Development of Fine Skills Through Occupational Therapy in Preschool Children with Special Educational Needs

Svetlana SAVIȚCHI[a*], Eugeniu AGAPII [a]

[a]*State University of Physical Education and Sport; 22, Andrei Doga Street, Chisinau MD-2024, Republic of Moldova*

Abstract

Children develop on their timelines – just because a child exhibits delayed fine motor skills doesn't mean there is automatically a problem. However, there are times when early intervention is necessary. Children use fine motor skills to make small ("fine") movements with their fingers, toes, and other parts of their body, like their hands, tongue, and lips. Fine motor delay occurs when a child has difficulty with the movement of their small muscle groups. Based on the literature review findings, fine motor skills are an important skill to develop during the preschool years.

The Occupational Therapy session is adapted to each child's needs, probably the most important factor in the development of fine motor skills in children with special educational needs.

This study was carried out in an interpretative and descriptive paradigm which involves preschool children with Special Educational Needs (SEN). Materials and method. The research is based on a case study of five children with special educational needs who carry out therapies in the Sun-Rise kindergarten in Chisinau. The subjects who were included in the study benefited from occupational therapy services during the 2021-2022 school year once a week.

Keywords*: occupationa therapy, special educational needs, preschool, motor skills, fine skills, children, kindergarten.*

[*] Corresponding author. Tel.: +373 69710803; fax: +373 22497671

E-mail address: svetasav@yahoo.com / svetlana.savitchi@outlook.com

1. Introduction

Assessment of motor development in preschool children has become increasingly important with the recent acknowledgment that motor impairment/deficit is linked with cognitive, language, social, and emotional difficulties. As there is a lack of evidence regarding motor development and early intervention in children with special education needs (SEN), the purpose of this study was to assess the motor development of preschool children with SEN within the educational context to allow their teachers to design appropriate physical education activities to improve students' motor proficiency.

Differences in the difficulties encountered during the subtests by children in different SEN groups were found, suggesting that evidence of certain motor weaknesses is more likely for children with specific SEN. An unsatisfactory level in overall performance in gross, fine, and total motor quotients confirmed the delayed motor development of students with SEN. The paper concludes with recommendations for an appropriate evaluative measure and early intervention programs for children with specific motor impairments (Riga, Misirle & Komessaariou, 2020).

Fine motor performance skills are essential for children's successful educational participation. Kindergarten curriculums are increasingly academic with less emphasis on play-based learning. Increased expectations for kindergarten readiness do not align with developmental milestones. Occupational therapists are uniquely positioned to support children and teachers in preparing for kindergarten. These three moths collaborative intervention utilized fine motor and sensory activity centers, integrated within the classroom, to promote kindergarten readiness for 5 preschool children. Pre- and post-testing indicated clinically significant gains in readiness skills. Results of this pilot study support the effectiveness of integrating occupational therapy within the preschool classroom to improve kindergarten readiness skills (Martino & Lape, 2020).

Fine motor skills are an integral part of everyday activities. Children with neurological disorders, such as cerebral palsy and autism spectrum disorder, have problems with fine motor skills, social interaction, and communication. Such children need to repeat a skill to acquire it. Therapy is needed so that children can develop important life skills and be involved in academic activities. However, children need to undergo long sessions of therapy, which will be tedious for them.

Occupational therapists realize the importance of fine motor skills, including reaching, grasping, carrying, voluntary release, in-hand manipulation, and bilateral hand use. A variety of child factors influence the development of fine motor skills such as movement skills, visual skills, sensory integration, visual perception, cognition, and social and cultural factors. When children mature with normal development, they have effective visual-hand coordination skills, and later develop eye-hand coordination with visual perception skills. For these reasons, children have delayed fine motor development when barriers reach academic achievement goals. Children with special educational needs are at risk of delayed fine motor development (Suchitporn L., Supawadee P. & Kewalin P., 2016).

