

STUDY ON DEVELOPMENT OF EFFORT CAPACITY IN NEUROLOCOMOTH DEFICIENCIES

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ABSTRACT. Physical education and sport are considered to be of major importance in special education, because through its many forms of organization it succeeds in stimulating the positive development of children in special education, both physically and intellectually. In special education, schools have a method that they use in a lively and attractive environment for children, and they seek to form knowledge, skills and understanding to help them integrate into society. The study was conducted over a 4-week period in which we aimed to develop the exercise capacity of subjects by monitoring results from day to day with the help of bracelets that calculate both heartbeat and calorie, distance, and subject trajectory. Last week's values have seen a big increase compared to the first week, with students having a much higher level of effort.

Keywords: *physical education, cardiac frequency, special needs, special education, cardio bracelets, beats per minute.*

REZUMAT. *Studiu privind dezvoltarea capacității de efort la deficienții neurolocomotori.* Educația fizică și sportul sunt considerate a fi de importanță majoră în învățământul special, deoarece prin numeroasele sale forme de organizare reușesc să stimuleze dezvoltarea pozitivă a copiilor în învățământul special, fizic și intelectual. În învățământul special, școlile au o metodă pe care o folosesc într-un mediu plin de viață și atractiv pentru copii și caută să formeze cunoștințe, abilități și înțelegere pentru a-i ajuta să se integreze în societate. Studiul a fost realizat pe o perioadă de 4 săptămâni în care ne-am propus să dezvoltăm capacitatea de exercițiu a subiecților prin monitorizarea rezultatelor zilnice cu ajutorul brățărilor care calculează atât ritmul cardiac, cât și caloric, distanța și traiectoria subiectului. Valorile din săptămâna trecută au înregistrat o creștere semnificativă față de prima săptămână, elevii având un nivel mult mai mare de efort.

Cuvinte-cheie: *educație fizică, frecvență cardiacă, nevoi speciale, învățământ special, brățări cardio, bătăi pe minut.*

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Introduction

Physical education contributes to the harmonious development and integral education of the young generation, the students, to the strengthening of the organism and to their better development. Due to physical education, we learn that: “students acquire knowledge of rational procedures for driving. Being a physical activity, physical education responds to the requirements of the modern school that seeks to train students at work and skills” (Marolicaru, Balint & Macra-Oșorhean, 2011).

Almășan (2001) defines education as “a set of pedagogical, moral, hygienic, scientific measures applied systematically in order to train man, his moral, intellectual and physical development with the aim of his individual formation, following his inclusion in society civilized”.

The selection and systematization of the means is the basic preoccupation of the teacher for the assurance, the educational content of the lesson. For this it is necessary for him to know very well the educational valences of each physical exercise used. In choosing the means of action it must be taken into account that some simple exercises can influence the educational aspect of the lesson even at the learning stage, while other exercises need to be strengthened first (Cîrstea, 2000).

By deficiency we mean “loss of substance or alteration of a function or a psychological, physiological or anatomical structure” (Prodea, 2005). This may be the result of an accident or the conditions in which the person was born or raised.

Incapacity is the limitation or reduction of a person from a particular activity because of the poor issues he has. By this term, we can say that a person does not have the necessary training to accomplish the proposed activity, and that he does not have the necessary skill. (Prodea, 2005)

Classification of types of deficiencies by the criterion of morpho-functional structures damaged:

a. Sensory impairments:

- visual impairment;
- hearing impairment;
- language and communication deficiencies;

b. Neuromotor deficiencies: dated to central nervous system damage (paralysis, hemiplegia);

c. Mental deficiencies: oligophrenia;

d. Behavioral deficiencies;

e. Associated (multiple) deficiencies: - combined with several types of deficiencies (Prodea, 2005).

Objectives

Through this study, I aimed to capture the capacity of children with special needs in physical education and sports lessons and how they can progress through the development of effort capacity, following a plan conceived according to their particularities. We followed the differences of attitude, desire and perseverance, of 2 pupils with totally different deficiencies.

Materials and methods

This research was carried out in a narrow setting, focusing on particular cases of behaviour and resistance. In everyday life, we unreservedly accept the idea of understanding in our relationships, and the understanding of a particular case is actually the basis of our capacity for altruism and trust in the power of change of the other.

The study was conducted over a 4-week period in which we aimed to develop the exercise capacity of the subjects by monitoring the results from day to day with the help of bracelets that calculate both heartbeat and calorie, distance and subject trajectory. Dynamic games with different themes (basketball, football, table tennis, exercise and balance exercises) have been applied according to the students' preferences so that their desire and motivation are as high as possible. At the same time, it was intended that subjects develop their desire to practice the movement for as long as possible.



