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Physical Activity Module Development for Children with Special Educational Needs

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ABSTRACT

Children with special educational needs (SEN) often face challenges in engaging in physical activities due to the lack of structured programs and clear guidance for teachers, parents, and caregivers. This study aimed to develop a physical activity module specifically designed to enhance motor skills, concentration, and emotional regulation in SEN children, providing a practical resource for educators and caregivers. Using a Research and Development (R&D) approach based on the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation), key users included special education teachers, parents, therapists, and caregivers. The module comprises five structured activities: Lempar Tangkap Bola (hand-eye coordination), Simon Says (listening and instruction-following), Body Bridge (balance and body awareness), Berburu Jejak Alam (sensory exploration), and Memory Pathway (memory and movement planning). Feedback from teachers and parents indicated that the module effectively engaged SEN children, with clear instructions and suitable activities. Recommendations for improvement include more visual aids, detailed instructions, and activity variety to accommodate diverse abilities, highlighting the importance of structured physical activity programs for SEN children.

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1. INTRODUCTION

Children with special educational needs (SEN) often face challenges in learning, forming friendships, and participating in daily activities. These difficulties can negatively affect their academic performance, emotional well-being, and physical health (Sulyman & Yetunde, 2023). As a result, SEN children require appropriate support to help them develop and reach their full potential. SEN children are individuals who experience disabilities or a combination of conditions that make learning, social interaction, or physical activity more challenging (Al Husaeni & Wahyudi, 2023). These disabilities may include developmental delays, learning difficulties, emotional or behavioral issues, or physical limitations. Globally, approximately 240 million children aged 0–17 years live with disabilities (Dad *et al*., 2024). In Indonesia, the 2018 Basic Health Research Survey (RISKESDAS) reported that 3.3% of children aged 5–17 years experience some form of disability (UNICEF, 2023). These statistics underscore the urgent need for tailored interventions to support SEN children in their education, mental health, and physical development (Tjandrarini *et al*., 2025).

Children with SEN often require tailored educational support, healthcare services, and functional assistance (Newacheck *et al*., 1998). According to the American Psychological Association (APA) Dictionary of Psychology, children with SEN frequently encounter challenges that make everyday activities more difficult without additional support. These children may struggle with mobility, communication, or emotional regulation, which can impact their independence and overall well-being (Sen & Yurtsever, 2007). Therefore, it is essential to provide SEN children with appropriate resources, structured programs, and accessible environments to help them develop and acquire crucial life skills (Jamaica Association for the Deaf, JAD).

Physical activity plays a crucial role in the well-being of children with SEN. Many of these children have abundant energy but often lack appropriate opportunities to channel it constructively. Without access to suitable activities or supportive spaces that encourage movement, SEN children may face several challenges, including obesity, emotional instability, difficulty concentrating, and behavioral problems (Ability Path) (Kumar *et al*., 2024).

There remains a significant gap in understanding how to effectively channel the energy and activity levels of children with SEN. Children with SEN are individuals who require specialized services and education to develop their full potential. This highlights the importance of creating personalized approaches tailored to their unique needs. Unfortunately, a lack of awareness often leads to missed opportunities for both physical activity and social interaction, which are crucial for their overall growth. Physical activity supports their physical health, while social interaction fosters confidence and emotional well-being (Nuwa *et al*., 2023).

When the activity levels of children with SEN are not properly channeled, it can result in several negative outcomes, including behavioral problems, increased frustration, and health issues such as obesity. Research indicates that children who lack opportunities for physical activity are more likely to become obese and face related health challenges (Qurrotul 'Aini *et al*., 2023). This underscores the importance of providing these children with structured programs and opportunities to engage in physical activity. Such interventions not only support their physical health but also promote their emotional and social development.

Despite the growing need for structured physical activities, there remains a significant gap in understanding how to effectively manage the energy levels of children with SEN. Raharjo and Kinanti (as cited in Setyaningsih, 2022) highlight that adaptive sports play a crucial role in helping these children develop motor skills, improve fitness, and enhance emotional

intelligence. Unfortunately, many teachers and parents lack the necessary resources or knowledge to implement such programs effectively. Consequently, the benefits of adaptive sports and physical activities are often overlooked, leaving many children without the support they need to reach their full potential. To address this issue, it is essential to provide better training for educators and parents, improve access to resources, and emphasize the importance of these programs for the overall development of children with SEN. Based on these challenges, this study aims to develop a structured module as a medium to deliver physical activities specifically designed for children with SEN.

