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Identification of Barriers in Performing Physical Activities in Children with Autism Spectrum Disorder (ASD)

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Abstract

This study aims to identify and compare physical activity barriers in children with Autism Spectrum Disorder (ASD) and children with non-ASD disabilities based on parental perceptions. Using a comparative quantitative design with a cross-sectional approach, the research involved 56 respondents, consisting of 29 children with ASD and 27 children with non-ASD disabilities aged 6–17 years, with a gender distribution of 33 males and 23 females. The instrument used was the Barriers to Being Active Quiz (CDC, 1999), and data analysis was conducted using the Independent Sample T-Test with $\alpha = 0.05$. Results showed significant differences in four categories of barriers: social influence ($p = .000$), lack of energy ($p = .003$), lack of willpower ($p = .000$), and lack of injury ($p = .000$). Children with ASD were more hindered by internal factors such as low motivation and self-regulation difficulties. Conversely, children with non-ASD disabilities were more affected by physical and environmental barriers, including fear of injury, fatigue, and lack of social support. No significant differences were found in three other categories: lack of time, lack of skill, and lack of resources. These findings emphasize the need for physical activity interventions tailored to the characteristics of each group of children with special needs.

How to Cite

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INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that affects how a person communicates, socializes, exhibits repetitive behaviors, and responds to sensory stimuli in different ways. This condition is spectrum-based, so individuals with ASD have a wide range of abilities and challenges that are quite unique. Worldwide, the number of children with ASD continues to increase and has become a focus in the fields of health, education, and social services. In Indonesia, a similar rise is observed alongside increased public awareness and early detection (Jia et al., 2024). Children with ASD often face difficulties in motor skills, emotions, physical fitness, and social interaction, which ultimately leads to lower participation in physical activities (Coffey et al., 2021; Sung et al., 2021). However, sports or physical activity are crucial for children's development, including physical, cognitive, social, and emotional aspects. These activities can help them recognize their own bodies, control movements, interact with peers, and build self-confidence. Recent research also shows that children and adolescents with disabilities are more frequently physically inactive compared to non-disabled children. This is generally caused by social barriers, environmental factors, and a lack of structured support for exercise (Barriers, 2024). These findings highlight the need for special attention to increase physical activity engagement among children with ASD. By understanding the characteristics of the obstacles they face, interventions and educational programs can be designed to be more adaptive, thereby supporting their overall development.

Various studies have confirmed the benefits of physical activity for children with ASD. Pan et al. (2017) found that structured sports programs can help improve motor skills and cognitive functions. On the other hand, Suárez-Manzano et al. (2024) reported that participation of children with ASD in physical activities can reduce maladaptive behaviors and enhance concentration. Wu et al. (2024) also showed that adaptive physical training has a positive impact on motor balance and social interaction skills. Moreover, group sports activities can increase the willingness of children with ASD through positive interactions with peers (Zanghì et al., 2024; Qi et al., 2024). Therefore, physical activity is not only a means for fitness but also plays a therapeutic and socialization role for children with ASD. Recent research also indicates that regular exercise routines have a positive effect on executive functions, focus ability, and emotional regulation in children with ASD (Cristina et al., 2024). Additionally, various interventions based on physical activities involving adaptive play and water activities have been proven to improve social skills and reduce repetitive behaviors (Putri et al., 2024). Overall, these findings further emphasize that physical activity provides multidimensional benefits, including motor, psychological, and social aspects that are important for the growth and development of children with ASD. Therefore, increasing physical participation should be pursued through environmental support, guidance from competent educators, and the design of activities that suit each child's characteristics.

Although the benefits of physical activity have been widely demonstrated, the participation level of children with ASD in such activities remains lower compared to children with typical development or other disabilities (Sung et al., 2021; Xing et al., 2024). This low participation is influenced by multidimensional barriers, including personal, social, and environmental factors (Columna et al., 2021; Hatipoğlu Özcan et al., 2025). On the personal aspect, obstacles may include motor limitations, difficulty understanding instructions, heightened sensory sensitivities, social anxiety, repetitive behaviors, and lack of motivation. Meanwhile, in the environmental domain, challenges often arise from limited accessible sports facilities, a scarcity of inclusive programs, community attitudes that are less supportive, and a shortage of educators or trainers with expertise in handling children with special needs (Perin et al., 2020; Salar et al., 2024). These situations illustrate that the participation of children with ASD is not only dependent on their individual characteristics but also heavily influenced by external support from their social environment. Therefore, a comprehensive understanding of the factors hindering children's engagement in physical activity both, internal and external is essential to developing effective strategies to increase their involvement.