As mentioned above, early detection and evaluation of fine motor problems in children with special educational needs are needed. After evaluating a child's performance, therapists develop and design an intervention program individually by systematic activity analysis and a synthesis process for each child, so that the program can be related to a child's skills, limitations, and culture (Chen, Ringenbach, & Albert, 2013). Most intervention programs for improving fine motor skills include exercises or activities by using hands. Research for adults with special educational needs included assisted and voluntary exercise with music that could improve fine manual dexterity (Chen, Ringenbach, & Albert, 2013). However, more consideration should be given to the developmental milestone of children with ASD (Frank & Esbensen, 2015). For these reasons, this study was interested in designing an intervention program and researching the effectiveness of the fine motor activities program to promote

fine motor skills, including bilateral hand coordination, hand prehension, manual dexterity, in-hand manipulation, and hand muscle strength in a study case. Fine motor performance skills are essential for children's successful educational participation. Kindergarten curricula are increasingly academic with less emphasis on play-based learning. Increased expectations for kindergarten readiness do not align with developmental milestones. Occupational therapists are uniquely positioned to support children and educators in preparing for school. Those three months' collaborative intervention utilized fine motor and sensory activity centers, integrated within the classroom, to promote school fine motor skills for five preschool children with special educational needs. Results of this pilot study support the effectiveness of integrating occupational therapy within the preschool classroom to improve fine motor skills.

1.1. Evaluation of people with special needs

The evaluation of people with special needs is based on complex knowledge of the medical, psychological, and social plan, covering the entire issue encountered by educational attainments, especially in the ordinary living environment. It should be emphasized that, in the vast majority of cases, the evaluation is a continuous process, not an instant X-RAY of the subject's condition, requiring a prolonged collaboration, the differential between the members of the evaluation team and the person with special requirements. Also, evaluation as an indispensable process in the structure of services offered to people with disabilities is based on a series of important elements, frequently invoked in current specialized literature a certain philosophy of evaluation, coherent and unitary constructions of content evaluations, modern and flexible legislation in the field of social services. Last but not the least, the evaluation is based on a series of criteria that can be classified as follows:

- Specific criteria to each field (medical, physiological, educational, and social);

- Specific criteria for classification in a degree of deficiently/disabilities;
- Specific criteria for school and professional orientation (Savițchi & Agapii, 2021).

1.2. The purpose of the research

The purpose is to develop fine skills for preschool children with special education needs through occupational therapy.

In realization of the research, we started from the following **hypothesis** it is assumed that through occupational therapy we will develop fine skills in preschool children with special educational needs.

In order to concretely guide the research activity, we established and formulated the following research **objective:**

- The study of the theory and practice of the process of developing fine skills in preschool children with special educational needs.
- Elaboration and implementation of the occupational therapy program for children with special educational requirements for the development of fine skills.
- Experimentation and argumentation of the occupational therapy program for the development of fine skills in preschool children with special educational needs Experimentation and argumentation of the occupational therapy program for the development of fine skills in preschool children with special educational needs.

2. Material and methods

The research took place at the " Sun Rise" kindergarten, for three months. Preschool children with special educational needs (n = 5) received occupational therapy a minimum of one individual 30-minute session, and one group 30-minute session per week for one year of study. Two assessment tests were administered twice to each child, at the beginning and end of the school year. Fine motor skills are essential for children's successful participation

in education. Kindergarten curricula are increasingly academic, with less emphasis on play-based learning. Raised expectations for kindergarten readiness do not align with developmental milestones. Occupational therapists are uniquely positioned to support children and educators in school readiness. This three-month collaborative intervention used classroom-integrated fine motor and sensory activity centers to promote scholastic fine motor skills for five preschool children with special educational needs. Pre- and post-testing indicated clinically significant gains in preparation skills. The results of this pilot study support the effectiveness of integrating occupational therapy into the preschool classroom to improve fine motor skills.

2.1. Selection criteria

The inclusion criteria to form part of the group of children with ASD were:

- to have a clinical diagnosis of ASD;
- to be aged between 5 and 6 years old;
- to have had an informed consent form signed by a parent or legal guardian.

On the other hand, the exclusion criteria were the presence of comorbid disorders added to ASD.

SPSS software was used to enter and analyze the obtained data.

3. Results

Fine motor skills refer to the movements of the flexor muscles in the fingers, hands, and forearms. These skills develop over time as children try to discover the world around them. As children improve their fine motor skills, they will become able to make controlled and steady movements, as well as learn to do more things with their hands independently, such as:Holding a pencil

- Tying the strings
- They feed themselves
- Cutting along straight and curved lines
- Opening lunch boxes
- Drawing circles
- Making sculptures with materials such as Playfoam etc.

