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The Prevalence of Developmental Coordination Disorder (DCD) in Adolescents: Preliminary Data in Amazonas

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Abstract

The DCD is characterized by a delay in the development of motor coordination that significantly interferes with activities of daily living and activities of school life, being considered one of the most frequent developmental disorders in children. The high prevalence of pDCD in children from Manaus-Am, pointed out by research in recent years, has led us to investigate preliminary data on the permanence of this disorder during the adolescence phase. Forty adolescents aged 11 to 14 years and 11 months from a state school in Manaus-AM participated in this study. This study has a descriptive and qualitative character. The instrument used was the Battery for the Assessment of Movement for Children - MABC2. Although the sample was small, our results showed an alarming prevalence of 45% of adolescents with indicative pDCD. Thus, this preliminary study draws attention to the high results found for adolescents with pDCD taking into account the negative consequences caused by the phenomenon that, generally, negatively impacts the lives of students. We also call attention to the lack of research that addresses DCD in the adolescent public, which justifies the investment of more studies on this theme.

Keywords: motor development, dcd, adolescents, inclusion, Amazonian context.

INTRODUCTION

Developmental Coordination Disorder (DCD) refers to the impairment accentuated in the development of the child's motor coordination, a difficulty that can imply in the performance of daily activities, school and social life activity not attributable and explainable by neurological and/or physical causes. (APA 2013; FERREIRA et al., 2015; SANTOS et al., 2015). This disorder deserves special attention due to the negative impact it has on activities of daily living (DL) and school activities (SA) (MAGALHÃES; CARDOSO, MISSIÚNA, 2011).

Studies on motor disorder began in 1962, the term Developmental Coordination Disorder(DCD) was introduced in the American Psychiatry Association(APA; DSM-III-R) in 1987, in Brazil the term Developmental Coordination Disorderwas translated to Developmental Coordination Disorder (DCD) (DSM-V, 2013) which is why the term is adopted in this work. (FERREIRA; FREUDENHEIN, 2017). Initially, DCD was considered as a motor delay that would soon be overcome by the maturation process. However, later studies stated that it was a chronic and persistent "disability" throughout the life course, and thus, the expectation that the disorder would disappear was discarded (LOSSE et al., 1991; GEUZE; BORGER, 1993; DAVENPORT, 1993; DAVENPORT). et al., 2003).

A factor in the etiology of DCD, also taken into account, is the impact of perinatal problems (PEARSALL-JONES et al., 2009). Many studies have investigated the relationship between children born prematurely or with signs of malnutrition associated with DCD (GOYEN; LUI, 2009; ROBERTS et al., 2011).

According to the studies cited, we understand that there is still no consensus on the etiology of DCD, so that heterogeneous characteristics, which confirm the complexity of this phenomenon, indicate that the cause may be multifactorial (HENDERSON; HALL, 1982; MIYAHARA; MÖBS, 1995; SMITS-ENGELSMAN et al., 2011). Thus, we assume that DCD arises from the combination of several symptoms. Therefore, the American Psychiatric Association (APA) established criteria that help in the identification and diagnosis of the phenomenon in question.

The consequences of developmental coordination disorder include selfexclusion and isolation; low self-esteem, both emotional and behavioral problems, as well as impaired academic performance; finally, low physical fitness, limited physical activity and obesity (MISSIUNA et al., 2006;

BEJEROT et al., 2011; PRATT; HILL, 2011; CAIRNEY et al., 2005; ZWICKER et al. 2012).

Its diagnosis follows the criteria of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V, APA, 2013). The degree of severity of DCD, as a consequence of identification, ranges from 0% to 5% for adolescents with "severe" DCD and 16% to 25% for a class of risk, called "moderate" (HENDERSON; SUGDEN; BARNETT, 2007). Having the potential to appear early or only when starting their academic activities (SUGDEN; WRIGHT, 1998).

