



Chapter 29

Physical and communicative activities in motor development associated with Autism Spectrum Disorder

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1 INTRODUCTION

Autism Spectrum Disorder (ASD) is a disorder in which the affected individual manifests changes in their development, among them, difficulties in communication and as a consequence, also in social interaction. Another common manifestation in the autistic patient is behavior with repetitive movements

ABSTRACT

Autism Spectrum Disorder (ASD) is a disorder in which the affected individual manifests changes in their development, among them, communication difficulties and, as a consequence, also in social interaction. The severity of this neurodevelopmental disorder depends on the degree of autism diagnosed therefore it varies with each patient. That said, the objective of this study is to search the literature for works that have used interventions of physical activities and communicative skills in children with ASD, to punctuate the positive aspects in the development of these patients, involving gains in motor skills or social interaction. The bibliographic consultation was performed through a manual search in the databases, Latin American and Caribbean *Literature on Health Sciences (LILACS)*, *Scientific Electronic Library Online (SciELO)*, *National Library of Medicine (PubMed/Medline)* and *Physiotherapy EvidenceDatabase (PEDro)*. The nine articles included in the qualitative synthesis presented some behavioral measurement scales for autism, whether to assess motor or communication skills or even the degree of autism presented by each child. So that at the end of the study, a survey of the gains or not gains could be made, with the activities proposed to the group. Noting, therefore, that the practice of physical activity with these autistic children has important relevance in the resourcefulness and maintenance of their motor skills, such as activities involving communication. Although different interventions were carried out, both obtained equivalent results. It can then be said that these bring considerable benefits to autistic individuals.

Keywords: Autism Spectrum Disorder, Children, Physiotherapy, Early intervention.

(Toscano *et al.*, 2018). The severity of this neurodevelopmental disorder depends on the degree of autism diagnosed, therefore, it varies in each patient. This disorder is not reversible, however, when an early intervention protocol is initiated, it may have a positive prognosis, so that symptoms are attenuated (Brazilian Society of Pediatrics, 2019).

The levels of complexity of autism are divided into 3 category, according to the Diagnostic and Statistical Manual of Mental Disorders - V. At level 1, mild degree, the autistic patient needs support in which, if there are no, deficits in communication, tend to promote remarkable impairments in the life of this child. Obproviding a difficulty of social interaction, but still, presenting relative adaptation to the external environment. While those who fit level 2 of complexity, they develop great difficulty in communication, both verbal and nonverbal, making them the most evident social damage even with the presence of a support network. Those who fit level 3 are the ones with the greatest difficulty, since they present a marked deficit in communication skills, whether verbal or non-verbal, entering directly into their capacity for socialization. These present stereotyped behaviors and a huge difficulty in dealing with changes (American Psychiatric Association, 2014).

Patients diagnosed with ASD have difficulties understanding their body globally, following and also in movements, and disorganization was observed during the execution of these movements, gestures, and actions (Brazilian Society of Pediatrics, 2019). This stereotyped behavior presented, can be reduced through the execution of the physical activity, since the stimulation that is achieved through these activities in these children have mechanisms that allow them to have a comfortable sensory experience, thus reaching an adequate level of excitation (Huang *et al.*, 2020; Movahedi *et al.*, 2013), resulting in a possible decrease in repetitive movement episodes.

That said, early intervention in autistic patients would be associated with considerable gains in cognitive as well as adaptive development of the child. With great potential to prevent ASD from manifesting itself completely, since the diagnosis is generally obtained between the first 4 and 5 years of the child's life, a period in which brain development is still evolving. So when delays during child development are detected, such as those identified in a child with ASD, the ideal is early stimulation, since a delay in this stimulation means the loss of acquisition of abilities, in an excellent period of development, which would be in its first years of life (Ministry of Health, 2016; Brazilian Society of Pediatrics, 2019). Making it important to monitor these patients with a multi-professional team aiming at contributing to their better development and quality of life (Marcião *et al.*, 2021)

The family has great difficulty in accepting the diagnosis of a chronic syndrome such as autism, being a moment experienced by a mixture of feelings and sensations, including frustration and insecurity (Pinto *et al.*, 2016) which ends up resulting in a delay in seeking care for the treatment of these individuals. But when proven and accepted the diagnosis, the insertion of the physiotherapist professional in the multidisciplinary team in the treatment of autistic people, acting early, is of paramount importance, because this, together with the whole team will collaborate for a better quality of life for these patients, enabling

them to develop their routine activities, as well as the development of coordination and interpersonal interaction (Marcião *et al.* , 2021).

