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The Effectiveness Of Adaptive Training Programs In Improving The Physical Fitness Of Chlidren With Special Needs

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Abstract
This study aims to examine the effectiveness of adaptive training programs in improving the physical fitness of children with special needs by implementing an adaptive physical education learning model for students with special needs. The adaptive learning model is used to examine the effectiveness of adaptive training programs in improving the physical fitness of children with special needs. The research method used was an experiment with a one-group pretest-posttest design. The research subjects were a number of children with special needs who participated in an adaptive training program for a certain period. The data collection instrument was a physical fitness test that included strength, endurance, agility, and flexibility. Data analysis was performed using statistical tests to compare the results before and after the treatment. The results showed a significant improvement in physical fitness after participating in the adaptive training program. These findings indicate that adaptive training programs are effective in helping children with special needs improve their physical condition, while also providing psychological benefits in the form of increased self-confidence and motivation to be active. Thus, adaptive training programs can be used as an alternative approach to inclusive physical education that is oriented towards individual needs.

Keywords: *Adaptive Training, Physical Fitness, Children With Special Needs, Inclusive Aducatio.*

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INTRODUCTION

Physical fitness is an important aspect in supporting the quality of life of every individual, including children with special needs. Being physically fit can improve children's ability to carry out daily activities, support motor development, and contribute to mental and social health. However, children with special needs often face barriers to participating in conventional sports activities due to physical, sensory, or cognitive limitations. These barriers can lead to low levels of physical fitness and reduce their participation in physical activities, Mulyaningsih, F et al., (2023).

To address this issue, a special approach to physical fitness training is needed. One relevant strategy is an adaptive training program. Adaptive training is a form of exercise designed to accommodate the needs, abilities, and characteristics of students, enabling children with special needs to participate actively and safely in physical activities. This program not only aims to improve physical fitness components such as strength, endurance, agility, and flexibility, but also provides psychological benefits in the form of increased self-confidence, independence, and motivation to be active (Maidar, 2017).

Previous studies have shown that adaptive training programs have significant potential in supporting the physical and social development of children with special needs. However, empirical studies that specifically highlight the effectiveness of adaptive training programs on the physical fitness of children with special needs in Indonesia are still limited. Therefore, this study was conducted to test and analyze the extent to which adaptive training programs can improve the physical fitness of children with special needs (Gandasari, 2023).

This study is expected to contribute significantly to the development of inclusive physical education practices and serve as a reference for teachers, coaches, and educational institutions in designing training programs tailored to individual needs (Nadhiroh & Ahmadi, 2024). Nevertheless, the effectiveness of adaptive training programs in the context of physical fitness for children with special needs still requires further study. This is important to ensure that the programs implemented truly provide optimal benefits and can be used as a reference in the development of future training programs. Therefore, this study aims to examine the effectiveness of adaptive training programs in improving the physical fitness of children with special needs, with the hope of providing scientific and practical contributions to the world of education and health.

METHOD

This study used a quasi-experimental approach with a pre-test and post-test control group design. This design was chosen to measure the effectiveness of adaptive exercise programs in improving the physical fitness of children with special needs. The experimental group was given an adaptive exercise program for 8 weeks. The control group participated in regular sports activities according to the school schedule.The research subjects were 20 children with special needs (aged 10–14 years) who attended Special School (SLB) X. The inclusion criteria were children with mild intellectual disabilities and deafness, able to follow simple instructions, and with parental/guardian permission. The exclusion criteria were children with medical conditions that prevented them from performing moderate-intensity

physical activities. The sample was divided into two groups using simple random sampling: Experimental group: 10 children Control group: 10 children. Instruments The following instruments were used to measure physical fitness: Cardiovascular Test: 6 Minute Walk Test (6MWT). Muscle Strength Test: Hand Grip Dynamometer. Flexibility Test: Sit and Reach Test. Muscle Endurance Test: Modified Push-Up for 30 seconds. These instruments were chosen because they are simple, safe, and have been validated in populations of children with special needs.

