

# PSYCHOMOTOR PERFORMANCE OF PRESCHOOL CHILDREN

*Desempenho psicomotor de crianças pré-escolares*

*Desempeño psicomotor de niños preescolares*

Original Article

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## ABSTRACT

**Objective:** This study aims to evaluate the psychomotor performance of 5 years old preschool children using a validated scale. **Methods:** Prospective and observational study that used a deductive approach with descriptive and statistical procedures, which performed a psychomotor evaluation in 30 children who are enrolled in a Reference Center for Early Childhood Education (CREI) in João Pessoa - PB in 2011 using an adapted and validated development scale. Data were analyzed using SPSS 16.0 software. **Results:** It has been observed in the acquisition areas that the evaluated children have reached 21 (89.4%) in a score of 24 for motor skills, 10 (84.7%) in a score of 12 for socio-emotional development, 16 (75.3%) in a score of 21 for visual-motor skills and 11 (71.3%) in a score of 15 for hearing and speaking skills, featuring the most affected area of psychomotor development. **Conclusion:** This study have shown deficits in all evaluated psychomotor perspectives, indicating an unsatisfactory psychomotor development regarding the age, highlighting the difficulties in the acquisition of hearing and speaking skills, in the defined lateralization exercises and in the performance of socialization activities.

**Descriptors:** Motor Activity; Health Evaluation; Child Development.

## RESUMO

**Objetivo:** Avaliar o desempenho psicomotor em crianças pré-escolares com 5 anos de idade mediante a utilização de uma escala validada. **Métodos:** Estudo prospectivo e observacional, de abordagem dedutiva com procedimento descritivo e estatístico, o qual realizou avaliação psicomotora em 30 crianças matriculadas em um Centro de Referência em Educação Infantil (CREI) de João Pessoa-PB, em 2011, utilizando-se uma escala de desenvolvimento validada e adaptada. Os dados foram analisados utilizando-se o software SPSS 16.0. **Resultados:** Notou-se nas áreas de aquisição que os avaliados atingiram 21 (89,4%) dos 24 pontos da motricidade, 10 (84,7%) dos 12 pontos da maturação socioemocional, 16 (75,3%) dos 21 pontos da visomotricidade, e 11 (71,3%) dos 15 pontos da audição-linguagem falada, caracterizando a área mais comprometida da psicomotricidade. **Conclusão:** Os achados do estudo demonstraram déficits em todas as perspectivas psicomotoras avaliadas, indicando desempenho psicomotor não satisfatório com a idade cronológica, com ênfase nas dificuldades de aquisição da audição-linguagem falada, nos exercícios de lateralização definida e na realização de atividades de socialização.

**Descritores:** Atividade Motora; Avaliação em Saúde; Desenvolvimento Infantil.

Arleciane Emilia de Azevêdo  
Borges<sup>(1)</sup>  
Luciana Moura Mendes<sup>(1)</sup>  
Adriana Carla Costa Ribeiro  
Clementino<sup>(1)</sup>

1) Federal University of Paraíba  
(Universidade Federal da Paraíba - UFPB)  
- João Pessoa (PB) - Brazil

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## RESUMEN

**Objetivo:** *Evaluar el desempeño psicomotor de niños preescolares de 5 años de edad a través de la utilización de una escala validada. Métodos:* Estudio prospectivo y observacional de abordaje deductivo con procedimiento descriptivo y estadístico a través de una evaluación psicomotora de 30 niños matriculados en un Centro de Referencia en Educación Infantil (CREI) de João Pessoa-PB, en 2011, utilizando una escala de desarrollo validada y adaptada. Los datos fueron analizados utilizando el Software SPSS 16.0. **Resultados:** Se notó en las áreas de adquisición que los evaluados alcanzaron 21 (89,4%) puntos de los 24 de la motricidad, 10 (84,7%) de los 12 puntos de la maduración socioemocional, 16 (75,3%) de los 21 puntos de la visomotricidad y 11 (71,3%) de los 15 puntos de la audición-lenguaje hablada, caracterizando la área más perjudicada de la psicomotricidad. **Conclusión:** Los hallazgos del estudio demuestran déficits en todas las perspectivas psicomotoras evaluadas lo que indica un desempeño psicomotor no satisfactorio con la edad cronológica con énfasis para las dificultades de adquisición de la audición-lenguaje hablada, los ejercicios de lateralización definida y la realización de las actividades de socialización.

