

# TABLE TENNIS CONTRIBUTION TO OPTIMIZING HEALTH AND QUALITY OF LIFE IN YOUTH WITH INTELLECTUAL DEVELOPMENT DISABILITIES

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**Abstract:** *In this study, our purpose was to emphasize the potential role of adapted motion activities to the motion related development of children with intellectual developmental disorders, in particular the role of table tennis in increasing the ability of movement of these children and the role of such activities in their socialization. We have included in our study 9 children with minor intellectual disabilities, aged between 10 and 14. The specific methods used were grouped into: voluntary relaxation exercises (autogenic training), dynamic balance exercises, exercises of coordination and ability and orientation games focusing on the development of the neuromuscular and mental reflex specific for correct attitudes. Meetings were held twice a week, including a warming up program, work program, physical therapy program and a table tennis training program. Table tennis training program included, besides general warming up exercises, other procedures specific to table tennis. Thus, daily for 30 minutes, after the end of physical therapy program, we have repeated the evaluation exercises. Also, other methods have been tried with those who had more developed motion ability, such as hitting balls to the wall, diagonally service.*

*Results and conclusions. The young people with disabilities' participation in physical education and adapted sport activities pursues major objectives such as the development of psiho-motility components, skill acquisition and training of motion skills, exercise the capacity of making physical effort, etc. Table tennis is a sport growing in general the interest of youngsters, but requires special equipments difficult to adapt and professionalism on behalf of the multidisciplinary team involved.*

**Key words:** *motion activity, assessment, physical therapy, recovery, adapted sport.*

## 1. Introduction

Adapted motion activity is one of the means necessary to improve the quality of

life of people with impaired intellectual development. The involvement of Special Olympics in the activities of people with intellectual disabilities opened new

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perspectives for their integration and socialization. Being a component of formative activities, adapted sport imposed an institutional framework, a set of skills, and some transdisciplinary original strategies, which are aimed to creating a system of values meaningful for both the individual and the society, able to put in a new light the person with disabilities.

## 2. Research hypothesis

The research hypothesis implies that the application of appropriate motion activities have an important role in the integration of individuals with in segregated environments through sports.

This paper assumes that the participation of children with intellectual disabilities in appropriate motion activities determine motion, affective and social progresses and those adapted activities promote an improvement of their quality of life and contribute to their social integration.

## 3. Organization of the research

The experiment was conducted at the Constantin Pufan Special School from Dr. Tr. Severin, which has provided its hall for physical education and the materials capable of providing the best framework for the participation of children with intellectual disabilities.

We have included in our study 9 children, aged between 10 and 14.

The basic exercises were interspersed in the breaks between tasks of their current programs as well as at their end.

The specific methods used were grouped into: voluntary relaxation exercises (autogenic training), dynamic balance exercises, exercises of coordination and ability and orientation games focusing on the development of the neuromuscular and mental reflex specific for correct attitudes. Their share in a lesson was as follows:

- 15 minutes for the introductory part;
- 20 minutes for the fundamental part;
- 10 minutes for the ending part.

Total: 45 minutes from 120 – a percentage of 37, 5%.

Meetings were held twice a week, including a warming up program, work program, physical therapy program and a table tennis training program.

The program of each lesson was enriched with 2-3 new exercises and entirely changed every month. Repetition of the exercises increased from 4-5 times to 20, with particular attention to precision/rightness.

To create training programs in table tennis for individuals with intellectual disabilities, an assessment of their capabilities must be done at first. In carrying out the assessment, we started from the simple exercises to more complex ones, so that we could share the training process on categories of skills based on the results.

