

**PSYCHOMOTOR PROFILE AND LEARNING DIFFICULTIES IN PRIMARY SCHOOL
STUDENTS OF LABREA/AM, BRAZIL**

**PERFIL PSICOMOTOR E DIFICULDADES DE APRENDIZAGEM EM ESCOLARES DE
SÉRIES INICIAIS DO ENSINO FUNDAMENTAL DE LÁBREA/AM, BRASIL**

José Fernandes Filho^{1*}, Alex Barreto De Lima², Silas Andrade Da Fonseca³, Fábio André Castilha⁴

1. PhD in Physical Education, Associate Professor at the School of Physical Education and Sport (EEFD-UFRJ) and Leader of the LABIMH-UFRJ-RJ
2. PhD Student in Physical Education at Porto University/PORTUGAL and Researcher of LABIMH-UFRJ-RJ/BRAZIL
3. Professor Manaus Military School, Manaus, AM, Brazil
4. PhD in Physical Education, Professor Manaus Military School, Manaus, AM, Brazil

* Autor correspondente: e-mail: jffbepe@gmail.com

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ABSTRACT

Introduction: The aim of this study was to verify the psychomotor performance of primary students with low school performance in the city of Labrea, state of Amazonas, Brazil. **Methodology:** Descriptive and transversal study. The sample consisted of 30 students - 17 boys and 13 girls (6 to 8 y/o), enrolled in the 1st (first) primary school year of Santo Agostinho State school. The students were selected intentionally: students with a low school performance among all the students of the 1st primary school year. For tracing the psychomotor profile, the Psychomotor Test Battery (BPM) proposed by Fonseca was used. A simple descriptive statistical analysis was used, with means and standard deviations. All analyzes observed the significance level of 5% ($p \leq 0.05$). **Results:** The results showed that all the 7 variables the protocol analyzes presented averages below 3 in a scale from 1 to 4, which suggests slight learning difficulties, with emphasis on the variables lateralization, body notion and fine coordination, which showed the highest deficiencies. With respect to the psychomotor profile of the sample, it was observed that 14 children (46.66%) presented Slight Psychomotor Difficulties profile, which also denotes difficulties in the learning process. **Final Considerations:** The psychomotor difficulties presented in this study suggest that they may interfere in the intellectual learning process of the sample as a whole. Therefore, it's recommended that such diagnoses be carried out as early as possible, so that adequate professional interventions are proposed in order to lower the onset of more difficulties in the future.

Key-words: Primary School, Motor Development, Psychomotor Performance, Learning Difficulties.

RESUMO

Introdução: O objetivo deste estudo foi verificar o desempenho psicomotor de alunos do ensino fundamental com baixo desempenho escolar da cidade de Lábrea/AM, Brasil. **Metodologia:** Estudo descritivo e transversal. A amostra consistiu-se de 30 alunos - 17 meninos e 13 meninas (6 a 8 anos), devidamente matriculados no 1º ano do ensino fundamental da escola estadual Santo Agostinho. Os estudantes foram selecionados intencionalmente: estudantes com desempenho escolar baixo dentre todos os alunos do 1º ano da referida instituição. Para o delineamento do perfil psicomotor, foi utilizada a Bateria de Teste Psicomotor (BPM) proposta por Fonseca. Foi utilizada uma análise estatística descritiva simples, com médias e desvios padrão. Todas as análises observaram o nível de significância de 5% ($p \leq 0.05$). **Resultados:** Os resultados apontaram que todas as 7 variáveis analisadas pelo protocolo apresentaram médias inferiores a 3 em uma escala de 1 a 4, o que sugere ligeiras dificuldades de aprendizagem (DAs), com ênfase nas variáveis lateralidade, noção espaço-corporal e coordenação motora fina, nas quais a amostra apresentou as maiores deficiências. Com relação ao perfil psicomotor da amostra, observou-se que 14 alunos (46,66%) apresentaram dificuldades psicomotoras leves, o que também sugere dificuldades no processo de aprendizagem. **Considerações finais:** Os resultados do perfil psicomotor apresentados pela amostra podem sugerir dificuldades no processo de aprendizagem intelectual. Desta forma, recomenda-se que tais diagnósticos sejam realizados o mais cedo possível, de modo que sejam propostas intervenções profissionais adequadas a fim de minimizar tais dificuldades no futuro.