Thus, through experiences with activities involving essential-motor skills, these will have the opportunity to acquire countless sensations and abilities. In addition to expanding his affinity with the world. Having said that, the objective of this study is due to the search in the literature of studies that have used interventions of physical activities and communicative skills in children with ASD, to score the positive aspects in the development of patients, involving gains in motor skills or communication/social interaction.

2 METHODOLOGY

2.1 RESEARCH STRATEGY

This article is an integrative review that includes Clinical Trials in English and Portuguese published in the period 2018 and 2022, reporting interventions of physical activity and communication in the motor and social development of autistic children.

During the process of preparing this article, the following steps were considered: definition of the theme and the research-based question; determination of inclusion and exclusion criteria for the search and selection of literature; what data would be extracted from the selected articles; evaluation of the included studies; analysis of the results; and presentation of the integrative review (De Sousa, S.T.; Da Silva, M. D.; De Carvalho, R., 2010).

The bibliographic consultation was performed through manual search in the databases, *Latin American and Caribbean Literature in Health Sciences (LILACS)*, *Scientific Electronic Library Online (SciELO)*, *National Library of Medicine (PubMed/Medline)*, and *PhysiotherapyEvidenceDatabase (PEDro)*.

The descriptors "*Autistic Disorder*", "*Autism Spectrum Disorder*", "*Physical Therapy Specialty*", "*Child*" and "*Early Intervention*" were selected following the Descriptors in Health Sciences (DeCS) of the Virtual Health Library using boolean operators AND and OR.

Through the manual search, with different combinations used from the descriptors mentioned above, a total of 366 articles were found in the databases, then the titles were analyzed, followed by the reading of the abstracts for the identification of those that would be fully read. In addition, the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) and the Guidance Manual - Autism Spectrum Disorder were also used to better detail this disorder of the neurodevelopmental neu and to support the content addressed in this review.

2.2 INCLUSION AND EXCLUSION CRITERIA

Clinical trials published in the last 5 years have been part of the study, being in Portuguese and English. The target audience of the research was created with a diagnosis of autism spectrum submitted to

the intervention of physical activities and communication/social interaction. We excluded the literature that was not clinical trials, those that were not in English or Portuguese language, and were not in the defined search period. Repeated and reviewed literature, those the subjects were not autistic children and did not have any physical or communication activity as an intervention, in addition to those studies whose focus did not contemplate the objective of this study, were eliminated.

