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Exploring Effective Teaching Strategies for Improving Motor Skills in Children with Special Needs Through Adapted Football: A Preliminary Study

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Abstract

Introduction. The research highlights the need for customized test batteries, periodic assessments, involvement of specialist staff and national training standards to support the development of adapted football programs for children with special needs.
Aim. The study aimed to identify strategies conducive to enhancing inclusion and skill development tailored to the unique needs of these children.
Material and methods. This research investigates effective teaching strategies aimed at enhancing the physical and psychological development of children with special needs aged 12-15 years through adapted football programs. A sample population comprising specialists in the field was surveyed through questionnaires, followed by tests administered to 25 children (with mild mental retardation) from the Gavana "Family Type Center" in Pitesti, serving as the experimental group.
Results. Results from screening and comprehensive examinations, including motor development assessments using a specialized grid, revealed significant findings. The study delineated motor skills deficits and educational requirements, forming the basis for individualized educational programs. Additionally, the study emphasized the importance of well-equipped facilities and skilled specialists for accurate evaluation and education. The analysis of control samples demonstrated positive outcomes, with the majority of subjects exhibiting capabilities in body schematics, general motor skills, conducted and perceptual-motor structures, and organizing actions. These results underscore the potential for improvement and adaptation in physical education programs for children with special needs. The study proposes an integrated approach to evaluation and training, aligning with modern praxiological principles. A didactic strategy for enhancing adapted football in institutionalized centers was developed based on the assessment outcomes. The integration of evaluation strategies into training optimization charts emphasizes the importance of continuous assessment and refinement in program delivery.
Conclusion. In conclusion, the research highlights the necessity for tailored test batteries, periodic evaluations, specialized personnel involvement, and national-level training standards to support the development of adapted football programs for children with special needs. The findings suggest promising avenues for future research and the implementation of inclusive sports initiatives sensitive to the diverse needs of young athletes with special needs.

Key words: *young athletes, mental retardation, integration, well-being, emotional.*

Rezumat
Introducere. Cercetarea evidențiază necesitatea unor baterii de testare personalizate, evaluări periodice, implicarea personalului specializat și standarde de pregătire la nivel național pentru a sprijini dezvoltarea programelor de fotbal adaptate pentru copiii cu nevoi speciale.
Scop. Studiul a avut ca scop identificarea strategiilor favorabile pentru îmbunătățirea incluziunii și dezvoltarea abilităților adaptate nevoilor unice ale acestor copii.
Material și metodă. Această cercetare investighează strategii de predare eficiente care vizează îmbunătățirea dezvoltării fizice și psihologice a copiilor cu nevoi speciale în vârstă de 12-15 ani prin programe de fotbal adaptate. Un eșantion de populație format din specialiști în domeniu a fost chestionat prin chestionare, urmat de testele administrate la 25 de copii (cu retard mintal ușor) de la Gavana „Centrul de tip familial" din Pitești, servind ca grup experimental.
Rezultate. Rezultatele de la screening și examinările cuprinzătoare, inclusiv evaluările dezvoltării motorii folosind o grilă specializată, au dezvăluit constatări semnificative. Studiul a delimitat deficitele motorii și cerințele educaționale, formând baza unor programe educaționale individualizate. În plus, studiul a subliniat importanța facilităților bine echipate și a specialiștilor calificați pentru evaluarea și educația corectă.

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Analiza eşantioanelor de control a demonstrat rezultate pozitive, majoritatea subiecţilor prezentând capacităţi în schema corporală, abilităţi motorii generale, structuri conduse şi perceptiv-motorii şi acţiuni de organizare. Aceste rezultate subliniază potenţialul de îmbunătăţire şi adaptare în programele de educaţie fizică pentru copiii cu nevoi speciale. Studiul propune o abordare integrată a evaluării şi formării, aliniată la principiile praxiologice moderne. Pe baza rezultatelor evaluării a fost elaborată o strategie didactică pentru îmbunătăţirea fotbalului adaptat în centrele instituţionalizate. Integrarea strategiilor de evaluare în diagramele de optimizare a instruirii subliniază importanţa evaluării continue şi a perfecţionării în livrarea programului.
Concluzii. În concluzie, cercetarea evidenţiază necesitatea unor baterii de testare personalizate, evaluări periodice, implicare a personalului specializat şi standarde de pregătire la nivel naţional pentru a sprijini dezvoltarea programelor de fotbal adaptate pentru copiii cu nevoi speciale. Descoperirile sugerează căi promiţătoare pentru cercetări viitoare şi implementarea iniţiativelor sportive incluzive, sensibile la nevoile diverse ale tinerilor sportivi cu nevoi speciale.