Palavras-chave: Ensino Fundamental, Desenvolvimento Motor, Desempenho Psicomotor, Dificuldades de Aprendizagem.

1. INTRODUCTION

The concern with the students' learning process in formal education is constant and, in this spectrum, variables that may influence or hinder this process have increasingly become focus of scientific research lately [1;2]. Recognized as Learning Difficulties (LD), this heterogeneous group of disorders manifested by difficulties in the acquisition and use of speech, hearing, reading, writing, reasoning or mathematical skills, intrinsic to the individual and that may occur throughout life, occur presumably due to central nervous system dysfunction [3], and are a constant in the school environment.

Enormous are the difficulties for diagnosing and characterizing the LD, which often ends up happening empirically, through the teacher's observation and monitoring, along with the low performance of the students in the evaluation processes [1]. According to Teixeira [4], they unconsciously evaluate the learning difficulty as a disability and / or non-standard behavior, which could potentiate the difficulties in the learning process. Teixeira [4] also states that such labeling can lead to the exclusion of the child, an inverse process to what is advocated within contemporary formal education, thereby causing the child to suffer doubly.

Such difficulties can be attributed to several variables, which can be intrinsic (genotype) and extrinsic (phenotype) to an individual, for example: biofunctional development (integrity and maturation of the nervous system, physical constitution, intellectual capacity, etc.), psychomotor, intellectual, affective and social, and the experiences transmitted by the social agents [5]. Correia [6] emphasizes that there are innumerable factors, such as emotional, social, pedagogical, among others, which can lead a child to present some discrepancy between their intellectual potential and their academic achievement.

In an attempt to minimize this scenario, different intervention actions may be proposed, especially in the first development stages of the individual. For example, recent studies have pointed towards the correlation between learning difficulties and the delay in neuromotor development [5;7;8;9]. Therefore, these same researchers point out the need to optimize the psychomotor stimulation work from the very first stages of life (elementary education and primary school education), so that cognitive gains in these individuals also occur, thus minimizing the LD.

Castilha [10] states that it is in early childhood, stage that covers the age range between 0 and 6 years, is when considerable changes occur regarding the physical, cognitive and emotional development of the child. This author also points out that

psychomotor stimulation is essential at this stage, as it is considered one of the most important development stages of all structures of the child.

Psychomotricity is defined by Le Bouch [11] as the science that studies motor behavior as an expression of the maturation and development of the psychophysical totality of man. One of its main objectives is making the individuals discover their own body in relation to the internal and external world and their capacity for movement-action. Thus, it can be classified as a very important tool in acquiring and improving skills that will contribute to the children's learning, as well as being the neuro-psycho-motor structure for life.

Rezende et al. [12] defends the use of psychomotricity in early school years and that psychomotor tests should be applied to students with LD in order to identify the extent to which neuromotor delays can influence cognitive performance, thus also providing parameters for planning professional intervention actions in order to minimize possible delays. Therefore, the aim of this study was to verify the psychomotor performance of primary school 1st year students with low school performance in the city of Labrea, state of Amazonas, Brazil.

Through the students' psychomotor profile identification, along with the need of getting to know them before any pedagogical

intervention is applied (diagnostic evaluation), it is believed that it may be possible to establish a relationship between psychomotor performance and the teaching and learning process [2]. Several authors

2. METHODOLOGY

This is a descriptive and transversal study. Thomas and Nelson [17] state that a descriptive research is defined on the premise that problems tend to be solved and that educational practices can be improved by observing, analyzing and describing facts, which must always be developed objectively and completely.

