

Three- to Six-Year-Old Children's Adaptation in the System of Recreative and Healthy Swimming

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Abstract

The content of the work lies in the theoretical and practical development of three methods of conducting recreational and health-improving swimming lessons for children 3-4 and 5-6 years old, aimed at optimizing adaptation and developing certain adaptive abilities.

Keywords: adaptation, healthy-recreational swimming, 3-4- and 5-6-year-old children

The purpose of the study is to determine adequate forms, principles, organizational measures, means and methods of conducting recreational swimming lessons, aimed at the adaptation of 3-4- and 5-6-years children.

Research methods. In addition to theoretical scientific methods, the research algorithm also used empirical methods based on the expediency of experimental studies in the field of physical culture [1, 5, 8] and directly in the field of studying children's motor activity in swimming [7].

These are the following methods:

- coverage of various aspects of physical culture for children, identification of existing classical and modern methods of children's swimming, study and analysis of scientific literature for the presence of age-related characteristics of the development and adaptation of children, which form the content of individual research methods and determine various author's methods aimed at the adaptation of children aged 3-6;
- pedagogical observations, which were carried out for children aged 3-6 years in the process of individual and group lessons, as well as during the control starts "FANNI FISH", including, inter alia, photography and video filming;
- survey methods (written questionnaire), where the respondents were the parents of the children involved;
- control tests, including functional tests and four simultaneous continuous swimming loads, designed to study certain indicators of physical development, health and physical fitness, which show the quality of the adaptation, as well as heart rate monitoring and timing, which determined the compliance of physical load during training with the proper norms;
- indices characterizing the development of some indicators of physical development and health;
- psychodiagnostic techniques aimed at studying indicators of social and emotional development and learning ability;

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• mathematical and statistical methods, including a comparative analysis of adaptation indicators in a coupled sample of children aged 3-4 years in the “One on one” individual training system; secondly, a comparative analysis of adaptation indices in an independent sample of children aged 5-6 years in the systems of individual swimming lessons “Water energy” and group lessons – “Interactive”.

The choice and specification of research methods and experimental teaching methods were formed depending on the factors [2, 3, 4, 6, 9, 10, 11, 12, 13], including systemic age characteristics and technical conditions of the pool in which the experimental activity.

In total, the study used 3 surveys, 11 tests, 6 indices and 6 methods, thanks to which we received results on 24 adaptation indicators characterizing the adaptation of children aged 3-6 years, of which 17 indicators are basic, and 7 are auxiliary.

Organization of the study. The study was carried out as part of a complex experiment in the period 2015-2020, since the effectiveness of three different training methods was studied and significant factors were identified that determine various experimental teaching methods for children aged 3-4 and 5-6 years.

All experimental activities took place at the pool Lotus Water Energy SRL.

Research results. Analysis of the results of this survey allows us to conclude that among the many achievements of a child, parents prefer physical fitness (40% of respondents), among the achievements of the level of social and emotional development – the ability to interact with children (36% of respondents), at the level of ability and attitude to learning – curiosity (66% of respondents).

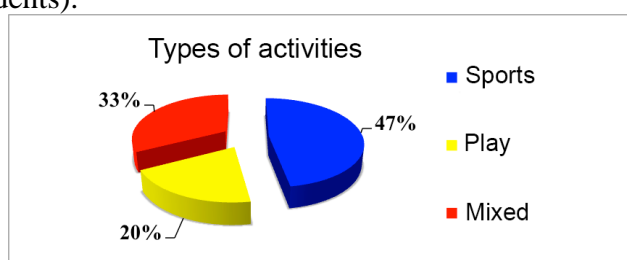


Figure 1. Results of the survey “I love swimming”

