



THE EFFECT OF 8 WEEK TENNIS TECHNICAL TRAINING AND GAMES ON REACTION TIME IN 10-12 YEAR OLD BOYS

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Abstract:

The aim of this study is to assess the effect of tennis technique training and games on reaction times of 10-12 years old boys. For this study, 40 subjects who did not perform any physical activity volunteered. Subjects randomly assigned two groups: Experimental group: 20, control group: 20. The experimental group was subjected to 8 week three days a week and 60 minute per session tennis and education with games training program modified according to relevant age group. The control group did not participate any physical activity. Visual, auditory and mix reaction times were measured by Newtest 1000 reaction timer. Subjects' reaction times were measured twice before and after training program. SPSS 22.0 package program was used for analysis of the data obtained from the study. Independent Sample T test was used for comparison between groups, and paired samples t test was analyzed at $p < 0.05$ significance level. As a result of the study, there was no difference in the control group, and after eight weeks of tenement-specific games and technical training, the research group revealed significant changes between auditory, visual and mixed reaction times in both hands.

Keywords: tennis, reaction, training

1. Introduction

Sport is a social activity which is an important part of human experience that affects societies. Of course, the most important elements that should be found in this activity

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are children and young people (1). Sports should enter early maturity in the growth of the child (2). Tennis is a sports branch with intensive coordination. Hence, during the learning of tennis-related skills, transfer of knowledge and skills acquired in the past to newly acquired skills can gain importance. At this stage, there are many factors that influence skill acquisition. These are the training method (method), repeat, individual psychological factors, number of sports, transfer factors (3).

Transfer differences are the transfer of information acquired during application to another application. It is important to transfer principles to practice in the methods of teaching. Sometimes unnecessary movements can be learned and this can make learning of movements in a skill difficult. For example; a person who has just begun to learn tenacity will learn to hit the tennis ball more accurately than anyone who has reinforced the same skill in the wrong way (3,4). Age, height, sex, body composition, conditional and coordinative characteristics are individual factors affecting skill acquisition (5). For example, the ability to improve some of the skills (coordinative) plays a crucial role. Skill acquisition in the elderly is slower than younger individuals (6). Every person has the ability to move, but the ability to develop this ability varies from person to person (5). The extent of this development determines the quality of the person's senso-motoric structure. Clutter can be used synonymously with coordinating ability.

Conditional and coordinative properties, strength, speed, endurance flexibility, agility, coordination, reaction time, orientation, movement sensitivity, rhythm, balance, movement fluency and harmonious formation (3). Physical fitness as well as skill and skill are important in all sports (7, 8, 9). The reaction time is also one of the items of physical fitness. The reaction is defined as rapid traversal of the muscle following neural stimulation.

This warning can be visual, auditory or tactile (10). The reaction rate, which is part of the movement spurt, is dependent on the ongoing and neurophysiological properties of a signal, from the onset of a signal to the onset of conscious action (11).

The "reaction time", defined as the time elapsed between the beginning of the stimulus and the beginning of the reaction (12, 13), is closely related to the fact that the players who are under the pressure of space, time and opponent have the ability to make quick decisions (14).

Many factors have been reported to be influential on the psychological state and decision-making ability of the athletes, and some of them have been reported in many studies that can be developed through training (15-16). Rapid and accurate response to warnings and quick response to both tennis and volleyball branches is a major factor affecting success.

The purpose of studying this information is to examine the effect of 8-week tennis technical training and games on reaction time in 10-12 year-old boys.

2. Materials and Methods

2.1 Participants' Choice

This study was randomized among middle school students aged 10-12 years living in Van. While selecting students, people who have never played tennis have been identified. A total of 40 participants, 20 training groups and 20 control groups, participated.

The athletes practiced tennis-specific techniques, tactics and games for 60 minutes on Mondays, Wednesdays and Fridays, 3 days a week.

2.2 Acceptance Measures

Visual and auditory reactions of the participants, (Newtest 1000) 10 stimuli were sent for each measurement by visual, audio and mixed warning with reaction timer. The average of the remaining 3 trials, minus the best and worst scores of the last 5 warnings, which were called the first 5 trials of warnings, were recorded in milliseconds.

2.3 Training Plan

The training plan took 60 minutes per week for 3 weeks (Monday, Wednesday and Friday) for 8 weeks. The 30 minutes of the training program consists of the technical tactics and the remaining 30 minutes consists of the educational games for the tennis branch. At the beginning and the end of the training 10 minutes warming and cooling work was done.