The sample consisted of 30 (thirty) students (17 boys and 13 girls), aged between 6 and 8 years, enrolled in the 1st (first) year of primary school at Santo Agostinho State school, city of Labrea, state of Amazonas, Brazil. This institution is the only one which attends the age group involved in the research in this city. The students were selected intentionally: the students who had a low school performance among all the students of the 1st year of primary school took part in the sample. This selection was based on their 1st term grades verification, and students who had most of their grades below 5,0 (five) in a scale from 1 to 10, were included in the sample.

point out the possibility of relating low school performance with LD manifestations, mainly in terms of reading and writing [13;14;15;16], which justifies the development of this study.

After the sample selection, a meeting was organized with their parents in order to explain the objectives and research, as well as clearing any doubts that might have aroused. A Free and Informed Consent Term was also presented to the parents, which was signed by all of them. The participation in the research was voluntary and there was no fee or financial benefit to the participants, in accordance with the procedures and conditions set forth in resolution 466/2012. This study was submitted to analysis by the Ethics Committee of the State University of Feira de Santana, State of Bahia, Brazil, which approved the accomplishment of the same, through the protocol CAAE 34173314.2.0000.0053. The data collection and research were carried out in the first term of 2017, and the anonymity and privacy of participants' data were fully protected.

In order to trace the psychomotor profile of the sample within the experimental process, the Psychomotor Test Battery (BPM) proposed by Fonseca [18] was used. This protocol consists on evaluating 7 (seven) psychomotor factors: muscle tone, balance, lateralization, body notion, space-time structuring, global coordination and fine coordination, all subdivided into 26

subfactors. The total BPM result is obtained by adding the results of all the subfactors, when then the mean is calculated, which results in the factor studied. The maximum an individual can gather is 28 points (4 x 7 factors); the minimum is 7 points (1 x 7) and the average (50%) is 14 points.

After the sum of the points gathered in each psychomotor factor, the individual is classified according to the following scale, with regards to his/her psychomotor level: 27-28: Excellent; 22-26: Good; 14-21: Normal; 09-13: Slight Psychomotor Difficulties; and 07-08: Severe Psychomotor Difficulties. Once the psychomotor profile of the evaluated has been identified, the child can be classified as to having possible learning difficulties or not.

The administration of this BPM is relatively simple and the materials required are cheap and devoid of any sophistication (a large room, balls, tires, benches, bows, ropes, etc.). The tests were applied individually and uninterrupted to each child evaluated, and lasted approximately 30 - 40 minutes. All data

collection took place during the Physical Education classes, always followed by the Physical Education teacher of the institution. For data tabulation, a simple descriptive statistical analysis was used, with means and standard deviations. In all analyzes, the significance level of 5% ($p \leq 0.05$) was observed. The software Microsoft Excel, from the Microsoft Office 2007™ package was used in order to present absolute mean values for each of the evaluated variables.

3. RESULTS AND DISCUSSION

At this moment, the results found for each psychomotor factor evaluated are presented in tables, as well as the classification proposed by Fonseca [18] for performing the tests in each sub-factor. Such classification was obtained from the mean values of each of the subfactors present in each psychomotor factor individually, and subsequently, the sum of the score in all factors.

Table 01: Psychomotor profiles for each psychomotor factor and related learning difficulties (n=30)

Psychomotor Factor	Number of Subfactors Evaluated	Average of All Evaluated Individuals in the Factor	Rating	Learning Difficulties
Muscle Tone	4	2.54	Normal to Slight Psychomotor Difficulties	Slight
Balance	3	2.66	Normal to Slight Psychomotor Difficulties	Slight
Lateralization	1	2.7	Normal to Slight Psychomotor Difficulties	Slight
Body Notion	5	2.53	Normal to Slight Psychomotor Difficulties	Slight
Space-Time Structuring	4	2.73	Normal to Slight Psychomotor Difficulties	Slight
Global Coordination	6	2.73	Normal to Slight Psychomotor Difficulties	Slight
Fine Coordination	3	2.4	Normal to Slight Psychomotor Difficulties	Slight