2.3 EVALUATION OF THE QUALITY OF THE LITERATURE INCLUDED IN THE STUDY

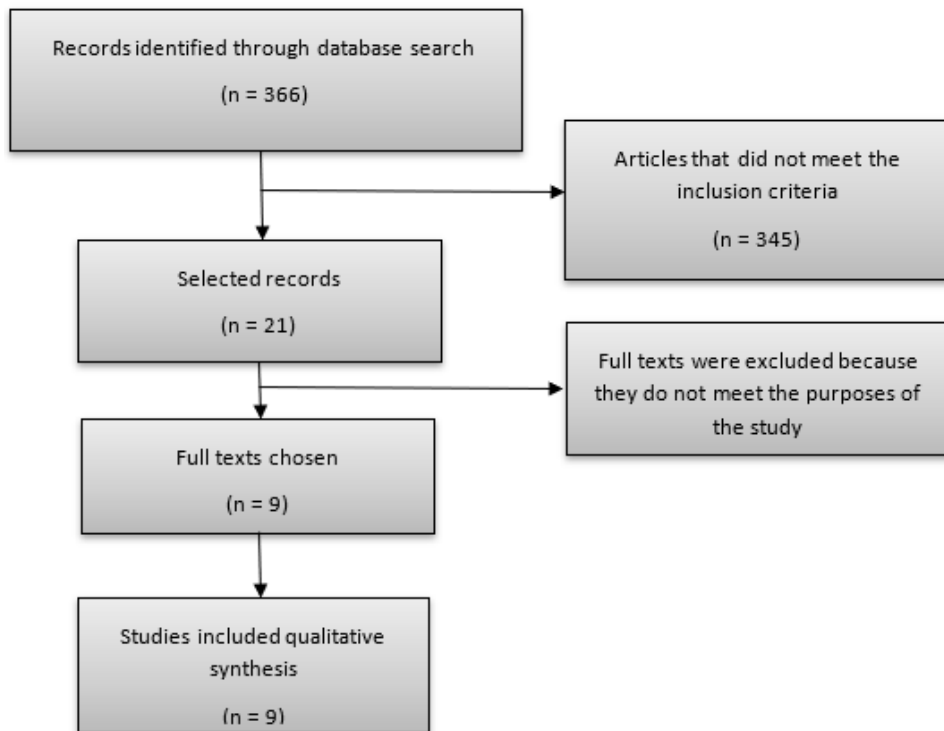
There was no evaluation of the quality of the literature composed in this integrative revisional study because there are few articles on the subject in which they are in the databases determined within the stipulated search period.

3 RESULTS

3.1 GENERAL RESULTS OF THE SELECTED RESEARCH LITERATURE

A total of 366 studies were found primarily after the combination of descriptors, and 21 of these were selected from the analysis by reading the titles and abstract following the inclusion criteria proposed in the study. Among those selected for a full evaluation, all clinical trials were in English and Portuguese. The research process carried out primarily is represented in detail in Figure 1.

Figure 1. Flowchart of representation of the research process for selection of studies.



Source: Developed by the authors (2022).

3.2 GENERAL CHARACTERISTICS OF THE SELECTED RESEARCH LITERATURE

3.2.1 General Information for Each Study

Through a wide search for literature and a systematic analysis according to the criteria stipulated in this study, a total of 9 articles remained in it, all of which were clinical trials published in the last 5 years, as represented in Chart 1.

Table 1. Distribution of the articles found in the databases and that remained in the study.

Year	Author	Search Platform	Type of Study
2018	Toscano <i>et al.</i>	PubMed/Medline	Randomized clinical trial
2019	Zhou <i>et al.</i>	PubMed/Medline	Randomized clinical trial
2021	Tanksale <i>et al.</i>	PubMed/Medline	A randomized controlled pilot study
2019	Sarabzadeh <i>et al.</i>	PubMed/Medline	Clinical trial
2019	Vernon <i>et al.</i>	PubMed/Medline	Pilot randomized clinical trial
2020	Hill <i>et al.</i>	PubMed/Medline	Randomized control pilot study
2021	Ansari <i>et al.</i>	PubMed/Medline	Clinical trial
2021	Jia & Xie	Lilacs	Experimental clinical trial
2018	El Shemy & Salah El-Sayed	Peter	Clinical Trial

All the bibliographies that composed this review included some physical activity or communication as an intervention protocol to be worked with autistic children, aiming at gains such as skills in motor skills

or communication/interaction. A predominance was observed in studies involving male children over the age of 12 months. A total of 314 children were included in the study.

The interventions performed in each study had a period of performance of their activities very different from each other, presenting a cycle of a duration of more than six weeks, with an average execution of 60 minutes. As for the frequency of each session, a significant variation was observed between the studies, thus not being able to be able to find a standard mean between them.

The nine articles included in the qualitative synthesis presented some behavioral measurement scales of autism, be it to assess motor or communication skills or even the degree of autism presented by each child. In so that at the end of the study, a survey of the gains or not gained was made, with the activities proposed to the group.

Next, Chart 2 depicts the interventions of the authors whose objective was to obtain gains in motor skills in children with ASD. Informing the specific data of each study on the proposed intervention and the sample group included.