3. Results

Table 1: Analysis of data from control and research group

Measurements	Group	N	Mean	Standard Deviation	T	P
Right Visual	Control	20	356,1000	22,43329	,122	,903
	Research	20	355,3000	18,77036		
Left Visual	Control	20	391,0500	31,43494	-,052	,959
	Research	20	391,5500	29,15742		
Audio Right	Control	20	344,7000	18,32197	,290	,773
	Research	20	343,1000	16,53035		
Audio Left	Control	20	360,8000	19,62169	,356	,724
	Research	20	358,7000	17,68466		

Mixed Right	Control	20	541,3500	27,76456	,006	,996
	Research	20	541,3000	28,58984		
Mixed Sol	Control	20	558,0000	29,55637	-,058	,954
	Research	20	558,5500	30,52605		
Right Visual End	Control	20	355,2500	23,58161	6,094	,000*
	Research	20	314,3000	18,62681		
Left Visual End	Control	20	389,4500	29,96573	4,425	,000*
	Research	20	345,2000	33,19099		
Audio Right End	Control	20	343,9500	18,35175	3,788	,001*
	Research	20	323,6000	15,50348		
Audio Left End	Control	20	360,0000	20,23025	6,351	,000*
	Research	20	321,1500	18,41417		
Mixed Right End	Control	20	539,7000	26,24600	4,691	,000*
	Research	20	492,1500	36,95556		
Mixed Left End	Control	20	557,0000	29,49219	5,465	,000*
	Research	20	500,9000	35,18358		

When the reaction times of the subjects participating in the study were examined, there was no significant difference between right hand light, left hand light, auditory right mixed left and mixed left and right mixed reaction values before the study of both groups ($p > 0.05$).

When the final test results of Table 1 were examined, reaction times of the subjects participating in the study were significantly different ($p < 0.05$) between right hand light, left hand light, auditory left mixed right and mixed left and left mixed reaction values after both groups.

4. Discussion

Although there are frequent occurrences in the literature of the studies on the reaction time in various sports branches, studies on the reaction time, especially in the tennis branch and in this age group, are limited.

Karagöz (2008) conducted a study on the effect of 12-week tennis training on the visual and auditory reaction time of children aged 8-10 years, the reaction time to right hand light was 454.5 milliseconds while the second measurement result was 405.9 milliseconds ($p < 0.01$).

The reaction time to the left hand light is 465.2 milliseconds while the second measurement is 433.7 milliseconds ($p < 0.05$). The differences between the first and second measurements of the reaction times of the right and left hands of 8-year-old

males against the light were found to be statistically significant (17) ($p < 0,05$). This work is parallel to our work.

Çimen et al. reported that table tennis athletes improved their reaction times by 12% after eight weeks of rapid-force training (18).

Can in his thesis study on the comparison of the reaction times of male tennis players, table tennis players and sedentary in the 10-12 age group in 2007 (19) the average of the left (light) against the tennis players; 273,12 ms, table tennis players; 262.89 ms. The average values of tennis and table tennis players in an upper age group are a little more advanced in terms of reaction than the pre-test averages of our study.

Küçükyetgin ve Çelik (2006) evaluated the effect of the reaction times of first grade primary school children (7-8 years) in the 12-week folk dance education program (20). Eventually, the reaction -Ses (right) pre-test means averaged 481.81 ms; 406,95 ms. This study is a higher value in the 7-8 age group than our study.

Çakıroğlu ve Sökmen (2012). The 12-week judo technical training and games they had performed were 285,72 ($p < 0.05$) against the light (right) pre-test 298,77 and 285,72 post-test, respectively, in the 8-10 year old boys studying the effect on reaction time. 309,40 preliminary tests against the light (left) and 297,54 final tests ($p < 0,05$). The sound (right) pretest was 305,72 and the post test was 297,04 ($p < 0.05$). The sound (left) pretest was 300,81 and the final test was 292,09 (21) ($p < 0.05$).

We have found these studies support these results. Visual and auditory reaction times include two sensory functions that are very important at the same time. Both visual and auditory stimuli cause somatic innervation and effector activity. Both visual and auditory stimuli require mental evaluation. The duration of design and response in grade depends on the general characteristics of mental performance (22, 23).

As a result of the study, it was observed that tennis techniques and games applied for 12 weeks have positive effects on reaction times (light, sound, mixed) in boys aged 10-12 years. It is in this study that we have done that in order to contribute to the development of the teenagers in this age group, especially the reaction times; the tennis training will improve in the positive direction if given in the games related to the technique.

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