3.1. Suggested modeling themes that can be achieved through various rendering procedures

This checklist was designed to serve as a functional assessment of developmental skills by age group. It does not constitute an evaluation, nor does it reflect strictly standardized research.

The occupational therapy program was carried out by all patients, who proved to be even interested in the association in the rehabilitation assistance of this particular modality of therapy. The reasons for dividing the two activities were many, one being that fine motor skills are involved in teaching activities and will help prepare children with special educational needs for school. Moreover, training different types of fine motor skills has been shown to influence other aspects related to motor performance, namely didactic activity. The generic early curriculum is thought to promote positive motor developments. For example, found that a longer period at kindergarten was associated with better grapho-motor skills (fine hand coordination, as well as ability to copy different figures as a whole and their parts) in both boys and girls (Pitchford et al., 2016).

The graphs represent the distribution of the values of the didactic activities evaluation questionnaire before (evaluation I) the occupational therapy program and after therapy (evaluation II).

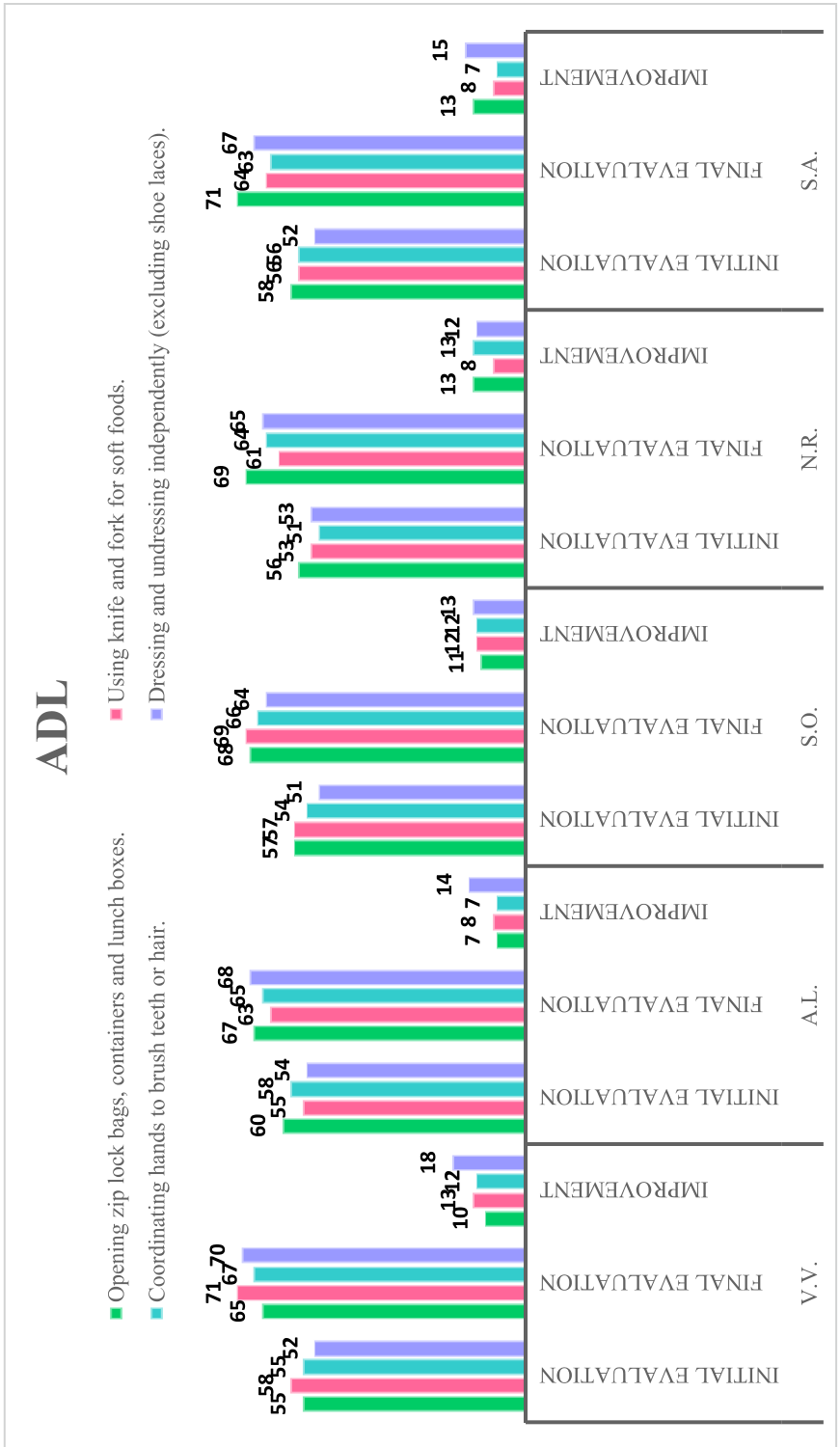

Figure 1. Comparative data of ADLs

