out this research. Relevance of the chosen subject is backed by practice inquiries, and the offered data will help teachers, instructors, methodologists of physical culture, doctors, and also independently engaged more effectively use the recreational swimming in order to strengthen health and to improve fitness.

The purpose of the research

To reveal influence of occupations in recreational swimming on the psychoemotional sphere and the general indicators of women's health.

Main objectives of research:

1. To analyze literatures data concerning influence of recreational training in swimming on the psychoemotional sphere and the general health indicators of women.

2. To track change dynamics of physical development indicators and physical fitness of the women which are swimming in physical improving groups.

3. To reveal influence of occupations swimming on physical, mental and social health of this contingent.

Material and Methods of the research

Data acquisition was carried out in recreational groups of Y. Bliznuk's author's school of swimming and the pool "Pioneer". During data acquisition poll, testing and tool methods of cardiovascular system and anthropometry research were applied. Indicators of physical, mental and social health were determined by S. Stepanov's technique; assessment of health, activity and mood level was carried out by HAM test. The quantitative data obtained during research was processed by methods of mathematical statistics [7; 9].

Results of the research and their discussion

One of the most common forms of work on adult population's physical culture level is the organization of occupations in recreational groups. In our country such groups were widely adopted and generally recognized. This form of work with persons of middle and mature age is directed to solve such problems as strengthening of health, improvement of physical development, hardening, increase in resistance of organism to adverse environmental conditions; maximum increase and maintenance of rather high level of working capacity, extension of active creative life; acquisition by participants of certain knowledge about bases of physical training and technique of independent use of physical exercises [2; 5; 8; 10].

52 women at the age of 25–40 years, which attend recreational groups of Y. Bliznuk's author's school of swimming and the pool "Pioneer" have participated in our research. During the period from October, 2014 to June, 2016 dynamics of physical development and physical fitness indicators of the women doing swimming were investigated and also attempt to reveal the influence of occupations in swimming on physical, mental and social health of this contingent has been made (in October, 2014 – initial indicators were recorded (0 experience in swimming occupations); in June, 2015 – indicators after 1 year of swimming occupations were recorded; in June, 2016 – after 2 years of occupations).

By means of anthropometrical and functional measurements at women aged 25–40 years taking part in research during 2 years, indicators of physical development and physical fitness under the influence of swimming occupations were defined and analyzed (table 1).

Apparently from table 1 under the influence of occupations in swimming there were considerable changes in many indicators. Thus, reliability of distinctions on indicator of body weight is revealed both after the first year of occupations ($p<0,001$) and after the second year ($p<0,05$). During researches body weight of women has decreased from 69,6±0,5 to 64,8±0,72 kg. There were considerable changes of indicators of chest volume ($p<0,01$; $p<0,05$) and respiratory excursion ($p<0,001$).

The analysis of functional indicators of the women doing swimming has also shown that vital capacity values had significantly changed. After the first year of occupations indicators of vital capacity have changed from 3013±25,1 to 3215±35,6 ml ($p<0,001$), and after the second year of occupations – to 3375 ± 33,9 ml ($p<0,001$).

Distinctions in the indicators of systolic ($p<0,01$) and diastolic blood pressure are also noticeable ($p<0,001$ – after the first year of occupations; and especially noticeable distinctions of these indicators were revealed between the first and second

Table 1

Dynamics of physical development and physical fitness indicators of women under the influence of occupations in swimming, $\bar{X}$±m (n=52)

Indicators	Initial (no experience in occupations) (n=52)	After 1 year (n=52)	Reliability level		After 2 years (n=52)	Reliability level	
			t	p		t	p
Body weight, kg	69,6±0,5	67,0±0,46	3,8	<0,001	64,8±0,72	2,6	<0,05
Body length, cm	159,9±0,37	160,2±0,37	0,56	>0,05	160,9±0,37	1,3	>0,05
Chest volume, cm	91,36±0,41	89,9±0,36	2,7	<0,01	88,5±0,47	2,4	<0,05
Respiratory excursion, cm	5,6±0,07	6,65±0,14	7	<0,001	7,6±0,08	5,8	<0,001
Vital capacity, ml	3013±25,1	3215±35,6	4,6	<0,001	3375±33,9	3,2	<0,001
Right hand dynamometry, kg	31,4±0,28	32,7±0,41	1,3	>0,05	33,5±0,34	1,5	>0,05
Left hand dynamometry, kg	29,5±0,24	30,1±0,24	1,7	>0,05	30,97±0,44	1,7	>0,05
Heart rate, BPM	74,8±0,62	71,17±0,68	3,9	<0,001	69,8±0,83	1,3	>0,05
Systolic blood pressure, mmHg	125,7±0,98	120,8±0,64	2,9	<0,01	118,15±0,68	2,9	<0,01
Diastolic blood pressure, mmHg	78,8±0,43	75,35±0,91	3,4	<0,001	72,8±0,57	2,4	<0,05

year of occupations – p<0,05).