On the other hand, children with non-ASD disabilities such as physical, sensory, or intellectual disabilities also face barriers to participating in physical activities. However, the forms and levels of these barriers may differ. Some obstacles are common, such as limited facilities, low accessibility, lack of social support, and few opportunities to engage in physical activities. Meanwhile, children with ASD face additional challenges that are more specific, such as difficulties in communication, emotional regulation barriers, and heightened sensitivity to sensory stimuli

(Bremer & Cairney, 2019). Therefore, comparing the barriers experienced by children with ASD and children with non-ASD disabilities becomes an important step to determine whether these barriers are specific to autistic characteristics or are general obstacles also felt by other disability groups. The results can provide a stronger basis for designing targeted interventions, whether specialized interventions for children with ASD or universal interventions for all children with special needs.

In research practice, collecting data directly from children with ASD often faces several challenges. Difficulties in communication, limited understanding of instructions, and potential stress caused by interactions with researchers pose significant obstacles. Therefore, involving parents as respondents is considered a relevant and effective approach (Ataíde et al., 2024). Parents have a better understanding of their child's behavior, routines, and obstacles faced during physical activities, making their perceptions a valid and representative source of data. Several previous studies have also employed parent-based approaches in the context of physical activity interventions for children with ASD. Columna et al. (2021) found that parent-mediated motor skills programs could improve basic motor abilities in children with ASD. Hatipoğlu Özcan et al. (2025) reported that adaptive motor programs had positive effects on children's social and academic skills. However, most of these studies primarily focus on children with ASD without involving a comparison group of children with non-ASD disabilities.

In Indonesia, research on barriers to physical activity among children with ASD and non-ASD disabilities remains very limited, especially studies that use a comparative design between ASD and non-ASD groups. Understanding the differences and similarities in barriers between these groups of children with special needs is crucial for developing more inclusive, adaptive, and evidence-based sports policies and programs. Based on this gap, this study aims to identify and compare the barriers faced by children with Autism Spectrum Disorder (ASD) and children with non-ASD disabilities in participating in physical activities, based on parental perceptions. The study primarily focuses on identifying the barriers experienced by children with ASD, while the non-ASD group is used as a comparison to provide broader context. The novelty of this research lies in its effort to directly distinguish the patterns of barriers to physical activity experienced by children with ASD and non-ASD disabilities based on parental perceptions, an approach that has not been widely used in similar studies in Indonesia. Therefore, this study offers a clearer picture of the characteristic barriers specific to children with ASD, while also highlighting common obstacles faced by the non-ASD disability group. Consequently, the findings from this research are expected to serve as a reference in developing adaptive, evidence-based, and inclusive intervention strategies to support children's optimal participation in physical activities.

METHODS

This study employs a comparative quantitative method with a cross-sectional research design. The choice of this design was made because the research aims to identify participation barriers faced by children diagnosed with Autism Spectrum Disorder (ASD) as well as children with non-ASD disabilities. Data collection was conducted without direct intervention, meaning that researchers did not provide treatment or adjustments to the respondents but only gathered information based on existing conditions. This method allows researchers to obtain an overview and comparison between groups efficiently and in line with the descriptive-comparative objectives of the study (Wang & Cheng, 2020). The research was conducted at a special school for children with special needs (SLB) in the Bandung area and also through social media platforms of parent communities of children with special needs during September-October 2025.

The research population includes parents who have children with special needs and are registered as students at Special Schools (SLB), as well as parents who are members of online communities for children with special needs. The sampling technique used is purposive sampling with the following criteria: (1) parents have children diagnosed with ASD or non-ASD disabilities, (2) children are aged between 5 and 17 years, (3) children do not have severe physical impairments that completely limit mobility, and (4) parents are willing to fill out the questionnaire.

