



Interdisciplinarity and tennis in primary education

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ABSTRACT

The aim of this article is to show solid scientific and pedagogical bases that justify the importance of introducing tennis in Primary Education, so that, from the area of Physical Education, the acquisition of skills linked to other areas is encouraged through this sport. Thus, the great contribution of comprehensive models to the teaching of tennis, or the benefits that tennis practiced in a played way brings in the executive functions of children who practice it, is based. Finally, a practical proposal is proposed, based on different interdisciplinary games, to be developed from the area of Physical Education to other areas of the school (mathematics, foreign language...), although also applicable in other contexts, such as clubs or tennis academies.

Key words: mini-tennis, school, comprehensive models, cognitive functions.

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INTRODUCTION

Faced with traditional teaching models, focused on acquiring a mastery of technique to later apply it to the real context, in the eighties a group of teachers emerged in England, especially at Loughborough University, who proposed a new way of teaching-learning sports, the "comprehensive model", in which the learning of skills, decision making and understanding should be inseparable aspects of the execution itself (Fuentes, 2013). In relation to the above, different methodological approaches and practical proposals arise focused on teaching tennis at early ages, characterized by a game-based teaching, where the understanding of the fundamentals of the game and the development of basic tactics must precede the mastery of technique (Fuentes and Gusi, 1996; French Tennis Federation, 2000; Brechbühl and Anker, 2000; Turner, Crespo, Reid and Miley, 2002; Sanz, Julián, Fuentes and Del Villar 2004; Torres and Carrasco, 2005; Fuentes et al, 2005; Unierzysk and Crespo, 2007; Fuentes, 2009; Fuentes, 2013; Fuentes et al. 2020; Fuentes, Muller and Furlaneto, 2020).

Thus, compared to traditional methods of teaching tennis, Unierzyski and Crespo (2007) state that the teaching of this sport has undergone major changes in the last 15-20 years, having suffered very little progress in previous decades, which clearly dominated a traditional methodology focused almost exclusively on technique or the production of the different strokes without a real understanding of the nature of the game.

Today, the International Tennis Federation proposes a teaching model based on play and tactics through the "Play & Stay" campaign, where the manipulation of the practice elements (racket, ball and playing space) allows greater interaction between players from the early stages (ITF, 2007). In this sense, different works have shown the interdisciplinary



potential of tennis in the early stages of development to acquire skills in different areas of education (Fuentes, Muller & Furlaneto, 2020), as well as to provide important benefits at the physical, psychological and social level in children who practice it (Araújo, Soares & Fuentes, 2014).

In relation to the above, the results of the cross-sectional study conducted by Ishihara et al. (2017) showed significant improvements in executive functions (inhibitory control and working memory) and physical fitness in children aged 6-12 years, regular tennis players, after participating in a program based on cognitively engaging tennis activities (coordination training and game-based exercises). The study concluded that longer duration of game-based exercises correlated positively with inhibitory control and physical fitness, while coordination training was associated with better working memory. The results of another study by these same authors, Ishihara et



al. (2017), similarly conducted with children aged 6-12 years, showed that playing tennis and practicing isolated tennis skills improve children's executive functions more than watching television, with game-based tennis lessons appearing to be more effective in improving such executive functions than a more traditional technique-based approach. In the same line of research as the two aforementioned studies, Ishihara et al. (2018) conducted a study with the aim of evaluating the effects of 12 months of frequent tennis practice in children and children aged 6 to 11 years on executive functions, as well as the relationships between moderate to vigorous daily physical activity (MVPA), physical competence and enjoyment of playing tennis with executive functions, showing the results that frequent tennis playing facilitates working memory, with increases in MVPA being associated with greater cognitive flexibility. In addition, changes in physical competence and enjoyment of tennis were positively associated with better inhibitory control, working memory and cognitive flexibility.

On the other hand, the results of the study carried out by Rym et al. (2019), conducted with 5-6 year old boys and girls, divided into two groups (group with two years of experience playing tennis and sedentary group with no previous experience in any type of sport) showed that at certain times of the day the peak of postural performance, the peak of attentional abilities and the greater visual input to maintain balance were only found in the group with experience in tennis. In addition, tennis players were more stable and more attentive than sedentary players.