Table 2. Data from articles with physical activity interventions for motor skills gains.

Author/Year:	Sample individuals:	Age in years:	Intervention and Location:	Intervention period:	Findings:
Ansari et al., 2021.	30 autistic children (all boys) G.C - 10 and G.I - 20 (kata -10 and aquatic - 10)	8/14 years old	Training of kata techniques and training of aquatic exercises. Location: Rasht, Iran.	10 weeks of kata techniques and aquatic exercises consisting of 20 sessions (2 sessions per week; 60 minutes per session).	There ≠ was significant efficacy in the static balance variable between aquatic exercises and control groups (p = 0.012) and karate and control groups (p = 0.001). In the dynamic equilibrium variable also, in which the groups of aquatic exercise and control (p = 0.001) and the karate and control groups (p = 0.001) and the groups of aquatic exercise and karate (p = 0.001).
El Shemy & Salah El-Sayed, 2018.	30 autistic children (22 boys and 8 girls) G.C - 15 and G.I - 15	8/10years	Gait training combined with rhythmic tracks. Location: Cairo, Egypt.	1 hour, 3 times/week for 3 months. G.I. with 30min of gait training with RAS (rhythmic auditory stimulation).	≠ between the pre-and post-treatment values within each group (p<0.05), as well as between the two groups after the intervention.
Hill et al., 2020.	22 autistic children (16 boys and 6 girls) G.C - 11 (without the inclusion of a therapy dog) and G.I - 11.	4/6aus	Occupational therapy assisted by dogs (e.g. dog therapy being the second player in a game of snakes and ladders; making a Christmas card for dog therapy). Location: Brisbane, Queensland.	9 weekly sessions, lasting between 55 and 77 minutes.	There ≠ were significantly observed in performance and satisfaction in the G.I of canine-assisted occupational therapy (p <0.001) and in the G.C (p = 0.001) from baseline to post-therapy. With scores of the group for the commitment of (median = 2.2, mean classification = 12.50 vs median = 2.0, average rating = 10.50, respectively).
Jia & Xie, 2021.	24 autistic children (18 boys and 6 girls) G.C and G.I - NI.	NU	Sports training of motor skills of large muscles with warm-up activities, basic movements and teaching practice, and relaxation activities. Location: Henan, China.	The intervention time was 12 weeks, three times a week, about 60 minutes per hour.	The scores of basic motor skills of G.I and G.C. ≠ showed degrees of improvement. However, the results showed that the fundamental motor skills of the subjects did not present ≠ significant effects on the main effects of time and interaction between the groups.
Sarabzadeh et al., 2019.	18 autistic children. G.C - 9 and G.I - 9	6/12 years.	Tai Chi Chuan training, in which 1 minute was warm-up, 40 minutes	Six weeks, consisting of 18 sessions, limited to 60 minutes.	The groups presented significant ball skills (P<0.001), as well as in the balance variables (P<0.001) between the groups; Pre- and post-test

	Note. G.C. did not perform any regular activity during the study.		practicing basic forms of Tai Chi Chuan, and 1 minute of relaxation. Location: Mashhad, Iran.		skills with the ball (P <0.001) and equilibrium (P <0.001) in the experimental group; While in the control group, there was no significant between the pre-and post-test scores.
Toscano et al. , 2018.	64 participants (9 - Asperger's syndrome, 43 - autism, and 12 - developmental disorder without specification.) Note. only 8 girls were included in the study. G.C - 18 and G.I - 46	6/12 years.	Physical activity is based on basic coordination and strength exercises. Location: Maceió, Alagoas.	48 weeks, twice a week, lasting 40 minutes per session. 96 sessions.	The intervention group showed increases in the physical health score (13.3, 95% CI 7.7– 18.9, effect size 1/41.05) and psychosocial health score (15.2, 95% CI 9.8–20.7, effect size 1/41.66).

Legend: G.C: Control group; G.I: Intervention Group; N.I: Not informed; I.C. Trust interval.

Source: Developed by the authors (2022).