The tradigital pincer improved after applying for the occupational therapy program, finally obtaining an average score of 58 points compared to the initial score of 50 points at the patient V.V. (Figure 2). The lowest score of the patient V.V. was obtained at drawing a basic picture only 4 points improvement. The lowest score was on the criteria Coordinating hands to brush teeth or hair average of 7 points (patient A.L. and S.A.) proved to be a difficult task (Figure 1).

At the patient A.L. the tradigital pincer at first evaluation 56 points ant the final of the therapy final score was 67 points, an improvement 11 points (Figure 2). The highest improvement was obtained in designing own Lego models at 17 points, the lowest at 9 points at three didactic activities. At the ADLs, activities patient A.L. the best score was on Dressing and undressing independently (excluding shoe laces) improvement by 14 points. For the patient S.O. the highest score of improvement was from the didactic activities at the criterion Self-generating letters independently, the lowest score of improvement was 8 points at the criterion tradigital pincer (Figure 2).

Not all children with special educational needs, however, are equally likely to recover ADL independence. In our study, all children with special educational needs recovered their ADL function. The highest score for ADL activities after applying the occupational program have got patient V.V. at the criteria Dressing and undressing independently (excluding shoe laces) 18 points (Figure 1). Our findings are consistent with the objective that the likelihood of ADL improvement increases substantially with the development of fine motor skills.