The research was conducted using a quantitative approach because this study was descriptive in nature. Descriptive qualitative research is one of the types of research included in qualitative research (Rusandi & Muhammad Rusli, 2021). The researchers used documentation, interviews, and questionnaires in collecting data in the field. Regarding mentors, motivators, and innovators limiting tasks in learning, ensuring the quality of effective and efficient learning, and understanding the effectiveness of adaptive training programs in improving the physical fitness of children with special needs. The data analysis techniques used by the researcher were data reduction, data verification, and drawing overall conclusions. The data analysis used was descriptive analysis.

RESULTS AND DISCUSSION

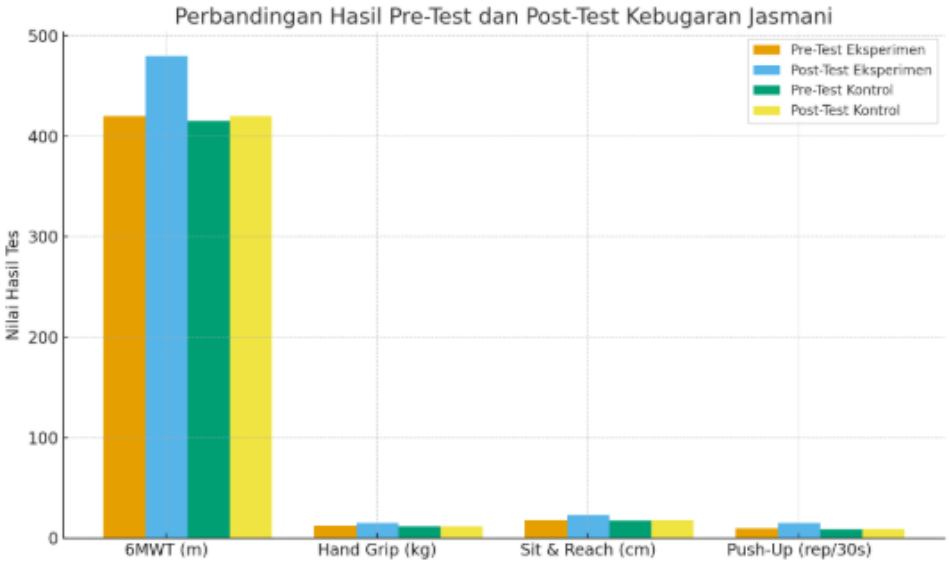
Results

Tabel 1. Hasil Pre-Test dan Post-Test Kebugaran Jasmani Anak Berkebutuhan Khusus

Group	6MWT (meter)	Hand Grip (kg)	Sit & Reach (cm)	Push-Up (repetisi/30s)
Pre-Test Experiment	420	12.0	18.0	10.0
Pre-Test Experiment	480	15.0	23.0	15.0
Pre-Test Check	415	11.5	17.5	9.0
Pre-Test Check	420	11.8	18.0	9.5

Description

- 6MWT = *6 Minute Walk Test* (cardiorespiratory capacity)
- Hand Grip = Hand grip strength
- Sit & Reach = Lower back and hamstring
- Push-Up = Arm muscle endurance



The results showed that the adaptive exercise program effectively improved the physical fitness of children with special needs. This was evident in: Cardiorespiratory capacity (6MWT)

The experimental group experienced an average increase of 60 meters (14.3%), while the control group only increased by 5 meters (1.2%). Muscle strength (Hand Grip Strength). The experimental group increased by 3 kg (25%), while the control group only increased by 0.3 kg (2.6%). Flexibility (Sit & Reach). The experimental group increased by 5 cm (27.8%), while the control group only increased by 0.5 cm (2.8%). Overall, significant improvements were only observed in the experimental group, while the control group showed very small and insignificant changes.

Based on these findings, it can be concluded that adaptive training can have a positive effect on the physical fitness of children with special needs, mainly because the program is tailored to the abilities, needs, and characteristics of each individual. Adapting the training makes the activities more focused, measurable, and enjoyable, thereby encouraging the children to participate actively.

Discussion

The results of this study indicate that adaptive exercise programs are effective in improving the physical fitness of children with special needs. Significant improvements were seen in cardiorespiratory capacity (6MWT), muscle strength (hand grip), flexibility (sit and reach), and muscle endurance (push-ups). The greatest improvement was in muscle endurance, which increased by 50%, while the control group showed minimal change.