Cuvinte cheie: *tineri sportivi, retard mintal, integrare, bunăstare, emoţional.*

Introduction

In the contemporary European context, the issue of institutionalized children has once again captured the attention of European commissions (Grugel & Iusmen, 2013). Numerous programs are underway with the aim of integrating these children and equipping them with the skills necessary for their transition into adulthood (Albu et al. 2006, Badau et al., 2023; Scifo et al., 2019). The role of sports in education holds significant implications not only for physical development but also for cultural integration and overall individual involvement (Kapsal et al. 2019). Engaging in sports activities, even within institutionalized environments, becomes imperative in bridging the gap between formal education and real-life challenges, particularly for children with special educational needs (SEN) (Moşoi & Balint, 2015).

Children with SEN encompass a diverse spectrum of individuals who face various challenges in their learning and development (Huepe et al., 2011; Stefanica, 2022). These challenges may stem from cognitive, physical, emotional, or sensory impairments, thereby impacting their ability to participate fully in traditional educational settings (Stefanica et al., 2024). Learning difficulties among children with SEN can range from mild to severe, encompassing conditions such as dyslexia, attention deficit hyperactivity disorder (ADHD), autism spectrum disorder (ASD), intellectual disabilities, and physical disabilities, among others (Traina et al., 2022; Vance & Clegg, 2010; Mathrick, 2017).

Understanding the sources of these learning difficulties is crucial for designing effective interventions (Valentina & Daniel, 2018; Sanches, 2005, Niculescu et al. 2008). Factors contributing to SEN may include genetic predispositions, neurological differences, prenatal exposure to toxins or infections, birth complications, childhood illnesses or injuries, environmental influences, and socio-economic factors (Naveed et al., 2020, Muntean et al., 2023; Reichenberg et al., 2016). Additionally, inadequate access to quality education, limited resources for early intervention, and societal stigmatization can exacerbate the challenges faced by children with SEN, hindering their academic progress and social integration (Carty et al., 2021; Luminita & Valentina, 2018; Ghergut, 2016) .

In light of these complexities, tailored interventions are essential to address the unique needs of children with SEN (Marin et al., 2023; Patrascan & Stefanica, 2019; Poon et al., 2023). Adapted physical activities, such as football, offer promising avenues for promoting their physical, social, and emotional well-being. However, the efficacy of such interventions hinges on the implementation of appropriate teaching strategies that cater to the diverse needs of this population (Patrascan & Stefanica, 2019; Sousa, 2022). UNESCO recognizes the paramount importance of physical education and sports, citing their beneficial effects in addressing various social, political, and economic issues (Kiuppis, 2016). Sports serve as a means to mitigate crime, violence, and drug addiction while promoting social inclusion, especially for individuals with physical disabilities. Furthermore, it contributes to enhancing work productivity by improving physical health, thereby extending the active working age and enhancing overall quality of life for all individuals (Edyburn, 2013, Zolghadr et al., 2019). Adapted physical activities emerge as indispensable tools for social inclusion, forming a fundamental component of internationally promoted educational policies. In recent years, Romania has witnessed a distinctive shift in educational discourse, marked by a focus on differentiation, social integration, and inclusion (Balan, 2021; Albu et al., 2006). Legislative documents now emphasize access to education for all children, particularly those in restrictive environments, with a deliberate effort to eliminate terms such as marginalization, segregation, or isolation. This paradigm shift underscores the commitment to fostering an inclusive educational environment where every child, regardless of their abilities or background, has equal opportunities to thrive (Albert et al., 2015).

The purpose of this exploratory research is to experimentally identify the most effective didactic strategies aimed at enhancing physical and psychological training through adapted football for children aged 12-15 years with special needs.

To achieve the proposed aim, the following research objectives will be undertaken in the course of the exploratory research:

1. Determination of the methodological instrument and its application in the research process.
2. Establishment of the operational framework for experimental research at the Gavana Family Center in Piteşti.
3. Stabilization of subjects and the organizational framework for preliminary research.
4. Development and implementation of tests and samples tailored to specific requirements.
5. Exploration of strategies conducive to increasing the inclusion of children with special needs in adapted football.

By systematically addressing these tasks, the research aims to contribute valuable insights into the development of effective educational strategies that cater to the unique needs of children with

special needs, thereby promoting their holistic well-being and integration into society.

