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Original article

THE STUDY IN CONNECTION WITH THE EDUCATION LEVEL OF THE COORDINATION AT THE DOWN'S SYNDROME CHILDREN

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Abstract

Aim. The study is achieved and published under the aegis of the National University of Physical Education and Sports of Bucharest, as a partner of the programme co-funded by the European Social Fund within the Operational Sectorial Programme for Human Resources Development 2007-2013 through the project Pluri- and interdisciplinary in doctoral and post-doctoral programmes Project Code: POSDRU/159/1.5/S/141086, its main beneficiary being the Research Institute for Quality of Life, Romanian Academy. It presents the manner in which three Down's syndrome children (a girl and two boys, aged 13) improve their level of the coordination.

Methods. In this study, we used three tests: manual coordination (the subject must throw a ball into a square with 1m sides which is placed at 5m from the subject; every child has three trials; it is noticed how many throwing arrives in the square), legs coordination (the subject must jumps over an imaginary obstacle which has 1.50m length; the subject must runs before jumping; every child has three trials; it is noticed how many jumps pass over the imaginary obstacle) and Matorin test. These tests were proposed, applied and validated on the Down's syndrome children by the Șuță (2010).

Results. The obtained results are a part of a study which begins and goes on during 16 months. It proposes to underline the bio-psycho-social influences of the swimming towards the Down's syndrome children. The results of our subjects at the initial and intermediary testing at the all three tests are compared with the mathematics average of the results obtained by Șuță (2010).

Conclusions. Finally, we can claim that the education level of the coordination can be improved. The values obtained by our subjects are better than Șuță's results for the manual and legs coordination tests and lower for Matorin test.

Key Words: Down's syndrome children, coordination, tests, results.

Introduction

Coordination is met every day in our life during the work activity, in the consumer activities and sport activities too. At the same time, it helps us to learn more quickly new motor skills and applies them "in the possible situations (stereotype) or unforeseeable (adaptation)" (Tudor, 2013).

The coordination capacity can be defined as "a psychomotor quality which is based on the correlation between the central nervous system and the muscular system while a movement is being performed" (Tudor, 2013). It depends on the development of the other motor qualities, the learning and consolidation of the motor skills and their performance in unusual conditions.

The education of the coordination is conditioned by many factors of which we mention: the quality of the central nervous system, the intermuscular and

intramuscular coordination, the functional quality of the sense organs, the short and long duration memory, the age, a.o.

The Down's syndrome children present imbalance and delays at the level of a lot of the conditioned factors mentioned before. These have a direct negative effects on the segments and between segments coordination. For these causes, Teodorescu, Bota and Stănescu (2007) recommend that the educational process with these children regards "the education of the coordination of the habitual motor skills, of the simple coordination – symmetric and asymmetric, too" together with the other specific objectives. All of these can be influenced by the physical education lessons and in the training lessons which are specially made up for learning the different sport branches.

The level of the coordination has to be evaluated

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so that it can be developed. This can be realized with the help of the different tests accepted at the international level and some tests elaborated and validated at the national level, too.

Purpose. This paper proposes to evaluate the level of the development of the coordination of the three Down's syndrome children. Their levels were evaluated at the beginning of a research which had gone on for 14 months. On the other hand, we wanted to observe if our subjects improved their indices of the manual, legs and general coordination after they attended swimming lessons.

Subjects. The evaluation tests of the coordination were applied on the three Down's syndrome children, aged 13 (a girl – S2 and two boys – S1, S3). The results obtained by our subjects were compared with the data obtained by the Şuţă (2010) on the ten mental retarded pupils of the same aged. These pupils had a very low motor development which was identified by Şuţă during his researches.

Methods.

In this study, we used three tests:

- manual coordination (the subject had to throw a ball into a square with 1m sides which was placed at 5m from the subject; every child had three trials; it was noticed how many throws arrived in the square). The results were expressed in the number of the successes;
- legs coordination (the subject had to jump over an imaginary obstacle which was 1.50m length; the

subject had to run before jumping; every child has three trials; it was noticed how many jump passed over the imaginary obstacle). The results were expressed in the number of the successes;

- Matorin test (the subject stood with his/hers feet placed on either side of a line drawn on the ground and his/hers arms were beside the body. He/She performed a jump with a turn to the right. After, he/she performed a jump with a turn to the left. After every jump, the subject remained in place in his/hers landed position. The turn of the angle was measured; Tudor, 2013:161). The results were expressed in degrees.

These tests were proposed, applied and validated on the mental retarded pupils by the Şuţă (2010). We used the data obtained by Şuţă (2010) to compare our subjects' results because we wanted to know which the level of coordination of our subjects was at the beginning of our research. At the same time, we wanted to know their level after six months when the intermediary testing was applied. In this period of time, they attended swimming lessons.

