

support of his/her parent in this way and s/he can represent our country much more successfully in international arena.

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EXAMINATION ON THE EFFECTS OF THE PREPARATION PERIOD TRAININGS ON THE PHYSICAL FITNESS CHARACTERISTICS OF FEMALE TENNIS PLAYERS

^{1*}MUCAHİT SARIKAYA ²VEDAT ÇINAR ³MUZAFFER SELÇUK
⁴TANER AKBULUT

1,3- University of Yuzunciyil School of Physical Education and Sport Van, Turkey

2,4- University of Firat Faculty of Sports Sciences Elazig, Turkey

Abstract

In this study, it has been aimed to examine the effect of 8-week training program in the preparation period on the physical parameters of female tennis players.

The study group consists of 14 female tennis player who play at the tennis clubs in Van province. Pre and post the 8-week training period, the hand grip strength, sit & reach, vertical jump, standing long jump, cooper, sit-up, push-up and speed over 30 meter measurements were done. The statistical analyses were conducted via SPSS 22.0 and Paired-Samples t test was used to determine the differences between the pre and post test results.

Considering the findings, it was identified statistically significant differences between the players' pretest dominant hand grip strength values ($30,42 \pm 3,74$ kg) and their posttest values ($33,21 \pm 3,57$ kg) ($p < 0.05$). It was determined statistically significant differences between the players' pretest standing long jump values ($1,75 \pm 3,94$ cm) and their posttest values ($1,82 \pm 3,93$ cm) ($p < 0.05$). Statistically significant differences were found between the players' pretest speed average over 30 meters ($5,04 \pm 0,32$ sec) and their posttest values ($4,96 \pm 0,29$ sec) ($p < 0.05$). Statistically significant differences were found between the players' pretest non-dominant hand grip strength values ($27,85 \pm 3,68$ kg) and posttest values ($29,27 \pm 3,46$ kg) ($p < 0.05$).

Consequently, it can be said that trainings executed during preparation period improve the physical conditions of female tennis players and it is thought implementation of these training in the preparation period may increase the performance of players.

Key Words: *Female, Tennis, Physical fitness*

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1.Introduction

Tennis is played in accordance with certain rules for the management of tennis matches between both individuals and teams on an equitable and appropriate standard, for the protection of the individual rights of the players, coaches, administrators and spectators participating in the competition and for the application of all the rules of the playing with the same way and the standard worldwide. (Koçak, 1990). Tennis was basically set up in a game played with sets format in which three sets in women, three or five sets in men, and women who achieves two sets, men who achieves three sets out of five and two sets out of three are the winners (Yardımcı, 1997). Today, the most played and popular one among the racket sports is the court tennis, an Olympic branch of the Tennis played by hundreds of thousands of people all over the world. In the past, tennis, played by only the upper class, has gradually emerged from these narrow template and has begun to spread rapidly among the public. Tennis is a sports branch that involves high-level spring exercises during the competition, where coordination is intense and the ability to change direction quickly with all body movements is required (Asan, 2011).

Badminton, an Olympic sport, has brief periods of submaximal loading and short rest periods, such as those with other sports played with racket (table tennis, squash, tennis). Therefore, the preconditions of success in tennis and badminton sports can be expressed as speed, durability, strength, coordination, reaction, perception, game skills and technical success. In non-contact individual sports, there is a great need for jumps, moves, rapid direction changes and fast arm movements in the game (Aracı, 2004).

In fact tennis is a sport that requires more work, training and effort than other sports. Those familiar with tennis express that a five-set tennis match between equal teams, a five-

thousand-meter run, an hour-and-a-half soccer game, and that it is tougher, more physical and more mental demanding than many other sports (Öztop, 2006).

This study was conducted with 14 volunteer female tennis players to examine the effect of the 8-week preparation period training program on the physical parameters of tennis players.