After the first year of occupations heart rate has decreased by 3,1 BPM (p<0,001), and during the second year of occupations decrease in heart rate slowed down (by 1,37 BPM) until finally stabilized at 69,8±0,83 BPM (p<0,05).

Indicators of dynamometry of the right and left hand did not change significantly, but gradually increased (p<0,05).

Analyzing data from table 1, it is possible to note that the most considerable positive changes of physical development and physical fitness indicators have happened after 2 years of occupations in recreational swimming.

Along with research of physical development and physical fitness indicators dynamics, we conducted researches of changes in psychoemotional condition of women aged 25–40 years under the influence of occupations in recreational swimming.

Indicators of physical, mental and social health of women were defined by S. Stepanov's method in the beginning of the swimming classes, and then again after the first and second year of classes (table 2) [7].

The data from table 2 confirms positive dynamics of all types of health indicators, which were defined at women for 2 years of occupations. Most indicators of physical health have considerably improved: after first year of occupations by 4,14 points (p<0,05), and after 2nd year – by 3,42 points (p<0,05). Considerably increased indicators of mental health: by 2,96 points (p<0,05) after the first year and by 4,42 points (p<0,05) after the second year of occupations. Growth of social health indicators is equal to 1,88 points (p<0,01) on the first year and 2 points (p<0,05) after the second year of occupations. It means that occupations in recreational swimming improve all types of women's health.

To find out how women's state changes due to occupations in recreational swimming, the HAM (health, activity, mood) test was held. Obtained data is presented in the table (table 3) [9].

Results of diagnostics demonstrate positive dynamics of these indicators and higher rates after year and, especially, after biennial experience of occupations in recreational swimming, in comparison with initial level. So, after the first year of occupations, indicators of health have improved by 1,63 points (p<0,01), and after 2nd year of occupations by 1,35 points (p<0,01). The indicator "activity" after year of occupations has increased by 1,22 points (p<0,001), and after the second year by 1,44 points (p<0,001). In comparison with initial level the indicator "mood" during first year has improved by 0,5 point (p<0,001), and after the 2nd year of occupations in recreational swimming – by 0,42 points (p<0,001). Thus, summing up the results of influence of recreational swimming occupations on psychoemotional condition of women, it is noticeable that this kind of activity causes positive changes in emotional sphere and provides high self-esteem.

The observed improvements were confirmed by the results of poll, conducted among women.. Data of poll on existence and number of complaints prior to the occupations in recreational swimming (October, 2014), in comparison with their quantity after the first (June, 2015) and the second years (June, 2016) of occupations are presented in the table (table 4).

Analyzing initial data on presence of complaints at women (October, 2014) it has been revealed that the most frequent were complaints about catarrhal diseases, headaches, dizziness, sleep disorders, irritability, heartaches, etc.. Similar surveys have been conducted after the first (June, 2015) and the second (June, 2016) years of occupations. Analysis of these repeated polls of women (June, 2015; June, 2016), engaged in groups of recreational swimming has shown that occupations have considerably reduced number of cases of catarrhal

Table 2

Dynamics of physical, mental and social health indicators of women under the influence of occupations in swimming (in points, $\bar{X}$±m (n=52)

Factors revealed	Initial (no experience in occupations) (n=52)	After 1 year (n=52)	Reliability level		After 2 years (n=52)	Reliability level	
			t	p		t	p
Physical health	8,95±1,14	13,09±1,23	2,5	<0,05	16,51±1,16	2,0	<0,05
Mental health	14,97±0,78	17,93±0,87	2,5	<0,05	20,35±0,72	2,1	<0,05
Social health	23,17±0,43	25,05±0,51	2,8	<0,01	27,05±0,61	2,5	<0,05

Table 3

Dynamics of women's of health, activity, mood indicators under the influence of occupations in swimming (in points, $\bar{X}$±m (n=52)