According to the Diagnostic and Statistical Manual of Mental Disorders V, identification and the diagnosis of DCD is made through a clinical synthesis of the history (developmental and medical), physical examination, school or professional reports, and individual assessment, using standardized, psychometric, appropriate, and culturally appropriate tests (DSM). -V- APA, 2013). The DSM-V (APA, 2013, p.74) states that to obtain the identification and diagnosis of DCD, four criteria must be followed:

a) Learning and performing coordinated motor skills is substantially underwhelming given the person's chronological age and opportunity for acquisition and use of motor skills. Difficulties are manifested by "clumsiness" (e.g. dropping or hitting objects) as well as slowness and inaccuracy of performance of motor skills, e.g. picking up an object, using scissors or cutlery, handwriting, riding a bicycle one participate in sport.
b) Deficits in motor skills mentioned in criterion A significantly and perceptually interfere in age-appropriate daily life activities (for example, self-care and self-maintenance) in academic/ school productivity, pre-professional and professional activities, leisure and games.
c) The first symptoms occur in the initial period of development.
d) Deficits in motor skills are not explained by intellectual disability (intellectual developmental disorder) or visual impairment and are not attributable to a neurological condition that affects movement (eg, muscular dystrophy, cerebral palsy, or degenerative disease).

To meet DSM-V criterion A, there is no requirement for a specific instrument for motor assessment, however the most used has been the Assessment Battery. Assessment Battery for Children 2nd Edition – MABC2 (HENDERSON, SUGDEN; 2007), was proposed to identify children with delays in motor development from 3 to 16 years of age. It is a standardized, capability-oriented, and norm-referenced instrument. It consists of a motor battery, a checklist and an orientation manual. An individual score is assigned to each task and, consequently, a total score is performed for each

component. The standardized score ranges from 1 to 19, and for each value there is a corresponding percentile ranging from 0.1% to 99.9%. The partial (subtests) and global scores are converted into percentiles (HENDERSON; SUDGEN; BARNETT, 2007) (table 01).

Table 01 -Classification of motor impairment in terms of percentile.

≤ 5th percentile	Percentiles between 6th and 16th	Percentile >16th
high probability of have disorder severe engine	Moderate motor disorder risk	Free from this condition

Source: Own authorship, 2019.

Individuals who present DCD, not diagnosed early, go through experiences of failure and frustration in their daily and school life since childhood. At adolescence, secondary complications may arise, such as learning difficulties, social, emotional and behavioral problems. Lazy labels also appear, uncoordinated, unmotivated and/or clumsy (SCHOEMAKER; KALVERBOER, 1994; SKINNER; PIEK, 2001).

The experiences of frustration experienced by individuals with DCD during activities of daily and school life, from the early years of childhood and during adolescence, a period in which they become more evident, lead to social problems, generate labels such as lazy, uncoordinated, unmotivated and/or awkward. It may favor the development of secondary complications, such as learning difficulties, social interaction, behavioral and emotional problems. (MAGALHÃES; CARDOSO, MISSIÚNA, 2011).

The characteristics of DCD can be observed in the early school years, so that the student's motor domain is below expectations, as verified by maladjustments to deal with the demands of the environment, as well as in typical academic tasks such as writing, cutting, painting and in children's daily motor activities (FERREIRA et al., 2015). The participation of adolescents with DCD in school life activities is also evident in the ability to copy texts, use scissors, organize and complete tasks in the classroom in the required time (HUAU et al., 2015; ROSENBLUM et al., 2008).

Associated with this context, they show lower academic performance than their peers of the same chronological age (PETERS; HENDERSON, 2008; CANTELL; SMYTH; AHONEN, 1994; LOSSE et al., 1991). Then, possibilities for school dropout arise, as a consequence of exclusion in motor tasks, in games, as well as in social relationships, and also, by the practice of bullying (BEJEROT; EDGAR; HUMBLE, 2011). The prevalence of DCD at age 5 to 11 years is estimated at 6% (APA, 2000; 2013).

According to Wann (2007), this prevalence is enough to rank it among the most common developmental disorders in children. Internationally, a study conducted by Wright and Sugden (1996) evaluated