2. Material and Methodology

2.1. The sample group of the study

The study group is composed of 14 female players playing tennis in the clubs in Van province. During pre and post the 8-week training period, the hand grip strength, sit & reach, vertical jump, standing long jump, cooper, sit-up, push-up and speed over 30 meter measurements were implemented to the participants. In the analysis of the data, SPSS 22.0 package program was used and Paired-Samples t test was applied to determine the differences between the pre-test and posttest.

2.2. Preparation Period Training program

Period was arranged as; Eight weeks, total duration; 96 hours, number of weekly training; 6, daily training time; 2 hours. Players were trained in techniques, tactics and conditions specific to their own branches.

Training days: Monday, Tuesday, Wednesday, Thursday, Friday, Saturday

Rest days: Sunday (resting)

2.3. Measurements and Tests Used in Research;

Hand Grip Strength

The right and left hand grip strengths of the players were carried out with Takkei hand dynamometer (Hand grip) with an accuracy of 0.100 kg while the player was standing and the measurements were repeated in both hands and the best results were recorded (Ziyagil, 2016).

Vertical Jump

Measurements were made using the Jump-meter, an electronic jumper. Measurements were made when the feet were open at shoulder width, 90 degrees bent from the body knees and leaning forward, with arms leaning downward. This process was repeated three times, the best value was recorded as cm. (Pamuk, Kaplan, Taşkın and Erkmen, 2008).

Flexibility

Flexibility Measurements: Sit-reach test was carried out. The volunteer sat down and bashed his bare feet on the test bench flat. The subject also leaned forward as far as possible, bowing his torso forward and bending his knees in front of the hands. In this state, the subject waited for 1-2 seconds in the furthest point, without flexing to forward or backward. The test was repeated twice and the highest value was recorded (Saygın, Polat and Karacabey, 2005).

Standing Long Jump

A line was drawn in the area where the standing long jump test was to be performed and a measuring stick with a sensitivity level of 0.01 was placed forward from this line. The player was standing upright and positioned in such a way that the toes of the feet would be placed in the position to touch the line, and they jumped forward. The subject's feet were

stopped at the first touch and the distance from the line to the heels was measured in cm. (Cicioğlu, Gökdemir and Erol, 1996).

Sit-up Test

Players were asked to stand with twisted soles on the floor, with the knees at 90 degrees, and the hands resting on the back of the head. The test was started with the start command after the subject's feet were fixed by the test team. For 30 seconds, the subject has performed sit-ups and returned to initial state providing their forehead passes knee level. Every correct sit-up of the player in 30 seconds was recorded (Diker and Müniroğlu, 2016).

Push Up Test

Players were asked to hold close to the corner of the bench and to keep his feet together on the mattress. The body has been moved smoothly with the angle of the arms. The player was asked to lower his body and twist his elbows as much as they can until they touch to the edge of the bench. The player was said that their arms should be in the starting position again. The test did not have a time limit. As far as the point of exhaustion, the player has made as many push-ups as they can. Every correct push-up was recorded (Diker and Müniroğlu, 2016).

30 m Spring Test:

After warming up the subjects were kept in the ready position at the exit point on the measured floor. They run 30 m at maximum speed with the mark of start. The time between start and finish was determined by photocell (New Test 2000). The test was applied twice to the test and the best value was recorded (Polat, Çınar, Savucu and Polat, 2009).

Cooper Test

In this test, a 400 m athletics track was used. The track was divided into 10 m sections. The players ran in groups of five. Players ran as much as they can for 12 minutes. As a result, the distance that the player ran was recorded in meters (Akbal, 1998).

