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DEVELOPMENT OF A METHODOLOGY FOR TEACHING JUDO TO CHILDREN WITH AUTISM SPECTRUM DISORDER

DESENVOLVIMENTO DE UMA METODOLOGIA PARA O ENSINO DE JUDÔ A CRIANÇAS COM TRANSTORNO DO ESPECTRO AUTISTA

DESARROLLO DE UNA METODOLOGÍA PARA LA ENSEÑANZA DE JUDO A NIÑOS CON TRASTORNO DEL ESPECTRO AUTISTA

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ABSTRACT

Autism Spectrum Disorder (ASD) is characterized by neurodevelopmental differences that may affect communication, social interaction, behavior, and motor performance, requiring individualized and inclusive educational strategies. In this context, physical activity and sports may constitute important resources for promoting participation, motor learning, and social interaction. Objective: To develop a structured methodology for teaching judo to children with Autism Spectrum Disorder, based on pedagogical, motor, and inclusive principles. Methods: This is an experience report with a descriptive and qualitative approach, conducted over 12 months in the municipality of Joinville, Santa Catarina, Brazil. The study included 30 children with ASD, aged 4 to 12 years, with no previous experience in the sport, accompanied by their parents or legal guardians. Activities were conducted weekly, on Saturdays, lasting 50 minutes, and organized according to age group. The methodology was structured progressively, encompassing adaptation to the environment, development of balance, motor coordination, body control, locomotor skills, understanding of commands, and acquisition of basic judo fundamentals. Caregivers actively participated in the sessions, acting as mediators between the instructor and the children through demonstration, guidance, and reproduction of the proposed activities. Results: Throughout the intervention period, qualitative progression was observed among participants regarding adaptation to the environment, participation in activities, social interaction, understanding of commands, development of motor skills, and progressive acquisition of judo fundamentals. The participation of caregivers as mediators enabled greater individualization of activities and supported the continuity of teaching strategies during the sessions. At the end of the 12-month period, aspects related to autonomy, execution of fundamentals, response to commands, interaction with partners, and tolerance of physical contact were also observed, which were considered relevant for potential participation in a competitive experience. Conclusion: This experience demonstrated the feasibility of a structured and progressive methodology for teaching judo to children with ASD, based on adapting activities to the individual characteristics of participants and the active involvement of caregivers. These findings reinforce the potential of judo as a pedagogical and inclusive strategy, contributing to the development of motor and social skills and participation in the sports context.

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Keywords: Autism Spectrum Disorder. Judo. Adapted Physical Activity. Social Inclusion. Educational Sport.

RESUMO
O Transtorno do Espectro Autista (TEA) caracteriza-se por diferenças no neurodesenvolvimento que podem afetar a comunicação, a interação social, o comportamento e o desempenho motor, exigindo estratégias educacionais individualizadas e inclusivas. Nesse contexto, a atividade física e o esporte podem constituir recursos importantes para promover a participação, a aprendizagem motora e a interação social. Objetivo: Desenvolver uma metodologia estruturada para o ensino de judô a crianças com Transtorno do Espectro Autista, fundamentada em princípios pedagógicos, motores e inclusivos. Métodos: Trata-se de um relato de experiência com abordagem descritiva e qualitativa, realizado ao longo de 12 meses no município de Joinville, Santa Catarina, Brasil. O estudo incluiu 30 crianças com TEA, com idades entre 4 e 12 anos e sem experiência prévia na modalidade, acompanhadas por seus pais ou responsáveis legais. As atividades foram realizadas semanalmente, aos sábados, com duração de 50 minutos, e organizadas por faixa etária. A metodologia foi estruturada de forma progressiva, abrangendo a adaptação ao ambiente, o desenvolvimento do equilíbrio, a coordenação motora, o controle corporal, as habilidades locomotoras, a compreensão de comandos e a aquisição de fundamentos básicos do judô. Os cuidadores participaram ativamente das sessões, atuando como mediadores entre o instrutor e as crianças por meio de demonstração, orientação e reprodução das atividades propostas. Resultados: Ao longo do período de intervenção, observou-se uma evolução qualitativa entre os participantes quanto à adaptação ao ambiente, participação nas atividades, interação social, compreensão de comandos, desenvolvimento de habilidades motoras e aquisição progressiva dos fundamentos do judô. A participação dos cuidadores como mediadores possibilitou maior individualização das atividades e favoreceu a continuidade das estratégias de ensino durante as sessões. Ao final do período de 12 meses, também foram observados aspectos relacionados à autonomia, execução de fundamentos, resposta a comandos, interação com parceiros e tolerância ao contato físico, considerados relevantes para uma possível participação em experiências competitivas. Conclusão: Esta experiência demonstrou a viabilidade de uma metodologia estruturada e progressiva para o ensino de judô a crianças com TEA, baseada na adaptação das atividades às características individuais dos participantes e no envolvimento ativo dos cuidadores. Tais achados reforçam o potencial do judô como estratégia pedagógica e inclusiva, contribuindo para o desenvolvimento de habilidades motoras e sociais e para a participação no contexto esportivo.