The age range of 5–17 years was selected based on scientific references indicating that childhood and adolescence are periods of active physical and social development (Brady et al., 2020). Additionally, Chaput et al. (2020) also recommend the age range of 5–17 years as the suggested group for engaging in physical activities with a minimum duration of 60 minutes per day. Based on these considerations, the age of 5–17 years is considered representative for depicting the active developmental phase of school-aged

children, especially in the environment of Special Schools (SLB).

Each group in this study consisted of 56 respondents, comprising 29 children with ASD and 27 children with non-ASD disabilities. The total number was determined based on statistical considerations and field feasibility. This sample size also references general guidelines stating that a minimum of approximately 30 participants per group is adequate for standard statistical analyses, including the Independent Sample T-Test, provided that the data meet the assumptions of normality and homogeneity (Youth.Gov., 2022). The independent or predictor variables in this study are the two groups of children, namely children with ASD and children with non-ASD disabilities. The dependent or outcome variable is the level of hindrance in physical activity experienced by the children, assessed from the parents' perspective of the two groups.

The instrument used is the Barriers to Being Active Quiz (US Department of Health and Human Services, 1999) from the Road to Health Toolkit CDC. This instrument consists of 21 statements covering seven types of physical activity barriers, namely: lack of time, social influence, lack of energy, lack of willpower, lack of injury, lack of skills, and lack of resources. Each category has a different meaning. Lack of time describes the parents' perception that children find it difficult to allocate specific time for physical activity due to various other routines. Social influence relates to parents' views on the support or influence from the social environment that can either enhance or hinder children's participation. Lack of energy reflects the assumption that children tend to tire quickly or do not have enough energy to be active. Lack of willpower is associated with parents' assessment that children's internal motivation to engage in physical activity is still low. Lack of injury indicates parents' concern about the risk of injuries that may occur when children participate in physical activities. Lack of skills refers to the view that children have not yet acquired adequate motor skills or abilities. Meanwhile, lack of resources describes environmental conditions or facilities that are considered insufficient to support children in being physically active.

This instrument was then adapted into the Indonesian context through translation and language adjustment processes to ensure relevance to the characteristics of the respondents in this study, who are parents of children with special needs registered at Special Needs Schools (SLB). The language validation process was conducted by two English language experts to ensure that the meaning in the original version and the Indonesian version remained equivalent. The evaluations from the two experts were then analyzed using inter-rater reliability, resulting in a value of $r = 0.749$. This value falls into the high category, indicating that the level of agreement between the validators is in the good category (Amirrudin et al., 2020).

Next, the internal reliability of the instrument was analyzed using Cronbach's Alpha coefficient, resulting in a value of $\alpha = 0.685$. According to recent literature, a Cronbach's Alpha value above 0.60 is still considered adequate for exploratory research or during the instrument adaptation stage (Taber, 2018; Zitzmann & Orona, 2025). Therefore, this instrument is considered to have sufficiently good internal consistency and is suitable for primary data collection. After being validated and deemed reliable, the instrument was tested on a small sample of respondents to assess readability and clarity of each statement item. The readability test aimed to ensure that all items could be well understood in accordance with the Indonesian language and cultural context. The results of the readability test showed that all statements could be understood without the need for substantial revisions, indicating that the instrument has good conceptual equivalence, is reliable, and is easy for target respondents to understand. To minimize potential bias, the researcher ensured the anonymity and confidentiality of data, provided consistent instructions for filling out the questionnaire, and ensured respondents understood the research objectives before completing the questionnaire.

Data were collected online through the distribution of questionnaires via Google Forms. The distribution process was carried out in two ways: first, with the assistance of teachers at a Special School (SLB) in the Bandung area who shared the questionnaire link in the parents' WhatsApp group; and second, through social media platforms such as Facebook groups of parents of children with special needs. Before filling out the questionnaire, the researcher first explains the research objectives, the procedure for completing the questionnaire, and reassures respondents that their data confidentiality will be maintained. Respondents participate voluntarily after reading and agreeing to the participation consent form (informed consent) that appears at the beginning of the questionnaire. The entire research process is conducted in accordance with ethical principles, including the protection of respondents' identities and personal data.

