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EFFECTS OF THE MINI TENNIS METHOD ON LEARNING FUNDAMENTAL TENNIS SKILLS IN CHILDREN AGED 6–8

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Abstract: This study investigates the effectiveness of the mini tennis method in facilitating the acquisition of basic tennis skills in children aged 6–8. The research involved 12 beginners divided into an experiment group, which trained using adapted mini tennis equipment and age-specific methods, and a control group, which followed traditional tennis instruction. Over an eight-week intervention, participants were evaluated through six tests targeting forehand and backhand execution (cross-court and down-the-line), mid-court rallies, and subjective technical assessments. Results indicate that the experiment group showed substantially greater progress than the control group, particularly in the accuracy of fundamental strokes. The experiment group improved from an average of 10.67 to 12.4 successful forehand cross-court hits out of 15, while the control group progressed only from 5.5 to 5.7. Similar trends were observed in backhand execution and long-line strokes. Technical evaluation scores also increased more consistently in the experiment group. These findings suggest that adapted mini tennis training using slower balls, smaller courts and lightweight rackets optimizes motor learning and enhances technical performance during early tennis initiation. The study concludes that the mini tennis method represents an effective pedagogical approach for developing coordinated, controlled, and technically correct strokes in young beginners, outperforming traditional instruction methods.

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Key words: mini tennis, motor learning, technical skills, adapted training, sports initiation.

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INTRODUCTION

Tennis is a multifaceted sport that requires the coordinated development of physical, technical, tactical, and cognitive abilities from an early age. When children are introduced to tennis using standard courts, rackets, and yellow balls, the excessive speed and bounce of the ball, combined with their incomplete physical maturation, often lead to poor stroke mechanics, reduced success rates, and early frustration (Cristea & Năstase, 1979; Georgescu, 1970). To respond to these constraints, international governing bodies have promoted modified formats for children, most notably the red orange green progression embedded in the ITF "Tennis Play and Stay" and Tennis10s programmes, which recommend smaller courts, lower compression balls, and lighter rackets for 10-and-under players (International Tennis Federation [ITF], n.d.; ITF, 2010).

Mini tennis represents a structured pedagogical approach within this framework, targeting children approximately between 5 and 10 years of age through age-appropriate equipment and simplified playing conditions (Moldovan & Murariu, 2013; FLTA, 2024).

By reducing court size and ball speed, mini tennis creates a functional learning environment in which children can perform a greater number of technically correct repetitions, maintain longer rallies, and experience early success. Experimental research consistently shows that scaling tennis equipment smaller rackets, lower-compression balls, and reduced courts enhances stroke accuracy, temporal stability of the swing, and overall performance compared with full-sized equipment in young or novice players (Buszard et al., 2020; Kilit, 2023; Larson et al., 2013).

Studies examining low-compression balls specifically have found that their use over an eight-week coaching programme significantly improves skill acquisition in beginners relative to standard balls (Hammond et al., 2006).

Beyond immediate technical outcomes, equipment modifications appear to produce broader benefits for novice and junior tennis players. Recent work indicates that playing with adapted balls and courts increases control, refines stroke technique, encourages more effective tactical behaviors, and elevates engagement and enjoyment, while also reducing joint stress and potential injury risk (Piquer-Piquer et al., 2025; Bayer et al., 2017).

These findings align with wider evidence from developmental sport science suggesting that scaled equipment promotes functional movement variability and more adaptive coordination patterns, which are essential for long-term motor learning (Buszard et al., 2020).

In tennis specifically, authors have emphasized that coaches must focus not only on "what" to teach but also on "how" to create learning conditions that support effective motor skill acquisition through appropriate task constraints and feedback (Pankhurst, 2013).

The developmental characteristics of children aged 6 - 8 further justify the use of mini tennis. At this age, fundamental motor skills, coordination, balance, and perceptual abilities undergo a period of rapid refinement, whereas absolute strength and skeletal maturity are still limited (Georgescu, 1970; Sackey-Addo et al., 2016).

Well-designed mini tennis programmes leverage this sensitive period by combining imitation, repetition, and play-based tasks that support the acquisition of technically correct forehand and backhand strokes under reduced physical and cognitive load (Brown, 1997; Schulz, 1993; Moldovan & Murariu, 2013). At the same time, concerns raised in the literature regarding early sport specialization highlight the need for developmentally appropriate training volumes and diversified motor experiences in young tennis players, to mitigate overuse injuries, burnout, and dropout (Guettler, 2024; Sackey-Addo et al., 2016; Thurber, 2025).