As an example to contextualize the practical proposal that will be presented later, in the context of Spain, the Organic Law 3/2020, of 29 December (LOMLOE), which will come into force in the academic year 2022-2023, structures Primary Education in three cycles of two years each, starting with the First Year of the First Cycle (6 years), organized in the following areas: (a) Knowledge of the natural, social and cultural Environment -Nature Sciences and Social Sciences-; (b) Artistic Education -Plastic and Visual Education, and Music and Dance; (c) Physical Education; (d) Spanish Language and Literature and, if any, proper Language and Literature; (e) Foreign Language; (f) Mathematics. To these areas, Education in Civic and Ethical Values will be added in some of the courses of the third cycle.

Considering all of the above, the main objective of this article is to present scientific and pedagogical foundations that support the suitability of introducing tennis in Primary Education for the development of competences from the area of Physical Education to other areas of the curriculum.

PRACTICAL PROPOSAL

In this section, considering, as reflected in the introduction, the undeniable physical, psychological and social benefits of playing tennis at an early age, as well as the great potential of the comprehensive model for better learning and interdisciplinarity with other areas of education, we propose, as an example, different games, some of them original and others adapted from Fuentes, Müller and Furlaneto (2020). These games are initially proposed to be developed in the context of the school Physical Education Area, but also, why not, in other areas of action, such as clubs or tennis academies.

Knowledge of the natural, social and cultural environment

- Three students on each side of the court, working together, must pass the ball to the third touch (each student only one touch), trying to keep the ball in play as long as possible, trying to achieve a record. The student who passes the ball to the other side of the court must say out loud the name of a city, for example "Madrid" and the student on the other side of the court, when returning the ball, will say the country in which the city is located (Spain), not being able to say more than four times in a row cities of the same country. If a name is left unsaid or a name is repeated during the same exchange, the count is stopped. Make variants using historical characters, types of food, groups of animals...

Art Education

- In teams of six children each, using a variety of tennis equipment (rackets, balls, boats, covers...), each team will have 3 minutes to invent a situation without being heard by the other teams, each team will have 3 minutes to, without being heard by the other teams, invent a situation that recreates, for example, a famous painting, or a film, or a song... After the preparation time, each team will have to perform the representation (for example for a maximum of 30 seconds) in front of the others, who will try to guess what it is about, and the team that performs must keep a ball in play for at least two touches per child (12 touches) before finishing the performance.

Spanish Language and Literature

- In doubles formation, cooperating in the exchange of strokes, each child, before passing the ball to the opposite side, must say aloud a verse of a short children's poem (El gallo despertador -by Gloria Fuertes-, Adiós Sol -by Federico García Lorca-...) until they recite it completely. The poem may have been previously passed on to the children, learnt or perfected during the tennis class itself..., it being essential that the children understand its meaning and progressively achieve better diction and interpretation.

Foreign Language

- Students should exchange shots in collaborative ways. When the teacher verbalizes a preposition of place in English - "on" (on), "over" (over), "in" (in), "under" (under), "between" (between), "in front of" (in front of)... - the children should, individually or in pairs, invent a situation playing with the place, area, height... The children should, individually or in pairs, invent a situation by playing with the place, area, height, etc. of the shot that expresses this preposition, being able to use a preparatory touch with

the racquet to the ball before hitting it to the other side of the court to allow more time to make the right decision.

- Divide each side of the court into four zones numbered from 1 to 4. In a collaborative stroke exchange situation, each student, before his partner hits the ball from the other side of the court, must imitate an animal with sounds and gestures, and the partner must say the name of the animal that is being imitated, preceded by the number of the zone, for example, if a cat is imitated and the player goes to zone 2, he must say in English "dos gatos" (two cats).

Mathematics

- Doubles matches, where each player, before hitting the ball to pass it to the opponent's court, must say out loud a number (for example 5), a child of the other pair before hitting the ball will say another number (for example 4) and the next child who has to pass the ball will have to say the result of adding the first and second numbers, that is "9", and the point can be lost both for missing the shot and for not doing the sum correctly. Subsequently, for example, the subtraction can be introduced or even the addition can be made if the hit is above the waist or the subtraction if it is below the waist.

CONCLUSIONS

The use of the "comprehensive model" for teaching tennis at an early age has provided, compared to traditional approaches, in addition to a better knowledge of the game from the beginning and, therefore, provide a more playful and motivating environment, important benefits at the physical, psychological, and social level in its practitioners. It is considered appropriate to enhance the important benefits at the level of executive functions of children who learn and practice tennis by playing, using for this purpose methodologies that integrate interdisciplinary work associated with different educational areas, such as mathematics, foreign language, or art education.

CONFLICT OF INTEREST AND FUNDING

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