427 schoolchildren aged between 6 and 9 years in Singapore. The results revealed a prevalence of 1.4% for students with severe DCD and 4% for students with moderate DCD, totaling 5.4% of students with motor disorders. Kadesjö and Gillberg (1999) evaluated 409 7-year-old schoolchildren in Sweden. The results revealed a prevalence of 4.9% for individuals with severe BDD and 8.6% for students with moderate DCD, which totaled 13.5% of students with motor disorders. In the study by Cairney et al. (2005), carried out in Canada, 578 schoolchildren were evaluated and the results indicated rates of 5% and 9% of schoolchildren with severe and moderate DCD, respectively. The final prevalence was 14% of students with motor disorders. In Greece, Tsiotra et al. (2006) evaluated 329 schoolchildren with a mean age of 11 years. The results revealed a prevalence of 19% of schoolchildren with motor disorders, however, with no indication of the degree of severity. The study conducted by Ellinouds et al. (2009), in the same country, involving 330 schoolchildren also aged 11 years, indicated 6.9% of individuals with Severe DCD and 10.9% with moderate DCD, equivalent to the prevalence of 17.8% of schoolchildren with motor disorders. In the United Kingdom, a study carried out by Lingmam et al. (2009) involved 7,000 7- year-old schoolchildren. Estimates were 1.8% of students with severe DCD and 4.9% for students with moderate DCD, revealing a final prevalence of 6.7% of students with motor disorders. Milander et al. (2016), in a study conducted in South Africa, evaluated 347 schoolchildren and their results showed that 6% of students had severe DCD and 6% had moderate DCD. The total prevalence was 12% of students with motor disorders. Finally, a study carried out in India by Girisha, Rajab and Kamathc (2016) involving 2,282 students with a mean age of 11 years, indicated a prevalence of 0.8% of students with severe DCD. One of the lowest estimates found in studies of this nature. However, the percentage of students with moderate DCD was not presented.

At the national level, studies carried out in different regions of Brazil have also indicated high prevalence rates. França (2008), for example, found rates of 10.8% for individuals with severe DCD and 12% showed moderate DCD, reaching a total prevalence of 22.8%. Silva and Beltrame (2013), in a study carried out in the cities of Florianópolis and São José in the State of Santa Catarina, found prevalence rates of 11.1% for individuals with severe DCD and 16.7% had moderate DCD, equivalent to 27 .8% prevalence. A study carried out in the city of Porto Alegre-RS, conducted by Coutinho, Spessato and Valentini (2015) estimated a prevalence of 36% for individuals with severe DCD and 15% for individuals with moderate DCD, which together indicate a very high estimate of 51%. Santos and Vieira (2012) evaluated schoolchildren in the city of Maringá-PR and the estimated prevalence was 10.5% for individuals with severe DCD and 11.4% for moderate DCD, totaling 21.9%. Another study involving the southern region of Brazil was carried out

by Valentini, Clark and Whitall (2014) who identified values of 18% for individuals with severe BDD and 15% for moderate DCD, totaling a prevalence of 33%. It is important to remember that these studies were conducted in the southern region of Brazil and that the estimates found were much higher than what is recommended in the literature. This reveals an extremely worrying situation involving our children and adolescents, since the motor disorder, by itself, already causes devastating effects on their education and health.

At the regional level, the estimates are equally worrying, Souza et al. (2006) evaluated 240 schoolchildren aged 7 and 8 years and revealed that 11.8% for individuals with severe DCD and 10.3% for moderate DCD. The total prevalence was 22.1% of individuals with signs of DCD. Santos et al. (2015) evaluated 300 schoolchildren aged 8 and 10 years in the city of ManausAM. Their results revealed that 8% for individuals with severe DCD and 25% for moderate DCD, that is, 33% of individuals with indicative of DCD. In another study carried out in the same city, Cabral (2018) evaluated 200 schoolchildren aged 7 to 10 years and found that 15.5% for individuals with severe DCD, 15% for moderate DCD, that is, 30.5% of individuals with indicative of DCD. This shows us that, in addition to the importance of identifying this condition in our students, there is a need to develop and offer intervention programs that help in the development of students with signs of DCD.

The high prevalence of children with pDCD in the city of Manaus-AM until the year 2018 led us to reflect on how the adolescents would be, and if this motor impairment would disappear with advancing age or if it would remain. In light of school inclusion, with the possible invisibility of motor disorders and their negative consequences in the academic life of adolescents, we are faced with the lack of research on DCD in the adolescent age group, which justifies the importance and need to conduct a study on this topic. Methodology This study has a descriptive and qualitative character (VOLPATO, 2013).

It was submitted to the REC – Research Ethics Committee and registered on Plataforma Brasil, as provided for in Resolution CNS/MS No. 466/12. It is also possible to obtain information about this research at the Research Ethics Committee of UFAM – cep.ufam@gmail.com.br with the number CAAE – 23316919.1.0000.5020 To carry out the data collection, authorization was initially requested from the State Department of Education of Amazonas and after its approval, a letter was sent. to the Manager responsible for the school explaining the details of the study, the students participated voluntarily.

The assessment of the students was carried out individually in properly prepared rooms with adequate lighting, ventilation and furniture,

during class hours in the presence of an applicator, a note taker and a person responsible for filming. With an estimated average time of 40 minutes, the test application followed the criteria established in the protocol.