The collected data were subsequently ana-

lyzed using an Independent Sample T-Test facilitated by SPSS version 22. This test was chosen because the study compares two independent groups, namely children with Autism Spectrum Disorder (ASD) and children with non-ASD disabilities. The analysis was conducted to determine whether there is a significant difference in the mean scores of physical activity limitations between these two groups. Prior to the test, the data were examined to ensure that the assumptions of normality and homogeneity of variances were met, which are prerequisites for parametric testing. The mean and standard deviation (SD) for each barrier category were used as the basis for identifying the most dominant barrier factors within each group. The results were then interpreted based on the significance value at a confidence level of $\alpha = 0.05$, where differences were considered statistically significant if the p-value < 0.05.

RESULTS AND DISCUSSION

During the data collection stage, this research obtained a total of 60 respondents. After the selection process based on inclusion and exclusion criteria, some data could not be used because they did not meet the criteria or there were inconsistencies in the questionnaire responses. Therefore, the data that could be analyzed consisted of 29 children with Autism Spectrum Disorder (ASD) and 27 children with non-ASD disabilities.

Table 1. Demographic Characteristics of Children

Basic characteristic	ASD		Non-ASD disabilities		Complete sample	
Gender	N	%	N	%	N	%
Male	17	58.6	16	59.3	33	58.9
Female	12	41.4	11	40.7	23	41.1

Note : N = 56 (total number of samples).

The average age of children with ASD is 11.45 years (SD = 2.52), while the average age of children with non-ASD disabilities is 11.70 years (SD = 3.20).

Based on **Table 1**, the demographic characteristics show that out of a total of 56 respondents, there are 29 children with Autism Spectrum Disorder (ASD) and 27 children with non-ASD disabilities. In the ASD group, 17 children (58.6%) are male and 12 children (41.4%) are female. Meanwhile, in the non-ASD disability group, there are 16 children (59.3%) males and 11 children (40.7%) females. Overall, the gender distribution in this study sample consists of 33 boys (58.9%) and 23 girls (41.1%). The average age of children with ASD is 11.45 years (SD = 2.52), with an age range of 6–16 years, while the average age of children with non-ASD disabilities is 11.70 years (SD = 3.20), with an age range of 7–17 years. This indicates that both groups have relatively balanced age distributions.

Table 2. Results of the Independent Sample T-Test Analysis (Comparison of Physical Activity Barriers in Children with ASD and Non-ASD Disabilities)

Dependent Variable	ASD		Non-ASD disabilities		t	p	Cohens'd
	M	SD	M	SD			
Lack of time	2.90	1.235	3.15	1.064	-.814	.419	-0.02
Social influence	1.86	.875	3.04	1.091	-4.460	.000	-1.20
Lack of energy	3.72	1.222	4.74	1.259	-3.067	.003	-0.82
Lack of willpower	6.24	1.215	4.22	1.739	5.065	.000	1.35
Lack of injury	3.00	1.195	5.89	1.528	-7.912	.000	-2.18
Lack of skill	2.66	1.471	3.04	1.255	-1.041	.302	-0.28
Lack of reseource	4.34	1.143	4.41	1.118	-.207	.837	-0.06

Note : $p < 0.05$ indicates a significant difference between groups.

Based on **Table 2**, the results of the Independent Sample T-Test indicate that there are several significant differences between children with ASD and children with non-ASD disabilities in physical activity barriers. Significant differences were found in the variables of social influence ($t = -4.460$, $p = .000$, $d = -1.20$), lack of energy ($t = -3.067$, $p = .003$, $d = -0.82$), lack of willpower ($t = 5.065$, $p = .000$, $d = 1.35$), and lack of injury ($t = -7.912$, $p = .000$, $d = -2.18$). This suggests that the two groups differ significantly in these aspects. Meanwhile, no significant differences were observed in the variables of lack of time ($p = 0.419$), lack of skill ($p = 0.302$), and lack of resources ($p = 0.837$), indicating that both groups experience relatively similar barriers in these three aspects. Furthermore, overall, children with non-ASD disabilities have higher levels of physical activity barriers compared to children with ASD. This indicates that the two groups of children face different types of barriers in accordance with their disability characteristics.