3.2.2 Detailing the results obtained by each author with physical activity interventions

Ansari et al., [2020) used the kata technique and aquatic exercises as intervention training in autistic children, obtaining significant results regarding the static and dynamic balance of these children through measurement tools. However, these significant scores addressed in Tabela 1 refer only to the pre-test, leaving no answer whether or not there were significant differences after training since there is no such comparison between pre and powder training of the analyzed groups, nor a simple mention of the results after this intervention period with the chosen techniques. Unlike the author El Shemy & El-Sayed (2018) bring this comparison before and after treatment between each group, demonstrating the positive results achieved by performing gait training combined with rhythmic cues in these autistic patients.

Jia & Xie's (2021) work showed improvement scores for motor skills, both in the intervention group and also in the control group. But when we talked about interactive skills between groups, no positive gains were observed. Hill and collaborators (2020) in their work stipulated numerous goals be achieved at the end of the period and intervention, among them some motor skills such as the ability to write his name, and independent cutting along a curved line with 50% accuracy. And also, some socio-emotional as, do not collapse 70% of the time you lose a game or carry out the transition to school without crying. These goals were achieved during the intervention with significant differences in performance and satisfaction in the group that participated in dog therapy, as shown in the table data.

Differing from all the results with positive effects about the interventions performed in the studies included in this review, Sarabzadeh et al. (2019) despite having manifested remarkable data, these were insignificant between the pre - and post-intervention groups both in the experimental groups and also in the control group submitted to tai chi chuan practice. On the other hand, Toscano et al. (2018) despite not specifically showing data about motricity, states through their registers that physical health scores increased positively in these children, besides bringing relevant results in several aspects, among them the decrease in autistic characteristics manifested by participants during the period of intervenção. There is an improvement in the quality of life of these patients.

Regarding communicative/interactive performance activities, Table 3, immediately below, discusses the interventions performed by each author and also the results of each study, directly detailing the essential information of each study.

Table 3. Data from articles with interventions of communicative/interactive performance activities.

Author/Year :	Sample individuals:	Age:	Intervention and location:	Intervention period:	Findings:
Tanksale <i>et al.</i> , 2021.	61 participants (39 boys and 22 girls) G.C - 30 and G.I - 31	8/12 years.	Yoga combined with CBT. Location: New Zealand, Australia.	Weekly sessions for 6 weeks lasting 60 minutes each.	The CEG, with a baseline for powders from 75.77 to 73.19 and a baseline for follow-up from 75.77 to 72.43. E G.C with a baseline for powders from 74.70 to 74.73 and a baseline for follow-up from 74.70 to 75.53. For the EAQ-30, except for verbal sharing of emotions after the intervention (PE: 0.34; CI 95% 0.13 to 0.55, p= 0.005, d=0.59) and follow-up (PE: 0.30; CI 95% 0.09 to 0.51, p= 0.016, d= -0.52), emotion analysis or willingness to understand one's own emotions after intervention (PE: 0.24; CI 95% 0.06 to 0.42, p= 0.047, d=0.53). Secondary changes were observed in children for some sleep problems, verbal communication of emotions, and willingness to understand their emotions.
Vernon <i>et al.</i> , 2019.	28 participants G.C - 12 and G.I - 16	18/56 months	PRISM to create learning opportunities in social communication. Being held in the home and community environment in the USA. Note: interests and tasks are varied so that engagement is maintained.	6 months (26 weeks) of the treatment model to PRISM; 10 h per week of intervention: 8 h of individual treatment implemented by the clinician and 2 h of parent education in the intervention strategies with the child present.	ADOS CSS d= -1.41; Mullen ELC d= 0.72; PLS-5d = 0.57; PPVT-4 d = 0.59. As well as in the scales/subdomains of secondary measures, with significant pre and post-changes in Mullen VR d= 0.56; Mullen FM d=1.08; Mullen RL d=0.76; Vineland-II d=0.75 Communication.
Zhou <i>et al.</i> , 2019.	37 participants (21 males) G.I (ESDM) -18 G.C (COM) - 19	12/26 months	ESDM and COM Location: Sacramento, UNITED STATES.	Participants in the ESDM group received 3 months of ESDM intervention administered by their parents, followed by 2 years of intensive care. And intervention performed at home by a therapist (two sessions of 2 hours a day, 5 days a week). The COM group received intervention recommendations and community referrals.	Total gestures: mean hB-increase of 33.7 (SD = 9.9, N=11), mean MLH increase of 20.9 (SD = 15.3, N=21), t= -3.12, p<0.01; Interaction: (t=1.69, p>0.05); after 2 years change and total gestures with HLE factor (mother tongue): (t= -2.85, p<0.01).