The tests started with one of the researchers going to the room, previously identified, to request the release of the teenager who was taken to the evaluation site. In this first contact with the adolescent, the researcher already informed that she would participate in a motor test, that the objective was to identify motor difficulties in adolescents and, if identified, to propose activities that would help to improve the students' school life activities, seeking to identify them. if not use the technical terms referring to the test protocol. Upon arriving at the room, the teenager was welcomed with informal greetings by the team members who helped with the collections, as it was a way to make her feel good and relaxed.

The research was carried out in a full-time state school located in the south of the city of Manaus-AM. Forty adolescents aged 11 to 14 years and 11 months (20 females and 20 males) participated in the MABC-2 test battery. As inclusion criteria we adopted: adolescents who were regularly enrolled; aged between 11 and 14 years and 11 months; and who had a signed consent form authorized by their respective guardians. We excluded from the sample: Adolescents with disabilities or under some medical treatment; adolescents with age/school year distortion (repeaters); and students during pregnancy. We adopted the MABC-2 (Movement Assessment Battery for Children) motor battery for the identification of adolescents with DCD as it meets the age of the adolescents who took part in the research. The MABC-2 (HENDERSON; SUDGEN; BARNETT, 2007) was proposed to identify children/adolescents with delays in motor development, covering the ages from 3 to 16 years. It is a standardized, capability-oriented, and norm-referenced instrument. It consists of a motor battery, a checklist and an orientation manual. For each task, an individual score is assigned and, consequently, the total score is performed for each component: Manual Dexterity (MD), Aim and Receive (AR) and Balance (B). When added together, the component scores form the total test score (HENDERSON; SUDGEN; BARNETT, 2007).

The standardized score ranges from 1 to 19, and for each value there is a corresponding percentile ranging from 0.1% to 99.9%. Partial (subtests) and global scores are converted into percentiles. The criteria adopted to identify children/adolescents with DCD are: (1) scores equal to or below the 5th percentile is the cut-off point for severe motor disorder; (2) scores between the 6th and 16th percentiles are considered to have moderate motor disorder (risk of DCD); (3) scores above the 16th percentile indicate that the child/adolescent is free from this condition (HENDERSON; SUDGEN; BARNETT, 2007).

In this study, we used track 3, which serves the ages of 11 to 16 years, consisting of the following tasks: tracing the bike trail, turning pegs, assembling a triangle with nuts and bolts (MD skills); receiving with both hands, throwing and receiving a ball on the wall, hitting a target with a ball (AR skills); plank balance, back toe/heel walk, zigzag jumps under mats (B skills). According to Ferreira and Freudenheim (2010), the test motor battery (MABC-2) has had great applicability and obtained reliable results in different contexts (HENDERSON; SUGDEN; BARNETT, 2007; SMITS-ENGELSMAN; NIEMEIJER; VAN WALVELDE, 2011), as well as in the national context (SILVA; BELTRAME; STAVISKI, 2007; FRANÇA, 2008) and, specifically, in the Manaus context (SOUZA et al., 2007).

In addition to the battery of motor tests, we used the following materials and equipment: Canon pshot sx540 digital 20.3 megapixel camcorder and Weifeng WT-3750 universal tripod, for filming the test applications and consulting the videos in case of doubts about the results; Digital scale with stadiometer model Sany BL201 PP, to check the weight and height of the participants and characterize them; and Support to regulate the stabilization of the feet of adolescents of short stature during the MD skills assessments.

The analysis of raw data into standardized data and percentiles followed the conversion tables in the MABC-Test manual. Data normality and the absence of extreme observations (outliers) were verified using the Kolmogorov-Smirnoff test and standard visual inspection. After standard inspection of the data, we verified that they did not seem to differ from a normal distribution ($p \geq 0.05$).

Descriptive analysis was performed based on the absolute and relative frequency of cases. For data that presented a normal distribution, we used the mean and standard deviation values as measures of central tendency. For those with non-normal distribution, we used the median and variance values as measures of central tendency.

RESULTS AND DISCUSSIONS

Estimating the prevalence of adolescents with probable Developmental Coordination Disorder (pDCD), mainly in the Amazonian context, is a fundamental step in identifying these adolescents, firstly, to provide information and make the condition known to teachers and parents, consequently, to promote reflections about taking attitudes that help and minimize negative interference in their developmental trajectory and, progressively, start a sequence of events that favor inclusion, participation and achievements, become frequent in the LA and SA of adolescents. We

present below the results obtained, interpreted according to the instructions manual of the MABC 2 test, first by task (tables, 02, 03 and 04).

