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DEVELOPMENT OF A SECOND-TIER RESPONSE TO INTERVENTION (RTI) PROGRAM FOR FINE MOTOR FUNCTION

Carolina Suemy Costa Ariga, & Giseli Donadon Germano
Department of Education and Human Development, São Paulo State University "Júlio de Mesquita Filho" (UNESP), Marilia, São Paulo (Brazil)

Abstract

Motor learning can be understood as the acquisition or modification of movement, which includes learning strategies (or new ones) that will lead to the execution of the movement. Specifically, fine motor skills correspond to the use of intrinsic and extrinsic muscles of the hand and fingers, enabling the performance of activities that require greater manual refinement, such as: daily tasks of eating, hygiene and school tasks. It is emphasized that fine motor coordination is an important indicator of a student's overall level of development, in addition to being able to contribute to social and emotional adjustment in the school environment. The study aimed to develop an intervention program with fine motor functions, based on the RTI model, for students in the 2nd grade of Elementary School. This study was divided into phases, as follows: Phase 1: Corresponds to the development of a program based on the Response to Intervention Model; Phase 2 – Corresponds to the characterization of the performance of fine motor functions of students in the 2nd grade of EFI. Phase 1: To develop the program, a bibliographic survey was carried out regarding the theoretical bases for the development of the Response to Intervention (RTI) program. The focus was on fine motor skills for students in the 1st and 2nd grade of Elementary School I. The Scielo and Pubmed databases were used, with the descriptors "fine motor function" and "intervention". Based on the theoretical models and the fine motor skills surveyed, six sessions with three tasks each were developed, with increasing complexity, and two training sessions per skill. Six sessions were developed, covering the skills of Tactile Perception, Grasping, Dexterity and manipulation of objects with one hand, Bilateral movement, Isolated finger movement and Pincer movement. Phase 2: 25 students were evaluated in fine motor tests (Fine Motor Precision and Visual Motor Integration), and 12 (34.3%) presented fine motor difficulties, which should be referred for intervention in the program developed in phase 1. The study demonstrated that it was possible to develop an intervention program for fine motor skills, based on the Response to Intervention Model (RTI), in the second layer, for students in the 2nd year of Elementary School I and that 12 (34.3%) presented fine motor difficulties, which should be referred for intervention in the program developed in phase 1.

Keywords: *Educational assessment, motor performance, intervention model.*

1. Introduction

Motor development is characterized as a behavior in which this function originates from three main points: the individual, the complex task, and the environment. In other words, an individual produces a movement in order to perform a task while being part of an environment. Thus, the effectiveness of this skill is associated with the ability to perform different tasks efficiently in one or more environments (Shumway-Cook & Woollacott, 2003).

Thus, it is highlighted that motor skills progress is an important indicator for the overall level of development of a student, in addition to being able to contribute to social and emotional adjustment in the school environment (Memisevic & Hadzic, 2013). Such skills are provided for in the National Common Curricular Base of Brazil (Brasil, 2018) – Early Childhood Education, in which motor aspects are encouraged mainly in relation to the promotion of activities that explore fields of experience of the body, gestures and movements and lines, children, nuclei and shapes.

In addition, studies indicate that these skills also become a relevant factor for referring individuals to spatial education or for students to remain in kindergarten. Therefore, investigations regarding motor skills can be beneficial for verifying that individuals who do not perform fine motor skills satisfactorily may possibly harm students who do not present such difficulties. (Cameron, et al., 2012).

Thus, the Response to Intervention model emerges as an alternative for early identification and intervention in the educational context. The Response to Intervention (RTI) Model is a multi-layered system of support for schoolchildren with learning difficulties. Since the RTI Model is an integrated system of assessment and successive interventions, monitoring the performance or progress of each student is one of the strongest points of the RTI Model for early identification, whether for learning, behavioral or motor problems, since the lack of response to these interventions may indicate the presence of these disorders. The model is composed of three layers: universal (layer 1), strategic (layer 2) and intensive (layer 3). Students are placed in one of the intervention layers due to their difficulties (Andrade, Andrade & Capellini, 2014).

Therefore, this study is justified by the lack of such programs. Furthermore, the development of programs using this model will allow for a better characterization of school difficulties with fine motor skills, leading to more precise and early intervention. Furthermore, it is expected to collaborate with the development of an early identification and intervention instrument aimed at stimulating and developing fine motor skills, so that it can promote positive effects in the later stages of writing.

Thus, the study is based on the hypothesis that the development of an intervention program based on the Response to Intervention Model (RTI), with systematic instructions on fine motor skills in students in the 1st and 2nd grades of Elementary School I, in a second layer, can help in the early identification of school risks for motor difficulties.

