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Investigation of the Effect of Physical Development of Students on Water Therapy Education Training Program Which is Applied to Mentally Retarded

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Abstract

The aim of this research is, the effect of physical and emotional development of students on the water therapy training program which is applied to mentally retarded. 24 students (16 men, 8 women) who study in the special education and rehabilitation center have been participated to this research. These students are between 10 and 18 years of age. The special movement education program has been made for trepotic reaction in the pool by special education expert and physical education sport faculty for the students. This special movement education program has been developed considering the exercises of force, flexibility, ability and balance. It was obtained permission from parents of students and corporate executives for this program. This program was performed two months, two days in each week and 60-90 minutes in each day. The observation of workouts from the begging and end of the exercises was saved. Also, it was negotiated with parents of students and taking options about the development of the workout were recorded. According to the research observations, it was observed that before the studies students hesitate entering the water, they are afraid and beware to do the exercises, failed to do the movements and do not want to leave their parents. After the research process, it was observed that students wanted to enter the water immediately, they did the exercises with fun, managed the all exercises which were shown after 2-3 again and they wanted from their parents to go out of the pool during the studies. In interviews with parents, they expressed that their children woke up early for coming to the special education and rehabilitation center in the day of pool studies, they wanted to prepare their pool staff, they came to the center happily and they were much more calm and were obedient after when they went home and they had more comfortable sleep. According to the research it has been reached that water therapy training program of children who take special education contributed positively to the physical, social and psychological development of them.

Keywords: Mentally Retarded, water therapy, thereapeutic recreation, exercise.

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1. Introduction

People with intellectual disabilities have diverse abilities and potential, and educators must be prepared to accept this diversity. Intellectual disabilities present a substantial disadvantage to people attempting to function in society. They are characterized by cognitive limitations as well as functional limitations in such areas as daily living skills, social skills, and communication (Winnick, 2011).

Many systems exist for classifying intellectual disabilities: intelligence quotient (IQ), intensity of needed supports, behavioral systems, and etiological systems. The International Classification of Diseases (ICD) of the World Health Organization (WHO, 2001) and the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM IV) (APA, 2000) use intelligence test scores to determine the severity of intellectual disabilities.

The 2010 American Association of Intellectual and Developmental Disabilities (AAIDD) classification system is multidimensional. It is based on five dimensions of human functioning and the patterns and intensity of supports that enable individuals to participate in home and community life along with medical and behavioral support needs (Schalock, 2010).

These five dimensions include

1. Intellectual ability;
2. Adaptive behavior;
3. Health (includes physical, mental, and positive health and etiology practices);
4. Participation (refers to roles and interactions in the areas of home living, work, education, leisure, and spiritual and cultural activities);
5. Context (the interrelated conditions within which people live their everyday lives):

Lastly, AAIDD's Supports Intensity Scale (Thompson, 2004) provides normative data on support needs in 49 life activities grouped into six components as well as supplemental Protection and Advocacy Scale. These six subscales include

1. Home living,
2. Community living,
3. Lifelong living,
4. Employment,
5. Health and safety, and
6. Social

Table 1: Classifications of Mental Retardation Based on IQ Scores

Mental retardation level	Intelligence test score
Mild Mental retardation	IQ 50-55 to 70-75
Moderate Mental retardation	IQ 35-40 to 50-55
Severe Mental retardation	IQ 20-25 to 35-40
Profound Mental retardation	IQ below 20-25

Disorders causing intellectual disabilities are generally categorized according to when in the gestation they occur—prenatally, perinatally, or postnatally.

Prenatally, there are more than 750 genetic disorders associated with intellectual disabilities that fall into three types of genetic disorders: single-gene disorders, chromosomal disorders, and

multifactorial inheritance (inheritance of genetic and nongenetic factors), each of which is thought to contribute a small amount toward intellectual disability (Harris, 2006).

Prenatal environmental factors such as malnutrition, drugs, toxins, and maternal diseases also may cause intellectual disabilities. Perinatal causes of intellectual disabilities include placental insufficiency, abnormal labor and delivery, obstetrical trauma, neonatal seizures, infections, head trauma at birth, metabolic disorders, and nutritional disorders. Traumatic head injuries, infections, degenerative disorders, seizure disorders, toxic metabolic disorders, malnutritions, and environmental deprivation are postnatal cases of intellectual disabilities (Luckasson, 1992).

2. Material Method

24 students (16 male, 8 female) who studied at the special education and rehabilitation center attended to the research. Students are aged between 10 and 18. The specific movement training program which is for therapeutic recreation purposes was prepared by special education professionals and physical education and sports instructors for students in the pool.

The specific movement training program was developed with the exercises of force, balance, flexibility and ability. The permission was gotten from headmasters and parents of students for the program. The sports facilities and materials were examined in the institution where the training is and the unhealthy and unsafe conditions were revised.

The training materials (life vest, sponge, pool noodle ect.) which are missing ones were obtained. Information about the aims and achievements of the training were informed with a meeting with parents. While creating the recreation and training program, the points of parent's expectations about training were taken into consideration.