The research results indicate that the category of lack of willpower has the highest score among children with ASD. Based on parents'

perceptions, children with ASD often exhibit difficulties in maintaining the motivation to engage in physical activities. They tend to lose interest easily, have trouble focusing, and require repeated guidance to participate. This is related to the characteristic of children with ASD who are typically rigid about routines, sensitive to environmental changes, and have limitations in self-regulation. Additionally, some parents also reported that children with ASD prefer to rest rather than engage in physical activities, even when opportunities to exercise are available. This condition shows that most children with ASD tend to avoid physical activities, either due to lack of interest or difficulty in maintaining motivation during activity. These barriers contribute to the low participation levels of children with ASD in daily physical activities.

These findings are consistent with the study by Columna et al. (2021), which stated that the main barriers for children with ASD in physical activities stem from a lack of intrinsic motivation and difficulties in maintaining attention during activities. Salar et al. (2024) also showed that low physical engagement among children with ASD is related to behavioral characteristics such as rigidity, sensitivity to sensory stimuli, and limitations in social skills. This reinforces the findings of this study that barriers faced by children with ASD are more rooted in internal factors rather than external ones. Therefore, it can be concluded that, in children with ASD, the primary barriers to physical activity originate from internal factors, particularly motivation and self-regulation. Consequently, consistent support from parents, teachers, and the social environment is needed to help children develop stable, structured, and meaningful physical activity routines that align with their characteristics and needs.

Based on the research findings, the category of lack of injury is the most significant barrier among children with non-ASD disabilities. According to parents' perceptions, concerns about injury risk are the primary factors limiting their children's participation in physical activities. Many parents hesitate to involve their children in sports activities due to fears of falls, injuries, or inability to keep up with activities considered too strenuous. These concerns are not solely based on the child's condition but also stem from parents' protective attitudes, aiming to safeguard their children from physical risks. Maher et al. (2022) The high perception of injury risk can significantly reduce the participation of children with disabilities in physical activities. As a result, children miss opportunities to improve fitness, motor skills, and social interactions. These findings indicate that both physical barriers and protective attitudes are not solely rooted in the child's limitations but also in the family's perspective on risks. Therefore, education about adaptive sports and safety principles is crucial to help parents feel confident in actively involving their children without excessive anxiety.

In addition to concerns about injuries, children with non-ASD disabilities also face other prominent barriers, especially in the aspects of lack of energy and social influence. Based on parents' perceptions, children are more prone to feeling tired, less energetic, and losing motivation more quickly when participating in physical activities. These conditions are generally related to physical limitations, low fitness levels, or limited opportunities for regular practice. These findings are consistent with Perin et al. (2020) and Forkert et al. (2021), who reported that children with physical or sensory disabilities tend to have lower participation levels due to endurance limitations and a lack of support from their surrounding environment.

Besides physical factors, the lack of social support also serves as a significant barrier. Parents perceive that children often do not receive positive encouragement from peers or teachers, which causes children to feel hesitant to engage in physical activities. The minimal support can lead to feelings of shame, inferiority, and low self-confidence, ultimately making children more reluctant to try or maintain participation in sports activities. The combination of fatigue, insufficient social support, and concerns about potential injuries makes the barriers faced by children with non-ASD disabilities multidimensional. These factors are interrelated and reinforce each other, resulting in a direct impact on the low physical participation of the children. Therefore, efforts to reduce these barriers need to be comprehensive, such as providing more accessible and disability-friendly sports facilities, as well as enhancing the role of accompanying teachers in offering social support, motivation, and a sense of safety during children's physical activities.

The three categories of barriers (lack of time, lack of skill, and lack of resources) do not show significant differences between children with ASD and children with non-ASD disabilities. According to parents' perceptions, these three barriers are general and experienced by almost all children with special needs. Many parents mention that the busy schedule of therapy sessions and school activities leaves children with very limited time to participate in physical activi-

ties outside of their daily routines. This time constraint is more due to structural issues rather than a lack of interest from the children. Additionally, skill-related barriers often arise because children are not yet accustomed to engaging in physical activities or have not received appropriate guidance from physical education teachers. The lack of tailored learning approaches makes children feel less confident and ultimately tend to become passive.