Thus, the assessment process included the following sets of exercises:

- Beats of the ball on palette, using both hands (are taken into account the number of successful beats in four attempts, both the most successful attempt and the sum of the four repetitions);
- Beats of the ball on the palette, using one hand (are taken into account the number of successful beats in four attempts, both the most successful attempt, and the sum of the four repetitions);
- Service over the net, without the ball initially touching its own field (10 services);
- Service over the net, but correctly executed (10 services);
- Succeeding a forehand volley from a total of 10 attempts;
- Succeeding a backhand volley from a total of 10 attempts,

### 3.1. Work Schedule

Principles of work schedules are:

- It starts with the warming up program of the upper limbs and trunk joints;
  - It follows and complies with the principle of from simple to complex, from easy to hard (always downwards);
  - Each exercise is repeated 4-5 times on both parts of the body;
  - Relaxation of the member worked will be done after each cycle of exercises;
  - Relaxation will be longer at occurrence of fatigue signs (signs of pallor, erythema, increased heart frequency, dyspnea);
  - Warming up should be general, for all joints, using the proper exercise, which will take about 30 minutes, followed by relaxation and return to normal frequency. This can be achieved through breathing exercises in different positions, followed by a set of elongation exercises;
  - Elongations should be done within 1 minute for each segment, with a pause of 30 seconds, followed by elongation of the other member;
  - The physical exercise can be structured on several training criteria.
- or with rotating arms on one side and the other, or with swinging arms back and forth from the same position;
  - standing and balance exercises: a distance is set between legs and lunges are executed on one side and the other (4 lunges on both legs), followed by bending their knees and staying in this position for a few seconds (note the resistance of children), meanwhile other exercises can be done by lifting arms to the side and maintain them this way;
  - exercises in quadrupeds: walking like the bear or with distance between the legs and then bring them closer to each other gradually;
  - exercises of sitting on the ground - wheelwrights of ankles so to warm up the feet joints;
  - using the elbow as support they keep legs swinging up and lifting one leg about 45 °;
  - exercises of lying on dorsal part: crunches shearing feet, zooming, or pedaling circles (with knees bent at chest are back to back runs and lift one leg.
  - candle exercise done so to relax and then they will pass to the position for crunches; after that they can make some extensions with different types of lifting, rotation of the trunk, arms forward or backward, or lifting legs;
  - exercises of supporting on a knee, while sitting on the elbows;
  - feet are balancing for several times back or on a side, while touching the ears, followed by bending on the arms stretched and returning to the initial position;
  - light pushups can be made from this position;
  - exercises of lying on frontal part: few wheelwrights or crossing over from one side to the other are made with the trunk and arms aligned completely to the ground;

### 3.2. Warming Up Program

The program included warming up of neck joints by wheelwrights and shoulders by lifting, lowering and wheelwrights.

- coordination exercises performed several times in order to succeed;
- arm exercises can be performed in different positions by rotating and bending the elbow
- trunk exercises - bending the trunk forward, back, and on a side, followed by turns aside (4 times on each side);
- bending forward or back, and, if possible, bending so to reach the ground with the hands or bringing the opposite hand to opposite foot;
- for a few seconds the children can keep the trunk bent forward at 90 ° (isometric),

- -standing exercises, meaning jumping with the ball in different variants such as skiing or dancing lightly for coordination improvement.

### 3.3. Physical Therapy Program

To achieve full social integration of young people with disabilities it is necessary to adapt activities, to re-educate and elaborate programs such as:

- Re-education and rehabilitation programs for all common ADL activities, at appropriate intervals;
- Leisure recreational programs, of cognitive therapy, music therapy, therapy based on games;
- Specific programs for signing up a disabled person in a form of sport practice;
- Education programs for gaining the right food and hygiene skills.

Short-term kinetic programs include *the major objectives of kinesiology*:

- gross motion development (it starts from the standing position and on knees);
- grasping and manipulation techniques;
- promoting harmonious physical development of the body;
- preventing the incorrect positions and postures;
- education of the inability arising from multiple causes;
- education and training or improvement of muscle strength, joint mobility, coordination of body on segments or as a whole in its various kinematic chains;
- combating sedentary lifestyle and obesity;
- learning and practicing skills until is achieved the formation of dynamic stereotype and automatisms;

- improving the respiratory function and the resistance to prolonged effort.

