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Enhancing Learning Self-Confidence through Traditional Game-Based Motor Activities among Children with Low Vision Disabilities

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Abstract

Study purpose. Children with low vision often experience limited participation in physical activities, which may negatively affect their motor development and confidence during the learning process. Traditional games provide enjoyable, interactive, and culturally relevant motor experiences that may encourage active participation and positive social interaction. Therefore, this study aimed to examine the effect of traditional game-based motor activities on improving learning self-confidence among children with low vision.

Materials and Methods: This study employed a pre-experimental design using a one-group pre-test and post-test approach. A total of 80 children with low vision disabilities from special schools in Medan City were selected through purposive sampling. The intervention consisted of adapted traditional games designed to stimulate children's motor abilities and active participation in learning. Data were collected using questionnaires and structured observation. The pre-test and post-test scores were analyzed to determine changes in children's self-confidence after the intervention.

Results: The findings showed that traditional game-based motor activities had a positive effect on children's motor engagement and self-confidence in learning. After participating in the adapted traditional games, children demonstrated greater confidence, improved participation, and more active involvement during learning activities.

Conclusions: Traditional games adapted to the needs of children with low vision disabilities can serve as an effective learning strategy to support motor development and enhance self-confidence. These findings suggest that culturally familiar and inclusive play-based activities may provide both physical and psychological benefits for children with visual impairments.

Keywords: Traditional Games, Motor Activities, Low Vision Disabilities, Self-Confidence, Inclusive Education.

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Introduction

Inclusive education requires schools to provide learning environments that respond to the diverse needs, abilities, and developmental characteristics of all learners, including children with disabilities (Hemayattalab et al., 2013; Hutzler et al., 2019). In this context, education is not only directed toward academic achievement but also toward supporting children's independence, participation, and personal development (Ji, 2025; Xu, 2010; Yulianto et al., 2019). The curriculum must therefore be implemented flexibly so that learning activities can accommodate differences in students' physical, cognitive, and sensory abilities. This need is especially important in physical education, where learning often depends on movement, visual cues, peer interaction, and confidence in performing physical tasks (Boguszewski et al., 2016).

Children with low vision disabilities experience particular challenges in learning and movement-based activities (Riley et al., 2017). Low vision refers to a condition in which children still have residual vision but experience limitations in seeing objects clearly, recognizing visual details, interpreting movement, and responding accurately to environmental stimuli (Andika et al., 2024; Patanjali Dev Nayar et al., 2021; Unruh et al., 2005). These limitations may affect their ability to imitate movement, understand visual instructions, and participate confidently in physical activities. As a result, children with low vision often face barriers not only in motor development but also in social interaction and learning confidence (Rumpoko et al., 2025; Sharma, 2025; Syahrial et al., 2020).

Motor development is a fundamental aspect of children's overall growth because it supports physical independence, coordination, balance, and participation in daily activities (Ali, 2023; Cairney et al., 2019). For children with low vision, motor development may progress more slowly due to limited visual stimulation, difficulty observing others' movements, and reduced opportunities to engage in active play. These conditions can influence both gross and fine motor skills, particularly when learning activities require spatial awareness, hand-eye coordination, and movement accuracy. Therefore, children with low vision require structured, adaptive, and continuous stimulation to support their motor abilities in a safe and enjoyable learning environment.

Physical education has an important role in addressing these developmental needs (Kuswoyo & Shareef, 2025). However, in practice, learning activities for children with low vision are often still dominated by direct instruction and are not always supported by adaptive models, media, or game-based strategies. Teachers may also experience difficulties in designing inclusive physical education activities because children with low vision have varied levels of visual ability and movement confidence. Consequently, some students show low self-confidence in physical education learning, especially when they feel uncertain about movement decisions, worry about making mistakes, or experience difficulty interpreting visual information during activities (Casey & MacPhail, 2018; Fukuda, 2026).

Self-confidence is a crucial psychological factor that influences students' willingness to participate, try new activities, communicate with peers, and persist in learning tasks. In physical education, self-confidence becomes even more important because students are required to perform movements openly, interact with others, and respond to dynamic learning situations. For children with low vision, low confidence may limit participation and reduce opportunities for motor practice. Therefore, learning strategies that combine physical

stimulation, social interaction, and emotional support are needed to help these children become more active and confident learners.

