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Optimizing Athletic Potential and Motor Development in Youth Table Tennis through Family Support and Intensive Training: A Single-Subject Approach

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Abstract: Every child has their own potential and strengths, including in physical and athletic areas. This potential can develop optimally if supported by the environment, parents, and appropriate facilities. This study focuses on a fifth-grade student at a Madrasah Ibtidaiyah in Sidareja who has shown exceptional talent in table tennis. The research employed a descriptive quantitative method using a Single-Subject Research (SSR) approach, consisting of two phases: a baseline phase (initial observation) and an intervention phase (seven days of intensive training). The results showed that family support, particularly from parents, significantly influences a child's motor development. The child demonstrated significant progress in agility and table tennis skills. Although the school did not yet provide specialized facilities, moral support was still provided. This study confirms that sports not only enhance physical abilities but also support children's social, emotional, and mental development.

Keywords: Single-Subject Research, Motor Agility, Parental Support, Youth Sports, Sport Science

Introduction

Every child has abilities and strengths that can be developed to their full potential if they receive the appropriate support and resources. Physical and athletic abilities are crucial elements in a child's growth, particularly at the elementary school level. In this regard, athletic ability can serve as an early indicator of a child's talent, especially in the world of sports. The early childhood years (ages 0–6) are a period of rapid development, particularly in terms of physical and motor skills. Physical development relates to a child's bodily growth, such as increases in height, body mass, and muscle strength. Meanwhile, motor development refers to a child's ability to control their body movements, including both gross motor skills (walking, jumping, running, etc.) and fine motor skills (drawing, writing, cutting, and so on). Physical aspects and activities are often used as key indicators for assessing children's overall growth and development. Therefore, appropriate stimulation from parents, teachers, and the environment is crucial to ensure optimal physical development in infants, and this motivation will benefit them as they advance to the next stage of education (Fitriani, R. & Adawiyah, R. 2018). Physical

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activity also plays a very important role in children's growth and development during childhood, particularly in terms of optimal physical, mental, and emotional development. Appropriate physical activity optimally promotes children's growth and development, but this does not mean that children must exercise every day, unlike adults, especially for children under the age of 5. Activities such as biking, rope games, and running are physical exercises through which children engage in physical activity and refine their movements to improve them (Rubiyatno, R., 2014).

Physical education is a discipline that focuses on physical activity, sports, and physical fitness (Prima & Kartiko, 2021). Physical education plays a vital role in developing children's motor skills and character through a variety of sports activities. Table tennis is a sport that can be enjoyed by people of all ages, whether for recreation or to achieve academic success (Hasmarita, S., Sobarna, A., Hambali, S., & Melani, R., 2025). It can also be said that physical education is a branch of science that studies various physical activities and exercises related to health, physical fitness, and an individual's motor skills (Candra, O., Pranoto, N. W., Ropitasari, R., Cahyono, D., Sukmawati, E., & Cs, A., 2023). This study presents a case study of a fifth-grade student at a Madrasah Ibtidaiyah in Sidareja Subdistrict who demonstrates exceptional talent in table tennis. Physical development occurs through the interaction between the nervous and muscular systems, which play a crucial role in children's lives before and during their school years and contribute to the development of their fine motor skills and cognitive abilities (Roslianti, E., Firmansyah, A., Nugraha, Y., Asmara, A. N., Maulidiyah, H., Monika, H., ... & Falah, S. A. 2022). Through observations, interviews with the child and parents, and supporting documentation, the researchers found that this child's motor skills had developed significantly from an early age thanks to structured training and full support from the family. This article aims to provide a more in-depth discussion of how motor skills can be honed from an early age and the importance of the environment's role in supporting that potential.

Method

The type of research used in this study is descriptive quantitative research in the form of a single-subject research (SSR) study. The SSR research design used in this study is the A-B design. The A-B design is the basic design of SSR research (Sunanto, Takeuchi, & Nakata, 2006). This SSR study was conducted at a private elementary madrasah in Margasari. The private elementary madrasah is in Margasari, Cilacap. The study was conducted during the even semester of the 2025/2026 academic year, specifically from May 28 to May 19, 2025. The research subject in this SSR study was one individual, a student with the initial "T" in Class V D at the private elementary madrasah in Margasari, who demonstrated exceptional talent in table tennis. The selection of this subject was based on interviews with the parent and the child, supplemented by observation.

The research data collection process was divided into two main parts: the baseline phase and the intervention phase. The baseline phase lasted for 2 months. During this phase, the researcher conducted observations and interviews with the parents and the child regarding the physical and motor skills that gave the child an advantage in table tennis. The data from the interviews, tests, and observations were used as baseline data for the student before the intervention began. Next, the intervention phase was conducted over 7 days, with each session lasting 2 hours per day. During this phase, students with a talent for table tennis were provided with an intervention consisting of regular training sessions focused primarily on table tennis, followed by an assessment of their table tennis skills after the intervention.

Results & Discussion

Results

The researchers conducted interviews and hands-on tests with students and parents to gather more in-depth information about children's physical and motor development through table tennis. During these interviews, the researchers asked several questions such as: "Can you tell us a little about this child?", "When did they first become interested in table tennis?", "Who was the first to realize that they had a talent for this sport?", "What are this child's most notable physical and motor strengths?", "How does table tennis training help their motor development?", "How does this child balance his time between school, practice, and rest?", "What kind of support do his parents and teachers provide for his athletic talent?", "Does the school provide any special facilities or support?", "What achievements has he made so far?", and "What are this child's hopes or aspirations for the future in the world of table tennis?".