### 3.4. Methodical directions

1. Exercises addressed to all muscle groups;
2. Workload (number of repetitions, amplitude of movement) addresses to each person's peculiarities.
3. Performance of additional exercises is advisable, according to the needs and possibilities of the person in case.

Table tennis training program included, besides general warming up exercises, other procedures specific to table tennis. Thus, daily for 30 minutes, after the end of physical therapy program, we have repeated the evaluation exercises. Also, other methods have been tried with those who had more developed motion ability, such as hitting balls to the wall, diagonally service.

The general objectives of physical education and adapted sport do not differ fundamentally from those established for normal young people. These cover issues related to:

- -Health (resistance to disease, hardening of the body habits, compliance with hygiene rules);
- -Body issues (growing up processes, the correct attitude of body, functional activity and responsiveness to effort);
- -Motility issues (learning and improving skills, motion skills, motion skills development);
- -Psychological and psycho-motor aspects (stimulation of cognitive, emotional, motivational and volitional processes, development of the use of both hands, spatial orientation, etc.);
- -Social aspects (development of socio-motility elements, transfer of social skills from sports in society).

Objectives are established based on long-term and short term goals.

**4. Analysis and interpretation of results**

To analyze the degree of functional independence we took into consideration a number of activities such as: eating, washing, using toilet, using a toothbrush,

tying shoe laces, combing, writing on the PC and use of electrical appliances.

Given the scores used by the FIM scale (Functional Independence Measure) and base on the initial and final tests performed, we obtained the following results:

*Scores of FIM scale*

Table 1

Activities	1		2		3		4		5		6		7		8		9	
	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf
Washing	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	6	7
Eating	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Using the toilet	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Dressing the higher part of the body	7	7	7	7	4	5	3	6	7	7	6	6	5	7	5	7	6	7
Dressing the lower part of the body	7	7	7	7	4	5	3	5	7	7	6	6	5	7	5	7	6	7
Using the toothbrush	7	7	6	7	7	7	3	4	6	7	7	7	5	6	5	7	6	7
Tying shoe laces	7	7	6	7	7	7	2	3	6	7	7	7	4	6	4	6	4	6
Combing hair	7	7	5	7	4	5	2	4	6	7	6	7	6	7	6	7	5	7
Writing on a PC	5	7	5	7	3	4	2	4	6	7	5	6	4	6	3	5	4	5
Using electrical appliances	6	7	5	7	5	5	3	4	6	7	6	6	4	5	4	5	4	6
<b>Total Score</b>	<b>67</b>	<b>70</b>	<b>62</b>	<b>70</b>	<b>55</b>	<b>59</b>	<b>39</b>	<b>51</b>	<b>65</b>	<b>70</b>	<b>64</b>	<b>66</b>	<b>54</b>	<b>65</b>	<b>52</b>	<b>65</b>	<b>55</b>	<b>66</b>

In terms of the degree of functional independence is observed that most children have achieved the total score over 50 both at the initial and the final assessment. Just one child had a low total score (39 at the initial test and 51 at the final one). This can

be because that child has not attended any community (kindergarten, school) until he came at the day care center, so all his skills were acquired rather late, his understanding and attention being weak and very weak.