Although the pedagogical rationale for mini tennis is well established in coaching practice and supported by research on scaled equipment and junior formats, fewer empirical studies have focused on the concrete impact of mini tennis-based training on technical performance in 6–8-year-old beginners, particularly when contrasted with traditional methods using standard equipment. Existing evidence points to benefits in rally ability, stroke proficiency, and psychological responses in programmes employing scaled conditions (Farrow & Reid, 2010; Larson et al., 2013; Piquer-Piquer et al., 2025), but there remains a need for controlled interventions that examine how mini tennis influences the accuracy and quality of fundamental strokes in this specific age group.

The present study contributes to this line of research by comparing an eight-week mini tennis intervention with traditional tennis instruction in children aged 6 - 8. Focusing on forehand and backhand execution in cross-court and down-the-line directions, as well as mid-court rallies and subjective technical ratings, the study aims to determine whether the mini tennis method leads to superior improvements in basic technical skills during the early initiation stage.

METHODS

Participants

Twelve children (10 girls and 2 boys) aged 6 to 8 years participated in the study. All participants were beginners with no prior formal tennis training. The sample was recruited from the CSM Oradea tennis program, and informed consent was obtained from parents or legal guardians. Participants were randomly assigned to one of two groups: an experiment group (n = 6), which followed a mini tennis–based training programme, and a control group (n = 6), which trained using traditional tennis instruction and standard equipment. Training frequency for both groups was three sessions per week, each lasting 60 minutes.

This age range was selected because children aged 6–8 demonstrate rapid development of coordination, balance, and perceptual skills, making it a sensitive period for foundational motor learning (Sackey-Addo et al., 2016).

Study Design

A pre-test–post-test experimental design with parallel groups was used to compare the effects of mini tennis versus traditional tennis instruction. Both groups completed the same battery of six technical tests at the beginning and end of the eight-week training intervention. The independent variable was the training method (mini tennis vs. traditional), and the dependent variables were technical scores on forehand, backhand, and rally-based tests.

This design aligns with previous research demonstrating the value of scaled equipment interventions in early tennis skill acquisition (Farrow & Reid, 2010; Larson et al., 2013).

Instruments and Tests

Participants completed six standardized tests designed to assess accuracy, control, and technical execution: forehand Cross-Court Test – number of successful forehand hits out of 15; backhand Cross-Court Test – number of successful backhand hits out of 15; forehand Down-the-Line Test – number of successful forehand hits out of 15; backhand Down-the-Line Test – number of successful backhand hits out of 15; mid-Court Rally Test – number of continuous forehand–backhand exchanges out of 15 attempts; subjective technical evaluation – expert rating of forehand and backhand technique based on criteria adapted from Brown (1997) and Schulz (1993), using a 1–10 scoring scale.These tests were chosen because they reliably reflect early-stage tennis competence, emphasizing control, consistency, and stroke mechanics (Buszard et al., 2020).

Procedure

The study was conducted at the CSM Oradea tennis facility. Baseline testing took place over three days (March 24–27, 2025), followed by an eight-week intervention consisting of 24 training sessions. Post-testing was conducted over two days (May 29–30, 2025).

Training Intervention

The *experiment group* followed a structured mini tennis programme specifically adapted to the needs of children aged 6–8. Throughout the eight-week intervention, the athletes trained with low-compression red balls and lightweight junior rackets (190–200 g), on a reduced-size court measuring approximately 11–12 meters in length and 5.5–6 meters in width. These modifications aligned with the ITF "Tennis Play and Stay" framework, which emphasises adapting task constraints to developmental characteristics in order to facilitate more effective motor learning. Training sessions placed particular emphasis on imitation-based learning and on a gradual, methodical development of the forehand and backhand strokes. Children progressed from basic mid-court hitting actions to more complex cross-court and down-the-line patterns, and eventually to controlled rallies that required both technical precision and consistency. Across sessions, tasks were designed to be engaging, appropriately challenging, and supportive of the natural acquisition of rhythm, timing, and ball control.

In contrast, the *control group* followed a traditional instructional model, training on a full-size court with standard yellow balls and adult-style rackets. Instruction relied primarily on classical teaching methods such as isolated technical demonstrations, repetitive feeding drills, and correction-based feedback. Unlike the scaled environment provided to the experiment group, the control group practised under the same spatial and material conditions used in adult tennis. This approach served as a baseline for evaluating the added value of the mini tennis method, allowing a direct comparison between developmentally adapted training and conventional early tennis instruction.