Palavras-chave: Transtorno do Espectro Autista. Judô. Atividade Física Adaptada. Inclusão Social. Esporte Educacional.

RESUMEN
El Trastorno del Espectro Autista (TEA) se caracteriza por diferencias en el desarrollo neurológico que pueden afectar la comunicación, la interacción social, el comportamiento y el rendimiento motor, requiriendo estrategias educativas individualizadas e inclusivas. En este contexto, la actividad física y el deporte pueden constituir recursos importantes para promover la participación, el aprendizaje motor y la interacción social. Objetivo: Desarrollar una metodología estructurada para la enseñanza del judo a niños con Trastorno del Espectro Autista, basada en principios pedagógicos, motores e inclusivos. Métodos: Se trata de un relato de experiencia con enfoque descriptivo y cualitativo, realizado durante 12 meses en el

municipio de Joinville, Santa Catarina, Brasil. En el estudio participaron 30 niños con TEA, de 4 a 12 años, sin experiencia previa en la práctica deportiva, acompañados de sus padres o tutores legales. Las actividades se realizaron semanalmente, los sábados, con una duración de 50 minutos, y se organizaron según grupos de edad. La metodología se estructuró de forma progresiva, abarcando la adaptación al entorno, el desarrollo del equilibrio, la coordinación motora, el control corporal, las habilidades locomotoras, la comprensión de órdenes y la adquisición de los fundamentos básicos del judo. Los cuidadores participaron activamente en las sesiones, actuando como mediadores entre el instructor y los niños a través de la demostración, orientación y reproducción de las actividades propuestas. Resultados: A lo largo del período de intervención, se observó una progresión cualitativa entre los participantes en cuanto a adaptación al entorno, participación en actividades, interacción social, comprensión de órdenes, desarrollo de habilidades motoras y adquisición progresiva de los fundamentos del judo. La participación de los cuidadores como mediadores permitió una mayor individualización de las actividades y apoyó la continuidad de las estrategias de enseñanza durante las sesiones. Al final del período de 12 meses, también se observaron aspectos relacionados con la autonomía, ejecución de fundamentos, respuesta a órdenes, interacción con compañeros y tolerancia al contacto físico, que se consideraron relevantes para una potencial participación en una experiencia competitiva. Conclusión: Esta experiencia demostró la viabilidad de una metodología estructurada y progresiva para la enseñanza de judo a niños con TEA, basada en la adaptación de las actividades a las características individuales de los participantes y la participación activa de los cuidadores. Estos hallazgos refuerzan el potencial del judo como estrategia pedagógica e inclusiva, contribuyendo al desarrollo de habilidades motoras y sociales y a la participación en el contexto deportivo.

Palabras clave: Trastorno del Espectro Autista. Judo. Actividad Física Adaptada. Inclusión Social. Deporte Educativo.

1 INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterized by persistent differences in communication and social interaction, associated with restricted and repetitive patterns of behavior, interests, or activities. These characteristics present different levels of manifestation and may affect autonomy, social participation, learning, and functional performance in different ways [1]. The heterogeneity of the spectrum highlights the need for individualized intervention strategies capable of considering the characteristics, needs, and potential of each child [1,2].

In addition to characteristics related to communication and social interaction, children with ASD may present differences in motor performance, including difficulties related to balance, motor coordination, postural control, and acquisition of fundamental motor skills [2–4]. Recent systematic reviews indicate that interventions based on physical activity and motor skill development may support motor development in children with ASD, although the quality of evidence and magnitude of effects vary across studies [3,4]. In this context, systematic physical activity represents an important complementary intervention opportunity, providing opportunities for motor learning, participation, and social interaction [3–5].

Participation in structured physical activities may provide an organized context for the development of motor and social skills. Exercise interventions have demonstrated positive effects on fundamental motor skills in children with ASD, particularly when activities are systematically planned and adapted to participants' characteristics [4]. However, considering the heterogeneity of the spectrum, the use of individualized strategies and adaptation of activities to the level of support required are important aspects for promoting participation and learning.