2. METHODS

This study follows a Research and Development (R&D) approach using the ADDIE model to create a physical activity module for children with SEN. The aim is to develop a practical tool that not only supports these children but also provides teachers, parents, and therapists with clear guidelines on facilitating physical activities. ADDIE stands for Analysis, Design, Development, Implementation, and Evaluation. In the analysis phase, data were collected through questionnaires distributed to special education teachers, parents, and caregivers. This process helped identify the specific challenges and needs of both the children and the individuals supporting them, providing a foundation for module development. During the design phase, the module's structure and content were planned. This included selecting appropriate activities and defining learning objectives, while carefully considering the unique needs of children with SEN to ensure accessibility and engagement. In the development phase, the actual content of the module was created based on the design plan. The implementation phase involves testing the module with a small group of children with SEN, supported by teachers and caregivers. Informal feedback will be collected to assess how effectively the module functions in practice. Finally, in the evaluation phase, feedback from teachers, parents, and therapists will be reviewed to identify strengths and areas for improvement. Based on this feedback, revisions will be made to enhance the module, ensuring it better meets the needs of children with SEN and the individuals supporting them.

3. RESULTS AND DISCUSSION

Recognizing the importance of physical activity for children with SEN, this study began by assessing the current situation and identifying existing gaps (see **Figure 1**). To achieve this, a questionnaire was distributed to special education teachers, parents, therapists, and caregivers to gather insights into their experiences with physical activity programs for children with SEN. The responses highlighted a clear need for structured and accessible resources, as many educators and caregivers face difficulties implementing effective programs due to a lack of clear guidance. This initial stage of the research provided essential information to guide the development of a physical activity module tailored to the specific needs and challenges of supporting children with SEN.

When asked about the importance of physical activity in helping children with SEN regulate their emotions and behavior, 27.3% of respondents considered it important, while 72.7% rated it as very important. Many respondents explained that physical activity allows children to release excess energy, making it easier for them to manage their emotions and behavior. Without adequate movement, children may experience frustration or difficulty maintaining self-control (Duckworth *et al*., 2014; Piquero *et al*., 20120). Other respondents emphasized additional benefits, such as increased confidence and reduced stress. Research supports

these observations, indicating that physical activity is vital for the health and development of children with SEN. Studies have shown that staying active can significantly improve their mental health and overall growth (Vanderloo et al., 2022).

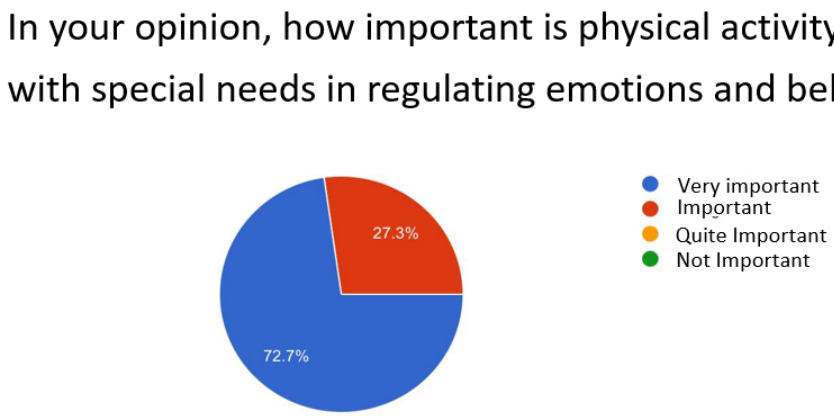

Figure 1. Questionnaire results on the importance of physical activity for children with SEN.

Approximately 81.8% of respondents had never used or seen a physical activity module designed for children with SEN, while only 18.2% reported having experience with one (see **Figure 2**). Among those who had, the activities mentioned included sports and gardening. These results indicate that most educators and caregivers are not familiar with structured physical activity programs for SEN children. This highlights a clear need for more accessible and well-organized physical activity resources that can support both children and the adults guiding them (Ostrowska-Tryzno *et al*., 2020).

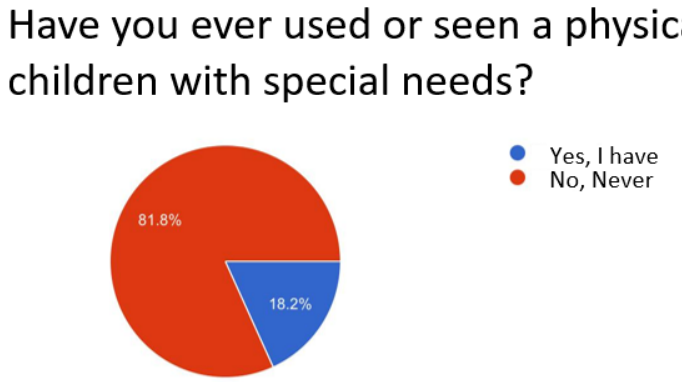

Figure 2. Questionnaire results on familiarity with physical activity modules.

