THE INFLUENCE OF AQUATIC GYMNASTICS PROGRAMS ON CHILDREN WITH DISABILITIES

INFLUENȚA PROGRAMELOR DE GIMNASTICĂ DESFĂȘURATE ÎN MEDIUL HIDRIC ASUPRA COPIILOR CU DIZABILITĂȚI

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Key words: motor skills, aquatic gymnastic, children with disabilities.

Abstract

Introduction. Climate and social changings are too fast and too aggressive for quieter evolution of man needs. Therefore with the rapid evolution of society has emerged a growing number of children with physical and intellectual deficiencies, who require constant help and support.

Aim. The purpose of this paper is the observation of the influence the use of gymnastic exercises conducted in the aquatic environment has on children with various physical and mental disabilities.

Hypothesis. Participation of children with physical and mental disabilities at a water gymnastics program, will enhance the level of development of motor skills of each individual.

Material and methods. The activity had been conducted with a group of five children, a girl and four boys with different disabilities, which had been performed once a week, during six months in 2015.

The structure of the lesson lasted 60-80 minutes including a standard structure in three parts.

It organized a group of children with physical disabilities that took up a water gymnastics exercises program. Four tests were applied to people with reduced capacity of motion: A. Flamingo test - to assess the balance; B. Flexibility legs and trunk; C. Coxo-femoral flexibility; D. Arm curl.

Rezults. We achieved an improvement of motor skills evaluated and observed by us and a breakthrough psycho-motor for each child.

Conclusions. Gymnastics programs conducted in the aquatic environment allowed the children to perform exercises more easily with little or no help, the most important aspect being their overall condition manifested by joy. A beneficial impact was found in the social sphere, children becoming more communicative and more confident. An improved social behavior of children at school and during other extracurricular activities was observed.

Cuvinte cheie: capacitate motrică, gimnastica în apă, copii cu dizabilităţi.

Rezumat

Introducere. Schimbările climatice şi sociale din care facem parte sunt mult prea rapide şi prea agresive pentru evoluția mai liniștită de care are nevoie omul. De aceea odată cu evoluția rapidă a societății a apărut și un număr tot mai mare de copii cu deficiențe fizice și intelectuale, care necesită ajutor și asistență permanentă.

Scop. Scopul lucrării este observarea influenței utilizării exercițiilor de gimnastică desfășurate în mediul acvatic la copiii cu dizabilități fizice și intelectuale diferite.

Ipoteză. Participarea la un program de gimnastică în mediul hidric personalizat a copiilor cu dizabilități fizice şi intelectuale, va permite îmbunătățirea nivelului de dezvoltare a calităților motrice proprii fiecărui individ.

Material şi metode. Activitatea a fost realizată cu un grup de cinci copii, o fată și patru băieți cu diferite disabilități, care au participat la un program o dată pe săptămână, timp de șase luni, în 2015. Structura lecției a durat 60-80 minute, inclusiv o structură standard în trei părți. Ea a fost organizată cu un grup de copii cu dizabilități fizice care au parcurs un program de exerciţii de gimnastică în apă. S-au aplicat patru probe de evaluare pentru persoanele cu capacitate redusă de mișcare: A. Proba Flamingo; B.Flexibilitate trunchi și membre inferioare;C. Flexibilitate coxo-femurală; D. Flexii ale brațelor.

Rezultate. Am obținut o îmbunătățire a calităților motrice evaluate și observate de noi și un progres psiho-motric pentru fiecare copil în parte.

Concluzii. Programele de gimnastică realizate în mediul hidric au permis copiilor să execute cu mai multă ușurință exercițiile, cu asistență redusă sau chiar fără asistență, cel mai important aspect fiind starea lor generală manifestată prin bucurie. Un impact benefic s-a constatat și în sfera socializării, copii fiind mai comunicativi, mai veseli şi mai încrezători. Acest aspect a produs modificări, în bine, şi asupra comportamentului social al copiilor pe parcursul activităţilor şcolare şi extraşcolare.

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Introduction

Climate and social changings are too fast and too aggressive for quieter evolution of man needs. Therefore with the rapid evolution of society has emerged a growing number of children with physical and intellectual deficiencies, who require constant help and support.

Thus, gymnastics programs are developed and will compensate and correct the deficiencies, improving the quality of life.