3.Findings

Table 1. Comparison of pretest and posttest values of the study group

Measurements	Pretest			Posttest			t	p
	N	\bar{X}	Ss	N	\bar{X}	Ss		
Dominant Hand Grip Strength (kg)	14	30.42	3.74	14	33.21	3.57	-5.40	,000*
Non Dominant Hand Grip Strength (kg)	14	27.85	3.68	14	29.27	3.46	-3.51	,004*
Vertical Jump (cm)	14	36.85	5.48	14	40.85	5.58	-4.69	,000*
30 m Spring (m)	14	5.04	0.32	14	4.96	0.29	3.240	.006*
Cooper Test	14	2047.1	283.99	14	2177.5	63.62	-7.32	,000*
Flexibility	14	21.64	9.64	14	23.35	9.77	-2.25	,041*
Standing Long	14	1.75	3.94	14	1.82	3.93	-9.44	,000*

Jump									
Push-up	14	9.85	4.86	14	14.5	5.68	-9.31	,000*	
Sit-up	14	37.71	14.84	14	44.21	$\frac{14.4}{6}$	-7.42	,000*	

When Table 1 is examined and the pre-test and post-test values of tennis players 8 weeks after the pretest are compared, statistically significant differences are found in dominant hand grip strength, non-dominant hand grip strength, vertical jump, Cooper test, flexibility, 30 m long jump, push-up and sit-up values ($p < 0.05$).

4. Discussion and Result

There was a significant difference in the hand grip strength of the study group between the values before the training program and the values after the training program ($p < 0.05$). Babayiğit et al. investigated the effects of 8-week step studies on some physiological and anthropometric variables in women between 25-31 years of age and found that they had a significant increase in right and left hand grip strength (Babayiğit, Zorba, İrez, Mollaoğulları, 2002). Similarly, Dönmez and Aydos emphasize that exercise increases the hand grip strength (Dönmez and Aydos, 2000). Current research results support our findings.

There was a significant increase in the 30-meter spring measurements of the study group after the training program between the values before the training program and the values after the training program. ($p < 0.05$). In the study performed by Bavli, the players who had 6-weeks pliometric exercises added to the basketball trainings improved more than the control group in terms of maximum 1 squat, vertical jump and 30m spring performance. This is parallel to the measurements we have conducted (Bavli, 2012).

When the vertical jump values of the players are examined; there was a significant difference between pre-test and post-test values in vertical jump measurements after exercise program ($p < 0,05$). Palmer et al. determined the vertical jump values of female soccer players to be 41.13 ± 1.26 cm in their studies (Palmer, Thompson, Hawkey, Conchola, Adams, Akehi, Thiele and Smith, 2014). These results are close to our study group. Again, Castagna and Castellini found vertical jump of 30.2 ± 3.5 cm (Castagna and Castellini, 2013). as a result of measurements made on Italian national women's footballers as distant values. This difference is thought to have originated from the sports branch. In another study, Cicioğlu et al. found vertical jump values (cm) in the three groups of female basketball, handball and volleyball players whose mean age was 20.9 ± 3.5 , 20.9 ± 3.8 and 21.3 ± 2.0 respectively were 42.2 ± 4.7 , 39.1 ± 3.8 and 45.5 ± 4.4 in order (Cicioğlu, Günay and Gökdemir, 1998). These findings are in line with current research results. In a study conducted with 73 amateur and 51 professional soccer players by Buğdaycı et al. vertical jump values of 49.57 ± 6.81 cm in amateurs and 49.39 ± 4.42 cm in professionals were found in the study (Buğdaycı, İnal and Akkuş, 2000). The results were found to be different than our findings due to the sports branch and gender differences. In a research which is supportive to our study and on strength performance of the force applied during the preparation period of the wrestler conducted by Kılınç et al. there are significant differences in the vertical jump values (Kılınç, Aydoğan, Ersoy and Yavuz, 2012). In McGuigan et al.'s study, the vertical jump value of wrestlers was determined as 45 cm (Mc Guigan, Winchester and Erickson, 2006).

