Original Article

Implementation of complex combined programs: learning- therapeutic physical exercise – dynamic play in order that pupils within special facilities of inclusive education may diminish their scoliotic attitude

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Abstract

Using therapeutic physical exercise in children with autism spectrum disorders, we can succeed in making them feel in control of their own body, improve their physical and mental balance, form their habits to use the objects around them correctly and efficiently and last, but not least, help them develop harmonious relationships with the people they interact with. Expert studies have shown that therapeutic physical exercises performed regularly and by a well-structured kinesiotherapy program have led to aggression reduction, hyperkinetic conduct and stereotypes of autistic children. We have encountered difficulties in school practice as regards recovery by kinesiotherapy in pupils with autism spectrum disorders, because of the fact that classical kinesiotherapeutic intervention methods are not corroborated with the therapeutic approach specific to these pupils, used by the psychotherapist teacher.

In order to choose the suitable programs, we should know how developed each child is. When they participate in physical activities, children vocalize more and activities are more fun. They can imitate their play partner or the kinesiotherapist teacher verbally or using gestures.

The purpose of the paper was to design a combined complex intervention plan, based on kinesiotherapeutic specific recovery and psychopedagogical working methods, combined with dynamic play, in order to achieve the scoliotic attitude's recovery and improve the psychomotor development specific to children with autism spectrum disorders.

Our study consisted in this program's implementation on one 10-year old child with autism and hyperkinetic disorder (ADHD), whose IQ was 50. The data collected before and after the program was implemented showed that it had been effective, as the subject registered a functional progression, which improves the quality of life by a substantial contribution over our patient's mental status. The favourable outcomes reported show the proposed program was effective and this approach can be continued to develop or improve other impairments of the pupil and the others who suffer from autism spectrum disorders, enrolled in school (body scheme, senses, laterality etc.).

Key words: autism, therapeutic physical exercise, recovery, integration.

Introduction

Autism is a pervasive, developmental disorder. It is not a psychosis, nor is it a disease. Children with autism have a different style of understanding the things around them. Although they see, hear and feel just like the other children, their brain processes the information received differently. Apart from this impairment, autistic children may also suffer from a mild, serious/severe mental deficiency. A percentage of 60% of the people diagnosed with autism have an IQ below 50 (Peeters T., 2016, page 39).

Many therapy methods have been approached over the years to help these children. Most of them relied on actual learning of everyday actions and activities. Further to assessment of kinesiotherapy, we can discover physical difficulties and other types of difficulties in body statics and dynamic, related to the ones already presented above. In order to succeed in helping children with autism, we believe that we have to adapt what they learn in psychotherapy classes by adding a learning program via physical exercise and dynamic play as a means of therapy used before the actual recovery program for various disorders encountered.

Physical activity is important to any child. It is all the more important to children suffering from autism spectrum disorders. Each child is unique, has strengths and weaknesses. During physical activity, children acquire adequate conducts, develop their imagination, learn to complete a task, build interpersonal relationships, consolidate their attention and imitation capabilities, form an adequate language and will also discover how certain objects work. To choose the suitable programs, we have to know how developed each child is. When they participate in physical activities, children vocalize more and activities are more fun. They can imitate their play partner or the kinesiotherapist teacher verbally or using gestures.

Material and methods

The purpose of this paper was to design a combined complex intervention plan, based on kinesiotherapeutic specific recovery and psychopedagogical working methods, combined with dynamic play, in order to achieve the scoliotic attitude's recovery and improve the psychomotor development specific to children with autism spectrum disorders.

The study was conducted within the "Sfânta Filofteia" School Centre for Inclusive Education of Ștefănești over a period of six months on a ten-year old pupil, enrolled in the 3rd grade, diagnosed with serious/severe infantile autism, ADHD and moderate developmental delay. The subject has a family, is doing therapy specific for the impairment since he was two years old and has undergone two stem cells interventions in Austria. According to the Framework Plan, the number of kinesiotherapy classes allotted to classes of children with serious/severe degree is two hours/ week, and 3rd grade (from which our subject is part of) consists of eight pupils with multiple and related disorders; this is why the effects and outcomes arise late and quite hard, the schedule being made by grades, a therapy class lasting for 45 minutes.

This is why, in order to support pupils, we have envisaged a work program in the gym, combining physical exercises with their psychopedagogical approach (ABA, TEACHH therapies) and dynamic play. We believe that such a program will help us manage the time allotted for a class, as such that two or three pupils could benefit at a time from one therapy session (the 45 minutes mentioned earlier).

Although the pupil may want to work by imitation, this doesn't necessarily mean that it is a good solution in the kinesiotherapeutic approach because: the kinesiotherapist undertakes to perform the exercises throughout the recovery program; the pupil will stop performing the exercises when the kinesiotherapist stops and, as there is no option for correction, the pupil may perform the moves wrong. Imitation is not necessarily the correct execution of what they see.

A matter which is specific to children with autism spectrum disorders, and to the subject of our study in particular, is that although they can count, this doesn't necessarily mean they understand the concept of numbers. To that purpose, we have designed a few routes in which we combined numbers from one to ten with a physical activity; it was the same throughout the entire route. The physical activity chosen contributes to recovery from the scoliotic attitude. Thus, the pupil learns that the number shows how many times they were supposed to perform the physical activity in the image attached to it.

The difficulty degree increased by adding more physical activities during the route; the first time, numbers were placed in ascending order, then randomly, other tasks were added, the routes being harder in difficulty.

