

AQUATHERAPY IN POSTURAL DISTURBANCES IN THE FRONTAL PLANE

(Preliminary communication)

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Abstract

The postural disturbances are one of the widespread diseases among children and teenagers. Unfound and untreated on time, they may also lead to unpleasant changes in the stand of the organism. In contemporary conditions the problem become bigger, because of the decreasing physical activity and long lasting in front of computer from early childhood, unsuitable regiment of diet, increasing number of traumatic injurings, innate spine anomalies and others. Many years objects of survey and discussion were aetiology, pathogenesis and their treatment. The problem of widespreding postural disturbances and undecided questions around it shows that the problem is current of the day. The right pose is actually very important for the normal function of the human musculoskeletal system. It is not only aesthetic quality of the growing body. Mostly it is connected with the good functional condition, as organs of movement as all of the rest important organs and systems. Aquatherapy appear huge influence over human body, it may be practices from early childhood, it is especially usefull for making the organism stronger and for it`s harmonic development. Exercices in water /underwater or water gymnastic/ have many priorities. Main factors which are used are lifting strenght and density of water. Objects of the research were 30 kids with postural disturbances in frontal plane at age 10-18 years old. Children were separate in two groups – control "A" (14) and experimental "B" (16). As a result, we made research found that the most common location of involvement of the spine thoracic-lumbar portion -76.67%.

Keywords: *curved spine, physiotherapy, kinesitherapy, scoliosis, swimming, exercises, physical activity, control grpup, experimental group, generally developing gymnastic exercises,*

INTRODUCTION

Bodystanding, gait, facial expressions, gestures are emphasized individuality and essential feature of personality. Correct posture provides stability to the body and is essential for daily mobility activities. Furthermore, it is most favorable to the functioning of internal organs, at least encumber the musculoskeletal system and requires less effort. All this explains why the interest in postural disorders dates back to ancient times and has not decreased in our days.

Every diversion of normal stand represent postural disturbance or curved spine. Postural disturbances are changes in movement habit for posture. Initially alterations of the normal pose have functional character, but in lack of right corection, they lead to structure changes mostly of the spine. Spine bendings are permanent diversions from the normal form of the spine. To them with the functional disturbances there are and structure digressions of the spine. Bendings on the spine in the frontal plane wear the same name **scoliosis**. Irregular scoliosis stand (functional scoliosis

or prescoliosis) is functional change of the spine with diversion in the frontal plane (in sideways direction to 5 degrees), which is unfixed and is rectificated with making the pose "stand to attention". Unsecurity bodystand is because weakness in muscularity of the body and unreliability in processes in the central nerves without destroying of the right movement habit for bodystand. Scoliosis is structure fixing sideway bending with twist around the axis of the spine. It is related with deformation to upgrowth of separate vertebral bodies, especially in the most prominent part of the bending. (Popov (Попов), 2006).

The aim of the current report is to research priorities of combine methods with aquatherapy and compare it with standard methods of physiotherapy for treatment and prevention of postural disturbances in the frontal plane.

Contingent of the research

Objects of the research were 30 kids with postural disturbances in frontal plane at age 10-18 years old.

Table 1. Characterization of the contingent according to character of bending, according to the gender and characterization according to localization of bending

Control group	%	Experimental group	%
Rightside scoliosis	30.00	Rightside scoliosis	36.67
Leftside scoliosis	16,67	Leftside scoliosis	16.67
Thoracic scoliosis	10,00	Thoracic scoliosis	13.33
Thoracic-lumbal scoliosis	36.67	Thoracic-lumbal scoliosis	40.00
<i>Female</i>	33.33	<i>Female</i>	43.33
<i>Male</i>	13.33	<i>Male</i>	10.00

Children were separate in two groups – control “A” (14) and experimental “B” (16). The research we made in Physiotherapy Centur “Faith, Hope and Love” Blagoevgrad.

Occupations with experimental group were made in covered swimmingpool in Blagoevgrad for the period of months September 2011 do December 2012.

On the Table 1, is present characterization of the contingent according to character of bending, according to the gender and characterization according to localization of bending.

On the Table 2, is present common characteristic

Table 2. Common characteristic of contingent according to character of bending

Type of scoliosis	%
Rightside scoliosis	66.67
Leftside scoliosis	16.67
Thoracic scoliosis	23,33
Thoracic-lumbal scoliosis	76.67
<i>Female</i>	76.67
<i>Male</i>	23.33

of contingent according to character of bending, we can see predominating of the rightside scoliosis 66, 67%, followed of leftside scoliosis 33, 34%. Scoliosis is more often met to girls 76, 67%, than to boys 23.33%, the cases with localization in thoracic and lumbal section are predominating 76, 67% and chest section 23, 33%.