Data Analysis

Data were processed in Microsoft Excel using descriptive statistical indicators, including arithmetic mean, minimum, and maximum values for each test at initial and final assessment. Performance changes were examined through within-group comparisons (pre–post differences) and between-group comparisons to evaluate the relative effectiveness of the mini tennis intervention. Percentage improvement and graphical representations were also utilized to illustrate trends across tests. This descriptive analytical approach is consistent with methodologies commonly applied in exploratory studies on junior tennis skill development.

RESULTS

Descriptive Statistics for the Experiment Group

Table 1 summarizes the mean values obtained by the experiment and control group at initial and final testing.

Table 1. Experiment Group – Mean Scores (Initial vs. Final)

Tests	***Experiment group***			***Control group***		
	TI Mean	***TF Mean***	***Improvement***	***TI Mean***	***TF Mean***	***Improvement***
FOREHAND CROSS successful hits (0–15)	10.67	12.17	+1.50	5.50	5.70	+0.20
BACKHAND CROSS successful hits (0–15)	10.50	12.00	+1.50	4.83	5.60	+0.77
FOREHAND LINE successful hits (0–15)	10.33	12.33	+2.00	5.17	7.00	+1.83
BACKHAND LINE successful hits (0–15)	10.17	12.17	+2.00	5.80	7.70	+1.90
MID-COURT RALLY successful rally exchanges(0-15)	12.00	13.00	+1.00	5.67	7.70	+2.03
SUBJECTIVE FH technique score (1–10)	7.83	9.00	+1.17	7.67	9.20	+1.53
SUBJECTIVE BH technique score (1–10)	7.50	9.00	+1.50	7.50	9.20	+1.70

The experiment group demonstrated consistent improvement across all tests. The greatest gains were recorded in forehand and backhand down-the-line execution, both improving by 2 points on average.

Subjective evaluations of technique also increased substantially, suggesting not only better accuracy but also enhanced stroke mechanics.

Although the control group improved in most tests, gains were smaller and less consistent, especially in cross-court accuracy. The most significant improvements appeared in the rally test and the down-the-line strokes, but still at lower absolute values than the experiment group.

Table 2. Between-Group Improvement Comparison

Tests	*Experiment Δ*	*Control Δ*	*Difference*	*% Increase from Initial to Final*	
				Experiment Δ	**Control Δ**
FOREHAND CROSS successful hits (0–15)	+1.50	+0.20	**+1.30**	+14.1%	+3.6%
BACKHAND CROSS successful hits (0–15)	+1.50	+0.77	**+0.73**	+14.3%	+15.9%
FOREHAND LINE successful hits (0–15)	+2.00	+1.83	+0.17	+19.4%	+35.4%
BACKHAND LINE successful hits (0–15)	+2.00	+1.90	+0.10	+19.7%	+32.8%
MID-COURT RALLY successful rally exchanges (0-15)	+1.00	+2.03	–1.03	+8.3%	+35.8%
SUBJECTIVE FH technique score (1–10)	+1.17	+1.53	–0.36	+14.9%	+19.9%
SUBJECTIVE BH technique score (1–10)	+1.50	+1.70	–0.20	+20.0%	+22.7%

The experiment group excelled especially in cross-court and directional accuracy, tests most sensitive to ball control and racket-ball interaction. Mini tennis equipment appears to facilitate fine motor control and technical precision, supporting better outcomes.

The control group performed comparatively better only in the rally test, likely due to performing on a full court, where longer distances may have encouraged more vigorous ball returns rather than controlled placement (table 2 and figure 1).

Percentage improvement shows that while the experiment group achieved higher absolute scores, the control group had larger relative gains in tests where their baseline scores were very low (especially rally and down-the-line strokes). This pattern is typical when initial performance levels differ (table 2).

