



Motor coordination and its implications on teaching tennis to three to six-year-old children

Layla Maria Campos Aburachid, Caio Corrêa Cortela & Pablo Juan Greco

Paranaense Tennis Federation, Curitiba, Brazil.

ABSTRACT

The practice of coordinative exercises contributes not only to develop technique but also to improve decision-making quality during the game. This study presents practical possibilities to stimulate motor coordination applied to three to six-year-old children during tennis classes. The methodological proposals of the Ball School and Universal Sport Initiation focus on a general education of the individuals and defend the so-called “playing to learn” and “learning while playing”. This way, implicit learning is stimulated considering the perception of children and the conditions/restrictions of the tasks performed during practice.

Key words: children, tennis, coordination, perception.

Received: 10 October 2021

Accepted: 20 November 2021

Corresponding author: Caio Corrêa. Email: capacitacao@cbtenis.com.br

INTRODUCTION

Considering the context of practice of coordinative activities with children at a beginner's stage in tennis in Sweden, around the 1980s, researchers in this field brought to light the applicability of practice for a consequent development of sports technique. Furthermore, and based on contemporary teaching models for sports, it became possible to understand, and then possible to prove, that stimulating the practice of coordinative activities contributes to developing technique and quality of decision-making in game context (Mazzardo et al., 2020).

This previous statement makes sense when comprehending that coordination is the main base of motor intelligence (Roth, Kröger & Memmert, 2017; Hirtz, 2007). Complex moves are executed quickly, in different ambients, and under adverse pressures (Starosta, 1990) that, in a more specific context, sort out sports tasks. In order to exemplify it, we have the following situation that happened in 2014, during the second round of the Roger Cup, in Toronto, Canada. Novac Djokovic was beating Gaël Monfils 6-2. At 3-3 of the second set, they interchanged eleven balls, and after hitting a volley over his body, Monfils moved back by re-hitting the ball between his legs, which is a move of extreme skill, based on a wide repertoire of motor coordination, not to mention his jumps in search of precise volleys.

METHODOLOGICAL PROPOSALS THAT STIMULATE MOTOR COORDINATION

The teaching-learning-training process of sports has evolved and presented great modifications for the last thirty years, optimizing the rise of methodological proposals of “playing to learn” and “learning while playing”. “Playing to learn” and posteriorly “learning while playing” demand coaches to introduce their students the games that stimulate perception of relevant signs, ones that will gradually improve their motor

execution, their coordination, as well as groups of sports skills (Greco et al., 2015), that promotes creativity and complexity increase in search of solutions. In these teaching models, we considered the non-linear nature of learning (Otte et al., 2021) and types of implicit and explicit learning. It is necessary that coaches must know the person (apprentice) and manipulate the task and the ambient to promote situations of long-lasting and meaningful learning in the context of sports practice (Nitsch, 2009).

Methodologic proposals that offer contents related to motor coordination applied to teaching tennis to children are the Ballschule Heidelberg, the Ball School, in Germany (Kröger & Roth, 2003; Roth & Kröger, 2011) and Iniciação Esportiva Universal, the Universal Sport Initiation, in Brazil (Greco et al., 2015). Both stimulate children to learn implicitly. The advantages in this teaching process correspond to development of creativity, long-lasting learning, and motivation to practice, once they learn by executing activities based on their own cognitive comprehension (Greco et al., 2017).

Overall, the Ball School and the Universal Sport Initiation propose a long-term teaching-learning education, in which a three to six-year-old age range is considered in preschool, followed by universal phases one (from eight to ten years old) and two (ten to twelve years old). There are some differences regarding schedule between these two methodologies, possibly because of differences in social and cultural contexts considering Brazilian (Universal Sport Initiation) and German realities (Ball School). Both make use of a progression of contents named ABC, which are based on the game capacity and motor learning.

As the text focus is to optimize motor coordination applied to the teaching of tennis, here is the development proposal through content B – motor constraints. Through sensory organs, analyzer/perception (afferent pathway) and external

pressures (efferent pathway), activities are proposed from simple to complex, easy to difficult, and known to new. It is important to highlight that the number of elements (one or more balls, racket substitution), teammates and/or adversaries must increase as the child develops. We recommend the constant use of the racket, taking weight proportion and size in comparison to the child into account. Considering a task proposed by coaches, the child notices stimuli (visual, tactile, optical, and kinesthetic) and is put under constraints/restrictions of pressure (time, precision, complexity, organization, variability, and physical strain/stress) (Figure 1). From this stimulus come the affordances, which is, the way/personal interpretation as each individual comprehends what to do to solve/execute the task (Greco et al., 2020).

Time pressure	Tasks to minimize time or maximize speed of execution.
Precision pressure	Tasks that one must be as precise as possible.
Complexity pressure	Tasks to solve several demands successively, sequentially, and one after another.
Organization pressure	Tasks to overcome simultaneous demands, double tasks.
Variability pressure	Tasks to solve demands under different ambient and situational conditions.
Physical strain/stress	Tasks to solve demands under psychic and physical strain/stress conditions.

Figure 1. Definition of coordination pressure conditions. Source: Roth, Kröger & Memmert (2017).

PROPOSAL OF ACTIVITIES APPLIED TO MOTOR COORDINATION

As to illustrate the referred proposal of contents applied to motor coordination, we presented three examples of practice with the rightful explanation of which perceptions are stimulated and which are the conditions/restrictions and pressures of each one.