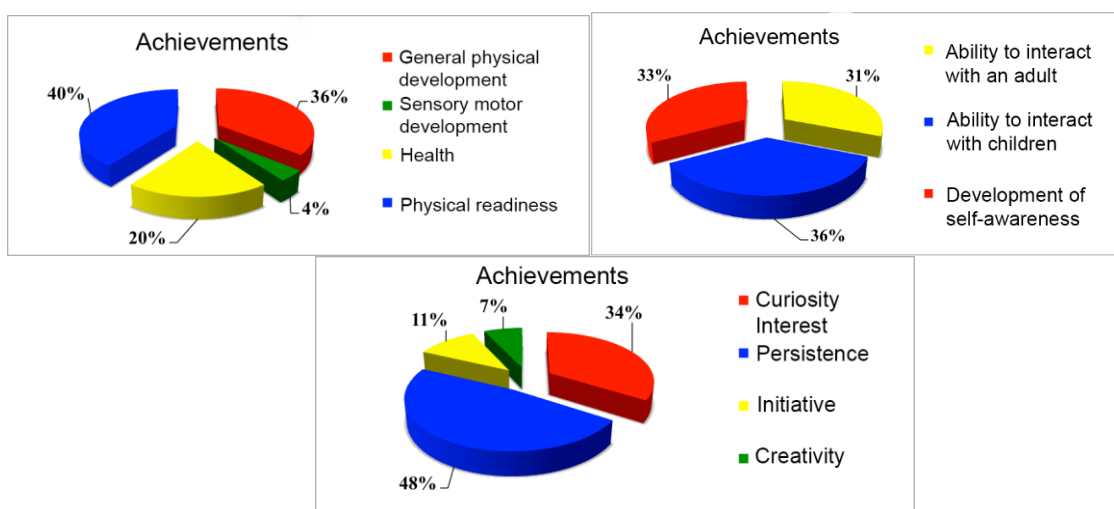


Figure 2. Distribution of expected achievements of parents from their children aged 3-6 years

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Before starting the introduction of the experimental swimming teaching methods developed by us in all three groups, we carried out many tests and measurements, which received the status of initial ones and are presented below in Table 1, Table 2 and Table 3.

Initial testing and psychodiagnostics of children aged 3-4 years demonstrate a certain level of development of the qualities of adaptation, and a comparative analysis of the results in terms of the adaptation indicator at the first level “Physical development and health” – VC in comparison with the calculated PVC (Table 2), demonstrates its insignificant excess, with VC = 0.87 compared to calculated PVC = 0.73 – 0.84.

Initial testing and psychodiagnostics of children aged 5-6 years demonstrate a certain level of development of adaptation qualities and state the homogeneity of properties in the systems of individual and group swimming training.

Having received the initial results of the main and auxiliary indicators of adaptation of children aged 3-6 years, we carried out their correlation analysis, as a result of which we received the results on 105 correlations of the levels of physical development, health and physical fitness and 15 on the levels of social-emotional development and ability and attitudes to learning, a total of 120 correlations, of which 38 and 6, respectively, found a positive relationship at $r = 0.50 - 0.99$.

Table 1. Initial results of adaptation indicators for children aged 3-4 years in the system of individual lessons, n = 37

| № i/i | Types of testing | Initial indicators $\bar{x}_1 \pm m$ |
|--|------------------------------|--|
| Level 1: Physical development and health | | |
| 1. | Life index, b | 10.38±0.19 |
| 2. | VC, l | 0.87±0.02 |
| 3. | Health index, b | 4.20±0.23 |
| 4. | Respiratory rate, times/min | 29.32±0.31 |
| 5. | Genchi test, s | 5.56±0.75 |
| 6. | Stange test, s | 8.80±0.16 |
| 7. | Heart rate reserve, b | 116.37±0.66 |
| Level 2: Physical readiness | | |
| 1. | Holding breath in water, s | 11.70±0.58 |
| 2. | Swimming on the chest 7 m, s | 16.31±0.30 |
| 3. | Swimming underwater 7 m, s | 17.16±0.37 |
| 4. | Backstroke 7 m, s | 29.83±1.08 |
| Level 3: Socio-emotional development | | |
| 1. | Ease of contact, b | 1.77±0.11 |
| 2. | Social orientation, b | 4.15±0.23 |
| 3. | Communication, b | 3.83±0.23 |
| 4. | Self-esteem, b | 1.85±0.11 |
| Level 4: Ability and Attitude to Learning | | |

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| | | | | | |
|-------|--------------------------------|-----------------------|---------------|----------------|-----------|
| 1. | Curiosity, b | | | | 5.17±0.31 |
| 2. | Perseverance, b | | | | 3.17±0.15 |
| Note: | n = 37; f – 36 r = 0.519 | P – 0.05 t – 2.028 | 0.01 2.719 | 0.001 3.582 | |

Table 2. Indicators of the initial calculated indicators of PVC for children aged 3-6 years

| Indicators of the calculated PVC, I | Age, years | | |
|-------------------------------------|---|---|--|
| | 3-4 | 5-6 | 5-6 |
| | System of individual lessons 0.73 – 0.84 | System of individual lessons 1,01 – 1,16 | System of group lessons 0,95 – 1,09 |

Among the adaptation indicators at the levels of physical development, health and physical fitness, the indicators of height, weight, IZ, VC, Stange’s test and Genchi’s test have a great influence, more than 5 connections, with $r = 0.51 – 0.83$. The large interconnection of these indicators indicates a complex and correct choice of tests for studying indicators of physical development, health and physical fitness in adaptation due to their specificity for swimming and the great potential of swimming to increase the effectiveness of adaptation in children according to these indicators, by influencing their development.