* $p \leq 0.05$

The mean values reached and presented in Table 01 classify by the sample as Normal to Slight Psychomotor Difficulties, once they've reached the scores between 2 (two) and 3 (three) in all the verified variables. Despite these findings, Favero and Calsa [1] affirm that not every child with learning difficulties presents psychomotor difficulties and they may even present a

considerable and elevated psychomotor level. Fonseca [18], however, states that in a regular public school environment, children with learning difficulties with psychomotor difficulties are more common.

At this moment, Table 02 is presented showing the number of children classified in each of the psychomotor factors, in a classification scale.

Table 02: Students' classification in a scale of psychomotor profile score for each psychomotor factor (n=30)

Psychomotor Factor	Scale 1	Scale 2	Scale 3	Scale 4	Total n
Muscle Tone	-	7	19	4	30
Balance	1	10	16	3	30
Lateralization	4	11	15	-	30
Body Notion	7	16	6	1	30
Space-Time Structuring	2	11	17	-	30
Global Coordination	2	10	16	2	30
Fine Coordination	6	15	9	-	30

These results demonstrate that the variables lateralization, body notion and fine coordination were the ones with the highest deficiencies in the sample studied. The table has a score (scale) that ranges from 1 to 4 points, where 1 (one) is attributed to the individual who performed the activity in an imperfect, incomplete and / or disordered way, and 4 (four) to the individual who

performed the activity proposed with perfection of movement.

In Table 03 a classification with regards to the psychomotor profile and in relation to possible learning difficulties of the sample group is presented. This classification was based on the scores obtained by the sum of the scales of each psychomotor factor presented in Tables 01 and 02 of the Psychomotor Battery (BPM).

Table 03: Psychomotor Profile of the Sample according to the BPM score (n=30)

Psychomotor Profile	Number of Individuals Classified in the Profile	Points in the BPM	LD
Excellent	---	---	---
Good	4	22 - 24	---
Normal	12	14 - 18	---
Slight Psychomotor Difficulties	14	9 - 13	Slight

These classifications are related to the ability of the student to perform the proposed activity and may suggest a correlation with learning difficulties. Medina, Rosa and Marques [13], when analyzing the motor development of children with learning difficulties, found greater motor retardation mainly in the body scheme and space-time structuring tests. They suggest intervention practices emphasizing these aspects in order to improve children's school performance.

Cunha [19], in the other hand, state that children with higher psychomotor development levels usually present better results in reading and writing skills, which are essential for the child in early school years. Oliveira [14] states that among the learning difficulties, there are some specifically related to psychomotor development and that subjecting these children to intervention programs with emphasis on psychomotor activities may allow the improvement of their school performance.

In a study conducted by Fávero and Calsa [20], it was found that children with psychomotor deficit, especially in the space-time structuring factors, were the same ones who presented difficulties in writing (dysgraphia). Another study, conducted by Moreira, Fonseca and Diniz [21], sought to relate the motor skills of children and learning difficulties, and pointed out that children with

greater learning difficulties also showed a poorer psychomotor profile.

Other studies developed throughout the last years [22;23] also demonstrate that a higher mental process is built up from the appropriate development of the motor and perceptive systems.

Similarly, Sanches et al. [24], in their study developed with children between 6 and 8 years-old, point out that students with motor difficulties also present certain difficulty degrees in school learning, also evidencing a possible association between the psychomotor profile and the learning performance.

In this study, it was found that the sample presented a Normal to Slight Psychomotor Difficulties profile (below 3) for each psychomotor factor individually, as seen in Table 01, which suggests slight learning difficulties according to the proposed protocol. With regards to the psychomotor profile of the sample, which is translated from the score obtained by the sum of the scales of each psychomotor factor (Table 03), it was observed that 14 children (46.66% of the sample) presented a Slight Psychomotor Difficulties profile, which also may suggest difficulties in the learning process.