Methods of examination

Methods of examination includes conduction of primary and end functional researches. To follow the effect of applied combine therapy, we used standard tests and methods for functional examination – somatoscopy, tetragon of prof. V. Moshkov, scoliosogramma – (G. Cankova and D.Minkova), test of Ott, test of Shober, test o Kraus Weber for strength endurance of dorsal musculature, equilibrium sample. The programe include occupations with physiotherapy 20 minutes and exercise in water and swimming 40-45 minutes.

With the children from control group we work to standard method – procedures of physiotherapy, massage and correctional gymnastics. With the experimental group we use methods in combination with aquatherapy.

Methods of applied physiotherapy

Control group methodspassive means, extension (optimal dosage without hyperextension), massage, physiotherapygenerally developing gymnastic exercises; targeted (special) exercises;

- exercises to increase muscle sense, exercises for balance, balancing, by carrying objects on the head, coordination and more.;
- exercises to educate properly telodarzhane in different starting points;
- breathing exercises.

Experimental group methods

Passivemeans: extension (optimaldosage without hyper extension), massage, physiotherapy generally developing gymnastic exercises; targeed (special) exercises:

- Exercises to improve the strength of back and abdominal muscles with and without appliances available with resistance (the system of Kabat) from different starting points, isometric exercises, walking with carring different weights, strength training in water.
- Exercises to download tear muscles and connective tissue structures and skew correction – exercises for downloading and upstanding the spine.
- Exercises recovering normal mobility of the spine (mobilization) creeps R.Klap, water exercises, exercise Moshkov, exercises automobilization.
- Exercises to increase muscle sense, exercises for balance, balancing, by carrying objects on the head, coordination and more.
- Exercises to educate properly bodystand at different starting points;
- Exercise of complex nature (involving more mobility segments). Such exercises are in water.
- Breathing exercises.

To achieve the desired result procedures were carried out at least three times a week. We watched the children carefully to determine the level of their

individual physical capabilities and physical culture. When building the programs we considered, etiology, clinical features, the degree of distortion. Comply with state and opportunities of children, age and motor skills.

Occupations with aquatherapy aim at:

- Overall strengthening and hardening and increased muscle tone;
- Strengthening the thoracic and abdominal muscles;
- Improve circulation;
- Development of a sustainable habit for proper bodystand;
- Increase mobility of the spine.

In the water body extends along the longitudinal axis, respiratory functions are activated. Muscles can be loaded significantly, the position of the spine is relieved. In the swimming body movements take corrective position. This normalize relations between the vertebral and intervertebral discs and improving their nutrition and growth.

Preparatory period of one month was designed quickly and efficiently learn the exercises in water techniques swimming styles (breaststroke and backstroke, as the butterfly is too onerous and crawl most often performed viciously asymmetric and can be difficultly corrected) and adaptation of the body to the water and definitely exercise.

Training period - here aiming at an overall strengthening of the body and increasing muscle tone, strengthening of the thoracic and abdominal muscles, improve circulation, build lasting habit bodystand properly, increase the mobility of the spine. An

important point of treatment is the motivation of the children. They are trained in intentional and precise execution of the complexes in aqua gymnastics. Pay special attention to respiratory and gymnastic exercises, improper bodystand in performing activities of daily living. Dosing is individually load gradually increased. Tracking the active participation of children in each exercise and proper performance.

RESULTS

Table 3, present the results of Tsankov's scoliosis scale. The results of the initial survey showed nearly identical averages in both groups (group A = 8.360 for group B 8.69 = 0). At the end of treatment, the results show an improvement in both groups, but the improvement in the group B is greater (Group A 0 = 7.43 for group B = 6,380). In group B, the improvement is 2.31 degrees, while Group A - 0.93.

Table 4 present the results of the strength of the abdominal muscles as measured in seconds. The results of the initial survey showed lower mean values in both groups (group A = 16.14 sec., Group B = 15.19 sec.). At the end of treatment, the results show an improvement in both groups, but the improvement in the group B is greater (Group A = 25.57 sec. For group B = 31.63).

Table 5 present the results on the strength of back muscles measured in seconds. Arithmetic mean value x at the beginning of the experiment of strength endurance of dorsal muscle in the control group was 10.57 sec., And in the end is 19s. In the experimental group at the beginning 9.5 sec., And after 25.19 seconds. In the experimental group, the improvement is greater.