In this context, the involvement of parents or caregivers may represent an additional resource in the teaching-learning process. An experimental study involving autistic children demonstrated that parent-mediated physical activity intervention may support the acquisition of fundamental motor skills, suggesting that caregivers can act as facilitators of learning when provided with appropriate guidance and strategies to assist children [6]. This perspective is particularly relevant in inclusive sports programs, in which adult mediation may help adapt commands, movements, stimuli, and levels of assistance to the individual needs of the child.

Among sports modalities, judo presents characteristics that may support its use as a pedagogical and inclusive resource. Created by Jigoro Kano in 1882, judo was conceived based on principles related to physical development, discipline, self-control, respect, and

social coexistence [7]. The modality involves elements such as balance, body control, motor coordination, locomotion, spatial perception, execution of commands, compliance with rules, and interaction with partners, which can be organized progressively and adapted to the characteristics and abilities of each practitioner.

Recent studies have specifically investigated the use of judo with children and young people with ASD. A six-month adapted judo program demonstrated favorable effects on aspects related to health-related physical fitness in children with ASD [8]. Another pilot study evaluated the participation of children with ASD in judo classes and identified parent reports of possible changes in behavioral aspects and social skills, although the authors themselves highlighted limitations resulting from variability in participants' characteristics and development [9]. In addition, a recently published systematic review identified evidence of physical, social, emotional, and cognitive benefits associated with judo practice in individuals with neurodevelopmental disorders, including ASD, while emphasizing the heterogeneity of available studies and the need for research with more robust designs [10].

The literature also presents experiences involving joint participation of children with ASD and their family members in judo programs. A pilot study of a family judo program observed favorable changes in indicators of physical activity and parental stress after 14 weeks of intervention [11]. Although these findings cannot be directly extrapolated to different intervention models, they reinforce the possibility that family-based sports programs may constitute a relevant strategy both for child participation and caregiver involvement.

Despite the growing evidence related to physical activity and judo for people with ASD, methodological proposals are still needed that systematically describe how to organize the teaching process while considering the specific characteristics of this population. In particular, the organization of routines, use of clear commands, demonstration of movements, repetition, skill progression, and active caregiver participation may constitute relevant strategies for supporting children's learning and participation.

Therefore, it is relevant to develop and systematize judo teaching methodologies that integrate pedagogical, motor, and inclusive principles while respecting the individual characteristics, level of support, and learning pace of children with ASD. Systematization of this experience may contribute to expanding opportunities for this population to engage in organized sports practices and provide support for professionals working with sports, physical education, and adapted physical activity.

2 GENERAL OBJECTIVE

To develop a structured methodology for teaching judo to children with Autism Spectrum Disorder (ASD), based on pedagogical, motor, and inclusive principles.

2.1 SPECIFIC OBJECTIVES

- To develop progressive pedagogical strategies for teaching basic judo fundamentals to children with ASD;
- To promote the development of motor skills related to balance, coordination, body control, locomotion, and spatial orientation;
- To encourage the understanding and execution of commands, participation in activities, and interaction with teachers and partners;
- To adapt activities to the individual characteristics, level of support, and learning pace of each child;
- To use the participation of parents or caregivers as a mediation strategy in the teaching-learning process;
- To monitor participants' progress regarding adaptation to the environment, participation, social interaction, motor skills, and acquisition of judo fundamentals over 12 months;
- To assess, at the end of the intervention period, aspects related to autonomy, execution of fundamentals, interaction with partners, and tolerance to physical contact, considering their possible participation in sports and competitive experiences.

3 METHODOLOGY

3.1 INTERVENTION

The general objective of the study was to develop a structured methodology for teaching judo to children with Autism Spectrum Disorder (ASD), based on pedagogical, motor, and inclusive principles. The methodological proposal was developed considering the individual characteristics of the participants and sought to promote not only the learning of judo technical fundamentals, but also the development of motor skills, social interaction, understanding of commands and rules, autonomy, and progressive adaptation to the sports environment.

3.2 SAMPLE

Thirty children diagnosed with Autism Spectrum Disorder (ASD), aged 4 to 12 years, from the AMA institution, located in Joinville, Santa Catarina, Brazil, participated in the study. Confirmation of the diagnosis and classification according to level of support were obtained by consulting the records provided by the institution, based on the diagnostic criteria established by the Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition (DSM-5).

All participants were beginners in judo and had no previous experience in the practice of the modality before the beginning of the intervention.

For organization of the activities, participants were divided into two groups according to age. The group referred to as “older children” consisted of 15 children aged 8 to 12 years, with activities held from 9:00 to 9:50 a.m. The group referred to as “younger children” consisted of 15 children aged 4 to 7 years, with activities held from 10:00 to 10:50 a.m.