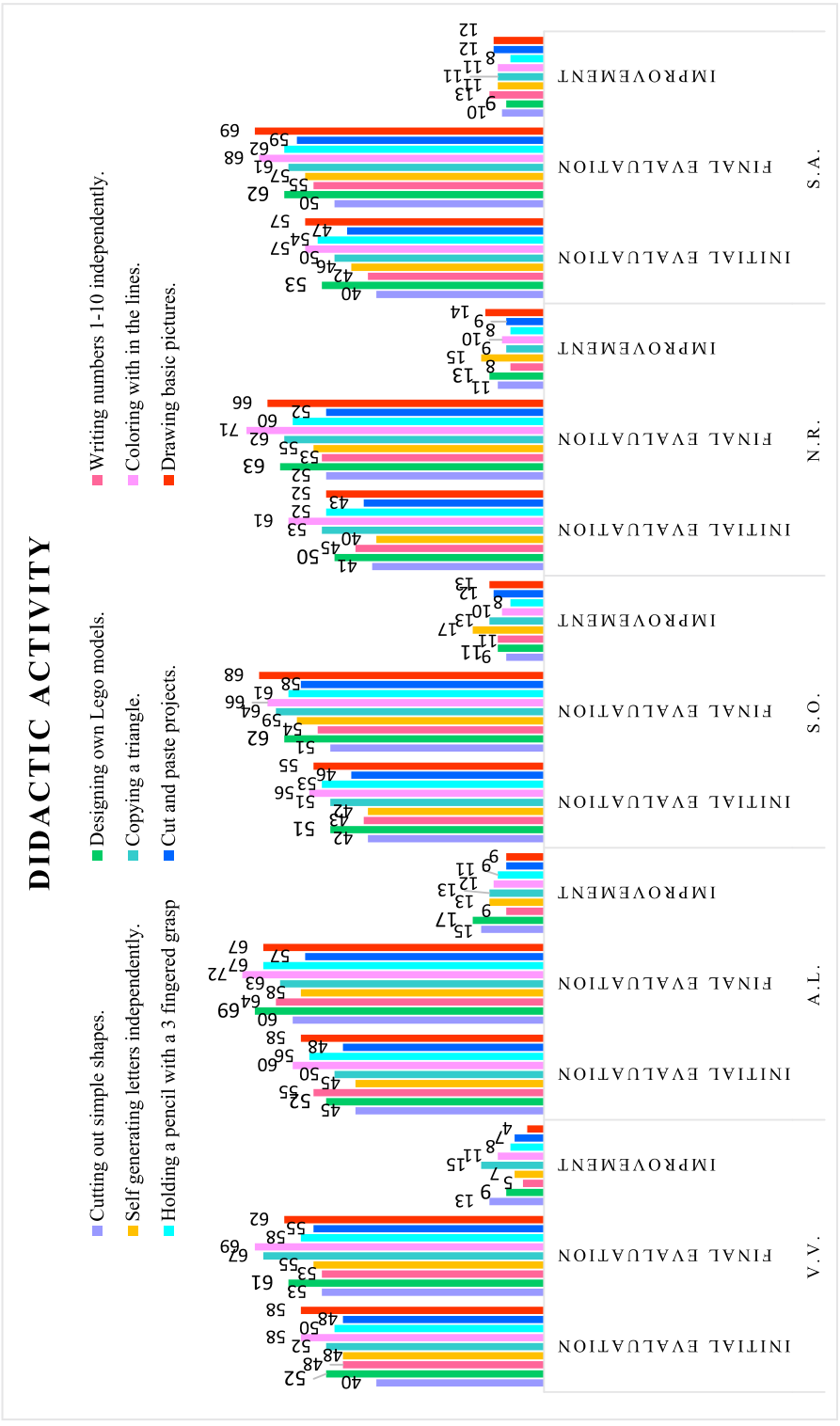

Figure 2. Comparative data of didactic activity

The ability to brush teeth for the A.L. results in 10 points, whereas for the V.V. 12 points. For dressing and undressing independently for the A.L. at first evaluation 54 at the final 64 points improvement 10 points (Figure 1), patient V.V. at the start of therapy 52 points and the final 71 points (Figure 1), improvement 19 points. However, the case study of this research used the program for three months, which may not be enough time for obvious changes to appear. Thus, increasing the intervention time would be a factor in improving the skills of the case study subject. Additionally, a child with special education needs have an intellectual disability, and limitations in learning and performing cognitive functions. Indeed, he/she might need more time to learn, integrate, recall, and receive feedback (Suchitporn, Supawadee & Kewalin P, 2016).

Fine motor skills deserve further consideration, especially at early school age. In this study, both gross and fine motor skills significantly improved with the occupational therapy program. This trend was expected as competency in fundamental movement skills has been shown to follow an increasing developmental trajectory, with both gross and fine motor skills improving with the application of the occupational therapy program.

4. Conclusion

The objective of this study was to develop a fine motor activities program and examine its efficiency in promoting fine motor skills in a study of children with special education needs. This study found that the fine motor activities program promoted fine motor skills, including bilateral hand coordination, hand prehension, manual dexterity, in-hand manipulation, and hand muscle strength activity sets, which were designed and developed by activity analysis and a synthesis process based on various related approaches, such as Neurodevelopmental, Biomechanical, and Motor Skill Acquisition and Psychosocial ones. Because fine motor skills consist of movement and visual skills, sensory integration, visual perception, and cognition, as well as social and cultural factors, using a single approach in designing and developing an intervention program, did not encourage fine motor skills. After designing and developing a program of activities, the case study was implemented within three months. Finally, the subject

showed a clear improvement in fine motor skills, especially in assessing hand manipulation. However, due to limited cognitive functions, he needed more time to improve and sustain his fine motor skills by using the therapists' adaptation and modification of the program. Additionally, to continue his development, integration of fine motor activities into his daily activities, especially those of self-care and play, might be planned by his parents with therapists because interventions using functional life skills have been shown to increase the efficacy of an intervention program and the child's motivation to participate.

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