Materials and Methods

Participants

The participants in this study consisted of children aged 12-15 years with special educational needs (SEN) from the Gavana "Family Type Center" in Pitesti, Romania. A total of 25 children, boys and girls diagnosed with SEN, with an average IQ of 52 ± 8. The average age of the participants was 13.42 ± 0.9 years. Regarding gender distribution, 41.7% of the participants were female, while 58.3% were male. with mild mental retardation were included in the study as the experimental group. Participants were selected based on predetermined inclusion criteria, including age range and diagnosis of mild mental retardation.

Data Collection/Research Tools

Data collection for this study involved the utilization of a multi-faceted approach comprising questionnaires, tests, and observational assessments. The research tools utilized included:

1. Questionnaires: A survey questionnaire was administered to specialists in the field of special education to gather insights into effective teaching strategies for children with special needs.
2. Motor Skills Assessment (Ghergut, 2016): Motor skills were assessed using a specialized grid-based inventory designed to evaluate various aspects of motor development. The grid encompassed a range of motor abilities typically observed in children aged 3 to 13-14 years, adapted to accommodate the unique needs of children with SEN (Fig 1). The evaluation process begins with the examiner, who systematically evaluates the child's motor skills over a period of several weeks. During this time, the examiner assesses a wide range of motor abilities, marking the corresponding response (YES, PARTIAL, or NO) for each skill in the inventory. Certain skills may require observation in different settings, such as the school canteen or family environment, where collaboration with educators or parents may be necessary. Once the assessment grid is fully completed, the examiner identifies any areas of inability or deficiency marked as PARTIAL or NO. These are then categorized into elements of motor structure, such as general motor skills, organization of actions, body pattern, conduct, and perceptual-motor structures. The inventory of inabilities is then transformed into an inventory of educational requirements, outlining the specific motor skills that need to be achieved. Based on this assessment, the examiner develops an individualized motor education program tailored to the child's needs and abilities.
3. Observational Assessments: Observations of participants' motor skills and behaviors were conducted during intervention sessions to assess progress and identify areas for improvement.

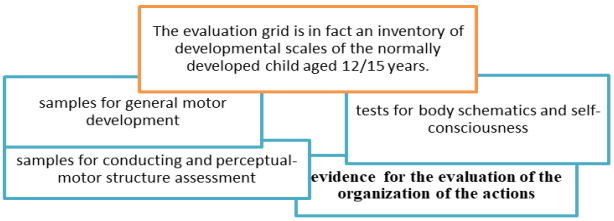

Fig. 1. Strategy for evaluation of motor development in children 12-15 years

Intervention/Training Protocol

The intervention protocol encompassed a series of adapted football training sessions meticulously tailored to meet the specific needs of children with special educational needs (SEN). Spanning a duration of 10 weeks, from February 15th to April 30th, 2023, the training program was meticulously designed to not only enhance physical and psychological development but also actively promote social inclusion and engagement among participants. This comprehensive approach included both initial and final assessments to measure the progress and effectiveness of the intervention. Key components of the intervention included:

1. Adapted Football Curriculum: A structured curriculum was developed to facilitate the teaching of football skills in a manner that accommodated the diverse abilities and learning styles of participants. The curriculum incorporated modified drills and activities aimed at improving coordination, balance, and teamwork (Patrascanu & Stefanica, 2019).

2. Individualized Support: Participants received individualized support and guidance from trained instructors throughout the intervention period. Instructors employed differentiated instruction techniques to cater to the unique needs and abilities of each participant, ensuring maximum engagement and participation.

Practical implementation of the modern praxiological orientation of thought and process management on the objectives-strategy-evaluation trajectory, following the results obtained through tests and evidence sensitive to the possibilities and needs of the children in the research.

3. Social Integration Activities (Rosu et al., 2022): In addition to football training, social integration activities were incorporated into the intervention to promote interaction and collaboration among participants. Group discussions, team-building exercises, and cooperative games were utilized to foster positive social interactions and relationships.

Based on the list of motor activities evaluating the degree of motor development of children with special needs between the ages of 12 and 15, we have developed and implemented the didactic strategy for the improvement of football adapted to the institutionalized centers (Fig. 2).