Regarding sex, the sample consisted of 18 male participants (60.0%) and 12 female participants (40.0%). Regarding ASD support levels, as recorded in the institutional records and classified according to the DSM-5, three participants (10.0%) had level 1 support, 19 (63.3%) had level 2, and eight (26.7%) had level 3. Thirty caregivers, corresponding to the children's parents or legal guardians, also participated in the study.

3.3 STUDY DESIGN AND ORGANIZATION

The study was conducted with longitudinal follow-up of participants over 12 months. Judo activities were performed once a week, on Saturdays, in the morning, with a duration of 50 minutes per session.

Class organization considered participants' age, seeking to adapt activities to the children's developmental characteristics and individual needs. The intervention was structured progressively, beginning with activities for adaptation to the environment and familiarization with judo dynamics, progressing to the development of fundamental motor skills and, subsequently, to the introduction of specific fundamentals of the modality.

A central component of the methodology was the active participation of parents or guardians during the sessions. Caregivers remained with the children and participated directly in the learning process. Techniques, movements, and activities were initially demonstrated and explained by the instructor to the caregivers, who subsequently assisted in reproducing and performing these activities with the children.

Thus, a pedagogical mediation strategy was established based on the sequence: demonstration by the instructor → guidance to the caregiver → reproduction or assistance by the caregiver → execution by the child → observation and correction by the instructor → repetition and consolidation of the skill.

3.4 INITIAL ASSESSMENT

Before the intervention began, an observational and exploratory initial assessment was conducted to identify participants' individual characteristics and their initial level of adaptation to the proposed activities.

Aspects related to social interaction, communication, response to commands, participation in group activities, behavior in relation to the environment and other participants, and motor characteristics related to balance, coordination, and body control were observed.

Simple motor tasks related to balance and body control were also performed, selected according to participants' age and individual characteristics. These tasks aimed to identify initial motor aspects that could interfere with the learning process for judo fundamentals.

Complementary information provided by parents or guardians was considered in the initial characterization of the children, particularly regarding behavioral, social, and functional characteristics observed in daily life.

The initial assessment was not intended to establish a diagnosis or additional clinical classification, but rather to support the organization of activities and individualization of the pedagogical strategies used during the intervention.

3.5 DEVELOPMENT AND ORGANIZATION OF THE JUDO TEACHING METHODOLOGY

The teaching methodology was structured around three main axes: pedagogical, motor, and inclusive, also considering the participation of parents or guardians as mediators of the learning process.

Within the pedagogical axis, priority was given to strategies involving routine organization, use of simple and objective commands, demonstration of movements, repetition of activities, task predictability, and gradual progression of demands. The organization of activities sought to provide children with greater familiarity with the judo routine and facilitate understanding of the proposed tasks.

Within the motor axis, skills related to balance, motor coordination, body control, spatial orientation, locomotion, and execution of modality-specific movements were addressed.

Activities were progressively made more complex according to each participant's response capacity.

Within the inclusive axis, activities were adapted according to participants' individual characteristics, respecting different levels of support, learning paces, and assistance needs. Caregiver participation as mediators enabled greater individualization of guidance and provided children with a familiar reference during activity performance.

Methodological progression began with familiarization with the judo environment and establishment of a participation routine, progressing to activities involving body control, balance, coordination, and locomotion and, subsequently, to the progressive introduction of specific fundamentals of the modality.

Skills addressed included performing the bow, entering and remaining on the mat, understanding and responding to simple commands, guided locomotion, maintaining balance, performing basic movements, respecting spatial boundaries, and participating in activities performed in pairs.

3.6 PARTICIPATION OF CAREGIVERS AS MEDIATORS

Parents or guardians were considered active participants in the methodology, rather than merely accompanying the children. During the sessions, they received guidance from the instructor regarding the proposed movements and techniques and subsequently reproduced or assisted in performing these activities with the children.

This strategy aimed to expand mediation between the instructor and the child, facilitate understanding of tasks, provide greater predictability during movement execution, and allow activities to be adapted according to the individual needs of each participant.

During the initial assessment, habitual physical activity level was also investigated through caregivers' self-reports. Of the 30 caregivers, 20 (66.7%) reported predominantly sedentary behavior, six (20.0%) reported walking, and four (13.3%) reported regular physical activity.

These data were used exclusively to characterize the caregivers at baseline and were not considered an objective measure of physical fitness or a variable of change over the course of the intervention.

During the 12-month intervention, participants were followed longitudinally, considering their progress in motor, behavioral, social, and judo-specific aspects.