This physical activity module for children with SEN is designed as a practical guide for educators and caregivers (see **Figures 3, 4, and 5**). The module includes a table of contents, an introduction, five structured activities, useful tips, an evaluation section, and a closing. The five activities featured are Lempar Tangkap Bola, Simon Says, Body Bridge, Berburu Jejak Alam, and Memory Pathway, each aimed at developing different physical, cognitive, and emotional skills in children with SEN.

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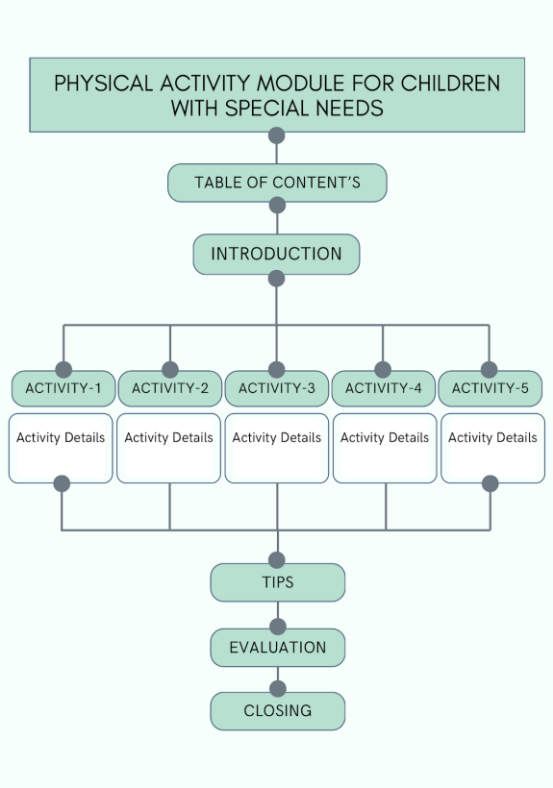

Figure 3. Physical activity module for children with sen concept map.

(a) (b)

Figure 4. (a) module cover and (b) table of contents.

Figure 5. (a) Overview and illustration of the memory pathway activity (page 12). (b) steps and benefits of the memory pathway activity (Page 13).

This module is designed to help teachers, parents, and caregivers plan structured physical activities for children with SEN by providing clear guidance and practical exercises (see **Figure 6**). It begins with an introduction that explains the challenges these children often face in motor skills, emotional regulation, and social interaction. The module is intended for parents, special education teachers, therapists, and caregivers, offering adaptable activities that can be implemented in various settings such as homes, schools, and therapy centers. The activities aim to enhance focus, motor coordination, and emotional stability, while making physical activity engaging and enjoyable. A section with practical tips guides caregivers on how to adjust activities to suit each child's needs, create a supportive environment, and incorporate elements like music to increase participation and enjoyment. The evaluation section encourages caregivers to observe the children's progress, reflect on the effectiveness of each activity, and make necessary adjustments. Ultimately, this module serves as a valuable resource for promoting skill development through movement and play, ensuring that physical activities are both structured and flexible, creating meaningful and enjoyable experiences for children with SEN.

Figure 6. (a) implementation of the throw and catch the ball activity. (b) implementation of the simon says activity.

During the implementation of Lempar Tangkap Bola, the children took turns throwing and catching the ball in small groups. Some participants were immediately excited and engaged, while others needed encouragement to join in. Initially, a few children had difficulty tracking the ball, but as the activity continued, their coordination gradually improved. There were moments of distraction, yet with guidance, they were able to refocus. Overall, the children seemed to enjoy the game, and the author observed noticeable improvements in their ability to follow the ball's movement and react to it over time. In Simon Says, the children listened attentively to the instructions, although some needed extra time to process what was said before responding. A few struggled with impulse control, occasionally moving without a command. However, as the game progressed, they became more focused, waiting for the correct cues before acting. This activity created a fun and interactive atmosphere, allowing the children to practice focus, patience, and self-control while enjoying the game.