Table 02- Manual Dexterity Test

pTDC callsign	Frequency	percentage
PTDCs	two	5%
PTDCm	6	15%
DT	32	80%
Total	40	100%

(Source: self-authored, 2019 – pTDC: probable Developmental Coordination Disorder; pTDCs: probable severe Developmental Coordination Disorder; pTDCm: probable moderate Developmental Coordination Disorder; TD: Typical Development).

Of the 40 adolescents participating in the manual dexterity test (Table 02), we have 2 (25%) with p DCD s, 6 (15%) demonstrated pTDCm and 32 (80%) did not present motor disorder. When we add the results between probable severe and moderate DCD children, we have 8 (20%) adolescents with indicative p DCD. According to Missiuna, Gaines and Sucie (2010), previous data indicate that, possibly, in the school environment, these 8 teenagers cannot handle the pencil properly, have difficulties in finishing written work, have frustration in writing and have a discrepancy between verbal ability and performance in tests and assessments, as all these characteristics of the DCD were evidenced during the application of the MD test.

Table 03- Aim and Receive Test

pTDC callsign	Frequency	percentage
PTDCs	3	7.5%
PTDCm	two	5%
DT	35	87.5%
Total	40	100%

(Source: self-authored, 2019 – pTDC: probable Developmental Coordination Disorder; pTDCs: probable severe Developmental Coordination Disorder; pTDCm: probable moderate Developmental Coordination Disorder; TD: Typical Development).

Of the 40 adolescents participating in the aim and receive test (Table 03), we have 3 (7.5%) with pDCDs, 2 (5%) demonstrated pDCDm and 35 (87.5%) did not present motor disorder. When we add the results between probable severe and moderate DCD children, we have 5 (12.5%) adolescents with indicative pDCD. MD activities are present in the teenager's daily life, both in games and activities typical of the age group as well as in dance or sports, performed in LA and AS in the discipline of physical education. To perform these simple tasks, adolescents with DCD face a great challenge, and end up having limited participation in sports and extracurricular activities, preferring to observe rather than participate, and consequently will experience situations of victimization, bullyingand social isolation (MISSIUNA; GAINES; SUCIE, 2010).

Individuals who have DCD, when undiagnosed, experience of failure and frustration in his daily and school life since childhood. In adolescence they can secondary complications arise, such as learning difficulties, social problems, emotional and behavioral. The labels of lazy, uncoordinated,

unmotivated and/or clumsy (SCHOEMAKER; KALVERBOER, 1994; SKINNER; PIEK, 2001).

Table 04- Balance Test

pTDC callsign	Frequency	percentage
pTDCs	13	32.5%
pTDCm	12	30%
DT	15	37.5%
Total	40	100%

(Source: self-authored, 2019 – pTDC: probable Developmental Coordination Disorder; pTDCs: probable severe Developmental Coordination Disorder; pTDCm: probable moderate Developmental Coordination Disorder; TD: Typical Development).

Of the 40 adolescents participating in the balance test (Table 04), we have 13 (32%) with pDCDs, 12 (30%) demonstrated pDCDm and 15 (38%) did not present motor disorder. When we add the results between probable severe and moderate DCD children, we have 25 (62.5%) adolescents with indicative pDCD. According to the terminology proposed by the International Classification of Functioning, Disability and Health – ICF of the World Health Organization (WHO, 2003) – , the individual with DCD may present, in the body structure and function component, motor planning problems and performance decline with repetition. In the activity component, there is a slowness in self-care and poor quality in skills such as writing. As for participation, we have an impact on school performance, with slowness and lack of interest both in school work and in involvement in typical age-appropriate games and games (MISSIUNA et al., 2006). By adding the frequencies found in each of the tests (MD, AC and B) we arrived at the raw scores in which we were able to obtain the results of the pDCD severity conditions (Table 05).

Table 05- Severity condition of pTDC

pTDC severity	Frequency	percentage
pTDCs	3	7.5%
pTDCm	15	37.5%
DT	22	55%
Total	40	100%

(Source: self-authored, 2019 – pTDC: probable Developmental Coordination Disorder; pTDCs: probable severe Developmental Coordination Disorder; pTDCm: probable moderate Developmental Coordination Disorder; TD: Typical Development).