Throughout the sessions, aspects such as adaptation to the training environment, participation in activities, interaction with instructors and peers, understanding and execution of commands, persistence and engagement in proposed tasks, tolerance to physical contact, and progressive acquisition of basic judo fundamentals were observed.

Skills related to performing the bow, entering and remaining on the mat, guided locomotion, maintaining balance, performing basic movements, respecting spatial boundaries, understanding simple rules, and participating in activities performed in pairs were also monitored.

Progress was analyzed individually, with the standard judo belt colors introduced according to each participant's characteristics and progression throughout the intervention period, without establishing direct comparisons among children regarding the speed of skill acquisition.

3.7 MONITORING AND ASSESSMENT OF PROGRESS

At the end of the 12-month intervention, an assessment of participants' progress was performed, considering the skills developed throughout the learning process.

Motor, behavioral, social, and judo-specific aspects were considered, including autonomy in performing activities, understanding and responding to commands, interaction with peers, participation in proposed activities, tolerance to physical contact, and execution of basic judo fundamentals.

The final assessment aimed to verify individual progress and identify the level of acquisition of skills addressed during the intervention period. As part of the final phase and one of the objectives, six of the 30 participants took part in a competition adapted to their needs, with a positive outcome, illustrating the potential of judo as a tool for social inclusion.

3.8 PROGRESSION CRITERIA AND SPORTS EXPERIENCES

For monitoring individual progress, observed skills were classified into four performance levels:

- Level 1 – Does not perform: the participant was unable to perform the task, even with assistance.
- Level 2 – Performs with assistance: the participant performed the task with frequent physical or verbal guidance.

• Level 3 – Performs partially: the participant was able to perform the task but presented difficulties or required occasional assistance.

At the end of the intervention period, these criteria were used to describe individual progress and assess the progressive acquisition of motor, behavioral, and judo-specific skills.

As a complementary stage, participants' ability to meet the demands required for a potential initial competitive experience was assessed. Aspects considered included execution of basic fundamentals, understanding and responding to commands, interaction with the partner, tolerance to physical contact, compliance with basic rules, remaining in the competition environment, and autonomy during activities.

The possibility of participating in competition was considered a subsequent stage of the learning process and a complementary indicator of skill acquisition, rather than the sole indicator of intervention success.

3.9 INCLUSION AND EXCLUSION CRITERIA

Children were included if they had a clinical diagnosis of ASD, were aged 4 to 12 years, had authorization from parents or guardians, and were available to participate weekly.

Children who did not meet the age requirements for regular judo practice, that is, children younger than 4 years, and children who did not adapt to the classes by their own choice were excluded.

3.10 INTERVENTION ENVIRONMENT

Classes were conducted in a judo academy with an appropriate structure, respecting literature recommendations regarding:

• physical space organization;
• control of auditory stimuli;
• environmental hygiene and cleanliness;
• participant safety.

Classes occurred once a week, on Saturdays, in the morning, lasting 50 minutes, and were structured into three main stages:

1. Playful warm-up

The warm-up was conducted through recreational activities and motor games, with joint participation of children and caregivers. Activities included games such as:

• tag;
• freeze tag;
• “little elephant”;
• “big dog”.

These activities aimed to:

• promote socialization;
• encourage group participation;
• facilitate adaptation to the environment;
• develop motor coordination;
• facilitate engagement and attention.

3.11 TECHNICAL AND PEDAGOGICAL DEVELOPMENT

Judo technical content was initially transmitted by the instructor to the caregivers, who acted as mediators in the teaching-learning process.

This strategy was based on the affective bond between caregiver and child, favoring:

• greater emotional security;
• reduction of avoidance behaviors;
• better understanding of the proposed tasks;
• communication adapted to the child's reality.

Activities involved basic judo movements, motor repetition exercises, learning falling techniques (ukemi), initial techniques, and introduction to the terminology of the modality.

3.12 SPECIFIC ACTIVITIES AND ADAPTED RANDORI

At the end of the classes, adapted randori practices were introduced, initially between caregivers and children, respecting their level of familiarity and sense of safety.

As the group progressed, a gradual increase in children's autonomy, confidence, and active participation was observed.

The presence of the caregiver constituted the main distinguishing feature of the methodology. Acting as the first recipient of pedagogical information, the caregiver was responsible for conveying the exercises using everyday language consistent with family interaction.

As confidence and attachment to the modality increased, a second phase of the project was implemented, characterized by children's participation in demonstration events.

These experiences were conducted noncompetitively, respecting the levels of the spectrum:

• children with mild ASD participated without assistance;

• children with moderate or severe ASD received caregiver support.

The symbolic presentation of medals had a significant impact on motivational, emotional, and social inclusion aspects.