One of the most common techniques of education, reeducation and rehabilitation for children, is gymnastics. The efficiency of these techniques is given by the early and accurate assessment of the child in its application in a process of correction, improvement or acquisition, which requires continuity. [1]

The most common disorders are torticollis, clubfoot congenital myopathy, trisomy 21, the delay in the development of the neuro-motor system, urinary or faecal incontinence, hip dysplasia and deviation of the spine, which by means of meetings of pediatric kinesiology would result in normalization of tone muscles, improving joint mobility, static and dynamic balance, harmonious physical development, coordination development, respiratory rehabilitation. [2]

For children with disabilities, one of the main institutions dealing with their lifestyle is Special Olympics. The basic institution is permanently centered on sports activities for children with various disabilities and their development towards an independent life. [3]

Water, is ideal for making physical exercises. This produces a state of weightlessness and so any person, regardless of age, weight, sports experience and skills, can carry out these exercises. [4]

Aquatic therapy movement is part of a holistic therapeutic complex along with other therapeutic means. The basic element in the recovery of motor or mental disorders is the gymnastics exercises conducted in water. [5]

Children with disabilities may have physical, mental or intellectual disabilities: autism, down syndrome, reduced IQ, associated disabilities. This may be due to genetic errors, problems during pregnancy, problems at birth or health problems due to social conditions of living. [6]

Nowadays we witness increasingly rapid ineffective changes of the environment to which we belong, modern and industrial activities being more and more aggressive and alert.

Climate and social changes are becoming more aggressive with a long-term negative impact on the development and evolution of the human body. It is understood that the individual, as a social being, is trying to adapt as quickly as possible to the demands of society, and especially as effectively, but not always with positive results.

Excess pollution, increasingly processed food and its production in industrial quantities generate major changes in the sphere of human genetics, which can be seen at future generations.

Because of these aspects mentioned above, in today's society appear a growing number of children with physical and mental disabilities, who require constant help and support. Thus some gymnastics programs can be developed in order to correct, to compensate and to improve the quality of a life with disabilities. Using interdisciplinary programs with specific elements of gymnastics and swimming is not a novelty, but a permanent way to improve the motion of children with disabilities.

Aim

The purpose of this paper is the observation of the influence the use of gymnastic exercises conducted in the aquatic environment has on children with various physical and mental disabilities.

Hypothesis

Participation of children with physical and mental disabilities at a water gymnastics program, will enhance the level of development of motor skills of each individual.

Material and methods

The activity had been conducted with a group of five children, a girl and four boys with different disabilities, which had been performed once a week, during six months in 2015.

The structure of the lesson lasted 60-80 minutes including a standard structure in three parts.

It organized a group of children with physical disabilities that took up a water gymnastics exercises program.

The group under investigation:

Investigated group of subjects: 5 children, one girl and four boys.

Table no.1 - Groups of subjects

No. crt.	**Girls**	**No.crt.**	**Boys**
1	B.S.	1	S.L.
		2	P.S.
		3	S.D.
		4	U.A.

Table no.2 - Disabilities

No	**Name/Surname**	**Year of birth**	**Diagnosis**
1	S.L.	2008	Muscular Dystrophy
2	P.S.	2007	Dislocation of the right hip
3	B.S.	2006	Cerebral palsy
4	S.D.	1997	Cerebral palsy
4	U.A.	1994	Hemiparesis

Research methods used

Evaluation samples were extracted from Eurofit test, and intended to assess the motion skills necessary for daily activities. Also evaluation samples are basic exercises in the development of the neuromotor handicaps. [7]

Four tests were applied to people with reduced capacity of motion.

A. Flamingo test - to assess the balance;
B. Flexibility legs and trunk;
C. Coxo-femoral flexibility;
D. Arm curl.

Exercise program used

Exercise program conducted took into account the lesson plans on structures for gymnastic exercises performed in water.

Objectives: general muscle relaxation, walking practice by education, development the mobility of the hip, mental relaxation.

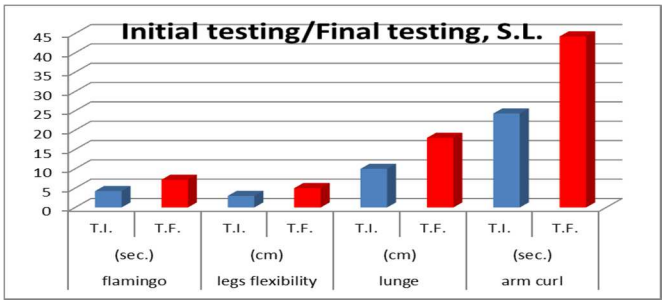
- Raising the arms from the shoulders – above;
- Arms forward into water;

- Spinning fists over each other;
- Wall pushups;
- Twisting the torso after a floating object;
- Lift the knee to the chest for 3-5 seconds;
- Lean against the wall, raising knees to chest;
- Continue with raising knees to chest 5m;
- Lateral movement 5 m;
- Throwing balls in a basket;
- Catching of ducklings.