Traditional games offer a promising approach to support inclusive physical education. These games are culturally familiar, enjoyable, socially interactive, and easily modified according to children's abilities (Ji, 2025; Sari et al., 2025; Thrush, 2021). Through traditional games,

Traditional game-based motor activities provide opportunities for students to practise fundamental movement skills while simultaneously developing cooperation, communication, courage, and self-expression. For children with low vision, these activities can be adapted through clearer verbal instructions, safer and more structured movement spaces, larger or high-contrast equipment, peer assistance, tactile or auditory cues, and simplified rules. Such adaptations may reduce participation barriers, increase students' sense of safety, and encourage more active involvement in physical education. Consequently, adaptive traditional games may contribute not only to motor engagement but also to children's confidence in participating, communicating, and completing learning tasks.

Previous studies have shown that children with visual impairments frequently experience delays in motor development, reduced physical activity participation, and lower confidence in movement-based learning compared with their sighted peers. Although compensatory strategies may develop over time, children with low vision still require intentionally designed interventions that provide repeated movement experiences, appropriate environmental adaptations, and meaningful social interaction. Existing research has primarily focused on general motor development, physical fitness, orientation and mobility training, or psychological characteristics among children with visual impairments (Bessa et al., 2021; Halilsoy, 2024; Simbolon & Purba, 2022). However, considerably less attention has been given to culturally grounded physical education interventions that integrate motor practice, social participation, and confidence development within a single learning programme.

More specifically, limited empirical evidence is available regarding the effectiveness of adapted traditional games in improving learning self-confidence among children with low vision. Previous studies have often examined motor performance and psychosocial outcomes separately, without explaining how culturally familiar and socially interactive movement activities may influence children's confidence during the learning process. In addition, traditional games are rarely investigated as structured adaptive interventions for students with visual limitations. This represents an important research gap because learning self-confidence can determine whether children are willing to participate, attempt unfamiliar movements, communicate with peers, and persist when experiencing difficulties in physical education.

The novelty of the present study lies in the use of adapted traditional game-based motor activities as an integrated intervention that combines motor stimulation, inclusive participation, cultural relevance, and confidence-building for children with low vision. Rather than treating traditional games merely as recreational activities, this study positions them as a systematic pedagogical strategy designed around the sensory and movement needs of learners with visual limitations. By examining changes in learning self-confidence, the study also extends previous research beyond physical or motor outcomes and highlights the psychological value of adaptive, culturally responsive physical education.

Based on this background, the present study aimed to examine the effect of traditional game-based motor activities on increasing learning self-confidence among children with low vision. The findings are expected to provide empirical support for teachers, special education practitioners, and curriculum developers in designing inclusive physical education programmes that are culturally relevant, developmentally appropriate, accessible, and responsive to the psychosocial needs of children with visual impairments.

23

Materials and Methods

Study Participants

The participants in this study were 80 children with low vision disabilities enrolled in several special schools in Medan City, Indonesia. Participants were selected using a purposive sampling technique based on specific inclusion criteria, namely students diagnosed with low vision disabilities and actively participating in school learning activities. The participants consisted of school-age children who experienced visual limitations but still retained residual vision that allowed participation in adapted physical activities. Prior to the implementation of the study, all participants received explanations regarding the procedures and objectives of the intervention.

Study Organization

The research procedures were conducted in five consecutive stages: preparation, pre-test assessment, intervention implementation, post-test assessment, and data analysis.

In the preparation stage, the researchers coordinated with the school and physical education teacher to determine the research schedule, participant eligibility, learning facilities, and safety procedures. Participants were selected according to the predetermined inclusion criteria for children with low vision. Before data collection, the participants received an explanation of the activities, instructions, and safety rules in language appropriate to their level of understanding. The researchers also prepared the adapted traditional-game equipment, observation sheets, and self-confidence questionnaire.

In the second stage, participants completed a pre-test before receiving the intervention. The pre-test was administered using the learning self-confidence questionnaire to determine the participants' initial confidence levels. Structured observations were also conducted during physical education activities to record participants' willingness to participate, interact with peers, express themselves, attempt movement tasks, and remain actively involved in learning. The same instructions and assessment procedures were applied to all participants.

In the third stage, participants took part in a structured intervention programme consisting of adapted traditional game-based motor activities. The programme was implemented during physical education lessons for [number of weeks], with [number of sessions] sessions per week and approximately [duration] minutes per session. Each session included an introduction and safety briefing, warm-up activities, adapted traditional games, and a closing reflection.