2. Objectives

The objectives of this study was to develop an intervention program for fine motor skills, based on the Response to Intervention Model (RTI), in a second layer, for students in the 2nd grade of Elementary School I.

3. Methods

This study was submitted to and approved by the university's Research Ethics Committee (protocol no. 6,260,277). All participants signed an informed consent form. For educational purposes, this study will be described in two phases, as follows.

3.1. Phase 1: Corresponds to the development of a program based on the response to intervention model

For the development, a bibliographic survey will be conducted regarding the theoretical bases for the development of the Response to Intervention (RTI) program, which includes screening and intervention proposal for the development of fine motor skills in students in the 2nd year of Elementary School I. The focus was on fine motor skills for students in the 1st and 2nd years of Elementary School I. The Scielo and Pubmed databases were used, with the descriptors “fine motor function” and “intervention”. The proposed theoretical models were considered, such as Feder and Majnemer (2007), Exner (1992), Humphry, Jewell and Rosenberger (1995), Alleoni (2007), Barbosa and Fukusato (2020), Bee and Boyd (2009), Builders (2023), Case-Smith (1993), Greutman (2017), Brasil (2016), Dadkhah et al. (2004), and Yu et al., (2011) contemplating the main skills of: Grasping, pincer movement, bilateral movements, manipulation of objects with one hand, dexterity, isolated finger movement and tactile perception, being developed a specific program for the second layer.

3.2. Phase 2: Corresponds to the characterization of the fine motor function performance of 2nd grade EFI students

After the program was developed, the fine motor profile of 2nd grade students was characterized in order to identify which ones would be eligible for the application of the Program developed in Phase 1. Twenty-five students aged between 7 years and 8 years and 11 months, regularly enrolled in the 2nd grade of EFI, from public schools in the city of Marília-SP, participated in this phase. The students were submitted to the following procedures: motor assessment Bruininks-Oseretsky test of motor proficiency (BOT-2) (Bruininks & Bruininks, 2005), with only the part corresponding to the fine motor tests (Fine Motor Precision and Visual Motor Integration) and age, corresponding to the tasks (Manual Dexterity, Throwing and Catching, and Balance) being selected. The study included students regularly enrolled in the 2nd grade, as indicated by their teachers. As an exclusion criterion, students who did not sign the Free and Informed Consent Form, students with sensory deficits (hearing and/or visual impairment) and cognitive deficits described in school records and/or in neuropsychological assessment findings were excluded from this study. In addition, students who had already undergone some type of Speech Therapy and Pedagogical

remediation will be excluded. The results indicated that 12 (34.3%) of the students performed below average and should be referred for intervention in the program developed in phase 1.

4. Discussion

The findings of this study reinforce the need to implement early intervention programs in the school context. The years corresponding to the beginning of elementary school are a period in which children actively explore and test the capacity of their bodies, leading to changes that result in the refinement of their motor skills, one of which is fine motor skills. Furthermore, the skills listed (Grasping, pincer movement, bilateral movements, manipulation of objects with one hand, dexterity, isolated finger movement and tactile perception) favor the development of fine motor coordination, which is an important indicator of a student's overall level of development and can contribute to social and emotional adjustment in the school environment (Gallahue et al., 2013). Movement intervention programs favor the student's understanding of learning strategies (or new ones) that will lead to the execution of movement (Shumway-Cook & Woollacott, 2003). Specifically, fine motor skills correspond to the use of intrinsic and extrinsic muscles of the hand and fingers, enabling the performance of activities that require greater manual refinement, such as daily feeding, hygiene and school tasks, and are gradually acquired between 18 and 24 months of age (Fonseca, 2008).

In this way, the skills involved in performing this action depend on a set of factors, according to the maturation of an individual, which can be developed in the school context, in Early Childhood Education, such as fine motor, cognitive and visual-perceptive skills, which are directly related to the precise manipulation of the pencil to produce letter shapes with appropriate sizes, order and positions (Almeida, 2013; Tseng & Chow, 2000).

5. Conclusions

The study demonstrated that it was possible to develop an intervention program for fine motor skills, based on the Response to Intervention Model (RTI), in the second layer, for students in the 2nd year of Elementary School I. Six sessions were developed, covering the skills of Tactile Perception, Grasping, Dexterity and manipulation of objects with one hand, Bilateral movement, Isolated finger movement and Pincer movement. The screening (motor assessment) included 25 students aged between 7 years and 8 years and 11 months, regularly enrolled in the 2nd year of Elementary School I, of which 12 (34.3%) presented fine motor difficulties, which should be referred for intervention in the program developed in phase 1.

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