Abstract

Introduction: Sensory Integration (SI) theory is based on understanding that the irregularities in neurological processes and sensory information processing disturb the construction of behaviors. Sensory Integration may be generally described as a neurological process reflecting the ability of a person to sort out the internal and external stimuli in order to regulate and function efficiently in environment.

The sensory processing disorders frequently occur in children with Autism Spectrum Disorder (ASD). Such disorders affect the regulation of responses to sensations and specific stimuli, the use of self-stimulation to compensate sensory limitations or avoiding excessive stimulation. Some stereotypical movements, purposeless running, aggression and self-inflicted injuries may correlate with sensory processes disorders.

Different modulation of sensory processing, such as varying responses to a stimulus, from hyperreactivity to the lack of response, to an external stimulus are characteristics for the children with ASD.

Objective of the paper: The purpose of the paper was to assess the effect of Sensory Integration therapy on achievement of self-regulation skills and improvement of sensory impressions modulation in children with ASD, with the use of objectivized clinical model of STEP-SI.

Material and methods: 36 children, age 3 – 6 years were subject to the examination, 31 boys and 5 girls, holding decisions on the need for special education due to autism, issued by a Psychological and Pedagogical Clinic, they attended preschool units for children with autistic disorders spectrum. Due to the wide age range, the subjects were divided into two sub-groups. Group I – children at the age of 3 and 4 years (from 3 to 4 years and 11 months). (M=51,86; SD=6,20). Group II – children at the age of 5 and 6 years (from 5 to 6 years and 11 months) (M=67,00; SD=7,34).

The examinations consisted of 3 parts and included: 1) the analysis of documents; 2) the analysis of particular components of the STEP-SI model; 3) Randall's interview questionnaire. The result analysis included basic descriptive statistics, Shapiro-Wilk normality test calculator and a series of ANOVY models for repeated measurements considering the inter-group factor. The assumed statistical significance level $\alpha = 0,05$.

Results: At the first stage of the statistical analysis the differences between the subsequent measurements were to be recognized, i.e.: prior to the therapy (T0), at the first therapeutic

session (T1), – after 10 therapeutic sessions (T2) and after a month since the end of the therapy (T3) taking into account the age groups 3-4 years vs. 5-6 years. These differences were analysed according to the STEP-SI dimension levels, i.e.: task, sensation, environment, predictability, interaction and self-regulation. All the effects, mainly for the dependent measurements, except for the model for the *interaction* dimension appeared to be statistically significant and explained from 33 to 65% variability in the dependent measurements.

The results presented in this paper indicate similar effectiveness of the SI therapy in both age groups, which suggests the SI therapy effectiveness on reduction of modulation disorders in children with ASD.

The analysis of the particular components of STEP-SI indicated differences between the measurements, In the *Sensation* components a statistically significant change in both groups was noted. The significant improvement took place before and after 10 therapeutic sessions. A month after the therapy a decrease was noted, nevertheless, the result is higher than before the therapy start.

Similar results were noted in the component *Tasks*. The significant improvement occurred between the pre-therapeutic examination and after 10 therapeutic sessions. Identically to the previous component, a month after the therapy a decrease was noted, though the result was higher than before the therapy start.

The statistical significance is distributed in a different way in the *Environment* component. A statistically significant change was noted between the pre-therapeutic measurements and one month after its completion. The results indicate a permanent change in this aspect.

The same changes as in *Environment* were noted in the *Predictability* component, however, in both groups the values were growing and the changes were visible between the first examination and after 10 therapies and some statistically significant differences between the third and fourth measurement.

Some permanent changes were also noted in the *Self-regulation* skill. The identical differences to the *Environment* component were visible. The statistically significant change was noted between the measurements before the therapy and one month after its end.
No statistically significant changes were found in the *Interaction* component.

Further, some identical analyses to those of the models for the STEP-SI components were carried out, all the effects of interaction between the dependent measurements and the test groups appeared to be statistically insignificant. However, for all the dimensions specified the

effects were noted mainly for the dependent measurements. The coefficient of the clarified variance ranged between 13 and 32%.

The pattern of differences between measurement T1 and measurement T2 for all the Randall instrument dimensions is identical, the average values during measurement T1 for each dimensions were significantly higher than the average values in measurement T2.

The examination results confirmed the positive impact on achieving the self-regulation skills and improvement of sensory impression modulation in children with ASD.

Key words: autism spectrum disorders, sensory integration therapy, modulation disorders, self-regulation, optimum arousal range.