The traditional games were modified according to the visual and movement needs of the participants. The adaptations included clear and repeated verbal instructions, demonstrations at a close distance, tactile and auditory cues, larger or high-contrast equipment, simplified rules, clearly marked and obstacle-free playing areas, and peer assistance. During each session, the teacher explained the game, demonstrated the required movements, organised participants individually or in small groups, and provided encouragement and corrective feedback. The activities were progressively arranged from simple individual movements to cooperative and group-based games to develop motor engagement, active participation, communication, courage, and social interaction.

In the fourth stage, a post-test was administered after all intervention sessions had been completed. Participants completed the same learning self-confidence questionnaire used during the pre-test. Structured observations were also repeated under comparable learning conditions. Using the same instrument, indicators, instructions, and assessment procedures allowed changes between the pre-test and post-test scores to be evaluated consistently.

In the final stage, the pre-test and post-test data were checked, coded, and analysed. Descriptive statistics, including the mean and standard deviation, were calculated to describe changes in learning self-confidence. An appropriate inferential statistical test was then used to

determine whether the difference between the pre-test and post-test scores was statistically significant.

Statistical Analysis

Data analysis was conducted using IBM SPSS statistical software. Descriptive statistics were used to summarize the mean, standard deviation, minimum score, maximum score, and score distribution of participants' self-confidence levels.

Prior to hypothesis testing, assumption tests were performed, including normality and homogeneity tests. The Shapiro-Wilk normality test showed that the pre-test data ($p = 0.203$) and post-test data ($p = 0.107$) were normally distributed because the significance values were greater than 0.05. In addition, the Q-Q plot analysis demonstrated that the data points followed the reference line, indicating normal data distribution.

Homogeneity testing was conducted using Levene's Test for Equality of Variances. The analysis produced a significance value of 0.093 ($p > 0.05$), indicating that the data variance was homogeneous.

To determine the effect of the intervention, a paired sample t-test was performed to compare pre-test and post-test self-confidence scores. The analysis revealed a statistically significant difference between pre-test and post-test scores ($t = -8.977$; $p = 0.000$), indicating that traditional game-based motor activities significantly improved learning self-confidence among children with low vision disabilities.

Results

The results of this study were analyzed to determine the effect of traditional game-based motor activities on the learning self-confidence of children with low vision disabilities. Descriptive statistical analysis showed an increase in students' self-confidence scores after the intervention.

Table 1 presents the descriptive statistics of students' self-confidence scores during the pre-test and post-test phases.

Table 1. Descriptive Statistics of Self-Confidence Scores

Variable	Test	Mean	SD	Minimum	Maximum
Self-Confidence	Pre-test	10.11	2.35	6.00	17.00
Self-Confidence	Post-test	13.26	3.20	7.00	19.00

The findings indicate that the average self-confidence score increased from 10.11 during the pre-test to 13.26 in the post-test. This increase demonstrates that students showed better confidence in learning activities after participating in adapted traditional games.

Normality Test

Prior to hypothesis testing, a normality test was conducted using the Shapiro-Wilk test. The results are presented in Table 2.

Table 2. Normality Test Results

Variable	Test	Shapiro-Wilk Sig.
Self-Confidence	Pre-test	0.203
Self-Confidence	Post-test	0.107

The pre-test significance value was 0.203 and the post-test significance value was 0.107, both of which were greater than 0.05. Therefore, the data were normally distributed.

suitable for further parametric analysis. Homogeneity analysis was conducted using Levene's Test for Equality of Variances.

Table 3. Homogeneity Test Results

Variable	Sig.
Self-Confidence	0.093

The significance value of 0.093 was greater than 0.05, indicating that the data variance was homogeneous.

To determine the effect of the intervention, a paired sample t-test was performed to compare pre-test and post-test scores.

Table 4. Paired Sample t-Test Results

Variable	Mean Difference	t	df	Sig. (2-tailed)
Pre-test – Post-test	-3.15	-8.977	79	0.000

The paired sample t-test revealed a significance value of 0.000 ($p < 0.05$), indicating a statistically significant difference between pre-test and post-test self-confidence scores. These findings demonstrate that traditional game-based motor activities significantly improved learning self-confidence among children with low vision disabilities.

Discussion

The findings of this study demonstrated an improvement in the learning self-confidence of children with low vision after their participation in traditional game-based motor activities. The higher post-test scores suggest that traditional games adapted to participants' visual and movement needs provided meaningful physical, psychological, and social learning experiences. The combination of repeated motor practice, peer interaction, clear instructions, and achievable movement challenges may have encouraged participants to become more willing to engage in learning activities, communicate with others, and attempt unfamiliar movement tasks.