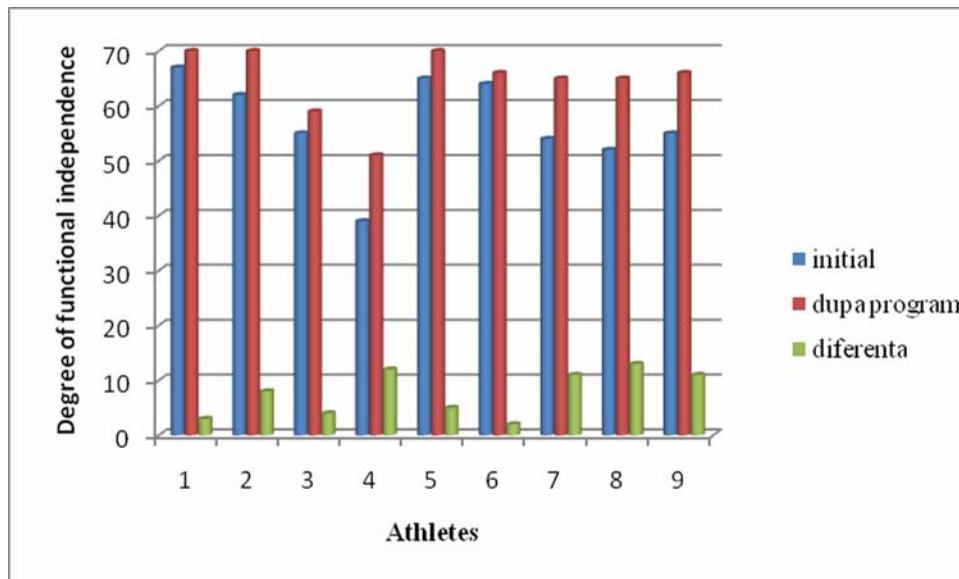


Fig. 1. *Degree of Functional Independence (D.F.I.)*.

For the activities within the table tennis program we targeted to achieve:

1. Beats of the ball on palette, using both hands (to take into account the number of successful beats in four attempts, the most successful attempt, and the sum of the four repetitions);
2. Beats of the ball on palette, using one hand (to take into account the number of successful beats in four attempts,
3. Service over the net without the ball reaching its initial field (10 services);
4. Service over the net, but correctly executed (10 services);
5. Succeeding a forehand volley from a total of 10 attempts;
6. Succeeding a backhand volley from a total of 10 attempts.

*Results obtained at table tennis*

Table 2

Activities	1		2		3		4		5		6		7		8		9		
	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf	Ti	Tf	
1	The most successful	9	14	9	13	7	11	2	3	8	13	8	14	6	10	11	15	7	10
	total	32	48	30	41	21	34	6	9	31	47	30	42	19	28	24	41	18	31
2	The most successful	14	17	8	15	9	15	1	2	13	17	11	16	7	10	8	12	6	12
	total	35	52	27	44	24	42	4	6	34	51	34	43	22	38	27	39	17	33
3	total	9	10	7	9	6	8	0	1	8	10	6	9	5	7	7	8	6	9
4	total	8	10	8	9	5	8	0	0	9	10	4	7	4	8	6	9	5	9
5	total	6	9	4	7	3	7	0	0	7	9	3	6	2	5	3	7	2	6
6	total	4	8	4	7	2	6	0	0	5	8	3	5	2	5	3	6	2	5

## 5. Conclusions

Introduction of the therapy through adapted sports in the special education was motivated by the high percentage of students with disabilities related to the “principal” disability, due to common causes that caused these disabilities that have become, in turn, a cause of vicious attitudes and functional disorders, etc.

In special schools for intellectually disabled students, classes are heterogeneous due to the chronological age differences that are not directly proportional to the intellectual and the physical disability. Children with limited intellect, or light, medium and serious mental backwardness, with different peculiarities in growth and development or in achievement of oral and/or written communication can be met.

The young people with disabilities’ participation in physical education and adapted sport activities pursues major objectives such as the development of psiho-motility components, skill acquisition and training of motion skills, exercise the capacity of making physical effort, etc.

Table tennis is a sport growing in general the interest of youngsters, but requires special equipments difficult to adapt and professionalism on behalf of the multidisciplinary team involved.

There is no standard program for the recovery process so it must be individualized.

Besides the fact that society should allow each individual to participate directly in social activities, it must ensure as well a type of training so that individuals with various disabilities to be able to have special developments, enjoying all the gains of civilization.

Adaptation and integration are critical objectives, and major problems of the present social life.

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