When asked whether the instructions in the module were easy to understand, 60% of respondents answered "very clear," while 40% answered "fairly clear" (see **Figure 7**). This indicates that the module's instructions are generally easy to follow and well-structured. Notably, none of the respondents found the instructions unclear, suggesting that the content is effectively organized and presented in a way that supports comprehension.

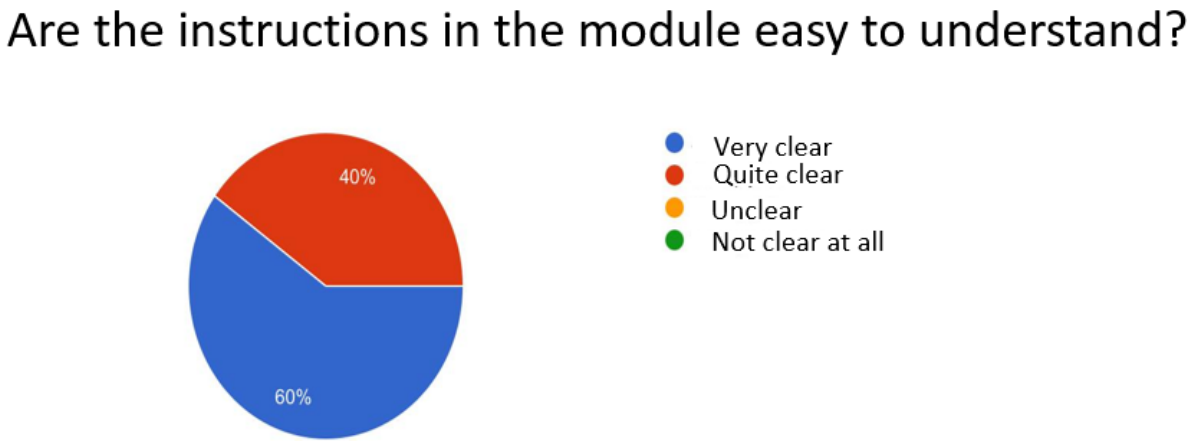

Figure 7. Results of the questionnaire on the clarity of instructions.

When asked whether children became more enthusiastic about physical activities after using the module, 90% of respondents answered yes, while 10% did not notice a significant change (see **Figure 8**). This indicates that the module successfully increases engagement for most children. However, since a small portion of children did not show the same level of enthusiasm, minor adjustments may be necessary. Enhancing interactivity, tailoring activities to individual needs, or providing additional guidance could help ensure that all children remain interested and actively involved (Chi, 2009).

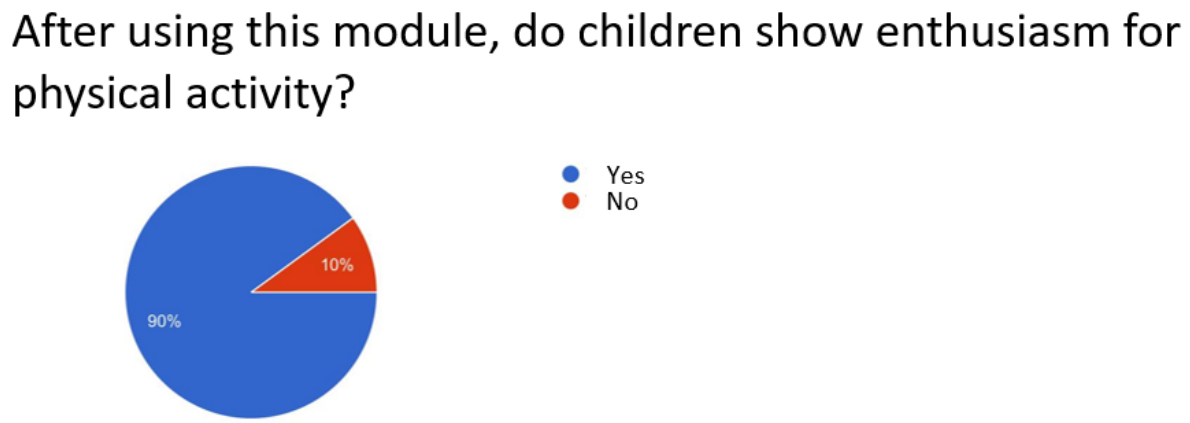

Figure 8. Questionnaire results on the module's impact on enthusiasm.

When asked about the module's impact on children's emotions and behavior, 90% of respondents reported noticeable improvements, including children being calmer, more focused, and more expressive (see **Figure 9**). However, 10% did not observe any significant changes. These results suggest that while the module benefits most children, its effects may vary among individuals. Some children might require a more personalized approach or minor adjustments to fully experience the benefits of the activities.