According to the scores and percentiles indicated in the MABC 2 test manual, we arrived at the table with general data, which shows the performance of adolescents in the three stages of the test: manual dexterity, aiming and receiving and balance. Of the 40 adolescents, 3 (7.5%) had pDCDs, 15 (37.5%) had pDCDm and 22 (55%) had no motor disorder. When we add the results between probable severe and moderate DCD children, we have 18 (45%), that is, almost half of the evaluated adolescents showed indicative pDCD. In our study, we concluded that, from a sample of 40 adolescents, 18 (45%) were alert for probable developmental coordination disorder (pDCD), that is,

reveals a prevalence of 3% for probable severe developmental coordination disorder (pDCDs) while 15% for probable moderate developmental coordination disorder (mpDCD).

Although they are preliminary data, this estimate is very high and stands out when compared to data from research carried out with children, also in the Amazonian context. Souza et al. (2006) evaluated 240 schoolchildren aged 7 and 8 years. They found 11.8% of individuals with severe DCD and 10.3% with moderate DCD. The general estimate was 22.1% of individuals with signs of DCD. Santos et al. (2015) evaluated 300 schoolchildren aged 8 and 10 years in the city of ManausAM. Their results revealed 8% of individuals with severe DCD and 25% with moderate DCD, representing a total of 33% of individuals with an indication of DCD. In another study carried out in the same city, Cabral (2018) evaluated 200 schoolchildren aged 7 to 10 years and found that 15.5% for individuals with severe DCD, 15% for moderate BDD, that is, 30.5% of individuals with indicative of DCD. This estimate is much higher than those found in the international context.

Considering the studies carried out in the national context, we observe that, irrespective of the region, DCD prevalence rates tend to be high. This shows us that, in addition to the importance of identifying this condition in adolescents in the city of Manaus-AM, there is a need to develop and offer intervention programs that help in the development of schoolchildren with signs of DCD.

FINAL CONSIDERATIONS

During the development of this research, it was possible to identify an alarming indication of adolescents with a probable prevalence of Motor Coordination Disorder, an estimate that exceeds the specialized literature.
This study can assist in the implementation of actions that aim to contribute to the motor, affective and cognitive development of adolescents identified with pDCD, as well as the possibility of their educational inclusion.

Through these results presented, we seek to sensitize and make family members, teachers and schools aware of the existence of the DCD phenomenon, since it is a one of the most common developmental disorders in childhood, it is extremely important that these professionals come to understand the negative consequences caused by p DCD, which, as a rule, has a negative impact on the school life of children and adolescents.

Thus, this preliminary study draws attention to the high results found for adolescents with pDCD, taking into account the negative consequences caused by the phenomenon, which generally negatively impacts the lives of students.

There is growing evidence of the impact of the DCD phenomenon in the lives of adolescents, which can persist into adulthood, as well as the negative and devastating effects in the long term, so that this does not occur, the early identification of these adolescents is essential to provide information and make the condition known by teachers and parents, to improve the relationship and the way of conducting school tasks and, finally, implement interventions that help and minimize the negative interferences to their developmental course.

The recognition of the existence of the DCD phenomenon, on the part of all, is crucial in support and guidance, as both family and teachers play important roles in the development and education of adolescents with DCD and can provide these better opportunities for these students to have the necessary competence to participate in school activities with a perspective of educational inclusion.

Ensuring the inclusion rights of these students means being predisposed to respect diversity. It is essential, therefore, that the school provides an environment focused on the perspective of educational inclusion, in which it will add to diversities, that is, a school open to all. And here, we reaffirm the importance of putting research in perspective in relation to the prevalence of DCD in the Amazonian context, especially among teenagers. We emphasize that the participation of everyone, parents, teachers and school, is important for the identification of adolescents with pDCD.

First, starting from the observation of the parents if this young person still has difficulties in carrying out the activities of his daily life, the teacher, on the other hand, needs to have the perception of this teenager who cannot complete the task in the allotted time and together with the school to observe if he presents low school performance, low selfesteem, if their perception of competence is very poor, if there is notorious social isolation, if they are slow and clumsy teenagers. We understand that the school can and should offer strategies that can minimize the negative effects of the DCD phenomenon on the developmental path and, consequently, strive for educational inclusion. Therefore, the results of this study will be forwarded in the form of a report to the management and teachers of these students with detailed information and guidelines as well as being part of a larger research at the regional level.

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