Results

Table no. 3 Initial/Final assessment

name/ surname	**flamingo (sec.)**		**legs and trunk flexibility (cm)**		**lunge (cm)**		**arm curl (sec.)**	
	T.I.	T.F.	T.I.	T.F.	T.I.	T.F.	T.I.	T.F.
S.L.	4, 25	7,18	3	14,31	10	18	24,31	34,25



Graphic no.1 – Initial / Final testing. S.L.

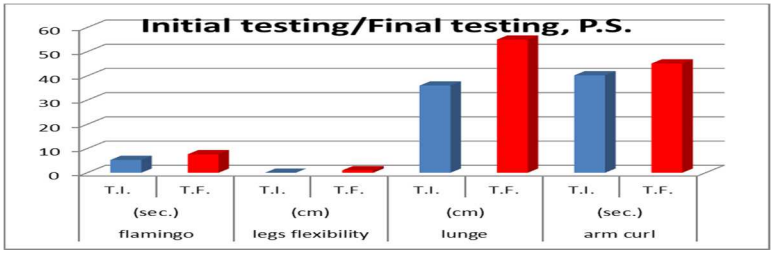
Following work carried S.L. the following results for initial testing and final testing. The case of S.L. has a muscular dystrophy situation, which implies poor muscle tonicity throughout the body and travelling with an attendant is mandatory.

S.L. with muscular dystrophy generally has performed well the assessment tests.

He has improved his balance, but guided with help, has also improved the flexibility of his legs; he has developed hip-femoral flexibility. By exercises conducted in water with assistance and help was developed muscle tone resulting in an improvement at the evaluation in time of force in both arms and legs.

Table no.4, Initial/Final assessment

name/ surname	**Flamingo (sec.)**		**trunk and legs flexibility (cm)**		**lunge (cm)**		**arm curl (sec.)**	
	Initial testing	Final testing	Initial testing	Final testing	Initial testing	Final testing	Initial testing	Final testing
P.S.	5,28	7,62	0	1	36	45	40,22	45,15



Graphic no.2 - Initial / Final testing, P.S.

Subject P.S. has an evolving medium-good torso and legs movement. Thus, the progress is very small, the dorsal mobility being of 1 cm and determined by the stiffness of the trunk and lower limbs. If the hip-femoral joint is observed it can cope better about 9 cm.

Subject P.S. could perform water exercises independently, with large amplitude, leading to greater flexibility on land. It is noticed that the results are quite high especially in the initial testing which determined small progress in the final testing. The exercises for the muscles of the arms carried in water have been achieved without the permanent supervision.

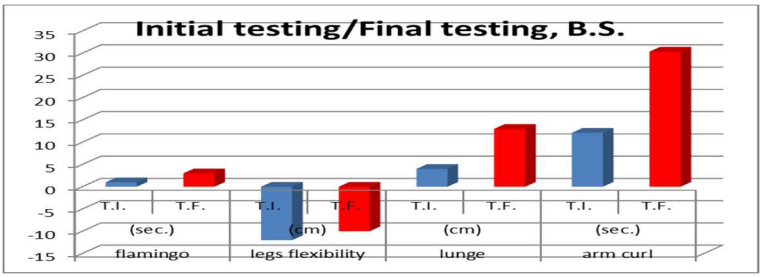
This subject has improved balance, flexibility of his legs being less developed due to one of the legs that is more rigid.

The flexibility of the hip-femoral joint has developed very well.

Exercises in water were performed in this case for increasing muscle assessment tests requested by us, seeing a positive result in all subjects.

Table no. 5, Initial/Final assessment

name/ surname	**flamingo (sec.)**		**legs flexibility (cm)**		**lunge (cm)**		**arm curl (sec.)**	
	Initial testing	Final testing	Initial testing	Final testing	Initial testing	Final testing	Initial testing	Final testing
B.S.	1	3	-12	-10	4	13	12,11	30,36



Graphic nr.3 – Initial / Final testing, B.S.

Undergoing gymnastics programs conducted in water B.S. has the following results from initial testing and final testing.

B.S. presents cerebral palsy.

Despite the difficulty of movement this little girl came from a permanent water training program and has had good results.