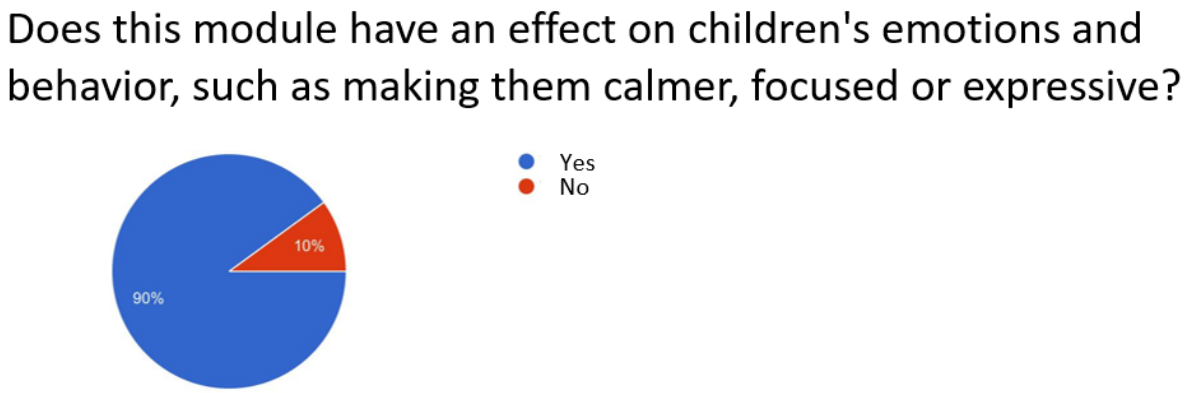

Figure 9. Questionnaire results on the module's impact on emotions and behavior.

All respondents (100%) agreed that the activities in the module could be carried out using the facilities they already had (see **Figure 10**). This indicates that the module is practical and easy to implement, allowing teachers, parents, and caregivers to use it without the need for specialized equipment. Its compatibility with existing resources makes the module adaptable to various settings, such as schools, homes, and therapy centers, thereby increasing accessibility for children who need structured physical activities.

Figure 10. Questionnaire results on module's suitability for available facilities.

When asked about the level of engagement, 60% of respondents found the activities very interesting, while 40% considered them quite interesting (see **Figure 11**). This indicates that the module successfully captures children's attention and keeps them involved in physical activities. Since no respondents found the activities uninteresting, it suggests that the exercises are enjoyable and stimulating. To further enhance engagement, incorporating a greater variety of activities, adding interactive elements, or adapting certain tasks to different ability levels could make the module even more appealing and beneficial for all children. Many respondents found the module easy to understand and apply across different school settings. They appreciated the clear, straightforward explanations and the well-organized layout, with readable fonts and good color contrast. The step-by-step instructions, covering guidelines, materials, tips, and evaluation, made the activities simple to implement. Respondents also noted that the activities were engaging, beneficial for children with SEN, and easy to conduct without placing too much burden on teachers or facilitators. Additionally, the materials were easily accessible, requiring no special equipment. Overall, the module was considered practical, informative, and well-designed to support physical activities for children with SEN.

When asked to rate the module, 70% of respondents gave it a score of 4 out of 5, while the remaining 30% rated it a perfect 5 (see **Figure 12**). These results indicate that the majority of users were satisfied with the module and found it effective in supporting physical activities for children with SEN. The high ratings suggest that the module is well-structured and useful, although minor improvements could further enhance its clarity, accessibility, or engagement. Overall, the feedback highlights the module's value in helping facilitators guide children through meaningful and structured physical activities.