**Descriptores:** *Actividad Motora; Evaluación en Salud; Desarrollo Infantil.*

## INTRODUCTION

The psychomotor skills can be defined as an interdisciplinary field which studies and investigates the relationships and the reciprocal and systemic influences between the psyche and the motor skills. It studies the body movement according to the internal interferences of the individual and their environment. It is indispensable during the preschool age the development of physical, mental and social functions through body language associated to the maturation of the language<sup>(1)</sup>.

The psychomotor skill is crucial in early childhood education, both for the formation of the body awareness of the learner as for academic learning, among which is the domain of relevant concepts to everyday life<sup>(2)</sup>. During childhood, the psychomotor skill is very important for both development and child's learning, involving emotional, motor and cognitive aspects<sup>(3)</sup>.

For psychomotor evaluation, the literature contains several instruments and tests, as well as, scientific works that may contribute to increase knowledge and to standardize specific evaluations<sup>(4)</sup>.

The development of the different components of psychomotor education becomes relevant during childhood, in order to be developed several basic motor skills such as walking, running, kicking and hitting. However, the infant

motor development does not happen in a linear way, being essential that the school provides to the child a diversified environment, with new challenging situations that provide various means to solve problems<sup>(5)</sup>. This way, the use of motor evaluation in schools is essential to establish a deeper and safer diagnosis of the real possibilities and limitations of children regarding their performance<sup>(6)</sup>.

The health promotion is one of the strategies from the health sector which aims to improve the population's life quality, being in Brazil, retaken by the Unified Health System (UHS) as an opportunity of focusing the aspects that determine the health-illness process<sup>(7)</sup>.

The initiative of health promoting schools is a commitment to develop partnerships and optimize resources in integrated action among schools, community and health services, aiming to generate knowledge and life skills, thus encouraging attitudes and practices considered as healthy, as well as building supportive environments<sup>(8)</sup>. A healthy school is that one which considers the entire individual and promotes autonomy, creativity and participation<sup>(9)</sup>.

Based upon scientific literature, it has been noticed that health promotion in preschool children is a relevant act, since these individuals can acquire knowledge and incorporate healthy habits early, which may extend throughout their life. It is recommended that the work of promotion-prevention be extended to parents and caretakers in order to design activities at different times and contexts of the child development, contributing in the control of the risk factors for an appropriate neural psychomotor formation<sup>(10)</sup>.

The interest in performing the psychomotor evaluation is a result of the relevance and the meanings that are attributed to the human actions and learning during neurodevelopment. This intervention consists of preventive action in the context of Primary Care, with the participation of physiotherapists in inter-professional works focusing on school health. This study aimed to carry out an evaluation of the psychomotor performance in 5 years old preschool children using a valid scale.

## METHODS

It is a prospective and observational study of 5 years old children in a Reference Center for Early Childhood Education (CREI) in João Pessoa city - PB, in November 2011.

It was investigated the CREI Dra. Rita Gadelha de Sá located at the community Timbó I in João Pessoa - PB, belonging to the coverage area of the Family Health Unit (FHU) Timbó I from the Sanitary District III of the Department of Health of João Pessoa - PB, in which occur the activities of the subject "Physiotherapy for the Nervous

System Disorders” from the Physiotherapy Graduation Course of the Federal University of Paraíba (UFPB).

The study included 30 children with 5 years old being (17 female and 13 male) randomly screened according to their availability and attendance at the CREI. It was excluded 5 children of whom 3 were unwilling spontaneously to the evaluation and 2 of them missed classes. The CREI had two groups of 5 years old children containing 20 and 15 students each, respectively, during the time of data collection which was performed in November 2011.

The present research was accomplished under a deductive approach with a descriptive and statistical procedure using the technique of direct documentation through extensive testing, using a survey instrument<sup>(1)</sup>. In order to accomplish this study each child was evaluated only once, in small groups, according to their sex during a four-week period, being one day a week in order to obtain data about psychomotor performance according to the chronological age.

Thus, the children were submitted to psychomotor evaluation using the Development Scale of M. Sheridan adapted<sup>(1)</sup> and validated, which include the ordinary evolution of the first month of life at 5 years old and must not be confused with any quotient, number or quantity. This scale<sup>(1)</sup> aims to get aspects of the psychomotor behavior to an appropriate therapeutic pedagogical treatment when understanding four areas: posture and global motor skills; vision and fine motor skills; hearing and spoken language and social maturity (self-sufficiency)<sup>(1)</sup>.

The psychomotor evaluation was carried out by the students supervised by the professor of the subject “Physiotherapy for the Nervous System Disorders”, through training and consisted of the verification of the following acquisitions in 5 years old children: motor skills, social-emotional maturity, visual motor skills, hearing and spoken language.

