

PSIWORLD 2014

Intersegmental and eye-hand coordination in elite junior tennis players

Radu Predoiu^a*

^a*U.N.E.F.S. Bucharest, Constantin Noica, No. 140, 060057, Romania*

Abstract

The purpose of this study consists of analyzing the existing correlations between the eye-hand coordination, intersegmental coordination and sports performance. The TUD and RCMV tests, included into the PSISELTEVA battery, developed by RQ Plus, evaluates the intersegmental and the eye-hand coordination, expressed through some psychomotor-related parameters. The subjects who took part in this study are 12 elite junior tennis players. Using the Spearman correlation there have been important relations highlighted between the resistance to disruptive factors when performing intersegmental movements, the eye-hand coordination under fast speed conditions and the sports performance, expressed through the ranking position (the official ranking system).

© 2015 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of the Scientific Committee of PSIWORLD 2014.

Keywords: intersegmental coordination; eye-hand coordination; resistance to disruptive factors; instrumental movements; tennis.

1. Introduction

The high level of modern sports performances imperiously claims an interdisciplinary-type approach, within which psychomotor control offers an interesting and rich area of investigation, both from the theoretical perspective and particularly from that of the opportunities to have training interventions in order to render efficient the competitive performance. As a component part of the psychomotor domain, coordination is regarded by most of the authors (Mitrache & Tüdös 2004; Hirtz, 2001) as one of the most challenging topics of investigation, relevant to sport psychologists and coaches, as well as a complex quality conditioning motor control capacity, motor learning capacity, adaptation and re-adaptation capacity, vigilance, all these conferring the athlete self-confidence, accuracy

* Radu Predoiu. Telephone number.: +4-073-518-6896

E-mail address: radu_predoiu@yahoo.com

and efficiency when performing the specialized skills. Intersegmental coordination and eye-hand coordination are complex psychomotor skills with an essential role in adaptation, which involves synergistic action of sensory functions (exteroceptive and interoceptive) and motor function, resulting in providing informational and energy parameters of the movement. Specialized literature (Aniței, 2007) indicates the importance of coordinated movements as an indicator that allows a correct evaluation of instrumental movements (those movements associated with device manipulation, tools, machines, movements that can be done at superior precision indices, dexterity and timing). Coordinated movements represent a distinct category of instrumental movements, which give to the subject the possibility to economize effort, motor action, in predictable situations (stereotypical) and unpredictable (of adjustment). The level of movement coordination is influenced by the level of knowledge of the motor skills, as well as by the disruptive factors or the desultory characteristics of the environment. The quality of the coordination is influenced by the position of the subject – the precision of the manipulation movements is maximum for the objects set in front and under the level of the shoulders. The coordination difficulties manifest through: temporal discrepancies between processing the information and executing the motor act, errors of non-synchronization of individual movements, order errors (inversions or substitutions of movements) or commutative errors (persevering with the anterior movement, interferences between movements). The movements of skilled individuals are characterized by a flowing quality that suggest more efficient control and a smoother coordination of joints and muscles – the movements become less stiff-looking after practice (Schmidt & Wrisberg, 2000). In tennis, junior players who have a good coordination level of tracing for the non-dominant hand - left-hand tracing (the athletes were right-handed players) can make the difference and achieve the best results (Moșoi, Rășcanu, & Gugu Gramatopol, 2012). Some top-level tennis players use the double handed backhand strokes, while some players prefer to use single handed backhand. Studies show that two handed backhand stroke is not more effective than one handed backhand stroke, with respect to targeting in tennis and two hand-eye coordination abilities (Erman, Şahan, & Küçükkaya, 2013).

2. Objectives and Hypotheses

2.1. Objectives

The main purpose of our research was to investigate the eye-hand coordination (under slow speed and fast speed conditions), the intersegmental coordination expressed through some psychomotor-related parameters (personal optimum rhythm, resistance to time pressure, perceptual-motor learning, mean of the latency time needed for a bi-segmental or multi-segmental response, resistance to disruptive factors) and the sports performance of elite junior tennis players.

3. Method

3.1. Participants

A number of 12 elite tennis players have participated at the study, aged between 15 and 17 years and having a competitive experience comprised between 6 and 9 years. The male athletes are ranked in top 15 junior players in Romania.

3.2. Instruments

The TUD test has a determined time and is conceived as a dynamic model obtained through the constant or unsteady movement of a target in a delimited space. The signal-stimulus target – under the shape of a yellow square, moves in the action field (the monitor's screen) on different trajectories (left/ right, up/ down). The purpose of the subject is to follow the signal-stimulus target by maintaining this one in a limited space under the shape of a red square named collimator. Response devices: – two levers (left - right) equipped with buttons. The movement of the collimator on an up/ down direction is automatically performed, through programming, at the same time with the target. In three pre-established moments of the test, the target suddenly changes position through a fast jump

Download English Version:

<https://daneshyari.com/en/article/1110313>

Download Persian Version:

<https://daneshyari.com/article/1110313>

[Daneshyari.com](https://daneshyari.com)