To highlight the outcomes of the program administered to the subject was assessed initially and finally and we used the following assessment methods: distance from acromion to fibula head, assessment of balance, assessment of coordination, assessment of the graphical rendering capacity, recognition and designation of numbers from one to ten and assessment of verbal conduct (0 =does not perform, 1 = performs with difficulty, 2= performs without difficulty).

Results and discussions

Analysis and interpretation of results consists of comparing the data obtained in the initial test to the data in the final test, and scores obtained will be recorded into tables and will be graphically represented as follows:

Table 1. Distance from acromion to fibula head

	Initial assessment	Final assessment
Distance from acromion to fibula head	0,5 cm	0 cm

Chart1. Graphical representation of the evolution recorded by testing lateral inclination of the dorso-lumbar spine

Further to joint mobility's testing of the dorso-lumbar spine for the lateral inclination movement, we may note that the distance between dactylion and fibula head is 0,5 cm (right side) in the initial test, and it is the same on the right side, and the left side in the final test, which shows the kinetic intervention is effective.

Table 2. Balance assessment

	Initial assessment	Final assessment
Romberg test	0	2
“Shove” test	0	0
Standing on one leg test	1	2
Torso rotation from a seated position	0	2
Take an object from the ground	2	2
Turn to 360°	0	1
Stretch forward from a seated position	0	1
Step over obstacles	2	2
Tip-toe walk	2	2
Heel walking	1	2

Chart 2. Graphical representation of the results obtained in balance testing

As it follows from the previous table and chart, balance assessment comprised 10 actions, the pupil participating in the initial test in just five of them. The pupil did not want to participate in the “shove” test in any of the tests (initial or final), as he did not understand the kinesiotherapist action; the other actions recorded significant improvements in the final test, this highlighting the effectiveness of the program proposed.

Table 3. Assessment of coordination

	Initial assessment	Final assessment
Index- nose test	0	1
Pupil index- kinesiotherapist index test	0	2
“Counting fingers” test	0	1
“Puppets” test	0	1
Heel-knee test	0	2

Chart 3. Graphical representation of results obtained in coordination's assessment

Table 3 shows the results obtained in coordination's assessment, highlighting the fact that the subject did not wish to perform any of the actions from the initial test. Further to the program administered, the subject

recorded an improvement in performing actions requiring coordination; he succeeded in carrying out three difficult activities and two easy ones.

Table 4. Assessment of the graphical rendering capacity, recognition and designation of numbers from one to ten

	Initial assessment	Final assessment
Recognize the numbers	2	2
Name the numbers	2	2
Render the numbers graphically	1	2

Chart 4. Graphical representation of results obtained in assessment of graphical rendering capacity, recognition and designation of numbers from one to ten.

According to chart no. 4, assessment of the graphical rendering capacity, recognition and designation of numbers from one to ten reported by the subject is good; he managed to render just part of them graphically.

Table 5. Assessment of verbal conduct

	Initial assessment	Final assessment
Language - communication	0	1
Perform the order given	0	2
Understand the cause- effect relationship	0	1

Chart 6. Graphical representation of results obtained in the verbal conduct's assessment

In the initial assessment of verbal conduct, the pupil repeated all the questions he was asked without giving any answers. Also, we noted that the pupil was reacting and responding just the questions he knew the answers to. He understands what he is asked to do and does it, knows the colours, animals shown in the images and the days of the week, can count to 20 and continues with help, knows his own body scheme, likes to climb and jump and play with balls.

Conclusions

Many therapy methods and intervention techniques in the field of autism have been prepared over the years, aiming especially at impacting the developmental fields affected by autism, but also stereotype, repetitive behaviours. The carry out of correct assessments using specific tools enables the design of intervention programs addressing the development of children with autism. Implementation of such programs leads both to acquiring new skills in the areas of mental, motor and behavioural development, and improving the symptoms comprised by the autism spectrum, aspects mentioned by the literature as well. Physiotherapy may, thanks to its high applicability, be successfully inserted into the autistic children's re-education process, especially if methods and means to entice the children are used and which make the program more pleasant (Rabolu E., Toma S., 2019).

After implementation of the kinetic program, an obvious improvement was noticed in terms of general motricity, fine motricity static and dynamic balance, rhythm and coordination of movements, body scheme's perception and the perception ability, orientation and organization in space and time. Although significant progress was reported, it did not reach the suitable level corresponding to the patient's age; consequently, the program will be conducted for a longer period, but with certain changes depending on the results obtained in re-assessments. After we administered the combined complex program, we noticed that the pupil understands the therapeutic exercises better, has the patience to perform as many repetitions as possible and manages to focus more on performing them correctly.

References

- Doidge, N. (2018). Creierul vindecător: miracolul neuroplasticității; trad. din lb. engleză de Liviu Mateescu, Pitești, Paralela 45
- Peeters, T. (2016). Autismul: teorie și intervenție educațională; trad. de Ana Ivasiuc, Iași, Polirom, 39
- Petruț-Barbu Gabriela (2012). Copilul și motricitatea. Program de educare neuromotorie. Ediția a 2-a, Pitești, Nomina
- Rabolu, E., Toma, S. (2019). Physiotherapy in the complex rehabilitation process of children with autistic spectrum disorders. *The European Proceedings of Social & Behavioural Sciences EpSBS*, ISSN: 2357-1330, 1376-82, <https://doi.org/10.15405/epsbs.2019.08.03.169>
- Sbenghe T. (2002). Kinesiologie. Știința mișcării, București, Editura Medicală
- Seach D. (2011). Jocul interactiv pentru copii cu autism; trad. din lb. engleză de Cristina Achim, Iași, Fides