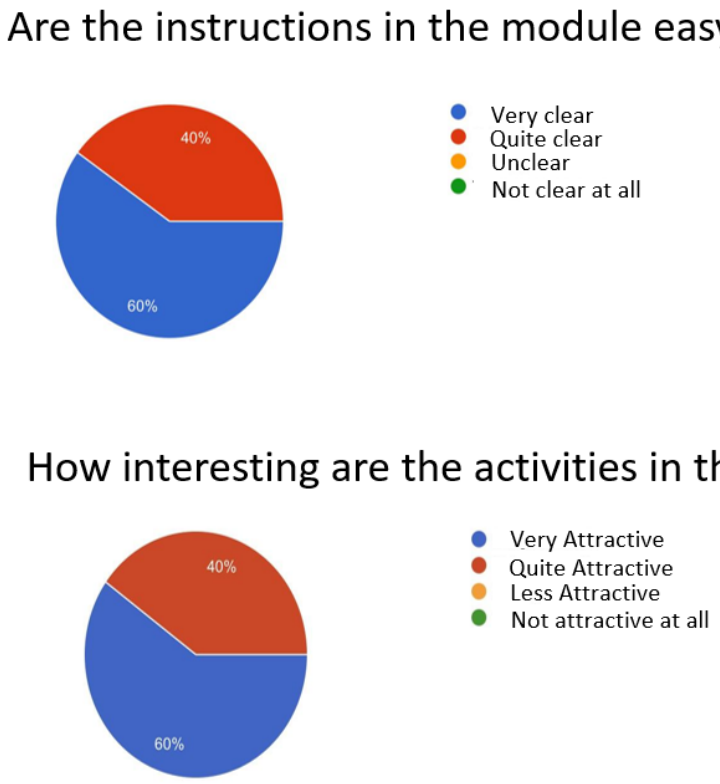

Figure 11. Questionnaire results on the module's activity engagement.

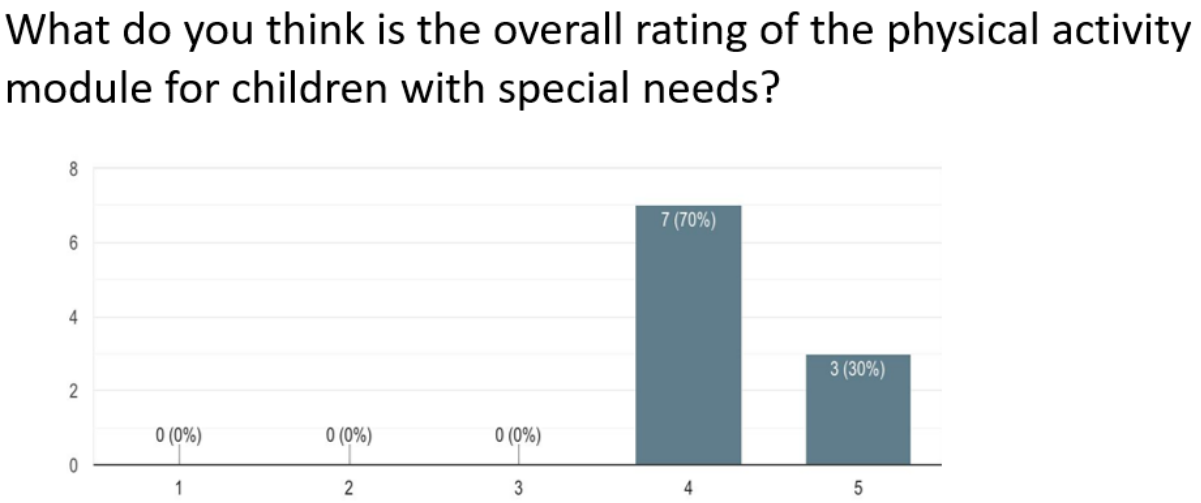

Figure 12. Questionnaire results on the module's overall rating.

4. CONCLUSION

Through this study, the author developed a physical activity module for children with special educational needs (SEN) to address the lack of structured resources available for educators and caregivers. The initial questionnaire revealed that many teachers and parents struggled to provide structured physical activities due to unclear guidelines and limited accessible programs. In response, the module was created with five activities—Lempar Tangkap Bola, Simon Says, Body Bridge, Berburu Jejak Alam, and Memory Pathway—designed to enhance motor skills, focus, and emotional regulation. During implementation, observations showed that most children were engaged and demonstrated improvements in coordination, attention, and the ability to follow instructions, although some required

additional encouragement or guidance. Post-implementation feedback supported these findings: 90% of respondents noticed positive changes in children's emotions and behavior, 60% found the instructions very clear, and all respondents agreed that the module could be implemented using existing facilities. Furthermore, 70% of respondents rated the module 4 out of 5 or higher, reflecting overall satisfaction. Suggestions for improvement included providing clearer step-by-step instructions, additional visual aids, and a broader range of activities to better accommodate diverse needs. These findings highlight the importance of well-structured and adaptable physical activity programs for children with SEN. Future enhancements should focus on refining instructions, increasing visual support, and expanding activity options. Additionally, further research could examine the module's long-term impact and explore strategies for integrating it into school curricula and therapy programs to better support the physical, cognitive, and emotional development of children with SEN.

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6. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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