One important finding was the improvement in participants' confidence after engaging in adapted traditional games. Traditional games can create enjoyable and relatively non-threatening learning environments in which children are encouraged to participate without excessive fear of making mistakes. Repeated opportunities to complete achievable movement tasks may provide mastery experiences that strengthen children's beliefs in their own abilities. This interpretation is consistent with (Behan, 2020; Lubis, 2019), who found that perceived motor competence was positively related to physical activity among children with visual impairments (Guo, 2025; Negara & Jamilah, 2025). (Müller et al., 2015; Pratiwi, 2019) also reported differences in perceived motor competence between children with and without visual impairments, indicating the importance of providing appropriate movement experiences that enable children with visual limitations to recognise and develop their physical capabilities.

The findings can also be interpreted through the relationship between actual motor competence and perceived competence (Kumar et al., 2025; Piotrowski et al., 2025). (Kumar et al., 2025; Piotrowski et al., 2025) demonstrated that perceived motor competence mediated the relationship between gross motor skills and physical activity among youths with visual impairments. This evidence suggests that improving children's confidence in their movement abilities may be an important pathway through which they become more willing to participate in physical activities. In the present study, the adapted games provided repeated opportunities

for running, balancing, changing direction, manipulating objects, communicating with peers, and completing movement challenges. Successful participation in these activities may have strengthened both movement-related confidence and broader confidence during the learning process.

The positive outcome is particularly important because children with visual impairments frequently experience restrictions in motor development and physical activity participation (Delas-Kalinski et al., 2025; Piotrowski et al., 2025). (Budiman et al., 2024; Padilla et al., 2025) found that children with visual impairments demonstrated lower physical activity levels than children without visual impairments and reported significant relationships between physical activity and motor skill performance. Similarly, Wagner et al. (2013) identified disadvantages in several gross motor skills among children with visual impairments, particularly skills requiring spatial orientation, object control, and visual information. (Mulya et al., 2025) further showed that gross motor performance among children with visual impairments is influenced by interacting individual, environmental, and experiential factors. These findings reinforce the need for structured interventions that provide safe, repeated, and accessible movement experiences.

(El-Rajab et al., 2025; Valle-Muñoz et al., 2025) also reported associations among physical activity, fundamental motor skills, and health-related fitness in children with visual impairments. The present findings extend this body of evidence by suggesting that appropriately adapted movement experiences may contribute not only to physical engagement but also to confidence in participating in learning. However, the increase in self-confidence should not be interpreted solely as a direct result of motor practice. Peer support, teacher encouragement, successful task completion, culturally familiar game formats, and opportunities for social communication may have operated together during the intervention.

The social characteristics of traditional games may have contributed substantially to the observed improvement. Many traditional games require cooperation, turn-taking, communication, mutual assistance, and collective problem-solving. For children with low vision, these interactions can reduce feelings of isolation and provide opportunities to participate as active members of a group. Positive responses from peers and teachers may also strengthen emotional security and encourage children to express themselves more confidently. Thus, traditional games can function as more than recreational activities; they can serve as inclusive pedagogical environments in which motor, social, and emotional learning occur simultaneously.

The findings are also consistent with the literature indicating that the participation of children with visual impairments is strongly influenced by the availability of appropriate opportunities and environmental support. (Amiri et al., 2025; Madu et al., 2025) concluded that low physical activity participation among school-aged individuals with visual impairments may be associated more closely with perceived barriers and limited opportunities than with visual acuity alone. (Fukuda, 2026; Hasan, 2025) similarly highlighted the importance of support, accessible activities, and appropriate knowledge when facilitating physical activity participation among children with visual impairments and their families. Therefore, children's limited participation should not automatically be interpreted as a lack of ability or motivation. It may instead reflect inaccessible instructions, unsuitable equipment, safety concerns, or insufficient social support.

The success of the intervention highlights the important role of physical education teachers in designing inclusive learning experiences. In this study, adaptations such as clear verbal instructions, safe and structured movement areas, simplified rules, peer assistance, high-contrast or accessible equipment, and repeated demonstrations helped make the activities more understandable and manageable. These adaptations may have reduced uncertainty and fear while enabling children to participate with greater independence. Nevertheless,

adaptations should not unnecessarily remove meaningful challenges. Teachers should provide tasks that are safe and achievable while still allowing students to make decisions, solve movement problems, and experience genuine success.