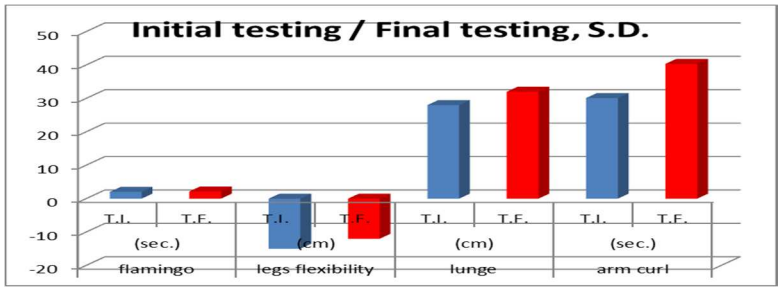
It has improved balance, and flexibility as well as the dorsal part of the legs and of the hip-femoral joint.

Recording the results we can assume that it has achieved a breakthrough at this level. We must point out that in this case too toned muscles and limbs are permanently rigid, which is an advantage for this subject.

The most important thing is to develop flexibility and to reduce joint pain, which in our case was carried out in a lesser extent.

Table no. 6, Initial/Final assessment

nume/ prenume	flamingo (sec.)		legs flexibility (cm)		lunge (cm)		arm curl (sec.)	
	T.I.	T.F.	T.I.	T.F.	T.I.	T.F.	T.I.	T.F.
S.D.	2.03	2.15	-15	-12	28	32	30.12	40.35



Graphic nr.4 – Initial/Final Testing, S.D.

Performing sports, S.D. obtained the following results for the initial testing and final testing.

This subject has presented extreme rigidity of limbs which makes moving hard to achieve. It has made a little progress in the balance area because it has no stability in his limbs.

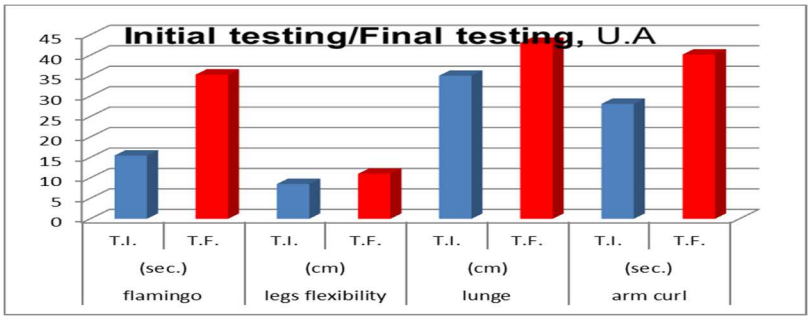
He has improved the flexibility of the dorsal part of the legs, and has also developed better flexibility of the hip-femoral joint, making it difficult to position segments.

Observed progress and evidence of static force, all registering higher values from baseline to the end.

The development of muscle and joint flexibility must be pursued, because it is a rather slow process.

Table no. 7, Initial/Final assessment

nume/ prenume	flamingo (sec.)		legs flexibility (cm)		lunge (cm)		arm curl (sec.)	
	T.I.	T.F.	T.I.	T.F.	T.I.	T.F.	T.I.	T.F.
U.A.	15.48	35.27	8.5	11	35	43	28.11	40.17



Graphic nr.5 – Initial/Final testing

After performing physical exercises U.A. has the following results from initial testing and final testing.

U.A. has presented a psycho-motor deficiency disorder of static and active movements. With this subject we achieved positive values in all control tests; deficiency is an easy one, and for which final results have improved. Each of the subjects shows a trend improved from baseline, water exercises being a determining factor and positive effect on their organism.

Subjects worked to carry out exercises in water within their own limits, some needed help, others practiced alone, but each child has shown perseverance and enthusiasm.

Meetings had a playful side, the children were able to play with different objects, with water toys, which delighted them so much. Also, the perseverance of parents is very important, keeping these children motivated to go through all the training; it is pleasing to improve motion and the motor skills of children, who can enjoy moving easily in water and who can also relax at the swimming pool.

Conclusions

- Gymnastics programs conducted in the aquatic environment allowed the children to perform exercises more easily with little or no help, the most important aspect being their overall condition manifested by joy.
- The evolution obtained from subjects undergoing the study demonstrates the beneficial influence of gymnastics exercises conducted in water and performed by children with disabilities. In the course of ongoing programs, children were able to experience improved measured motor skills, and overall better physical condition.
- A beneficial impact was found in the social sphere, children becoming more communicative and more confident. An improved social behavior of children at school and during other extracurricular activities was observed.
- The children were excited and happy to have performed gymnastics exercises, especially those carried out in water, where it was easier to achieve movement. Parents were also satisfied and pleased with the program, bringing constantly their children to the courses.
- Being in water children were able to execute exercises more easily with little or no help from the supervisors, the most important aspect being the thrill of the children playing together.
- In the course of the ongoing programs in aquatic gymnastics, children were able to improve motor skills and a new and better physical condition, as reflected in swimming journeys undertaken.

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