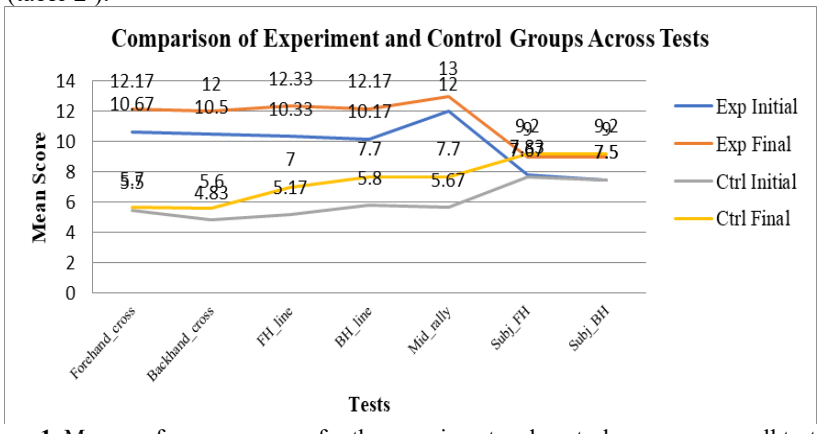

Figure 1. Mean performance scores for the experiment and control groups across all tests at initial and final assessment

Still, the experiment group reached higher final performance levels across all accuracy-based tests. The mini tennis method led to superior technical performance, especially in precision-based tasks (cross-court, down-the-line).

Scaled equipment appears to facilitate more controlled motor patterns, leading to better stroke execution. The control group improved but remained significantly behind in absolute performance values. The rally test favored the control group percentage-wise, driven by low initial scores and more vigorous hitting rather than controlled technique.

Overall, the statistical and graphical analysis strongly supports the effectiveness of mini tennis as a developmentally appropriate method for children aged 6–8. These results suggest that, under traditional training conditions, technical improvement is present but occurs at a slower rate.

DISCUSSION

The purpose of this study was to examine the impact of the mini tennis method on the acquisition of fundamental technical skills in children aged 6–8, compared with traditional tennis training. Overall, the results strongly support the use of scaled equipment and developmentally adapted training environments in early tennis instruction. The experiment group demonstrated consistent and superior improvement across all accuracy-based tests, confirming prior research that highlights the pedagogical and motor-learning advantages of scaled task constraints for young beginners (Farrow & Reid, 2010; Buszard et al., 2020).

The significantly higher final performance scores of the experiment group suggest that mini tennis facilitates more stable and controlled stroke mechanics. This aligns with the principles outlined in the ITF's "Tennis Play and Stay" framework, which asserts that lower-compression balls and reduced court sizes promote longer rallies, better timing, and increased technical success in novice players (ITF, 2010). The children who trained under mini tennis conditions were able to execute both forehand and backhand strokes with increased directional accuracy an outcome consistent with findings by Larson et al. (2013), who demonstrated that scaled balls and rackets improve the biomechanical quality of groundstrokes in young players.

Furthermore, the use of age-appropriate training loads and simplified tasks likely contributed to improved motivation and engagement, factors considered critical for long-term adherence to the sport (Piquer-Piquer et al., 2025). The enhanced technical evaluations of the experiment group also suggest that mini tennis reduces the incidence of early technical errors, which, as Petcu (2021) notes, often become difficult to correct once consolidated. The progressive structure of the training—moving from mid-court control to directional precision—appears to have supported the natural development of coordination, balance, and perception-action coupling during a sensitive developmental period (Sackey-Addo et al., 2016).

In contrast, the control group exhibited improvement but at a slower and less uniform rate. Their lower absolute performance in accuracy tests may be attributed to the use of standard equipment, which increases the physical and cognitive demands placed on young learners. Prior studies indicate that full-size courts and yellow balls tend to overwhelm children at this age, reducing functional success and limiting opportunities for correct repetition (Kilit, 2023; Hammond et al., 2006). Although percentage improvements in some control group tests were relatively high due to low baseline values, the group's final performance levels remained substantially below those of the experiment group, underscoring the limitations of traditional instruction for early skill acquisition.

These findings reinforce the broader consensus in developmental sport science, which advocates for equipment scaling and adapted learning environments to optimize the acquisition of motor skills in young athletes (Bayer et al., 2017; Buszard et al., 2020). By reducing task difficulty and increasing functional affordances, mini tennis supports the emergence of effective movement patterns and enhances the quality of learning experiences. The results of the present study

therefore provide empirical support for integrating mini tennis more systematically into early tennis initiation programmes.

CONCLUSION

The findings of this study demonstrate that the mini tennis method is significantly more effective than traditional instruction in developing fundamental technical skills in children aged 6–8. Participants who trained with scaled equipment—lower compression balls, smaller courts, and lightweight rackets—achieved higher levels of accuracy, control, and technical quality in both forehand and backhand strokes. The consistent and substantial improvements observed in the experiment group support the premise that developmentally adapted training environments facilitate more efficient motor learning and promote the acquisition of stable movement patterns at early stages of tennis initiation.