It was observed the achievement of the acquisitions of each child and depending on their performance, they were classified by assigning them concepts according to the scale<sup>(1)</sup>: 1) not acquired acquisition; 2) uncontrolled acquisition; 3) controlled acquisition; which may be observed in cases of performing activities and any other that involve body movements linked to the conscious or to the unconscious.

Therefore, the following materials were used: pencil, A4 paper, crayons, geometric figures and camera cardboard, ID cards of each child, clothing (shirt, strap, shoe and slipper), face towels, mirror, plastic container and balls.

Regarding the motor skills, it was found that the children could stand on one foot, jumping alternately and jumping with together feet. Still regarding the motor skills,

it was evaluated the directionality, laterality, the notion of body and the intentional objects handling. These last items were evaluated in two ways: one through a ball which they should hit the target (goal); the other one by throwing a chalk into a bowl at a certain distance, both in the position like they were taking a photo and transferring an object one to another.

The social-emotional maturation included the capacity of the children in dressing themselves (self-sufficiency), wash their hands and face without any assistance and the ability to choose their friends. The last item of this acquisition was to understand whether the children understood the rules of the game.

Regarding the visual motor skills, the children were asked to count the five fingers of the hand, to name four colors and identify symbolic artwork (triangle, rectangle, heart and star). Besides these tasks, it was observed the ability they had in dressing themselves, buttoning their shirt, drawing themselves and a house.

The acquisition of hearing and spoken language, it was observed that the children could answer their full name, age and their address. Another observation made in the evaluation of this domain referred to the use of the pronoun “I” in sentences and the use of different expressions in fluent vocabulary and the correct articulation of the sounds.

It was performed a descriptive analysis of the data about the motor skills, social-emotional maturity, visual motor skills, hearing and spoken language, with measures of central tendency, through the Statistical Package software for the Social Sciences (SPSS) version 16.0 for Windows.

The study was approved by the Research Ethics Committee/HULW/UFPB, under the Protocol N°. 452/11, according to the Resolution 466/12 of the National Health Council. Parents and/or guardians of the participating children were informed about the spontaneous character of the participation and the confidentiality of the information, signing the Term of Free and Informed Consent. It was also obtained the permission to start the research by signing the Letter of Authorization by the director of CREI enabling the accomplishment of the evaluations.

## RESULTS

It was evaluated 30 children (100%), 17 (56.7%) were female and 13 (43.3%) were males, all of them with 5 years old.

It was noticed in the areas of acquisition that the children reached 21 (89.4%) of the 24 points of the motor skills, 10 (84.7%) of the 12 points of the social-emotional maturity, 16 (75.3%) of the 21 points of the visual motor skills and 11 (71.3%) of the 15 points of the hearing and

spoken language, featuring the most affected area of the psychomotor skills.

Regarding the motor skills, 9 children (30.0%) had greater difficulty in running the defined lateralization exercises, failing in distinguishing the left side from the right side in alternate commands. In this aspect, the playful activities that needed to manipulate, receive and throw objects intentionally were held with greater performance for 19 children (63.3%).

In the social-emotional maturity, it was verified that 7 children (23.3%) have shown difficulty in choosing friends as a result of poor social interaction and of the restricted adult stimulus in the environment where they live. Activities involving global and fine praxis such as washing hands and face and clean up by themselves were easily performed with skill and agility expected by 18 children (60.0%).

About the visual motor skills, it was observed motor and cognitive deficits in 13 children (43.3%) regarding the drawing of the body and the house, due to the difficulty of motor coordination and the association between symbol and meaning. The body notion of counting five fingers of each hand was satisfactory in 20 children (66.7%).

Regarding the hearing and the spoken language 16 children (53.3%) were not able to externalize differentiated expressions in dialogues with a language compatible to the studied age, in other words, phrases with complete sense with grammatical correctness. In this regard, it was noticed that 15 children (50.0%) had easy communication with fluent vocabulary and generally correct articulations, there may be confusion in some sounds.

## DISCUSSION

The evaluation of psychomotor aspects of this study manifested itself in a playful way through objects and tasks easily understood so that children do not feel analyzed and they could naturally express the physical and emotional reality. Thus, the children were analyzed and stimulated through games and everyday activities as facilitators of motor and social functions.

This study have shown that children had a greater difficulty in defined lateralization exercises, failing in distinguishing the right side from the left side in alternate commands, this way, hindering motor development and school learning. The laterality is the preference of using one of the symmetrical parts of the body: hand, eye, ear, leg. It can be classified into: full right-handed, when the use of the hand, eye, ear and leg takes place with the right hemisphere of the body; cross, when there is no such harmony and may be right-handed in the hand and left-handed in the leg, for example. There is also undefined laterality that occurs when using both sides of the body without any

prevalent dominance. Children with cross laterality have lower performance in reading and writing when compared to children with complete lateral dominance, justifying the relevance of psychomotor development during the childhood as an essential factor in the school learning process<sup>(12)</sup> because the laterality is involved in all levels of the school learning process<sup>(13)</sup>.

