PSYCHOMOTOR THERAPY AS A EFFECTIVE METHOD OF ALLEVIATING THE SYMPTOMS OF CHILD'S NON-HARMONIOUS DEVELOPMENT

Gnitecka Jolanta, Nowak Agata, Romanowska-Tołloczko Anna
University School of Physical Education in Wrocław

Abstract. *Purpose:* assess the influence of a therapy conducted according to the Belgian School on the psychomotor development of children suffering from developmental dissonance. *Material and methods:* the studies involved 32 six yrs. old children, having symptoms of developmental dissonance, who qualified for Belgian psychomotor therapy and who came from different areas in Poland. Two measurements of the selected areas of the psychomotor field have been performed using the following tests: MOT 4-6 by R. Zimmer and M. Volkammer; PST 6-8 by S. Naville and A. Weber, B. Mock; WET 3-6 by P. Deimann and U. Kastner-Koller , as well as SCSIT by J. Ayres. The undertaken studies lasted for approximately 6 months and were a pedagogic quasi-experiment in nature. *Results:* upon the conclusion of experimental factor's influence i.e. the Belgian psychomotor therapy, it has been observed that in the study pertaining to the psychomotor development, the results obtained by the six-year-old children cease to significantly differ from the values obtained by their peers, displaying no symptoms of dissonance. *Conclusion:* psychomotor therapy according to the Belgian School is a useful method of alleviating the symptoms of a non-harmonious development of a six-year-old child. A scientific confirmation of the research problem's significance can facilitate therapist's work. The results of the research will also contribute to the development of knowledge about diagnosis of developmental dissonance and Belgian psychomotor therapy.
Key words: Belgian, psychomotor, therapy, development, dissonance.

Introduction

The problem we researched was based on many years' experience of European therapists and neurologists. It also constitutes a continuation of a pilot study among 500 kindergarten pupils from Poland, out of whom I have selected a significant number of children showing disorders of developmental dissonance (10%) [1].

The presentation of this topic in scientific literature expresses the need for of an early and effective intervention [2,3,4,5]. Also our own personal professional experience as part of the Early Intervention Government Program demonstrates the need for a prompt and professional activities of informative and therapeutic nature already at the kindergarten level [6], especially among children who are preparing for their school education duty [7].

The psychomotor therapy according to Procus and Block, proposed in the research, falls into the trend of integration therapies. Initially applied in the 60s of the 20th century in Belgium, and then in the 90s in Poland is based on neuro-physiological and psycho-pedagogical knowledge [8].

Psychomotor therapy is a system for rehabilitation in pre-school and junior school children (from the ages of two and a half to ten), which shows mild neuro-psychological symptoms referred to as minimal brain dysfunction (MBD) or as developmental disharmony [9]. According to Laucht, developmental disharmony is the mild neurological syndromes observed at the age of about four years [10]. There is around a 10% occurrence of symptoms of developmental disharmony within the school population [1]. It follows to emphasize however that the frequency is much higher amongst children who were born prematurely. Belgian psychomotor therapy has been developed on the basis of knowledge of neuro-physiological developmental processes of the brain during the prenatal period and in early childhood, taking into consideration both the genetic and environmental conditioning of maturity in the nerve system as well as the phenomena of integration and brain plasticity. Therapy according to Procus and Block is located within the current of integration therapies in which, on the basis of motor exercises, the development of many functions of central nervous system is stimulated, particularly within the scope of their mutual coupling and integration. The aim and effect of the therapy is the construction and activation of neuronal networks which are responsible for brain integration processes. In the method Procus and Block assume that through consciousness and achievement of a target movement a child will gradually obtain a control of the psychological process, control over himself, which will lead to a improvement in the cognitive processes: understanding, speech, memory. Gradually the integration of the nervous system as a whole will improve [11].