In contrast, although the control group also showed progress, their improvements were less uniform and remained considerably lower in absolute performance compared with the experiment group. This disparity reinforces evidence from previous research indicating that standard equipment may pose excessive demands on young beginners, limiting their ability to perform correct repetitions and develop functional technique.

Overall, the results suggest that implementing mini tennis in early training programmes not only accelerates the learning of fundamental strokes but also provides a more accessible, engaging, and developmentally appropriate pathway into the sport. Coaches and practitioners are therefore encouraged to adopt scaled equipment and progressive instructional strategies to maximize learning outcomes and support long-term athlete development.

Limitations and Future Research

This study presents several limitations that should be acknowledged. First, the sample size was relatively small (n = 12), which limits the generalizability of the findings. Second, the intervention lasted eight weeks, a period sufficient to capture early skill acquisition but not long enough to assess long-term retention or performance transfer to match play. Additionally, the study relied primarily on descriptive statistics, and future investigations may benefit from more advanced inferential analyses to strengthen the evidence for group differences.

Future research should consider larger and more diverse samples, longer intervention periods, and the inclusion of biomechanical or perceptual–cognitive measures to better understand how scaled equipment influences technical development. Comparative studies exploring different progressions of mini tennis (red, orange, green stages) or examining psychological outcomes such as motivation and confidence would further contribute to a comprehensive understanding of early tennis learning.

REFERENCES

Bayer, D., Brown, J., Hocking, J., & Reid, M. (2017). „A comparison of the playing structure in elite kids' tennis on the full-sized court and the scaled junior court." *International Journal of Sports Science & Coaching*, 12(1), 90–97.

Brown, J. (1997). Steps to success: Tennis. Teora.

Buszard, T., Reid, M., Masters, R. S. W., & Farrow, D. (2020). „Scaling sports equipment for children promotes functional movement variability." *Scientific Reports*, 10, 3110.

Cristea, E., & Năstase, I. (1979). „Tenis (2nd ed.)." [Tennis], *Sport-Turism*

Farrow, D., & Reid, M. (2010). „The effect of equipment scaling on the skill acquisition of beginning tennis players." *Journal of Sports Sciences*, 28(7), 723–732.

Georgescu, Ș. (1970). „Lecții de tenis.” [Tennis lessons] *Consiliul Național pentru Educație Fizică și Sport.*

Guettler, J. H. (2024). „The fallacy of falling behind: The realities of early sports specialization.” *Sports Medicine Update*. American Orthopaedic Society for Sports Medicine

Hammond, J., Smith, C., & Powell, D. (2006). „Low compression tennis balls and skill acquisition.” *Journal of Sports Science and Medicine*, 5(4), 575–581.

International Tennis Federation. (2010). „Tennis10s: Tennis for players 10-and-under.” *International Tennis Federation.*

Kilit, B. (2023). „Ball compression and scaled court sizes on beginner tennis skills.” *Acta Gymnica*, 53(1), 1–12.

Larson, E. J., Guggenheimer, J. D., Vaughn, D. W., & Greenwood, M. (2013). „Effects of scaling tennis equipment on forehand groundstroke performance in children.” *Journal of Sports Science and Medicine*, 12(2), 323–331.

Moldovan, P. A., & Murariu, D. (2013). „Manualul viitorilor campioni.” [The future champions' handbook], *Federația Română de Tenis.*

Pankhurst, A. (2013). „How tennis players learn motor skills: Some considerations.” *ITF Coaching and Sport Science Review*, 21(58), 18–20.

Petcu, D. (2021). „Tehnica în jocul de tenis.” [Technique in the game of tennis], *Ovidius University Press*.

Piquer-Piquer, A., et al. (2025). „Exploring the impact of equipment modifications on novice tennis players.” *Frontiers in Psychology*, 16, 1536427.

Sackey-Addo, R., Pérez, J., & Crespo, M. (2016). „Fundamental motor skills for 10 and 12 & under tennis players.” *ITF Coaching and Sport Science Review*, 24(69), 6–9.

Schulz, R. (1993). „Să învățăm corect tenis de la inițiere la performanță.” [Learning tennis correctly from initiation to performance], *Helicon*.

Thurber, L. (2025). “Early sport specialization and intense training in junior tennis: A review.” *Sports Health*

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