This study found that children showed difficulties in conducting socialization activities indicating coexistence restrictions in the environment where they live. In this perspective, the family works as the first and the most important socializing agent, being the first context in which they develop socialization patterns where the children build their learning model and has a relationship to all acquired knowledge during their primary life experience and will be reflected in their school life. Therefore, the family reveals not only as an indispensable factor in the emotional stability of the child as well as in their education, thus, the success of the school's task depends on the active family collaboration<sup>(14)</sup>.

The results of this study detected deficits in psychomotor development and can be justified by a lower yield in the classroom and by the reduction or absence of monitoring of the family members. Children with learning disabilities have motor impairment in the development of the motor components, particularly those related to the body, spatial and temporal notions. Considering the longest delay in the body scheme, it is suggested the inclusion of tasks that assist in the development of motor components, besides the homework<sup>(15)</sup>.

It is not just about to present and expose an object or an instrument to the child, it is much more about how the child can turn it, handle it and try it, as a result of a mediated interaction with adults who involve them<sup>(1)</sup>. This involvement and this interaction were seen in this study as restricted, since the evaluated children had no familiarity with the colors nor the geometrical figures and, when requested to draw themselves, they refused without any justification or said that they did not know how to do it.

In fact, it is noticed in the children evaluated in the present study that the lack of domestic stimulus is a constant among them, they did not know how to tell their own age or how to name the people with whom they live. Therefore, it is relevant to note that children with learning disabilities also exhibit one or more disorders in basic psychological processes and that they are involved in understanding and in the use of written and spoken language<sup>(16)</sup>. The verbal expression of the lived experience of the body is the natural prolongation of psychomotor work. The 5 years old child likes to verbalize and has quite wide vocabulary<sup>(17)</sup>.

The children of this research have failed to externalize different expressions in dialogues with language compatible



to the studied age, in other words, sentences with complete meanings and grammar correction, indicating an unsatisfactory psychomotor development with chronological age. It is understood that communication has an essential role in the psychomotor rehabilitation<sup>(18)</sup>. Once the psychomotor skills take into account the communicative aspect of the human being, the body and the gestures, it resists in being a mechanical education of the body<sup>(18)</sup>.

It is important to note that the integration between health and education contribute for planning child care actions, in other words, to reflect such actions in a connected way make them more appropriate. Thus, since the CREI has a social and political role aiming to modify the school society through citizenship, the access to learning opportunities and actions aiming to promote health, it is observed the importance of the participation of the health professional in this operation model by having the knowledge about the growth and development of children, being able to understand their peculiarities. This way, education and health practices opportunities are expanded<sup>(19)</sup>.

The care is linked to a range of processes involving education, care, protection, food, hygiene, interaction between child and adult and meeting the basic needs of children, in other words, an integration of all the factors involving health and education. The relevance of this integration is the need to improve the look for the child care, understanding it as a basis for the promotion of health and child development, everywhere where it is received<sup>(20)</sup>. Therefore, the psychomotor development is achieved from the interrelation between intrinsic factors (biological) and extrinsic factors (proprioceptive stimuli), resulting from the learning originated in the historical and cultural aspects and in the educational environments.

From this perspective, the Physiotherapy at UFPB is expanding its work in Primary Care through the Centers of Support for Family Health (NASFs) and services provided to communities from the inclusion of graduate students in the Family Health Units and social facilities in order to provide rehabilitation, promotional and preventive actions based upon the health education paradigms and expanded clinic.

The limits of this study consisted in the sample field, since the mentioned CREI supports only two groups of children under 5 years old, making it difficult a reliably percentage analysis regarding the reality of the psychomotor development of the population of children enrolled in these public institutions in the city of João Pessoa - PB.

## CONCLUSION

The findings of this study showed deficits in all evaluated psychomotor perspectives, indicating an unsatisfactory

psychomotor performance regarding the chronological age, emphasizing the difficulties of acquisition of the hearing and spoken language in the defined lateralization exercises and in conducting socialization activities.

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**Mailing address:**

Arleciane Emilia de Azevêdo Borges  
Departamento de Fisioterapia da Universidade Federal da Paraíba  
Rua Campus Universitário I, s/n  
Bairro: Cidade Universitária  
CEP: 58.059-900 - João Pessoa - PB - Brasil  
E-mail: arleciane.emilia@hotmail.com