Description: Several students form a circle and stand the racket on the floor with its head down, and handle up. As the coach signals, and according to previous guidance, students must turn left or right, attempting to control the racket balance of another teammate before it falls down.

Pressures:
Time: control static balance of the racket before it falls down.
Analyzer/perception:
Visual, acoustic, vestibular and tactile.



Description: In pairs, students stand four meters away from each other. By using one ball, student A passes a ball thrown from bottom to top to student B. B waits its bounce on the floor and picks the ball using the T-shirt (as a kangaroo pouch).

Pressures:
Time: student must pick the ball before its second bounce.
Precision: throw the ball aiming the target (teammate's T-shirt).

Analyzer/perception:
Visual, tactile and kinesthetic.



Description: Students A and B, from a 2-meter distance from each other, must lead a ball on the floor with the aid of the head of the racket, keeping it vertically as they perform the cone slalom drill. Student B must touch student A before getting to the last cone slalom.

Pressures:
Time: A must complete the cone slalom drill before being reached by student B.
Complexity: leading the ball as they perform the cone slalom drill.

Analyzer/perception:
Visual, tactile and kinesthetic.

Complementarily, click the following QR code to visualize further examples of recorded activities related to motor coordination development.



CONCLUSIONS

The application of game tasks that include aspects of perception and challenges to be overcome collaborate to develop motor coordination, favor children to establish internal and external relationships with the situations to be solved in this context. While playing tennis, relevant signals exposed, such as speed of actions and high precision of techniques demand players to acquire an education based on coordinative stimuli since the beginning of the practice.

CONFLICT OF INTERESTS AND FUNDING

The authors declare that they do not have any conflict of interest and that they did not receive any funding to conduct the research.

REFERENCES

- Greco, P. J. et al. (2015). Iniciação Esportiva Universal: o jogo do "ABC" na alfabetização esportiva. In: Lemos, K. L. M., Greco, P. J. & Morales, J. C. P. 5. Congresso Internacional dos Jogos Desportivos. Belo Horizonte: EEFETO/UFMG, 335-359.
- Greco, P. J., Morales, J. C. P. & Aburachid, L. M. C. (2017). Metodologia do ensino dos esportes coletivos: Iniciação Esportiva Universal, aprendizado incidental-ensino intencional. In: GALATTI, L.R.; SCAGLIA, A.J.; MONTAGNER, P.C.; PAES, R.R. Desenvolvimento de treinadores e atletas: Pedagogia do Esporte. v. 1. Campinas, SP: Editora da Unicamp. 107-136.
- Greco, P. J. et al. (2020). Vinte anos de iniciação esportiva universal: o conceito de jogar para aprender e aprender jogando, um pedagógico ABC-D. In: Boullosa, D.; Lara, L. Athayde, P. Treinamento esportivo: um olhar multidisciplinar. Natal, RN: EDUFRN. 43-63.
- Hirtz, P. (2007). Koordinative Fähigkeiten und Beweglichkeit. In: Meinel, K.; Schnabel, G. Bewegungslehre – Sportmotorik. Abriss einer Theorie der sportlichen Motorik unter pädagogischem Aspekt (S. 212-242). Aachen: Meyer, Meyer Verlag.
- Mazzardo, T., Ribas, S., Monteiro, G. N., Silva, W. J. B., Araújo, N. D. & Aburachid, L. M. C. (2020). TGFU and motor coordination: the effects of a teaching program on tactical-technical performance in handball. Journal of Physical Education, Maringá, 31, e3169. <https://doi.org/10.4025/jphyseduc.v31i1.3169>
- Nitsch, J. (2009). Ecological approaches to Sport Activity: A commentary from an action-theoretical point of view. International Journal Sport Psychology, 40, 152-176.
- Otte, F. W., Davis, K., Millar, S. K. & Klat, S. (2021). Understanding How Athletes Learn: Integrating Skill Training Concepts, Theory and Practice from an Ecological Perspective. Applied Coaching Research Journal, v. 7, p. 22-33.
- Kröger, C. & Roth, K. (2003). Escuela de Balon: Guia Para Principiante. España: Editorial Paidotribo.
- Roth, K. & Kröger, C. (2011). Ballschule: ein ABC für Spielanfänger. Schorndorf: Hofmann.
- Roth, K., Kröger, C. & Memmert, D. (2017). Escola da bola: jogos de rede e raquete. São Paulo: Phorte Editora.
- Starosta, W. (1990). Shooting with the right and left feet by elite footballers. Science & Football, 3, 17-22.

Copyright © 2021 Layla Maria Campos Aburachid, Caio Corrêa Cortela & Pablo Juan Greco



This text is under a [Creative Commons BY 4.0 license](https://creativecommons.org/licenses/by/4.0/)

You are free to Share - copy and redistribute the material in any medium or format - and Adapt the content - remix, transform, and build upon the material for any purpose, even commercially under the following terms:

Attribution: You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

[CC BY 4.0 license terms summary](https://creativecommons.org/licenses/by/4.0/). [CC BY 4.0 license terms](https://creativecommons.org/licenses/by/4.0/)

RECOMMENDED ITF TENNIS ACADEMY CONTENT (CLICK BELOW)