Table 3. Initial results of adaptation indicators of children aged 5-6 years in the system of individual (1) and group (2) lessons (n1=28; n2=28)

| N ₂ i/i | Types of testing | Initial Indicators $\bar{x}_1 \pm m$ | Initial indicators $\bar{x}_2 \pm m$ | t ₁ | P ₁ |
|---|-------------------------------|---|---|----------------|----------------|
| Level 1: Physical development and health | | | | | |
| 1. | Life index, b | 8.84±0.20 | 7.98±0.40 | 1.95 | >0,05 |
| 2. | VC, I | 0.94±0.01 | 0.92±0.01 | 2.00 | >0,05 |
| 3. | Health index, b | 6.34±0.32 | 5.87±0.28 | 1.11 | >0,05 |
| 4. | Respiratory rate, times / min | 27.15±0.37 | 26.70±0.37 | 0.90 | >0,05 |
| 5. | Genchi test, s | 10.15±0.15 | 10.34±0.07 | 1.35 | >0,05 |
| 6. | Stange test, s | 11.67±0.26 | 12.03±0.27 | 1.00 | >0,05 |
| 7. | Heart rate reserve, b | 116.30±0.75 | 117.45±1.07 | 0.88 | >0,05 |
| Level 2: Physical readiness | | | | | |
| 1. | Holding breath in water, s | 14.35±0.59 | 11.97±0.98 | 2.08 | >0,01 |
| 2. | Swimming on the chest 7 m, s | 17.24±0.44 | 18.83±0.46 | 2.52 | >0,01 |
| 3. | Swimming underwater 7 m, s | 16.56±0.58 | 19.12±0.78 | 2.66 | >0,01 |
| 4. | Backstroke 7 m, s | 26.37±0.74 | 29.03±0.82 | 2.41 | >0,01 |
| Level 3: Socio-emotional development | | | | | |
| 1. | Ease of contact, b | 3.07±0.14 | 2.81±0.14 | 1.85 | >0,05 |
| 2. | Social orientation, b | 2.30±0.37 | 1,0±0.23 | 1.42 | >0,05 |

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| | | | | | |
|--|------------------|---|-----------------------|---------------|----------------|
| 3. | Communication, b | 6070±1.97 | 6.,40±1.64 | 1.05 | >0,05 |
| 4. | Self-esteem, b | 1.54±0.23 | 1.39±0.19 | 0.53 | >0,05 |
| Level 4: Ability and Attitude to Learning | | | | | |
| 1. | Curiosity, b | 5.67±0.8 | 5.18±0.28 | 1.28 | >0,05 |
| 2. | Perseverance, b | 3.15±0.8 | 3.56±0.23 | 1.17 | >0,05 |
| Note: | | n ₁ =28; n ₂ =28; f=27 | P - 0.05 t - 2.056 | 0.01 2.779 | 0.001 3.707 |

The revealed high correlation between the indicators of resting heart rate and heart rate, at $r = 0.99$, is associated with the fact that the resting heart rate result is used in the index formula.

Having received the initial results of adaptation of children aged 3-6 years, we began to apply three developed experimental methods of teaching swimming "One on one", "Water energy" and "Interactive".

Conclusions

1. The study of the essence of human adaptation has shown that the processes and their components occur at the social, psychological, and physiological levels, and at the age of 3 to 6 years, acquiring certain characteristics, the quality of adaptation, to a greater extent depend on the characteristics of physical development, health, physical preparedness, social and emotional development, ability and attitude to learning.

2. An adequate content of recreational swimming for children from 3-6 years old is aimed at physical development and health, improvement of physical fitness, social and emotional development and dynamization of ability and attitude to learning and depends on factors including systemic age characteristics and technical conditions of education swimming, which form such author's methods of teaching swimming as recreational swimming in the system of individual lessons for children aged 3-4 years "One on one", recreational swimming in the system of individual lessons for children aged 5-6 years "Water energy" and recreational swimming in the system of group lessons for children aged 5-6 years "Interactive".

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