Sanches et al. [24] also demonstrated the association between the psychomotor profile and the learning process. They evaluated children from the same age group of this study (between 6 and 8 years-old), and

found that students who showed motor difficulties in performing space-time structuring and fine coordination tasks also presented certain difficulties degrees in school performance.

Furtado [2] has established relationships between psychomotor performance and reading and writing learning skills. His findings have pointed out that by enhancing the child's psychomotor potential, the basic conditions for learning are also broadened.

Favero and Calsa [1] point out that the applied psychomotor intervention in the school can influence the cognitive performance, being able to enrich or modify the perceptive, integrative and elaborative learning processes.

4. FINAL CONSIDERATIONS

Recognizing the psychomotor profile of children, especially in the first school years, is crucial so that activities can be planned aiming to supply possible deficiencies or vacuities in the psychomotor development process. In this spectrum, studies have also evidenced a positive relationship between psychomotor retardation and learning difficulties.

Thus, the administering of psychomotor tests in school physical

education classes prior to the beginning of the school year, especially in the first school years, as a diagnosis of possible developmental disorders, is of relevant importance for the planning and execution of any intervention in this area of knowledge. But that may also help in the process of early diagnosing possible learning difficulties, which involve reading, writing, mathematics, are areas of intellectual priority, also a priority in the educational process of the children.

In this study, each of the psychomotor factor was individually identified along with their subfactors, thereby identifying lateralization, body notions, and fine coordination deficits in part of the sample. Such psychomotor difficulties may interfere in the intellectual learning process as a whole, making it necessary that such diagnoses be carried out as far in advance as possible, so that adequate professional interventions are promoted aiming the lowering the onset of more severe difficulties in the future.

It is recommended that professionals who work with school physical education in the early years recognize the BPM application procedures so that they can evaluate their students, identify possible psychomotor difficulties, thereby making the pedagogical intervention relevant in a multi and interdisciplinary way.