Therapy according to Procus and Block fits within the integrated therapy current, in which stimulation in the development of many functions of CNS, particularly in the scope of their mutual interlocking (coupling) and integration, is on the basis of motor exercises. The aim of the therapy is to suppress various types of brain disorders connected with: motor functions (clumsiness and hyperactivity), in the area of behavior, emotional disorders and difficulties with adaptation in family and school environment, problems of somatognosia, speech function (delay, dysphasia) [11]. As a result of which the child obtains the ability to function optimally in its environment, relative to age and psycho-physical predispositions. Within the clinical dimension the aim of the therapy is the eradication of pathology and motor disturbance of various kinds, eye-movement coordination, behavior, emotions, memory, attention, reading, writing.

http://dx.doi.org/10.15561/18189172.2015.0508

The results of the research by Kulakowska et al. [12] conducted from Psychomotor therapy according to Procus and Block may, even in a short period of application, have a significant influence on the treatment of somatognosis disturbances in children with developmental disharmony.

Purpose

The object of scientific research is the Belgian psychomotor therapy among children at kindergarten age suffering from developmental dissonance. The fundamental research problem of the project is contained in the following question: What changes in the psychomotor development of a kindergarten child suffering from developmental dissonance can be observed under the influence of the psychomotor therapy according to the Procus and Block model? The cognitive aim of the study is to present the concept of the Belgian psychomotor activity and its usefulness in the work with a child at kindergarten age.

Material and methods

Over a period of 6 months we were conduct a study among 32 children (9 boys and 23 girls), displaying the symptoms of developmental dissonance on the basis of the following tests: MOT 4-6 according to Zimmer, PST 6-8 by S. Naville, WET 3-6 according to Deimann, Kastner-Koller [13] and Southern California Sensory Integration Tests according to Ayres [14]. The study was carried out in 2 cycles, 1 child had pretest and posttest (before and after the Belgian psychomotor therapy). It was 17 research psychomotor tasks for each child. The fundamental research method, to be applied in the project, included a quasi-experiment method. The applied research technique included an international psychomotor tests and analysis of documents. The interview prepared for the purpose of the research was directed towards the parents of children with developmental dissonance. The next step was include conducting research and using selected international tests (MOT 4-6 according to Zimmer, PST 6-8 by Naville, WET 3-6 according to Deimann, Kastner-Koller and Southern California Sensory Integration Tests according to Ayres) intended to diagnose the children suffering from developmental dissonance. During each session of psychomotor diagnosis, we conducted a detailed observation which was written down on a child's chart.

Results

The expected result of the conducted research was the precise evaluation of the changes which took place in the psychomotor development of the children suffering from developmental dissonance exposed to the Belgian psychomotor therapy.

Figures 1-3 present the results of evaluation of the psychomotor development in the tested group before (Fig. 1.) and after (Fig.2) the Belgian therapy. Results were expressed in total score (0-2 points for each tasks).

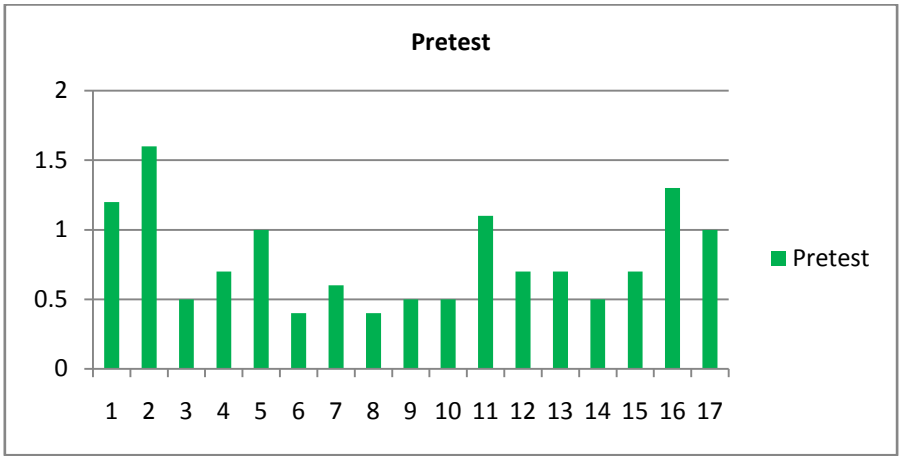

Fig.1. Level of the psychomotor development before Belgian psychomotor therapy (pretest)