Assessment was continuous and observational, considering:

• involvement in activities;

• social interaction;

• behavior during classes;

• motor development;

• group participation.

4 RESULTS

At the end of the follow-up period, aspects related to autonomy, response to commands, interaction with partners, tolerance to physical contact, and execution of basic judo fundamentals were observed. These elements were considered relevant to the participants' pedagogical progression and to the possibility of entering more structured sports experiences, while respecting the individual characteristics and needs of each child.

Thirty children with Autism Spectrum Disorder participated in the experience, aged 4 to 12 years, including 18 (60.0%) males and 12 (40.0%) females. Regarding age group, 15 (50.0%) participants were between 4 and 7 years old and 15 (50.0%) between 8 and 12 years old. Regarding the institutionally recorded ASD support level, 3 (10.0%) participants were classified as level 1, 19 (63.3%) as level 2, and 8 (26.7%) as level 3 (Table 1).

Table 1

Participant characteristics

VARIABLE	N	%
Participants	30	100.0
Male sex	18	60.0
Female sex	12	40.0
Age group		
4–7 years	15	50.0
8–12 years	15	50.0
ASD support level*		
Level 1	3	10.0
Level 2	19	63.3
Level 3	8	26.7

*Note: Support level classification according to institutional records and criteria described in the DSM-5.

Among the caregivers at baseline, predominantly sedentary behavior was observed in 20 (66.7%) participants. Another 6 (20.0%) reported walking, and 4 (13.3%) reported regular physical activity (Table 2). This information was used exclusively to characterize the population, and no longitudinal assessment of caregivers' physical activity was performed.

Table 2

Characterization of caregivers' physical activity

Physical activity	n	%
Sedentary	20	66.7
Walking	6	20.0
Regular physical activity	4	13.3
Total	30	100.0

Note: Data refer to the baseline characterization of caregivers at the beginning of the intervention; no longitudinal follow-up of this variable was performed.

Over the 12-month follow-up, qualitative progression was observed in different aspects related to children's participation in the proposed activities. Changes were identified in adaptation to the environment, understanding and response to commands, participation in activities, balance, body control, motor coordination, locomotion, interaction with partners, tolerance to physical contact, and progressive acquisition of basic judo fundamentals (Table 3).

Table 3

Aspects observed in participants' progress during the 12 months

Observed domain	Characteristics observed at baseline	Qualitative progression observed
Adaptation to the environment	Need for familiarization with the space, mat, and class routine	Greater familiarity with the environment and participation in activities
Understanding of commands	Frequent need for demonstration and guidance	Greater understanding and response to proposed commands
Participation	Variable participation, requiring individualized mediation	Greater involvement in proposed activities
Balance and body control	Need for assistance in certain motor tasks	Progress in activities related to balance and body control
Motor coordination	Difficulties performing certain movements	Greater ability to perform guided movements
Locomotion	Need for demonstration and guidance	Greater participation and autonomy in proposed locomotor tasks
Interaction with partners	Need for mediation in paired activities	Greater participation in activities with partners
Tolerance to physical contact	Need for gradual adaptation to contact	Greater tolerance to physical contact during activities
Judo fundamentals	No previous experience in the modality	Progressive acquisition of basic fundamentals
Autonomy	Different levels of need for assistance	Reduced need for assistance in some activities

Note: Results are qualitative and were obtained through observation during sessions; they do not correspond to a standardized assessment scale.

The methodology was developed progressively, beginning with familiarization with the environment and class routine and progressing to activities involving body control, balance, coordination, locomotion, and, subsequently, specific judo fundamentals. Activities were adapted according to each participant's individual characteristics, level of support, learning pace, and need for assistance (Table 4).

Table 4

Progression of the judo teaching methodology

Stage	Main objective	Strategies used
1. Adaptation	Familiarization with the environment and routine	Demonstration, repetition, and simple commands
2. Body control	Develop balance and body awareness	Playful motor activities and directed exercises
3. Locomotion	Develop coordination and spatial orientation	Guided locomotion and motor circuits
4. Judo fundamentals	Introduce basic movements of the modality	Demonstration by the instructor and reproduction with caregiver assistance
5. Interaction	Encourage paired activities and progressive contact	Partner exercises and individualized mediation
6. Autonomy	Gradually reduce the need for assistance	Repetition, adaptation, and progressive withdrawal of assistance
7. Sports experience	Bring participants closer to judo rules and dynamics	Simulated activities, technical exercises, and interaction situations

The participation of parents or guardians constituted a central element of the methodology. The teaching process was organized through a sequence of demonstration by the instructor, guidance to the caregiver, reproduction or assistance by the caregiver, execution by the child, observation and correction by the instructor, and repetition of the activity. This strategy enabled greater individualization of tasks and adaptation of the level of assistance during the sessions (Table 5).