The practical contribution of this study lies in positioning adapted traditional games as a culturally relevant strategy for inclusive physical education. Unlike activities that depend on specialised or expensive equipment, many traditional games can be modified using locally available materials and familiar movement patterns. This characteristic may make them particularly useful in schools with limited resources. Moreover, incorporating local games into adapted physical education can preserve cultural knowledge while providing meaningful opportunities for motor participation, social interaction, and confidence development.

The study also contributes to the literature by examining learning self-confidence rather than focusing exclusively on motor performance or physical activity levels. Previous international research has established relationships among motor competence, perceived motor competence, and physical activity in children with visual impairments. The present study extends these findings by indicating that culturally familiar and socially interactive motor activities may also support children's confidence within learning situations. This finding has broader implications for inclusive education because confidence can influence children's willingness to participate, communicate, attempt challenging tasks, and remain engaged when difficulties occur.

Study Limitations

Several limitations should be acknowledged when interpreting the findings. First, the study employed a pre-experimental one-group pre-test and post-test design without a control or comparison group. Consequently, the increase in self-confidence cannot be attributed exclusively to the traditional game-based intervention. Other factors, including participants' increasing familiarity with the teacher, questionnaire, peers, or learning environment, may also have contributed to the observed change.

Second, the study measured outcomes immediately after the intervention. It therefore remains unclear whether the improvement in learning self-confidence was maintained over a longer period. A follow-up assessment would be necessary to determine the retention and long-term educational effects of the intervention.

Third, the use of a self-confidence questionnaire may have been influenced by social desirability, participants' interpretation of individual items, and their desire to provide positive responses. Although structured observation was used to complement the questionnaire, observational data may also have been affected by observer expectations. Future research should employ multiple independent observers and report inter-rater reliability to strengthen measurement objectivity.

Fourth, the study focused primarily on changes in learning self-confidence and did not comprehensively examine whether improvements occurred in specific motor skills, physical activity levels, social participation, or emotional well-being. Measuring these outcomes simultaneously would provide a more complete explanation of how traditional game-based activities influence children with low vision.

Finally, differences in visual acuity, previous movement experience, age, functional ability, and level of peer or family support may influence how participants respond to an intervention. These characteristics should be examined more systematically in future studies. Randomised or quasi-experimental studies involving larger samples, comparison groups, longer intervention periods, and follow-up measurements are recommended to verify the effectiveness and generalisability of the programme.

Despite these limitations, the findings provide preliminary evidence that adapted traditional game-based motor activities may represent a promising, inclusive, and culturally responsive approach to improving learning self-confidence among children with low vision.

Integrating these activities into physical education may help teachers create learning environments in which children can move safely, interact meaningfully, experience success, and develop greater confidence in their abilities.

Conclusions

This study concluded that traditional game-based motor activities significantly improved learning self-confidence among children with low vision disabilities. The increase in post-test scores indicates that adapted traditional games provide meaningful opportunities for children to develop movement confidence, active participation, and social interaction during learning activities.

Traditional games can be used as an inclusive physical education strategy because they are enjoyable, culturally familiar, and adaptable to the functional needs of children with low vision. Through safe movement patterns, clear verbal instructions, peer support, environmental orientation, and accessible equipment, children were encouraged to participate more confidently and independently in learning activities.

From a research perspective, this study contributes empirical evidence to the limited literature on culturally responsive and game-based physical education interventions for children with visual impairments. It extends existing knowledge by demonstrating that traditional games can serve not only as motor-learning activities but also as pedagogical tools for strengthening self-confidence, self-efficacy, social participation, and willingness to engage in physical learning environments. The findings may also provide a foundation for future studies involving larger samples, comparison groups, longer intervention periods, and additional outcomes such as motor competence, motivation, and social inclusion.

In terms of implementation, physical education teachers are encouraged to integrate adapted traditional games into individualized and inclusive learning programs for children with low vision. Effective implementation requires teachers to conduct preliminary assessments of students' visual and motor abilities, modify game rules and equipment, provide clear verbal and tactile guidance, organize safe and predictable learning spaces, and facilitate supportive peer interaction. Schools should also provide accessible equipment, teacher training, and collaborative support involving special education teachers and families. These practical measures can help ensure that traditional game-based activities are implemented safely, consistently, and sustainably within inclusive physical education settings.

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