Legend: ESDM: Early Start Denver Model; COM: Customary treatment in the Community; CBT: Cognitive Behavioral Therapy; PRISM: Pivotal Response Intervention for Social Motivation Model; CEG: Global Executive Behavior; EAQ-30: Emotional Awareness Questionnaire; ADOS: Autism Diagnostic Observation Schedule–Second Edition; ELC: Early Learning Composite; PLS-5d: Preschool language scales 5th edition; PPVT-4: Peabody Picture Vocabulary Test, 4th edition; VR: Visual Reception; FM: Fine Motor Skills; RL: Receptive Language; EL: Expressive Language.

3.2.3 Detailing the results obtained by each author with interventions of communication/social interaction activities

Tanksale et al. (2020) presented heterogeneous results after the treatment of autistic children with yoga associated with CBT, in which for the intervention group the CEG scores suggested a decrease, therefore, significant positive differences after treatment. While for the control group, these scores remained stable. It is important to note that the diminuição of the overall score suggests improvement in several aspects of executive functions measured by the Executive Function Behavior Assessment Inventory 2° ed. (BRIEF-2). Other changes observed were the improvement in sleep ability, verbal communication, and also in the desire to understand their own emotions.

The work of Vernon et al. (2019) achieved statistically significant changes with the treatment group either for ADOS-2 CSS, about the media and inclusion of children with ASD, Mullen ELC as to development alums, PLS-5 Total Score and PPVT-4 Standard Score, presenting a better language development, both for auditory comprehension and also to communicate more express. As in the Mullen scales of VR, FM, and RL and likewise the Vineland-II communication subdomain whose form allows measuring the daily adaptive abilities of these children based on the information given by parents. Regarding the control group, significant changes were manifested only in the pre-and post-treatment group FM abilities.

The results of Zhou et al. (2018) indicated significant positive changes both after 1 year and after 2 years about language variables as identified in vabs-ii - Vineland adaptive behavior scale - 2nd edition, MCDI- MacArthur-Bates Communicative Development Inventory and MSEL- Mullen Early Learning Scale for bilingual families in COM. As for the domains of VABS socialization, no significant changes were observed. That said, according to the data provided in Quadro 2, children from bilingual families obtained significantly greater gains when compared to children from monolingual families, when we talk about the total gestures, and this significance was affirmed also after 2 years of intervention. When we speak of the interaction term, this did not demonstrate significant data.

4 DISCUSSION

Adolescents and adolescents with autism spectrum disorder have limitations in their social and communicative abilities, being people who are not active, which ends up directly interfering with their participation and interaction with people (Pan & Frey, 2006). The early identification of these limitations can occur through the Bayley Scale, an assessment instrument that can be used when infantile development begins, which allows for verification of changes in the language, motricity, and cognition of these children. This scale is considered the gold standard since it allows for evaluating the child's neuro psychomotor development in a complete and detailed way (Alves *et al.*, 2021).

The possibility of early identification of developmental changes through the Bayley scale ends up assisting in the diagnosis of autism since it encompasses all areas of development and correlates it with the age of the child. In addition, this scale allows parents to use at home for brain stimulation since its application is simple and playful, thus providing the development and improving the quality of life of these children autist them within the normal range that is possible in the clinical condition presented (Alves *et al.*, 2021).