5. REFERENCES

- [1] FAVERO, M.T.M; CALSA, G.C. **Intervenção psicomotora em crianças com dificuldades de aprendizagem.** Universidade Estadual de Maringá, 2012. Disponível em <http://www.ppe.uem.br/publicacoes/seminario_ppe_2012/trabalhos/co_02/027.pdf>, [acesso 6 de fev 2018].
- [2] FURTADO, V.Q. **Relação entre Desempenho Psicomotor e aprendizagem da Leitura e Escrita.** (Dissertação) Mestrado em Educação, Faculdade de Educação, Universidade Estadual de Campinas (Campinas), 1998.
- [3] CRUZ, V. **Dificuldades de aprendizagem: Fundamentos.** Porto: Porto Editora, 1999.
- [4] TEIXEIRA, Y.S.A. **O enfrentamento da medicalização pelo trabalho pedagógico.** (Dissertação) Mestrado em Ciências Médicas – Faculdade de Ciências Médicas, Universidade Estadual de Campinas (Campinas), 2008.
- [5] CARVALHO, M.C; CIASCA, S.M; RODRIGUES, S.D. Há relação entre desenvolvimento psicomotor e dificuldade de aprendizagem? Estudo comparativo de crianças com transtorno de déficit de atenção e hiperatividade, dificuldade escolar e transtorno de aprendizagem. **Rev Psicopedagogia**, v. 32(99), p. 293-301, 2015.
- [6] CORREIA, L.M. **Dificuldades de Aprendizagem: Contributos para a Clarificação e Unificação de Conceitos.** Braga: Associação dos Psicólogos Portugueses, 1991.
- [7] FAVERO, M.T.M. **Desenvolvimento psicomotor e aprendizagem da escrita.** (Dissertação) Mestrado em Educação, Faculdade de Educação, Universidade Estadual de Maringá (Maringá), 2004.
- [8] SILVA, T.N.; NAVARRO, E.C. Problemas de Aprendizagens Psicomotoras. **Rev. Eletrônica UNIVAR**, n. 7, p. 49-52, 2012.
- [9] AMARO, K.N.; JATOBÁ, L; MAURILIA, A.P; ROSA NETO, F. Desenvolvimento motor em escolares com dificuldades na aprendizagem. **Mov. Percepção**, v. 11(16), p. 39-47, 2010.
- [10] CASTILHA, F.A. **Aspectos Pedagógicos da Capoeira.** Passo Fundo: Méritos, 2012.
- [11] LE BOULCH, J. **Desenvolvimento Psicomotor: do Nascimento até os Seis Anos.** Porto Alegre: Artes Médicas, 1982.
- [12] REZENDE, J.C.G.; GORLA, J.I; ARAÚJO, P.F.; CARMINATO, R.A. Bateria psicomotora de Fonseca: uma análise com o portador de deficiência mental. **EF Deportes**, n.62, 2003. Disponível em <<http://www.efdeportes.com/efd62/fonseca.htm>>, [acesso 6 de fev 2018].
- [13] MEDINA, J., ROSA, G.K.B., MARQUES, I. Desenvolvimento da organização temporal de crianças com dificuldades de aprendizagem. **Revista da Educação Física/ UEM**, 17(1), p. 107- 116, 2006.
- [14] OLIVEIRA, G.C. **Psicomotricidade: Um Estudo em Escolares com Dificuldades em Leitura e Escrita.** (Tese), Doutorado em Educação – Faculdade de Educação, Universidade Estadual de Campinas (Campinas), 1992.
- [15] SISTO, F.; FINI, L.; OLIVEIRA, G.; SOUZA, M.; BRENELLI, R. Matemática e alfabetização: mecanismos psicológicos subjacentes. **Pró-posições**, v.2 (14), p. 49-59, 1994.
- [16] CRUZ, V. **Dificuldades de aprendizagem. Fundamentos.** Porto: Porto Editora, 1999.

[17] THOMAS, J.R.; NELSON, J.K. **Métodos de Pesquisa em Atividade Física**. Tradução: Ricardo Petersen et al. 3º ed. Porto Alegre: Artmed, 2002.

[18] FONSECA, V. **Manual de Observação Psicomotora, Significação Psiconeurológica dos Fatores Psicomotores**. Porto Alegre: Artes Médicas, 1995.

[19] CUNHA, M.F.C. Desenvolvimento psicomotor e cognitivo: influência na alfabetização de criança de baixa renda. (Tese), Doutorado em Psicologia - Instituto de Psicologia da USP (São Paulo), 1990.

[20] FAVERO, M.T.M, CALSA, G.C. As razões do corpo: psicomotricidade e disgrafia. **I Encontro Paranaense de Psicopedagogia – ABPppr**, 2003. Disponível em <https://www.unitins.br/bibliotecamidia/files/documento/bm_634045385567921250a13favo03.pdf>, [acesso 6 de fev 2018].

[21] MOREIRA, R.; FONSECA, V.; DINIZ, A. Proficiência motora em crianças normais e com dificuldade de Aprendizagem: estudo comparativo e correlacional com base no teste de proficiência motora de Bruininks-Oseretsky. **Revista da Educação Física/UEM**, v. 11(1), p. 11-26, 2000.

[22] KEPHART, N.C. **El alumno retrasado**. Barcelona: Editorial Luis Miracle, 1960.

[23] MENDES, N.; FONSECA, V. **Escola, Escola, Quem és tu?** Porto Alegre: Artes Médicas, 1987.

[24] SANCHES, S.O., GUERRA, L.A., LUFT, C.B.; ANDRADE, A. Perfil Psicomotor associado à aprendizagem escolar. **EF Deportes**, 2004. Disponível em <<http://www.efdeportes.com/efd79/psicom.htm>>, [acesso 6 de fev 2018].