Tabela 3. Tsankova`s Scoliosis scale dimension in degrees

<i>Primary results</i>						
Index	X	S	R	Max	Min	V%
Control group (A)	8,36	1,39	5	10	5	16,63%
Experimental group (B)	8,69	1,3	4	11	7	14,96%
<i>End results</i>						
Index	X	S	R	Max	Min	V%
Control group (A)	7,43	1,22	4	9	5	16,42%
Experimental group (B)	6,38	1,2	3	8	5	18,81%

Table 4. Effect of abdominal muscle /sec./

<i>Primary results</i>						
Index	X	S	R	Max	Min	V%
Control group (A)	16,14	4,11	16	26	10	25,46%
Experimental group (B)	15,19	4,18	18	26	8	27,52%
<i>End results</i>						
Index	X	S	R	Max	Min	V%
Control group (A)	25,57	6,5	24	38	14	25,42%
Experimental group (B)	31,63	4,69	20	41	21	14,83%

Table 5. Effect of dorsal muscle / sec. /

Primary results						
Index	X	S	R	Max	Min	V%
Control group	10,57	3,78	13	18	5	35,76%
Experimental group	9,5	3,08	12	17	5	32,42%
End results						
Index	X	S	R	Max	Min	V%
Control group	19	5,75	20	29	9	30,26%
Experimental group	25,19	4,59	16	33	17	17,72%

Table 6. Equilibrium sample / sec. /

Primary results						
Index	X	S	R	Max	Min	V%
Control group	8,21	2,15	8	14	6	26,19%
Experimental group	8,5	2,22	9	14	5	26,12%
End results						
Index	X	S	R	Max	Min	V%
Control group	15,5	3,35	10	21	11	21,61%
Experimental group	18,4	3,01	13	26	13	16,32%

Table 7. Ott's test /c m./

Primary results						
Index	X	S	R	Max	Min	V%
Control group	2,54	0,46	1,5	3	1,5	18,11%
Experimental group	2,59	0,49	1,5	3,5	2	16,22%
End results						
Index	X	S	R	Max	Min	V%
Control group	3,04	0,46	1,5	3,5	1,5	15,13%
Experimental group	3,25	0,45	1,5	4	2,5	13,85%

Table 8. Shoher's test /cm./

Primary results						
Index	X	S	R	Max	Min	V%
Control group	2,11	0,53	2	3	1	25,12%
Experimental group	1,64	0,5	1,5	2	0,5	30,49%
End results						
Index	X	S	R	Max	Min.	V%
Control group	2,61	0,53	2	3,5	1,5	20,31%
Experimental group	2,25	0,47	2	3	1	20,89%

Table 6 present the results of the equilibrium sample measured in seconds. The results of the initial study show low average values in both groups (Group A = 8.21 sec. For group B = 8.5 sec.). At the end of treatment, the

results show an improvement in both groups, but with higher values of B is a group (Group A = 15.50 sec. For group B = 18.44 sec.).

Table 7 present the results of the test of Ott measured

in centimeters. Arithmetic average of the beginning of the experiment, the control group was 2.54 cm and 2.59 cm for the experimental. At the end of treatment in the control group the mean value was 3.04 cm and 3.25 cm in the experimental.

Table 8 present the results of the test Schober measured in centimeters. Arithmetic average of the beginning of the experiment, the control group was 2.11 cm and 1.64 cm for the experimental. At the end of treatment in the control group the mean value was 2.61 cm and 2.25 cm in the experimental. In both groups there was an improvement.

CONCLUSION

Lead of us treatment and reserching work, shows that in physiotherapy in combination with aquatherapy is really effective curative instrument with patients with postural disturbances.

It enables full functional recovery. Methodology applied by us in physical therapy, which includes aqua is very well accepted by children and lead to improvements in their health and self-confidence. Achieved a positive influence on psycho-emotional state of the children. As a result, we made research found that the most common location of involvement of the spine thoracic-lumbar portion -76.67%. From the results of measuring the strength endurance of back and abdominal muscles can be concluded that the applied our method has a better effect in strengthening the same, compared with control patients bothered by standard methodology. In the experimental group strength endurance of the abdominal muscles at the end of the study was 31.63 sec., While the control group 25.57 sec. Strength endurance of the dorsal muscle in the experimental group at the end of the study was 25.19 sec., While the control group 19s.

In the daily life of children studied by us in a large percentage of missing or inadequate preventive measures against postural disorders.

Is recommended to be increased awareness of students, teachers and parents to be fully aware of the preventive measures that a serious problem for them to find a place in their everyday life. In conclusion it can be said that postural distortions remain disease with great medical and social significance. The proposed methodology and conducted shows a high degree

of effectiveness in the prevention and treatment of postural disorders in students, consisting of the correct posture, complete or partial correction scoliosis arc and associated asymmetries of the shoulder line, scapula and pelvis, improving the functionality of the body children, and hence to improve their physical abilities.

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