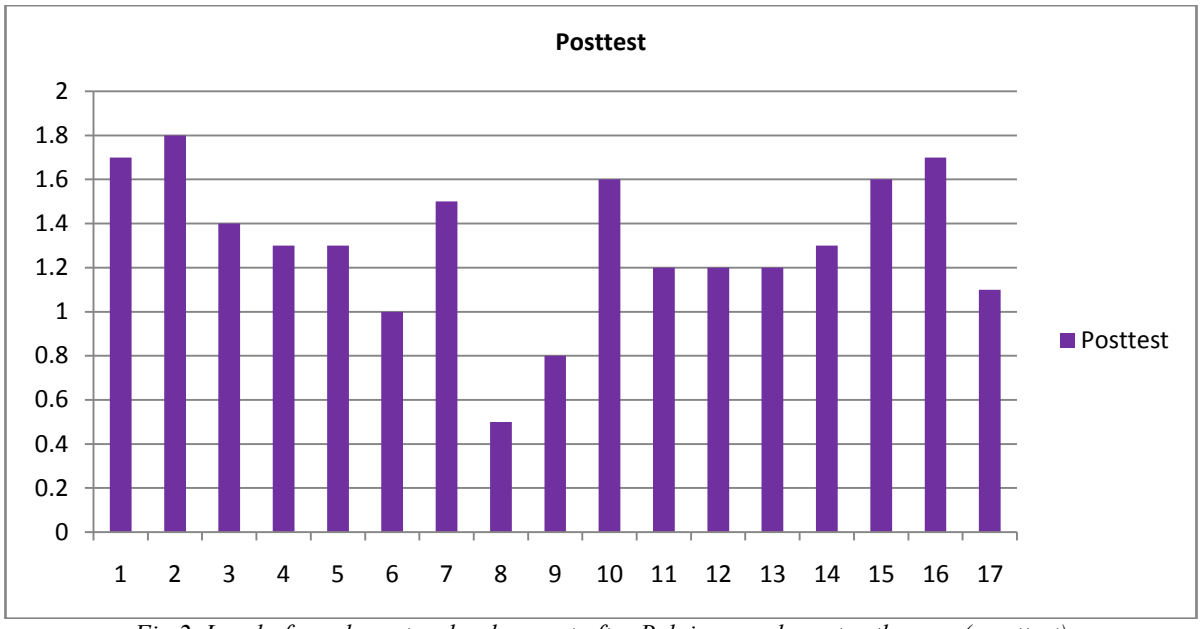

Fig.2. Level of psychomotor development after Belgian psychomotor therapy (posttest)

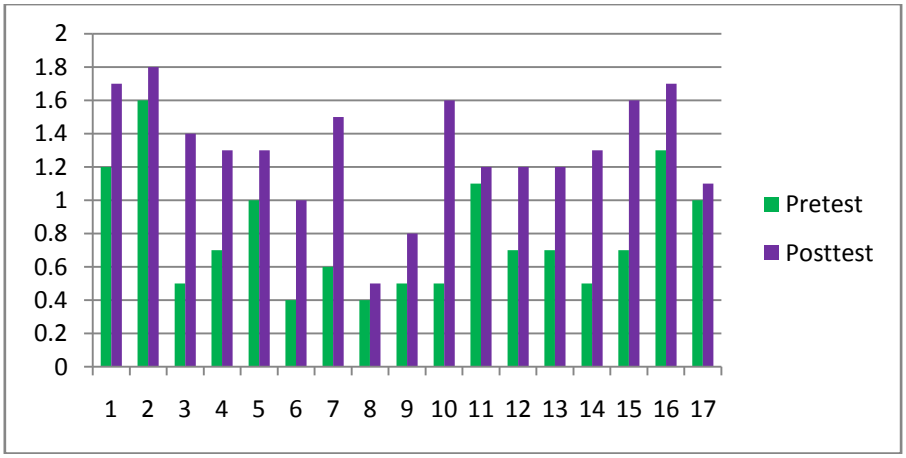

Fig.3. The results of evaluation of psychomotor development before (pretest) and after (posttest) therapy by six-year-old children suffering from developmental dissonance

Statistical analysis was based on the Wilcoxon test, R equivalent effect and Spearman's rank order correlation coefficient. Differences at $p<0.05$ were considered statistically significant.

Before therapy the scores showed lower levels of the psychomotor parameter.