In the studies included in this review, the Bayley Scale was not used, however, all of them used at least one test or evaluation tool to identify/prove autism or autistic characteristics according to the objective of their work. Some of the different scales were used for each area of development, such as in the study by Vernon et al. (2019) who make use of different assessment instruments, among them the Mullen Scale for classification of development allocated skills and ADOS-2, which allows the evaluation of behavioral

(communication/social interaction) signs related to ASD. And this could have been facilitated if the Bayley scale had been used, since it contains all the necessary points for assessing neuro psychomotor development, thus avoiding the use of different scales to conclude the level of development of these children and consequently autism.

The limitations presented by a child diagnosed with autism, depending on the level presented, have a direct impact on the general health of these individuals and deprive them of social contact since they cannot interact with third parties. That said, the practice of physical activity, such as those discussed in this study, helps these patients become more active, allowing them to connect with others. In addition, according to Sorensen & Zarett, (2014) the practice of physical life brings benefits in cardiovascular, emotional, and cognitive performance, avoiding morbidity and mortality, as reported in the study by Pitetti et al. (2007) due to less sedentary lifestyle when adopted in the daily routine, the performance of physical activities.

Ansari et al. (2021) focused on analyzing motor gains of autistic patients with kata training, while the study by Movahedi et al. (2013) demonstrated that this technique brings improvements to the environment, indicating good indices for social dysfunction of these patients, in which individuals submitted to this intervention presented better social interaction after the intervention. This is significant information because although each proposed activity has a main objective, it is important to highlight that one can have gained in different niches with the same activity performed.

Social/communication interaction is one of the main difficulties presented by individuals with autism, in which manifestations such as difficulty in initiating a speech, delay in recognizing and responding to a person or even paralyzing during the execution of an activity can directly influence these aspects (Fournier *et al.*, 2010). Therefore, with the performance of physical activities, these difficulties may be improved, especially if the activities to be worked on have a playful character, since this is a good way for these children to communicate since they have difficulty in using the language spoken itself (Huang *et al.*, 2020).

Parents are the main interested in the development of children with ASD since a flaw observed during the analysis of the 9 literature included in this isn't the orientation of parents on how to proceed with the protocol outside the interventional treatment observed in most studies, which will certainly have a direct impact on the maintaining of long-term gains. So, this orientation and also the participation of these during the interventions are important for the treatment to have greater efficacy. However, although there is no such orientation, the results indicate that these interventions provide improvements in the motor skills of the children. And when we talk about communicative skills/social interaction, even with the data being a little confusing and superficial, it is still possible to see positive milestones.

Noting, therefore, that the practice of physical activity with autistic children has important relevance in the resourcefulness and maintenance of their motor skills, such as activities involving communication. However, although we can make this positive statement following the analysis of the data obtained and untacted in Tables 1 and Chart 2, it is questionable to say that these children began to have greater motor

skills and, mainly, communicative skills in their daily life because it is not known how they are following the process of development of these patients the end of the intervention treatment. Moreover, it is that due to the sample size being small, it cannot be ensured that the proposed interventions would be effective in any children with autism syndrome, considering the different levels of autism existing.

5 FINAL CONSIDERATIONS

Despite the difficulty of finding studies in the literature that deals with approaches with physical activities and mainly communicative to work with autistic patients, noting that this has been a little-studied, the 9 articles analyzed in the present study, brought positive indicators regarding the performance of physical activity with these children, demonstrating signs of good development in their motor skills after the treatment period, such as activities involving communicative/interactive work. And although different interventions were performed, both obtained equivalent results. It can then be affirmed that these bring considerable benefits to autistic individuals, except for the work of Sarabzadeh and collaborators (2019) who claim the data are insignificant, even though it is still remarkable.

Each author reports on a specific gain related to the proposed treatment, however, these interventions allow autistic people benefits in various areas of their life, and their health, and that was even pointed out by some of these authors, but as the focus of this study was only by evaluating the results about motricity and communication this will be discussed in a next study. Finally, in future studies, the proposed interventions could be considered so that improvements can be achieved in various aspects of the daily life of these children, even if the focus is a specific point, moreover, that there is an instruction to parents so that they can continue these activities in their home and the positive gains with continue in the long term.

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