Figure 1. Cardio-frequency belt

The Dual Belt Cardio Frequency Belt emits the heart rate signal thanks to the two wireless communications technologies: ANT + and Bluetooth Smart. The strap is compatible with all devices that use the Smart Bluetooth protocol.

The materials used were customized according to the sporting branch practiced at Physical Education. Basketball balls, soccer, table tennis, inflatable fitness balls, and mattresses, treadmill, TRX, basketball basket, table tennis balls and small improvisations were needed. Dynamic and balance games have been used in stacks, mats, objects of different sizes and heights.

Intervention program

1. Preparatory side

Heating elements: walking on decks with arms up;

- walking on the heel with arms at the back;
- walked;
- light running;
- ankle play;
- stepped forward;
- stepped up;
- running with knees at the chest;

2. Fundamental (thematic):

Basket:

- learning to keep the ball in the correct throw position;
- Simulation of basketball throwing;
- learning to throw the basket with a hand over the shoulder on the spot;
- throwing the ball at the basket, with one hand, from different angles;
- Bring the ball with two hands from the chest;
- the ball to the target, circles traced on the ground, on the wall;
- dribbling in place, with his left hand, then with his right hand;
- dribbling on the run, and running smoothly with his right hand, then with his left hand;
- dribbling bypassing obstacles;

3. Ending part

- Breathing exercises;
- stretching;
- exercises for correcting body posture and physical deficiencies;