Statistical analysis of psychomotor tasks showed that by the children suffering from developmental dissonance difference between the initial (Fig. 1) and final (Fig 2.) test results was statistically significant (Wilcoxon test, $p=0.0001$). The level of the effects R equivalent = 0.66 (middle effect).

Discussion

General hypothesis of the research: the application of the Belgian psychomotor therapy will bring changes in the development which can be observed both during a neurological examination, as well as during a psychomotor examination.

Upon the conclusion of the influence of the experimental factor, i.e. the Belgian psychomotor therapy, it has been observed that in the study pertaining to the psychomotor development, the results obtained by the six-year-old children cease to significantly differ from the values obtained by their peers, displaying no symptoms of dissonance [12].

Psychomotor therapy by the Procus and Block method may already within a short 3 to 4 month period of application have a significant influence on the treatment of psychomotor disorders that occur in children with developmental disharmony [11].

One of the effects was include the reduction of the intensity of the symptoms of developmental dissonance in children. Determining the relationships between the level of the changes in the psychomotor development of the children and the symptoms of developmental dissonance and a Belgian psychomotor therapy [8,12].

Kułakowska et al. [11,12], Gnitecka at al. [7, 8] and Nowak at al. [6,4] and others studied the issue of impact of the relationship between the symptoms of a non-harmonious development of a child. The results of Kułakowska et al.

[11, 12] indicated a correlations between the psychomotor therapy and the level of the aspects of somatognosia disorders [15,16]. Gnitecka et.al. [7,8] also showed that, in the examined population of children with MBD [17,18,19,20] the level of somatic and motor development was similar regardless the origin of the dysfunctions.

The significance of the implementation of the research for the Polish society is enormous. The implementation of the research will contribute to the development of a field of science and a scientific discipline i.e. kindergarten physiotherapy based on physical culture sciences [8,6,4]. Although the therapy in the Procus and Block model is becoming more and more popular in Poland, amongst physicians, physiotherapists, speech therapists, psychologists, as well as the parents of children with impeded development it is rather unknown. Thus, there is a need in popularizing it. The obtained results might also constitute a starting point for activities aimed at increasing the number of hours of physical movement classes in kindergartens and schools. There is an evaluation of the possibility to utilize the results of the conducted research in practice, along with the continuation of the study. Confirmation of the effectiveness of psychomotor therapy by means of the Procus and Block method requires the conduction of tests in conjunction with a control group.

The implementation of the project will contribute to the development of a field of the psychomotor diagnosis of children commence their school education obligation in Poland.

The application of Belgian psychomotor therapy for the rehabilitation of neurological disorders may prove to be very useful; however, it requires further research in this field to confirm the effectiveness and therapeutic potential of this method.

Conclusions

The effect of the conducted experimental study is statistically significant improvement of results in experimental group. It showed need in further studies of psychomotor therapy's influence on the level of psychomotor development of children suffering from developmental dissonance. Subsequent experiments should be conducted on larger populations, which should be selected with regard to etiology and the type of non-harmonious development.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and publication of this article.