Every Down's syndrome children attended different numbers of lessons because a great number of variables appeared: the season diseases, their IQ, availability of the parent or grandparents to bring them to the lessons, their school timetable, the number of the lessons in which the trainer had to work individually with the child, a.o.

The lessons that our subjects attended were presented in figure 1:

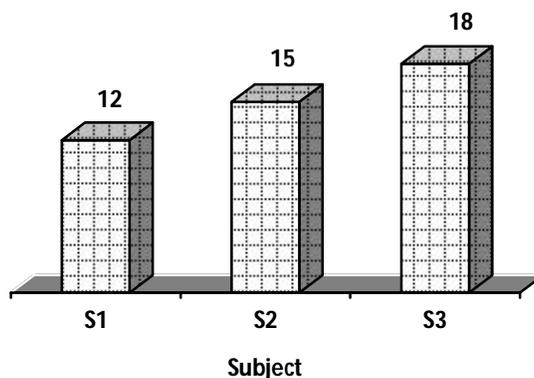


Figure 1. The swimming lessons performed by every Down's syndrome child

The swimming lessons contents followed:

- adapting to water;
- learning aquatic breathing;
- learning water gliding and floating;

- learning and consolidation the kick movement for freestyle, learning and consolidation the arm movement for freestyle, learning and consolidation the freestyle.



We mentioned that those contents were carried on differently by every child. They depended on the manner in which the Down's syndrome children

could learn every swimming skill, plus the variables shown before. The division of the contents for every child were presented in the table 1, 2 and 3.

Table 1. The division of the contents for S1

Content	Lesson	1	2	3	4	5	6	7	8	9	10	11	12
Adapting to water		x	x	x	x	x	x						
Learning aquatic breathing		x	x	x	x	x	x	x	x				
Learning water gliding and floating		x	x	x	x	x	x						
Learning the kick movement for freestyle		x	x	x	x	x	x	x	x				
Learning the arm movement for freestyle												x	x
Consolidation the kick movement for freestyle										x	x	x	x
Consolidation the arm movement for freestyle													
Learning freestyle													
Consolidation freestyle													

Table 2. The division of the contents for S2

Content	Lesson	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Adapting to water		x	x	x	x	x	x									
Learning aquatic breathing		x	x	x	x	x	x	x	x	x	x					
Learning water gliding and floating		x	x	x	x	x	x									
Learning the kick movement for freestyle		x	x	x	x	x	x	x	x	x	x	x	x			
Learning the arm movement for freestyle																
Consolidation the kick movement for freestyle														x	x	x
Consolidation the arm movement for freestyle																
Learning freestyle																
Consolidation freestyle																

Table 3. The division of the contents for S3

Content	Lesson	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Adapting to water		x	x	x	x	x	x												
Learning aquatic breathing		x	x	x	x	x	x	x	x										
Learning water gliding and floating		x	x	x	x	x	x												
Learning the kick movement for freestyle		x	x	x	x	x	x	x	x										
Learning the arm movement for freestyle								x	x	x	x								
Consolidation the kick										x	x	x	x	x	x	x	x	x	x



After realising the intermediary testing, we could claim:

- S1 improved his performances from all three tests;
- S2 realised the better performances only Matorin test. At the other two tests she did not realise any successful attempt. For manual coordination, the results obtained by her were: 4,30m, 3,80m and 2,50m. For legs coordination the performances obtained by her were: 0,90m, 1,00m and 0,90m;
- S3 improved his results obtained at the initial testing. So, he realised tow throws over 5m. The third attempt measured 4,80m. For legs coordination, he jumped one above the imaginary obstacle (1,50m). His other results were 1,40m and 1,20m.
- when we compared the our subjects' results with the performances obtained by Şuţă's pupils we could observed that S1 and S3 had better results than the Şuţă's group at the manual and legs coordination. S2 were lower performances for both two tests. For Matorin test, all our three subjects realized lower performances in comparison with the data taken as guiding marks by us.

And studies realized by Capio and Rotor (2010) and Connolly, a.o. (1993) mentioned a low level of coordination at the Down's syndrome children what had negative influences on the motor skills.

Conclusion

Coordination is a component of the motor capacity which can be developed. It can be improved at the Down's syndrome children too. But, the improvement is very small but lost quickly if the

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Down's syndrome person does not work all the time to maintain his/her level.

Our subjects had low indices of the coordination at the beginning of our research. They were determined at the initial testing with the help of a comparison made by us with the Şuţă's data. Those data were obtained on the mental retarded pupils who were the same age as our subjects when they were tested.

Our subjects improved their level of coordination after they had attended swimming lessons. But, the level of improvement was different from one subject to another. Thus, S1 improved the performances for all three tests, S2 had good results that initial testing only to Matorin test and S3 was better at two tests (manual and legs coordination tests).

At the same time, they obtained improvement of their performances at the manual and legs coordination in comparison with the results of the Şuţă's pupils, but lower for Matorin test.

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