Subject 1



Figure 2. Cardiac frequency and time

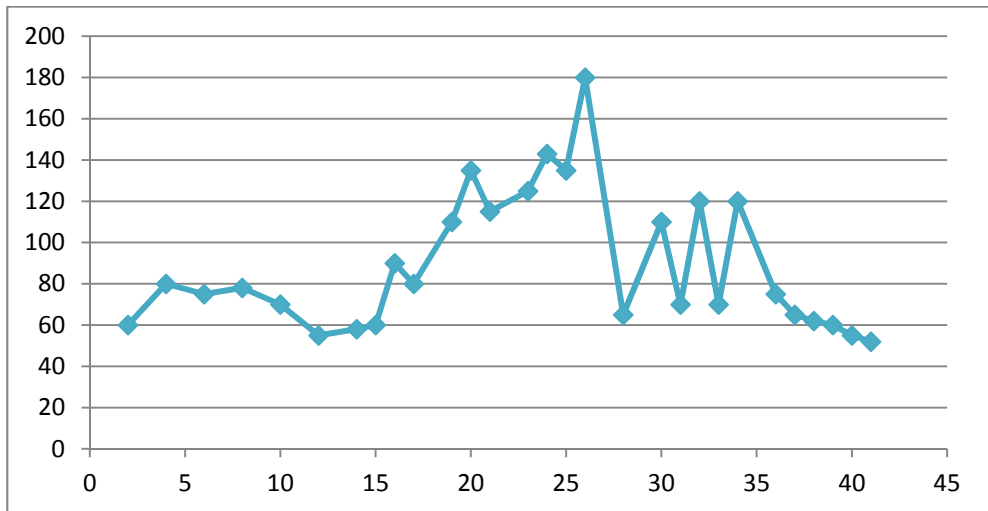


Figure 3. Evolution of physical activity



Figure 4. Cardiac frequency and time

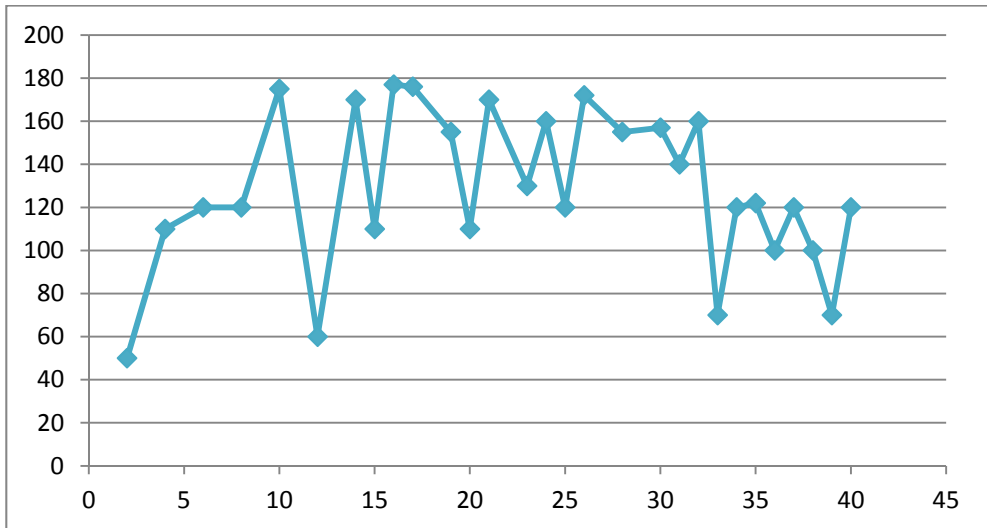


Figure 5. Evolution of Physical Activity

Subject 2



Figure 6. Cardiac frequency and time

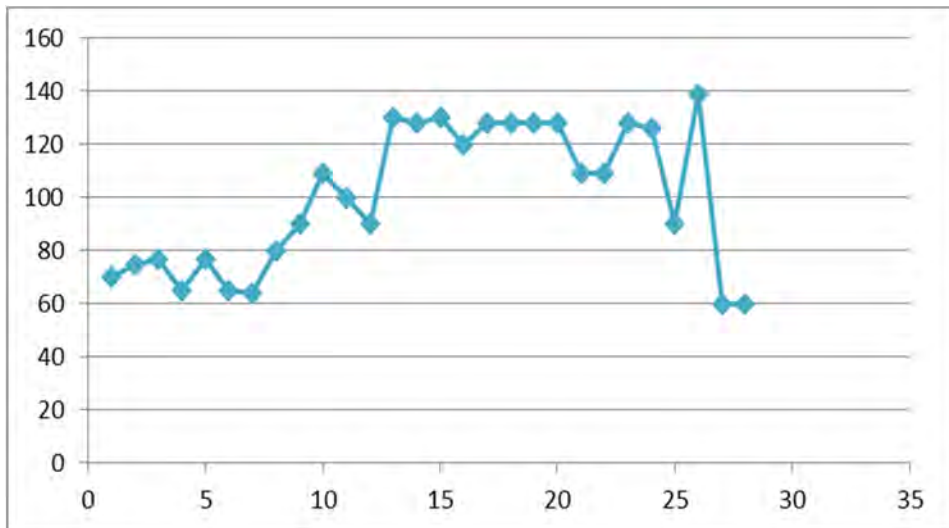


Figure 7. Evolution of Physical Activity

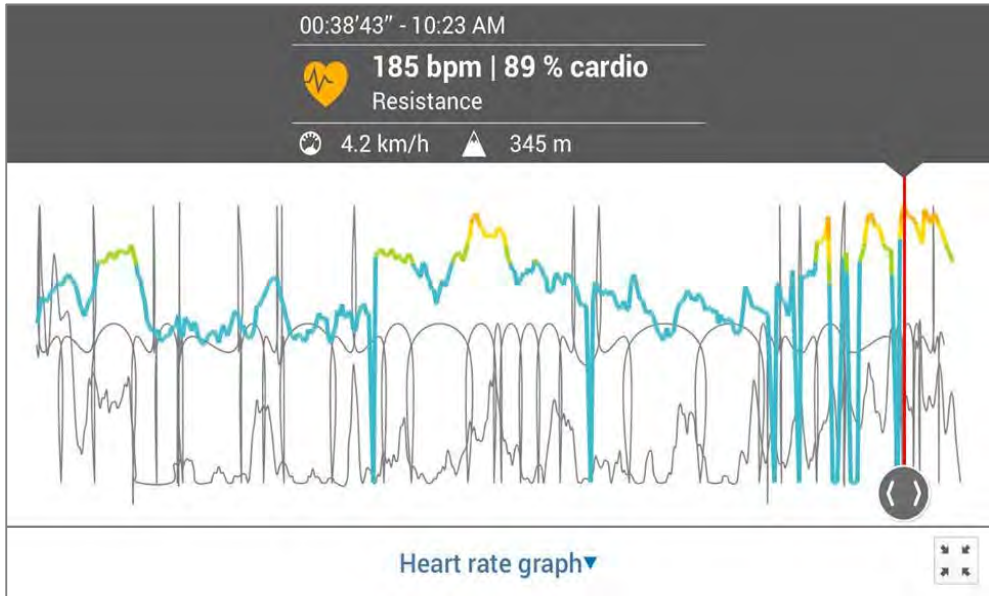


Figure 8. Cardiac frequency and time

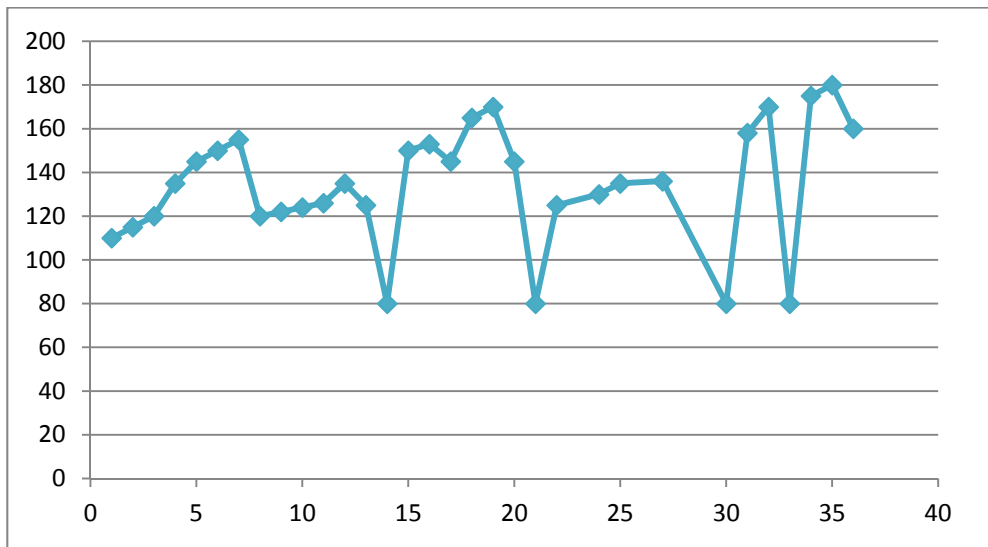


Figure 9. Evolution of Physical Activity

Results

Following the study of the two subjects, the following values of heart rate were obtained during the 4 weeks. As shown in Table 1, subjects had modest results, even in the case of their problems.

Table 1. Results of the first week

Week 1				
Subject 1	Subject 2			
Indices	Activity 1	Activity 2	Activity 1	Activity 2
Max. value	143	153	140	157
Med. value	90	117	100	122
Min. value	50	80	90	108

Table 2. Second week results

Week 2				
Subject 1	Subject 2			
Indices	Activity 1	Activity 2	Activity 1	Activity 2
Max. value	149	158	145	151
Med. value	115	120	105	110
Min. value	60	65	90	108

Table 3. Third week results

Week 3				
Subject 1	Subject 2			
Indices	Activity 1	Activity 2	Activity 1	Activity 2
Max. value	145	150	156	0
Med. value	120	110	125	0
Min. value	70	80	115	0

Table 4. Fourth week results

Week 4				
Subject 1	Subject 2			
Indices	Activity 1	Activity 2	Activity 1	Activity 2
Max. value	177	174	165	185
Med. value	135	140	130	140
Min. value	110	120	118	122

As shown in Table 1, at the start of the study, both subjects were at a level very close to effort. Both have the maximum effort in the first two days between 140-157 bmp. When looking at the description of each subject, we expect this difference to be much higher because one of them is immobilized in a wheelchair and the other is a physically healthy child, that is, until a crisis, this is a perfectly normal child.

Table 2 and 3 show that both subjects had a similar development, with heart rate values remaining in close proximity to each other. If in the first week the subjects had the maximum value between 140-157 bpm, in the next 2 weeks these values can be said to have been maintained (145-157 bpm), but this time the increase value can be seen in the case of the average value of the hour, which ranged from 105-125 bpm, during the first week ranging from 90-120. Thus, we can say that the subjects maintained a better level of effort, even if the maximum value did not increase considerably.