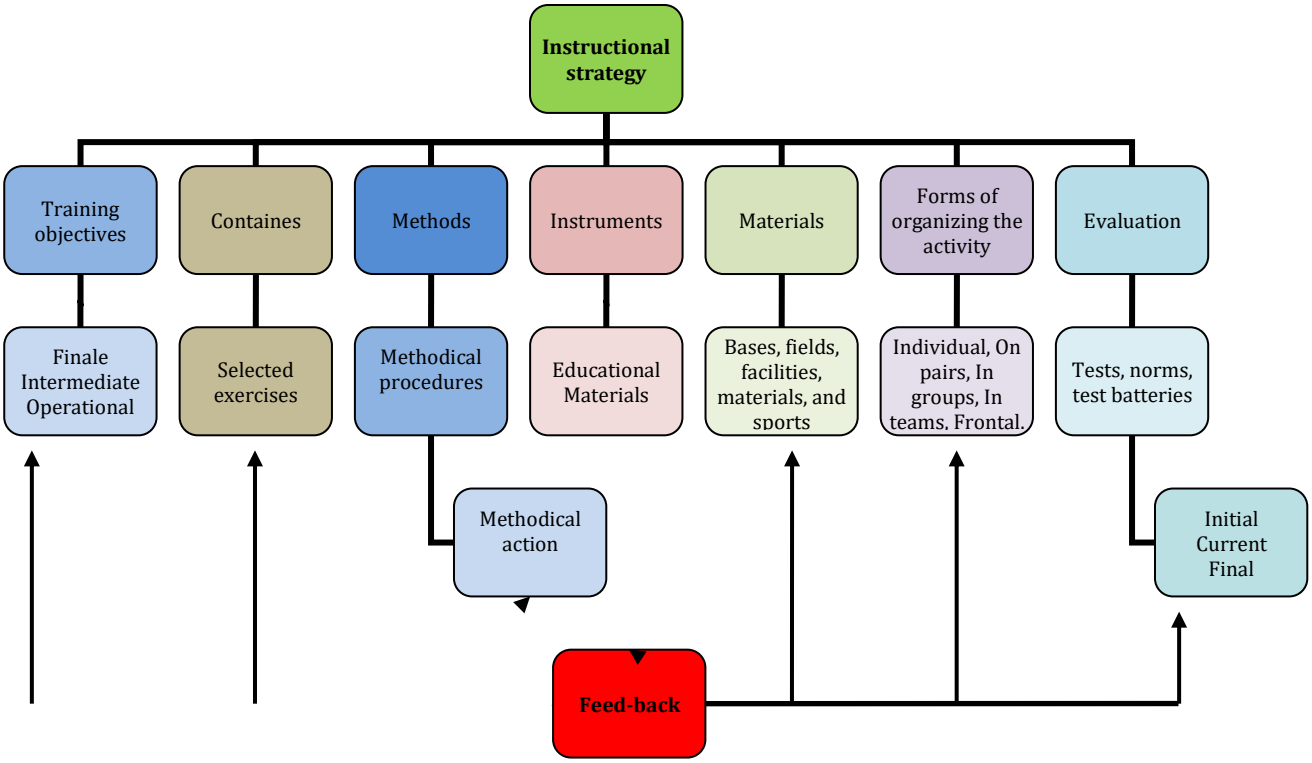

Fig. 2. Implementation of didactic strategy for enhancing motor skills through adapted football in institutionalized centers

Statistical Analysis

Paired-sample t-tests were utilized to assess the differences in performance between initial and final assessments. By employing the Paired Samples t-Test (One-Sample), we were able to compare means within paired groups, allowing us to evaluate the statistical significance of observed changes (Rosu et al., 2023). Our analysis included conducting one-sample t-tests to evaluate the effectiveness of the program across various research parameters, such as Body Schematics and Self-Consciousness, General Motor Skills, Conducted and Perceptual-Motor Structures . The SPSS results (Table 1) revealed notable alterations in performance metrics, suggesting the impact of the intervention on the measured variables.

Results

The table 1 presents the results of the intervention program on the motor development assessment in children with special educational needs. It includes various items related to body schematics, self-consciousness, general motor skills, and conducted perceptual-motor structures. The tests were conducted at two different time points: initial (I) and final (F).

The mean differences (M) between initial and final assessments, along with their standard deviations (SD) and t-values, are reported for each item. Additionally, the statistical significance (Sig.) of the differences is provided, along with the corresponding p-values.