References

1. Marlow N. For the EPICURE Study group: Neurologic and Developmental Disability at Six of Age after Extremely Preterm Birth. *New England Journal of Medicine,* 2005, vol.353, pp. 9-19.
2. Bremer A., Stucke Ch. *Development of equilibrium function in children of pre-school age with regard to their social environment*. WCPAS VII, Magdeburg 2008, p. 35.
3. Choi Y.S., Lee E.J. The effects of Psychomotor on self concept, sociability and aggression in preschoolers. *Journal oh Korean Academy of Child Health Nursing,* 2008, vol.14, pp. 379-387.
4. Nowak A., Gnitecka J. Parents' awareness of the child's psychomotor development as an aspect of promoting health in kindergartens. *Annales Universitatis Mariae Curie-Skłodowska,* Sect. D Med. 2007, vol. 62,18 (5), pp. 297-300.
5. Trouli K. Psychomotor education in preschool years - an experimental research. *European Psychomotricity Journal,* 2008, vol. 1, pp. 23-27.
6. Nowak A., Bartusiak I., Gnitecka J. Promoting health awareness in kindesgartens from the perspective of psychomotor researches. *Annales Universitatis Mariae Curie-Skłodowska,* Sect. D Med. 2007, vol. 62, 18, (2) pp. 360-364.
7. Gnitecka J. Psychomotoric therapy by children with MBD. In: Kossakowski Cz. (ed.) *A person with a disability in the system of rehabilitation, education and social support*. Olsztyn 2007, pp. 55-62.
8. Gnitecka J., Nowak A. Belgian psychomotor therapy as a tool of prophylactic and promoting health awareness of children. *Annales Universitatis Mariae Curie-Skłodowska,* Sect. D Med. 2007, vol.62, 18(2), pp. 365-368.
9. Wojnarowska K., Olechnowicz Ł., Gnitecka J. Supporting speech development of children with hearing defect by the use of mvarious types of motor therapy. In: Kruk-Lasocka J. (ed.) *Psychomotoric: Movement Full of Meaning*. Wroclaw 2008, pp. 55-62.
10. Laucht M. Developmental outcome of infants born with biological and psychosocial risks. *Journal of Child Psychology and Psychiatry,* 1997, vol.38(7), pp. 843-853.
11. Kułakowska Z., Szamotulska K., Zychowicz B., Gnitecka J. Psychomotor rehabilitation of children by the Procus and Block method. *Medical Rehabilitation* [Medycyna Rehabilitacyjna], 2009, vol.13(4), pp. 22-38.
12. Kułakowska Z. Changes in the somatagnosis of children with developmental disharmony who have undergone psychomotor therapy by means of the Procus and Block method. *Medical Rehabilitation* [Medycyna Rehabilitacyjna] 2010, vol.14(4), pp. 9-17.
13. Deimann P., Kastner-Koller U. *Wiener Entwicklungstest*. Göttingen, 2002, pp. 10-11.
14. Ayres J. *The Southern California Sensory Integration Tests*. Warszawa, 2009, pp. 10-20.
15. Counsell S. J. Magnetic resonance imaging of preterm brain injury. *Archives of Disease in Childhood*. 2002, vol. 88, pp. 269-274.
16. Inder T.E. Periventricular white matter injury in the prematureinfants is followed by reduced cerebal cortical gray matter volume at term. *Annals of neurology,* 1999, vol.46, pp. 755-760.

17. Touwen B., Prechtl H. Neurological development in infancy. *Clinics in Developmental Medicine*, 1976, vol.58, pp. 136-141.
18. Michelsson K. *Minimal Brain damage*. Essentialia, 1985, vol.14, pp. 1-3.
19. Petersen R.C. Mild cognitive impairment as a diagnostic entity. *Journal of Internal Medicine,* 2004, vol.256(3), pp. 183-194.
20. Berger W. Developmental aspects of equilibrium control during stance: a kinematic and EMG study. *Gait & Posture,* 1995, vol.3, pp. 149-155.

Information about the authors:

Gnitecka Jolanta: http://orcid.org/0000-0001-5855-1057; Jolanta.Gnitecka@awf.wroc.pl; University School of Physical Education in Wrocław; Paderewskiego 35, 51-612 Wrocław, Poland.

Nowak Agata: http://orcid.org/0000-0001-7924-0944; Agata.Nowak@awf.wroc.pl; University School of Physical Education in Wrocław; Paderewskiego 35, 51-612 Wrocław, Poland.

Romanowska-Tołłoczko Anna: http://orcid.org/000-0003-2236-7519; Anna.Romanowska-Tolloczko@awf.wroc.pl; University School of Physical Education in Wrocław; Paderewskiego 35, 51-612 Wrocław, Poland.

Cite this article as: Gnitecka Jolanta, Nowak Agata, Romanowska-Tołłoczko Anna. Psychomotor therapy as a effective method of alleviating the symptoms of child's non-harmonious development. *Pedagogics, psychology, medical-biological problems of physical training and sports*, 2015, vol.5, pp. 44-48. http://dx.doi.org/10.15561/18189172.2015.0508

The electronic version of this article is the complete one and can be found online at: http://www.sportpedagogy.org.ua/html/arhive-e.html

Received: 31.03.2015
Accepted: 25.04.2015; Published: 30.04.2015