When the Cooper test results of the players were examined, pre-test values were found as $2047,1 \pm 283,99$ meters and final test values as $2177,5 \pm 63,62$ meters. There was a significant difference between the pre and post Cooper test values of the players ($p < 0,05$). It

can be said that these differences have a positive effect on the aerobic capacity of tennis players in preparation period training. In a study by Colakoglu and Karacan investigating the effects of some physiological parameters on aerobic exercise in young and middle-aged women, the 12-week training program was determined to have affected the participants' aerobic capacity positively (Çolakoğlu and Karacan, 2006). In the study of Savas and Ugras examining the effect of the pre-season training program on the physical and physiological characteristics of college players, the eight-week training program was found to have significant differences between pre and post-test results of aerobic capacities of players (Savaş and Uğraş, 2004). These findings are in parallel with our study results.

When the push-up test results of the players were taken into consideration, pre-test values were found to be 9.85 ± 4.86 meters and final test values were found to be 14.5 ± 5.68 meters. There was a significant difference between the pre and post push-up test values of the players ($p < 0,05$). Kılinc et al. in their research conducted on the strength performances of the combined strength trainings of wrestlers during preparation period, found that pre-training push-up test was 37.5 ± 6.9 times/30 sec. and post-training was 39.8 ± 4.9 times/30 sec (Kılınç, Aydoğan, Ersoy and Yavuz, 2012). Cicioğlu et al. in their research conducted to determine the seasonal change of physical and physiological characteristics of the wrestler of 15-17 age group, found the sit-up test value as 30.76 ± 4.12 (Cicioğlu, Kürkçü, Eroğlu and Yüksek, 2007).

When the sit-up test results of the players were taken into consideration, pre-test values were found to be 9.85 ± 4.86 meters and final test values were found to be 14.5 ± 5.68 meters. There was a significant difference between the pre and post sit-up test values of the players ($p < 0,05$). Cicioğlu et al. in their research conducted to determine the seasonal change of physical and physiological characteristics of the wrestler of 15-17 age group, found the sit-up test value as 30.76 ± 4.12 (Cicioğlu, Kürkçü, Eroğlu and Yüksek, 2007). Kurkcu et al. found that the 12-14 age group wrestlers' sit-up value was 30.36, and the control group's sit up value which do not exercise any sports was 14.13 (Kürkçü, Hazar, Nanikli and Çalışkan, 2001). These findings are similar to our results.

When the sit-up test results of the players were taken into consideration, pre-test values were found to be 1.75 ± 3.94 meters and final test values were found to be 1.82 ± 3.93 meters. There was a significant difference between the pre and post standing long jump test values of the players ($p < 0,05$). Gerek found that the standing long jump value of 109 male BESYO (School of Physical Education and Sports) students was $224,92 \pm 18,01$ (Gerek, 2008). Kurt in the research conducted on the comparison of the effects of Plyometric training on trained and untrained players, found that standing long jump test value of the players were $243,95 \pm 21,98$ cm (Kurt, 2004). Ek et al. found that standing long jump test value of the soccer players was $225,00 \pm 21,00$ cm as a result of the test they conducted (Ek, Temoçin, Tekin and Yıldız, 2007).

When the flexibility test of the players was examined, pretest values were found as 21.64 ± 9.64 cm and posttest as 23.35 ± 9.77 cm. It is observed that the training of the preparation period made significant increases in the flexibility situations of the players. Kulak et al. in their study in which effect of mental training program on some motoric features were examined, significant differences between flexibility test and control groups were determined (Kulak, Kerkez and Aktaş, 2011). Kurt et al. in their study in which effect of eight-week step-aerobic exercises on some physical fitness parameters of middle-age sedentary women was evaluated, significant increases between first and second measurement values were found (Kurt, Hazar, İbiş, Albay and Kurt, 2010).

As a result; the 8-week training program has resulted in significant increases in dominant and non-dominant hand grip strength, vertical jump, Cooper test, flexibility, long jump, push-up, sit-up, 30 meters sprint values. In the light of these results, it can be said that

the preparation period training for eight weeks affects the performance of female tennis players positively. In addition, this practice, which was carried out during the preparation period, it is believed that racket sports coaches can be provided with contributions at the point of training planning.

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