At the end of the follow-up period, aspects related to autonomy, response to commands, interaction with partners, tolerance to physical contact, and execution of basic judo fundamentals were observed. These elements were considered relevant to participants' pedagogical progression and to the possibility of entering more structured sports experiences, respecting the individual characteristics and needs of each child.

Table 5

Caregiver participation as mediators of the teaching process

Mediation stage	Action performed
Demonstration	The instructor demonstrated the proposed movement or activity
Guidance	The instructor explained to the caregiver how to perform or adapt the activity
Reproduction	The caregiver reproduced the movement or directly assisted the child
Execution	The child performed the activity with the necessary level of assistance
Observation	The instructor monitored individual performance
Correction	Adjustments were made by the instructor together with the caregiver and child
Repetition	The activity was repeated to facilitate understanding and consolidation of the skill

5 DISCUSSION

The findings of this experience indicate that the use of a structured and progressive methodology may constitute a feasible strategy for teaching judo to children with Autism Spectrum Disorder (ASD). Over the 12-month follow-up, qualitative changes were observed in adaptation to the environment, participation in activities, understanding of commands, interaction with instructors and partners, development of motor skills, and progressive acquisition of judo fundamentals. These findings should be interpreted considering the study design, characterized as an experience report with a descriptive and qualitative approach; therefore, causal relationships cannot be established or the magnitude of the observed changes measured.

The progression observed in motor aspects is consistent with recent evidence indicating structured physical activity as a potentially important strategy for motor development in children with ASD. A systematic review and meta-analysis involving 13 studies and 541 participants identified positive effects of exercise interventions on fundamental motor skills, including locomotor, object-control, and stability skills [4]. A more recent systematic review also identified favorable outcomes from different physical activity and motor development interventions, although it highlighted protocol heterogeneity and variable quality of the available evidence [3]. In this sense, the progression observed in the present study, particularly in balance, coordination, body control, and locomotion, is consistent with literature recognizing the importance of structured motor experiences for children with ASD.

The progressive organization of activities appears to have been an important element of the methodology developed. Initially, priority was given to familiarization with the environment, understanding the routine, remaining on the mat, responding to simple commands, and performing basic movements. Subsequently, locomotion, balance exercises, body control, interaction with partners, and specific judo fundamentals were introduced. This sequence enabled demands to be presented gradually, reducing the initial complexity of tasks and allowing each child to progress according to their abilities. Although a standardized scale was not used to quantitatively measure this progression, longitudinal observation made it possible to identify qualitative changes in motor behavior and participants' involvement.

The choice of judo as the intervention modality is also supported by recent studies. Pierantozzi et al. [8] evaluated a long-term adapted judo program and observed favorable effects on components of health-related physical fitness in children with ASD. Complementarily, the systematic review by Descamps et al. [10] compiled evidence on physical, social, emotional, and cognitive benefits associated with judo practice in individuals with neurodevelopmental disorders. These findings are particularly relevant to the present experience, since the elements addressed in the classes—balance, coordination, body control, locomotion, execution of commands, and interaction with partners—are directly related to the motor demands of judo practice.

In addition to motor aspects, social interaction and participation in activities constituted important components of the experience. Throughout the follow-up period, qualitative changes were observed in group participation, interaction with the instructor and other participants, and the ability to remain and function within the class routine. Similar results were described by Lockard et al. [9] in a pilot study involving children with ASD who practiced judo, in which behavioral and social aspects were investigated based on parent reports. However, the authors themselves highlighted the difficulty of directly assessing the effects of judo because of variability in participants' characteristics and developmental levels. Therefore, the findings of the present study should likewise be understood as qualitative observations related to the intervention context, rather than evidence of efficacy regarding social skills.

A particularly relevant aspect of this methodology was the active participation of parents or caregivers during the sessions. Unlike a model in which the caregiver remains only as an accompanying person, in this proposal the caregiver assumed a mediating role between the instructor and the child. The instructor demonstrated and guided the activity, the caregiver

reproduced or adapted the proposal with the child, and the instructor subsequently monitored performance and made the necessary corrections. This organization enabled greater individualization of activities, particularly given the heterogeneity of participants regarding support levels and assistance needs.

Caregiver participation is supported by evidence indicating the potential of parent-mediated interventions to promote motor development in children with ASD. Prieto et al. [6], in a randomized study involving 31 parent-child dyads with autistic children, found positive effects of a parent-mediated physical activity intervention on fundamental motor skills, particularly when caregivers received in-person guidance. The authors suggest that parents can act as facilitators of motor skill acquisition when provided with appropriate strategies and resources. This finding presents important convergence with the experience described here, in which the caregiver was intentionally incorporated into the teaching dynamics as a learning mediator.