Exercises were done for two months, two days per week and 60-90 minutes in each day. At the beginning and at the end of the exercises, observations about the training were taken and saved. Also after the training, parent's opinion about the development of exercises was taken and saved with a meeting.

The volunteer instructors who studied earlier the lesson of physical education and sports, therapeutic recreation program, development and planning for disabled were determined to carry out the special movement training program. The instructors were trained with giving two seminars. Additionally, postgraduated students who will give observations and make interviews were determined and the forms of observations and interviews were created. The results of observations and interviews in the research were interpreted and reported as a qualitative research.

3. Analysis And Findings

Content of Training Program:

Table1: The age, gender, height, weight status of children who participated to the training program

Status	Mentally Retarded	M	%
Age	10-12 aged	8	33.3
	13-15 aged	9	37.5
	16-18 aged	7	29.2
Gender	Male	16	66.6
	Female	8	33.4
Height	120-130 cm	5	20.8
	131-140cm	5	20.8
	141-150cm	6	25
	151cm and above	8	33.4
	30-40 kg	8	33.4

Weight	41-50 kg	6	25
	51 kg and above	10	41.6

According to Table1; 8 of students who participated to the research are in the group of 10-12 aged (%33,3), 9 of them are in the group of 13-15 aged (%37,5) and 7 of them are in the group pf 16-18 aged (%29,2).

Students consists of 16 male (% 66,6) and 8 female (% 33,4). 5 of this students have 120-130 cm height (% 20,8), 5 of them have 131-140cm (% 20,8), 6 of them have 141-150cm (% 25) and 8 of them have 151cm and above (%33,4).

8 of students who participated to the research are 30-40kg (% 33,4), 8 of them are 41-50 kg (% 33,4) and 10 of them are 51 kg and above (% 41,6).

Table 2: The special movement training water threapy program for students who participated to the training

Weeks	Basic movements	Special movements	Gains	Used materials
Week1. (2 exercises)	Pool outside exercises	Using arms, legs and hands	To spin arms in all directions, to be able to close and open legs and to be able to close and open fingers	Pool noodles, sponges, water wings.
Week2. (2 exercises)	Pool outside exercises	Using arms, legs and hands	To spin arms in all directions, to be able to close and open legs and to be able to close and open fingers	Pool noodles, sponges, water wings.
Week3. (2 exercises)	The inner edge of pool exercises	Holding from the pool side and foot tapping in the pool side, head immerse exercises	To be able to move the legs, flapping feet in coordination while holding the pool side, sticking the head into water and removing it from the water.	Sponges, pool noodles, ropes of various thicknesses, balloons, flexible bands.
Week4. (2 exercises)	The inner edge of pool exercises	Holding from the pool side and foot tapping in the pool side, head immerse exercises	To be able to move the legs, flapping feet in coordination while holding the pool side, sticking the head into water and removing it from the water.	Sponges, pool noodles, ropes of various thicknesses, balloons, flexible bands, waterwings.
Week5. (2 exercises)	Exercises in the pool	Swimming with help, get into and get out of the water with help, to do hand-arm coordination exercises with help	To be able to swim with help, to be able to get into and get out of to water with help, to be able to do hand-arm coordination exercises with help	Sponges, pool noodles, ropes of various thicknesses, balloons, flexible bands, waterwings.
Week6. (2 exercises)	Exercises in the pool	Swimming with help, get into and get out of the water with help, to do hand-arm coordination exercises with help	To be able to swim with help, to be able to get into and get out of to water with help, to be able to do hand-arm coordination exercises with help	Sponges, pool noodles, ropes of various thicknesses, balloons, flexible bands.
Week7. (2 pool)	Sports games in the pool	Mutual playing water ball in the pool, throw the puff balls into the	To be able to mutual playing water ball in the pool, to be able to throwing the puff balls	Ropes of various thicknesses, puff balls, sponges, sponge balls, pool

exercises)		goal in the pool.	into the goal in the pool.	noodles, flexible bands, balloons.
Week8. (2 exercises)	Sports games in the pool	Mutual playing water ball in the pool, throw the puff balls into the goal in the pool.	To be able to mutual playing water ball in the pool, to be able to throwing the puff balls into the goal in the pool.	Ropes of various thicknesses, puff balls, sponges, sponge balls, pool noodles, flexible bands, balloons.

Note: The specially prepared program “the special movement training water therapy program” was taken from the research which is done with autistic children and used (Sirinkan, 2015).

In Table2, the basic principles of special movement training water therapy program which is applied to students participating to exercises were indicated.

In the implementation phase, implementation plan was prepared for each implementation program and implemented. The implementation plan was prepared in accordance with principles of physical education and sports lesson plans. Beginning of the implementation, exercises of general warming, special warming, opening and stretching were included in the plan.

The implementation phase was prepared with using methods which are from easy to difficult and from known to unknown. During the evaluation phase of implementation, learned things were checked and reported.