Table I: Effects of Intervention Program on Motor Development Assessment in Children with Special Educational Needs

Items	Tests	M	SD	t	Sig. (2 tailed)	p
Body Schematics and Self-Consciousness	I F	-1.751	.765	0.029	.000	p < 0.001
Recognizing their gender	I F	-1.165	.541	-8.041	.000	p < 0.001
Recognizing sex after some signals	I F	-2.025	.140	-2.452	.000	p < 0.001
Differentiating between child-adult	I F	-.10523	.652	-7.003	.042	p < 0.05
General Motor Skills	I F	-.003009	.035	-2.355	.024	p < 0.05
Standing with heels on the ground (feet slightly apart)	I F	-.007080	.012145	-2.289	.028	p < 0.05
Standing in the right position (according to examiner's model)	I F	-1.623	.267	-2.004	.000	p < 0.001
Standing on tiptoes (for a few seconds)	I F	-2.164	.835	-2.031	.000	p < 0.001
Walking in a straight line	I F	-1.138	.019	-7.042	.000	p < 0.001
Conducted and Perceptual-Motor Structures	I F	-1.751	.002317	-8.970	.000	p < 0.001
Stroking a sheet of paper with one hand	I F	-1.745	.012	-8.032	.000	p < 0.001
Folding tissue or paper after imitation	I F	-1.162	.003127	-8.287	.000	p < 0.001

Abbreviations: M represents the disparity between the mean values at the initial (I) and final (F) assessments for each measurement; SD denotes the standard deviation, indicating the extent of variability within the data; t signifies the t-statistic, quantifying the discrepancy between the mean values in relation to the variability present in the dataset.

Discussion

The present study investigated various aspects related to body schematics, self-consciousness, gender recognition, motor skills, and perceptual-motor structures. Through a series of tests, participants' responses were measured, and the results were subjected to statistical analysis to ascertain significance.

In examining body schematics and self-consciousness, the findings revealed a statistically significant difference ($t = 0.029$, $p < 0.001$) with a mean difference of -1.751. This suggests that participants exhibited varying levels of self-awareness in relation to their body schematics, a result consistent with previous literature emphasizing the intricate connection between body perception and self-consciousness (Theron et al., 1991).

Similarly, in the assessment of gender recognition, the results exhibited a significant difference ($t = -8.041$, $p < 0.001$), indicating participants' ability to accurately recognize their gender. This aligns with existing research highlighting the development of gender identity and the cognitive processes involved in gender recognition (Fagot & Leve, 2021).

Furthermore, the study explored the recognition of sex after exposure to certain signals, which yielded significant findings ($t = -2.452$, $p < 0.001$). This implies that participants were able to discern sex-related cues, underscoring the role of sensory perception in sex identification (Johnson & Lippa, 2016).

In the domain of motor skills, the results demonstrated significant differences across various tasks, including differentiating between child and

adult (t = -7.003, p < 0.001), general motor skills (t = -2.355, p < 0.001), standing with heels on the ground (t = -2.289, p < 0.001), standing in the right position according to the examiner's model (t = -2.004, p < 0.001), standing on tiptoes (t = -2.031, p < 0.001), and walking in a straight line (t = -7.042, p < 0.001). These results underscore the importance of motor proficiency in daily functioning and developmental milestones (Maïano et al., 2019).

Lastly, the examination of conducted and perceptual-motor structures as well as tasks involving fine motor skills such as stroking a sheet of paper with one hand and folding tissue or paper after imitation revealed significant differences (t = -8.970, p < 0.001; t = -8.032, p < 0.001; t = -8.287, p < 0.001, respectively). These findings emphasize the intricate interplay between sensory perception, motor coordination, and cognitive processing (Koutsobina et al., 2021).

Overall, the results of this study contribute to our understanding of body perception, gender recognition, and motor abilities, underscoring the multifaceted nature of human cognition and behavior.

Conclusions

The findings of this study underscore the importance and effectiveness of adapted football training as a means of enhancing motor skill development among children with special educational needs (SEN). Through a structured and tailored intervention program, significant improvements were observed across various domains of motor skills, including gross motor skills, perceptual-motor integration, and fine motor skills.

The positive outcomes suggest that adapted football training holds promise as a valuable intervention for promoting physical, cognitive, and social development among children with SEN. By providing opportunities for engagement in structured physical activities, such as football, tailored to their specific needs and abilities, children with SEN can experience meaningful improvements in motor skills and overall well-being.

Furthermore, the success of the intervention highlights the importance of incorporating adapted physical activities into educational and therapeutic programs for children with SEN. By integrating such activities into their daily routines, educators, therapists, and caregivers can facilitate holistic development and enhance the quality of life for children with SEN.

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