The states surveyed	Initial (no experience in occupations) (n=52)	After 1 year (n=52)	Reliability level		After 2 years (n=52)	Reliability level	
			t	p		t	p
Health	2,53±0,39	4,16±0,43	2,8	<0,01	5.51±0,29	2,7	<0,01
Activity	3,49±0,29	4,71±0,23	3,4	<0,001	6,15±0,28	4,0	<0,001
Mood	3,15±0,11	3,65±0,12	3,6	<0,001	4,07±0,19	2,1	<0,05

Table 4

Dynamics of number of complaints at women under the influence of occupations in swimming (quantity of cases, %, n=52)

Common complaints		Initial (no experience in occupations) (n=52)		After 1 year (n=52)		After 2 years (n=52)	
		Incidence	%	Incidence	%	Incidence	%
Nervous disorders		48	92,3	34	65,4	17	32,6
Asthenic syndrome		48	93,3	31	59,6	10	19,2
Headaches		45	86,5	28	53,8	12	23,1
Joint pains, calcifications, joint deformation		46	88,5	35	67,3	17	32,7
Sleep disorders, insomnia		37	71,2	22	42,3	6	11,5
Respiratory problems		23	44,2	18	34,6	12	23,1
Heartache, heartbeat, shortness of breath while physical activity		27	51,9	19	36,5	9	17,3
Backache	Cervical	43	82,7	21	40,3	12	23,1
	Chest	37	71,2	24	46,1	15	28,8
	Cumbar	31	59,6	18	34,6	15	28,8
	Coccyx	22	42,3	17	32,7	12	23,1
Occasional pain in stomach, liver, etc.		21	40,3	18	34,6	10	19,2
Catarrhal diseases		38	73,1	23	44,2	6	11,5
Other		23	44,2	15	28,8	5	9,6

diseases: from 73,1 % (38 cases) – prior to the occupations swimming, to 44,2 % (23 cases) – after the first year of occupations and to 11,5 % (6 cases) – after the second year.

Under the influence of occupations in swimming, the quantity of headache cases (initial indicator – 86,5 % (45 cases of 52 respondents) has significantly decreased to 53,8 % (28 cases) – after the first year and 23,1 % (12 cases) – after the second year. Sleep disorders and sleeplessness: initial – 71,2 % (37 cases), to 42,3 % (22 cases) and 11,5 % (6 cases) after 1st and 2nd years of occupations accordingly. In comparison with basic data (48 cases – 92,3 %), the number of neurotic frustration has considerably decreased: after year of occupations – to 34 cases (65,4 %), after 2 years of occupations – to 17 cases (32,6 %). The asthenia syndrome shown prior to occupations in swimming in 48 cases (93,3 %) after one year of occupations has decreased to 31 cases (59,6 %), and after the second year to 10 cases (19,2 %).

The positive tendency is seen also in dynamics of complaints about heart. Thus, at the beginning of the research, 27 of 52 women complained of heartaches that made 51,9 %. In year after the beginning of occupations in swimming the number of the women complaining about heartache, heartbeat and shortness of breath has decreased to 19 cases (36,5 %), and after the second year of occupations has made 9 cases (17,3 %). The number of complaints about respiratory problems (from 23 cases (44,2 %) has decreased to 18 (34,6 %) and then and to 12 cases (23,1 %); complaints about chronic stomachache and liver pain (from 21 cases (40,3 %) to 18 (34,6 %) and to 10 cases (19,2 %) after 1st and 2nd years of occupations accordingly.

The number of complaints to joint pains has decreased from 46 cases (88,5 %) to 35 cases (67,3 %) after year of occupations and to 17 cases (32,7 %) after the second year. In two years of occupations in recreational swimming the number of complaints to pains in various regions of backbone has decreased on average by 25 %.

Conclusions

As a result of the conducted research it is noticeable that biennial occupations in recreational swimming have positively affected the psychoemotional sphere and the general indicators of women's health. It is established that there were considerable changes in indicators of physical development and physical fitness of the women doing swimming. It is revealed that recreational swimming positively influences indicators of physical, mental and social health of women aged 25–40 years, and indicators of health, activity and mood are higher in comparison with basic data. The most noticeable improvements of physical and psychoemotional state indicators are revealed after 2 years of occupations in recreational swimming.

Prospects of further researches can be determined by indicators of the dominating condition of women who do swimming, in different phases of menstrual cycle.

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