Table 3: The observation form

Topic	Observation1	Observation2	Observation3	Observation4	Evaluation
The physical effects of the program	Ineffective	Ineffective	Pretty effective	Effective	Positive evaluation
The social effects of the program	Ineffective	Pretty effective	Effective	Very effective	Very positive evaluation
The communication effects of the program	Ineffective	Ineffective	Ineffective	Pretty effective	Quiet positive evaluation
The effects of the peer relationships of the program	Ineffective	Pretty effective	Effective	Very effective	Very positive evaluation

According to observation results from Table3; eventhough the effect of the implemented special movement training water therapy program to student’s physical development wasn’t seen in observation 1 and 2, in third observation the effect was pretty effective and at the end of the study it was observed that the program effected in very good way to student’s physical development.

Furthermore, at the beginning of the study the effect of program to student’s social development wasn’t seen in observation 1. In the second observation the effect was seen a little bit and in the third and fourth observation the effect of program to student’s social development was observed that the effect is very effective.

The first, second and third observation which are related to communication skills the effect of program to students wasn’t seen. In fourth observation which was done at the end of the study the effect was observed that the effect begins to emerge little bit.

The another aim of the program which is development of peer relationships didn’t have any effectiveness in first observation. In second observation there is little bit effectiveness and in fourth one which was done at the end of the study the effect of program was observed in a positive way about the development of peer relationships.

Table 4: The parents' interview form

Questions	First interview	Parent's View			Evaluation
		Second interview	Third interview	Fourth interview	
Have you seen changes in the physical properties?	No	Little bit	Yes	Very much	Very positive development
Have you seen changes in social behavior?	No	Little bit	Yes	Yes	Very positive development
Have you seen changes in communication skills?	Little bit	Little bit	Yes	Yes	Positive development
Have you seen changes in peer relationships?	No	No	Little bit	Yes	Positive development
Have you seen changes in group communications?	No	No	Little bit	Yes	Positive development
Have you seen changes to comply with the rules?	No	Yes	Yes	Very much	Very positive development
Have you seen changes against school and education institutions?	No	No	Little bit	Yes	Positive development
Have you seen changes in behavior within the family?	No	No	Little bit	Yes	Positive development

According to the results of parent's interview of special movement training water therapy program in Table4, they stated that they have seen negative results in the first interview about physical and social development, in the second interview little bit development, in the third interview positive development and in the fourth one very positive development.

In their opinion of children's communication skills, they expressed that they have seen little bit development in first and second interview, positive development in third and fourth interview.

In research they expressed that they haven't seen development about peer relationships, group communications, attitudes against the school and education institutions and behavior within the family in the first and second interviews. In the third and fourth interview they have seen slightly positive and visible development about peer relationships, group communications, attitudes against the school and education institutions and behavior within the family.

In general of parent's interview which is done in the research, parents expressed that their children take advantage of training program, thereupon they have positive and sometimes very positive development in their physical, social and communicative properties.

4. Results And Evaluations

In the study, the results of special movement training water therapy program which is applied to children with learning difficulties and the results of interviews coincide with positive way in many

properties (physical development, social development, communicative development, peer relationships). It is observed that also in other properties (attitudes against the school and education institutions, behavior within the family, comply with the rules) have positive development.

The results of observation in research, it is observed that firstly students hesitated to enter the water, they were afraid and boggled to do the exercises, they failed to do the moves and they didn't want to leave their parents. At the end of the research process, it is observed that students want to get into the pool as soon as they arrive, do the exercises with fun, succeeded all exercises which are shown after 2-3 repeat and want from their parents to go out of the pool during the training.

In parent's interview, parents are expressed that their children get up early to come to the special education and rehabilitation center in the pool training day, want to prepare the pool staff as soon as possible, come to the center in cheerful way and they are more calm and obedient at home after school and have more comfortable sleep at nights.

All of this children's development results, it concluded that they are also successful in twos and thirds study groups, swim in a disciplined manner, play ball games, mostly obey the command of trainer and they don't have much problem with their friends.

The water therapy exercises which is done to 3-12 aged children from studies regarding water therapy (Mortimer and friends, 2014) contribute to their social interaction in good way and they develop positive behavior with friends.

In special education and rehabilitation center, it is observed from the water therapy exercises (www.dailysabah.com, 2016) which are done with the method of Halliwich and Watsu that children move more quickly in the water, increased their muscle strength and have differences in balance development.

In special movement training water therapy program which is applied to autistic students (Sirinkan, 2015) it is expressed that firstly students hesitated to contact with water but in later studies they were more comfortable with moving, played and moved with getting into the pool without fear.

In another research (Lotan and friends, 2015) it is observed that the physical and mental terms of patients, young and old people have improvement with water therapy exercises.

It is expressed that pools create a safe environment for patients and gain movement skills with water therapy program (Obst and friends, 2013) which is done for spinal cord injured patients.

It is observed that doing leg exercises in the water, walking and swimming from one side to other side in the pool as a water therapy increased the muscle strength and they enjoyed a lot with this training. (www.mangar.co.uk, 2016)

In Henly C.'s research (2015) it is expressed that water exercises as well as general exercises offers physical and psychological benefits, provides opportunity of free movement individuals by water's buoyancy, reduces the supplying water rolling resistance in water.

As a result, in all of the water therapy programs which are made in scientific it is reached that exercises provides the positive progress in terms of mentally, physically and socially development for elderly, children, sick and healthy person.

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