Meanwhile, barriers related to resources/ facilities are associated with the limited availability of disability-friendly sports facilities and the shortage of trainers who understand the principles of adaptive sports. Parents perceive that this situation is a common challenge faced by all children with special needs, regardless of the type of disability. This finding is consistent with Sung et al. (2021), which mentions that limitations in infrastructure, educators, and policy support are global factors hindering the implementation of truly inclusive physical education. Therefore, stronger systemic support from schools and the government is needed to provide facilities, qualified teachers, and inclusive physical activity programs for all children with special needs.

If we look at the total scores, parents' perceptions indicate that children with non-ASD disabilities face higher physical activity barriers compared to children with ASD. This finding suggests that children with non-ASD disabilities encounter more challenges when trying to actively participate in physical activities. These barriers are primarily influenced by external factors, such as concerns about injury risks, physical limitations, and a lack of social and environmental support. Parents perceive that children with non-ASD disabilities often have more evident motor limitations, such as movement disorders, low muscle strength, or difficulties in body coordination. These conditions make them more vulnerable to injuries during physical activities. Such concerns are reinforced by parents' protective attitudes, which tend to restrict children's movements to avoid injury risks. However, this approach ultimately narrows children's opportunities to move freely and develop their physical abilities.

Besides physical factors, the social environment also has a significant influence. Parents convey that children with non-ASD disabilities often face social barriers such as a lack of support from peers or teachers who truly understand their conditions. This lack of support makes the children less confident and hesitant to engage in physical activities, especially those conducted in groups. Such environmental obstacles reinforce social isolation and worsen the perception that physical activities are difficult for them to participate in. Conversely, in the ASD children group, the barriers that arise are more related to internal factors, such as low motivation and self-regulation difficulties. According to parents' perceptions, children with ASD often have quite good physical potential, but they do not always show interest in participating consistently. They require encouragement and special approaches to be willing to engage in physical activities. These barriers are more related to psychological and behavioral aspects, rather than tangible physical limitations.

The differences in the sources of barriers indicate that the type of disability influences the characteristics of the physical activity obstacles experienced by children. Research by Hatipoğlu Özcan et al. (2025) and Qi et al. (2024) confirms that each form of disability has a distinct barrier profile, with children with physical disabilities generally hindered by their physical condition and environmental support, whereas children with developmental disorders like ASD are more affected by motivation factors and social-emotional aspects. Therefore, children with non-ASD disabilities tend to face external and situational barriers, while children with ASD are more influenced by internal and psychological barriers. These findings highlight the importance of adopting a truly individualized approach when designing physical activities for children with special needs. The programs developed should consider these differences in barrier characteristics to ensure that interventions are not only effective but also tailored to each child's specific needs.

This study has several limitations that should be considered when interpreting the results. All data were obtained from parents' perceptions, so the findings are highly influenced by each respondent's personal experiences and subjective viewpoints. Additionally, the relatively small sample size and the fact that it was only from one region limit the generalizability of the results. From an analytical perspective, the use of a single statistical test, namely the Independent Sample T-Test, restricts the scope of interpretation because it only assesses differences between groups without considering other variables that may also have an influence. Therefore, future research is recommended to use more comprehensive analyses, such as multivariate analysis, and to involve direct observation of the children. This approach would allow for more objective data and provide a deeper understanding of the physical activity barriers faced by children with special needs.

CONCLUSION

This study shows that the barriers to physical activity experienced by children with Autism Spectrum Disorder (ASD) and children with non-ASD disabilities have different characteristics based on parents' perceptions. Children with ASD are considered to face more internal barriers such as low motivation, difficulty maintaining focus, and challenges in self-regulation during physical activity. On the other hand, children with non-ASD disabilities are perceived to be more hindered by physical and environmental factors, including concerns about injury, limited motor abilities, and a lack of social support. These findings emphasize that the type of disability influences the variation in barriers experienced in participating in physical activity.

From an academic perspective, this research provides meaningful contribution by presenting empirical evidence regarding differences in barrier profiles based on the type of disability, particularly through the parents' perspective—a viewpoint that remains rarely used as a comparison in the Indonesian context. Practically, these findings can serve as a reference for physical education teachers, therapists, and parents in designing interventions that are more tailored to their needs. Children with ASD require a more structured approach to help improve motivation and self-regulation abilities, while children with non-ASD disabilities need a safe environment and stronger social support. Therefore, the results of this study can support the development of more inclusive, safe, and needs-based physical activity programs for children with special needs.

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