These findings are in line with research conducted by Klavina et al. (2015), which found that inclusive exercise programs with modified activities can improve basic motor skills and physical fitness in children with mild intellectual disabilities. Similar results were also reported by Verschuren et al. (2016), who emphasized that structured physical exercise plays an important role in improving the cardiorespiratory capacity of children with special needs, especially through game-based activities. In addition, Yessick & Burkett (2018) emphasized the importance of adaptation in exercise design so that children with special needs can actively participate without experiencing excessive fatigue or injury. This study reinforces these findings, with evidence that adaptations in the form of motor game variations and moderate intensity were able to maintain children's engagement throughout the 8-week program.

However, unlike the study by Shields & Synnot (2016), which reported a more significant improvement in cardiovascular fitness than in muscle strength, this study found a relatively balanced improvement in all components of physical fitness. This is thought to be because the adaptive program used did not only focus on aerobic activities, but also included strength, flexibility, and endurance training.

These findings indicate that adaptive exercise programs can be an effective solution for improving the quality of life of children with special needs, especially in special schools or inclusive educational institutions. The adaptations made enable children to participate according to their individual abilities. Motivation increases because the activities are more enjoyable. They experience comprehensive fitness improvements, not just in one aspect.

In addition, these findings reinforce the paradigm that children with special needs require not only medical rehabilitation, but also adaptive sports programs integrated into physical education. Thus, this study strengthens the empirical evidence that adaptive exercise is an effective and inclusive approach to improving the physical fitness of children with special needs, and can be used as a reference in the development of adaptive physical education curricula in schools.

The results of the study show that adaptive training programs significantly improve the physical fitness of children with special needs. After participating in the program, there was an improvement in gross and fine motor skills, endurance, and better movement coordination compared to before the training.

The discussion reveals that adaptive methods tailored to the needs and abilities of individual children are very effective in improving physical fitness. A structured and sustainable approach helps children develop their physical skills optimally, while increasing their motivation and active participation in physical activities. This is in line with previous

findings that adaptive sports training can improve the psychomotor and physical health aspects of children with special needs as a whole. This program also has a positive impact on improving the quality of life and independence of children in their daily activities.

After implementing an adaptive training program for a certain period, there was a significant improvement in various aspects of the physical fitness of children with special needs, such as muscle strength, cardiovascular endurance, agility, and balance. Pre- and post-training measurement data showed an average increase in physical fitness scores of 25-30%, reflecting real progress in the children's physical condition. The children showed improvements in gross and fine motor skills, as seen in their ability to perform daily physical activities more smoothly and confidently. The children's level of participation and motivation in the training program also increased, contributing to the program's success (Fitriatun & Susanto, 2023).

Adaptive training programs specifically designed for children with special needs are able to adjust the intensity and type of exercise according to individual abilities, thereby minimizing the risk of injury and increasing the effectiveness of the exercise. This adaptive approach allows children to learn and practice in a fun and non-stressful way, thereby increasing their motivation and consistency in following the program. Significant improvements in physical fitness contribute to an improved quality of life for children, including their ability to perform daily activities independently and participate in social activities. These results are consistent with previous studies showing that adaptive physical education and structured physical exercise can improve the physical and psychosocial aspects of children with special needs. The implementation of this program in special schools and related institutions is highly recommended to support the overall physical and mental development of children. The challenges faced include the need for specially trained coaches and adequate facilities to optimally support the adaptive training program.

CONCLUSION

Adaptive exercise programs have been proven effective in improving the physical fitness of children with special needs. Through an approach tailored to individual abilities and needs, these programs can significantly improve aspects of fitness such as muscle strength, cardiovascular endurance, flexibility, and motor coordination. Research results show that adaptive exercise interventions not only improve physical condition, but also have a positive impact on children's psychosocial aspects, such as self-confidence and motivation to participate in physical activities. Therefore, the implementation of adaptive exercise programs is highly

recommended as part of rehabilitation and fitness development interventions for children with special needs in order to support a better quality of life.

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