In Table 4 the results of the fourth week, we can say that there has been a substantial increase in all respects. The maximum effort level reached 177 bpm for subject I and the subject II reached 185 bpm. And, in the case of the average value of the lesson, we can see a very high increase, the values being between 130-140 this time, sign that the density of the lesson was very good, and the pupils were delighted with the exercises.

At the same time, we can also notice the differences between the first week of the study and the last. If in the first week the maximum reached by subject I was 153 bpm, in the last week it reached 177 bpm. Similarly to HR, in the first week, the maximum was 157 bpm, and in the last week it was 185bpm.

Conclusions

When we talk about a child in special conditions, that is, a child with special needs, we think about it being unable to perform certain tasks or accomplish them, but not entirely. Because of this “need,” every child or person needs all our attention, understanding, support and availability.

Following the study of children with special needs, we can say that these children have tremendous potential in terms of movement, but often society is unjust with them and does not give them the attention they need to progress in this area. This study showed us that when the lesson of physical education is individualized for each pupil and the results will not cease to defend.

The purpose of this study was to develop the level of effort of children with mental and locomotor deficiencies so that these students can lead a physically healthy life. At the same time, the study wanted to track the maximum exercise capacity of a mentally disabled and one with locomotor deficiency during a physical activity.

The study was conducted using a heart rate measuring belt, which is located at the chest level, and monitors the subjects’ activity. The research lasted 4 weeks, during which each week had a different density program.

That a final conclusion of this study, we can say that these children with special needs can progress much more, but for this it takes a long time for exercises and material bases specific to their needs.

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