Family participation has also been specifically explored in judo programs. Garcia et al. [11] investigated a family judo program involving parents and children with ASD and identified favorable outcomes in physical and psychosocial aspects among parents after 14 weeks of intervention. Although this model differs from that used in the present study, the literature reinforces the possibility of integrating the family into sports activities intended for children with ASD. In the present study, however, caregivers' physical activity was used only as baseline characterization, and no longitudinal assessment was conducted that would allow changes in physical activity level or physical fitness to be determined.

Another aspect observed throughout the experience was progression in tolerance to physical contact and interaction with the partner. This dimension is particularly relevant to judo, since the modality involves bodily contact, physical proximity, and performance of movements in interaction with another person. The gradual introduction of these stimuli, respecting individual characteristics and each child's pace, allowed physical contact to be incorporated progressively into the activities. This adaptation is particularly important in the context of ASD, in which individual differences may exist in responses to sensory stimuli and tolerance of certain bodily experiences.

The observed progression in technical fundamentals should also be understood within a perspective of progressive learning. The initial objective was not perfect technical execution of movements, but rather the construction of conditions necessary for learning: understanding commands, remaining in the environment, participating in the routine, body control, balance,

locomotion, and interaction with the partner. From this foundation, specific judo elements were introduced. This approach allowed technical acquisition to be considered part of a broader process of development and sports participation.

In this sense, the possibility of participating in competitive experiences at the end of the period was not considered the sole indicator of methodological success. Competition was understood as a possibility resulting from the acquisition of certain skills, autonomy, understanding of rules, response to commands, interaction with the partner, and tolerance to physical contact. This perspective is important for an inclusive proposal because it allows different forms of sports participation to be recognized and prevents competitive performance from being used as the sole criterion of the child's progress.

The methodology developed also has practical implications for professionals working with physical activity and inclusive sports. The experience suggests that organization of predictable routines, use of objective commands, visual demonstration of movements, repetition, gradual progression of tasks, and active caregiver participation may facilitate session organization and expand opportunities for children's participation. The literature on motor interventions in children with ASD also highlights the importance of structured strategies and participation of different agents, including teachers, coaches, and health professionals [3,4].

However, some methodological aspects limit interpretation of the results. The study was developed as an experience report, without a control group and without application of standardized instruments for quantitative comparison between initial and final time points. The initial assessment and follow-up were predominantly observational, complemented by information provided by caregivers. Therefore, it is not possible to determine the extent to which the observed changes were exclusively attributable to participation in judo classes. In addition, the heterogeneity characteristic of ASD, particularly regarding support levels, behavioral characteristics, and motor abilities, is another factor that should be considered when interpreting the findings.

Another limitation concerns the absence of a specific quantitative measure to assess progression in judo technical fundamentals. Although systematic observation made it possible to identify progression in activity performance, future studies may use standardized instruments or specific protocols to assess motor skills, behavior, social interaction, and technical performance. Adoption of pre- and post-intervention assessments may also allow a more objective analysis of participants' progress.

Despite these limitations, the experience is relevant because it systematizes a teaching proposal that integrates pedagogical, motor, and inclusive aspects, associating instructor participation with active caregiver mediation. The literature available on adapted judo for children with ASD remains relatively limited compared with other physical activity modalities, although recent studies present promising results related to motor skills, physical fitness, and psychosocial aspects [8–10]. Thus, detailed descriptions of practical experiences may contribute to the development of future intervention protocols and to the design of controlled studies with greater methodological rigor.

Overall, the findings of this experience suggest that judo teaching for children with ASD can be organized progressively, individually, and inclusively, with the caregiver serving as an important mediator of the learning process. The combination of predictability, repetition, demonstration, task adaptation, and gradual progression of demands made it possible to follow different forms of participation and learning over 12 months. Thus, the methodology developed represents a possible pedagogical approach for organizing judo instruction for this population, and its effectiveness should be investigated in future longitudinal studies using standardized instruments, comparison groups, and quantitative outcome measures.

6 CONCLUSION

This experience demonstrated the feasibility of a structured and progressive methodology for teaching judo to children with Autism Spectrum Disorder. Adapting activities to participants' individual characteristics, combined with active caregiver participation as mediators, favored participation, learning of the fundamentals of the modality, and development of motor and social skills. The findings reinforce the potential of judo as a pedagogical and inclusive strategy in the context of sports for children with ASD.

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