Baseline Phase

Based on the interview results, it was found that the child became interested in table tennis at a young age due to the influence of his parents, who were also active in the sport. This interest grew further when the child participated in a table tennis competition organized by the Ministry of Religious Affairs. The parents were the first to realize that their child had a talent in this field because he had been accustomed to exercising regularly since childhood. The child demonstrated strengths in physical and motor skills, particularly in movements involving large muscle groups. Regular table tennis practice proved to be highly beneficial in developing the child's agility and motor skills. In addition to excelling at table tennis, the child also showed potential in other sports. The parents provided significant support in fostering the child's interests and talents. The parents actively provide the necessary equipment, such as a table tennis table, balls, paddles, a net, and even a training robot. Meanwhile, although the school has not yet provided specialized facilities for table tennis development, it still offers moral support for the child's athletic activities. The child has also developed good time-management skills by scheduling practice sessions in the afternoons and on days off, ensuring that these do not interfere with schoolwork or rest time. So far, the child has achieved success by winning a subdistrict-level championship and is currently preparing to advance to the district level. The child's future aspiration is to win as many trophies as possible in table tennis. Meanwhile, the parents shared a message with other parents who have children with similar potential: to continue supporting their children, stay motivated, never give up easily, and actively participate in various competitions to build mental resilience while continually encouraging their children to learn and develop even more diligently.

Intervention Phase

For 7 consecutive days, a student with a talent for table tennis participated in regular training sessions lasting 2 hours each day. This training is part of the advanced phase designed to improve the student's table tennis skills. During these sessions, the student was taught various basic and advanced techniques, such as the correct way to hold the paddle, proper body positioning, and agile footwork. In addition, the student was trained to execute serves with various variations, as well as fast and powerful smash techniques. Furthermore, the student learned other essential techniques such as the push, block, drive, and topspin. These techniques were taught so that the student could play with greater confidence and be able to adapt to various playing styles of opponents. After completing a week of training, the student was then tested to assess the progress of his skills. The results were very satisfying. The student was already able to serve well

and accurately, his smashes had become sharper and more powerful, and he was able to master various other playing techniques quite smoothly. With regular practice and proper guidance, the student's table tennis skills have improved significantly. He is now more confident when playing and able to compete with other players in matches.

Discussion

The findings indicate that parental support is crucial for a child's development, as is the support provided by educators at facilities dedicated to children's physical and motor development in early childhood education, specifically, what is supported, exactly how these goals can help, and how age-appropriate safety exercises can contribute (Burhaein, E., 2017). Motor development in children also involves the development of both gross and fine motor skills. Motor development is the process through which a child's movement abilities grow and mature. Essentially, this development progresses in tandem with the neurological and muscular maturation of the child. Thus, every movement, no matter how simple, is the result of a complex pattern of interaction among various parts and systems of the body controlled by the brain (Fajar, M. 2017). Engaging in regular physical activity also promotes a healthy and fit body. From a physiological perspective, a child's physical activity or exercise helps prevent heart problems caused by a sedentary lifestyle. The habit of being active through sports stimulates various physiological processes, such as improved blood circulation and respiration. In addition, physical activity or exercise strengthens children's bones and muscles, and the increased frequency of movement also helps regulate body weight; obese children or those who are overweight tend to be less active than children with a normal weight (Taufan, J., Ardisal, A., Damri, D., & Arise, A., 2018).

Table tennis also offers various additional benefits, such as positive physical, mental, and social development. Table tennis requires good physical conditioning to make training more efficient and achieve better performance, in addition to mastery of technique, tactics, and strategy in the game (Yulianto, F. R. P., 2015). Parental support is crucial for children because when children receive strong support from their parents, they become more enthusiastic and motivated to practice. Parents also help children balance their time between rest, school, and play so that children do not feel pressured while studying. Parents also motivate their children daily to maintain the enthusiasm needed to hone the skills they possess.

Conclusion

Every child has unique potential that can develop optimally if they receive appropriate support and facilities, especially in the areas of physical development and sports. Motor and physical skills develop rapidly between the ages of 0 and 6 and serve as important indicators for assessing a child's growth. Physical activities, such as playing, running, and sports like table tennis, play a major role in the development of a child's muscles, coordination, and physical and mental health. This study examined the motor skills of a 5th-grade female student at a Madrasah Ibtidaiyah in Sidareja who demonstrated exceptional talent in table tennis. The study employed a descriptive quantitative method with an SSR A-B design, which included a baseline phase (initial observation) and an intervention phase (7 days of intensive training). The results showed that the child's talent was identified early on thanks to family support, particularly from parents who actively provided training facilities. The child demonstrated significant progress in agility and motor skills. Although the school has not yet provided specialized facilities, moral support continues to be offered. The child also maintains good time management between school, practice, and rest. Table tennis is not only beneficial for physical health but also supports social, emotional, and mental development. Parental

support has proven to be a key factor in motivating children to continue developing and achieving success.

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