

The effect of 12-week service training on self-confidence in racket sport

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ABSTRACT

The aim of this study is to investigate the effect of twelve-week service training on self-confidence in racquet sports. The universe of the study consists of the secondary schools in the province of Van, and the sample consists of 60 students from 10 to 14 years of age in Hasan Ali Yücel Secondary School in Van and TOBB Secondary School. Self-Concept Scale developed by "Piers-Harris" (1984) and adapted to Turkish Öner (1996) to evaluate their self-confidence before and after the study. In evaluating the performances, Dewitt-Dugan Tennis Test, Target Service Test, French-Stalter Badminton Service tests were applied. After the normality test was done, Independent-Sample T test was used for binary independent variables and paired-sample T test for dependent groups. The effect of self-confidence on the hit was tested by regression analysis. Significance level ($p < 0.05$) was evaluated. When the finding of the study were examined, no change was observed between pre-test and post-test of the control group, while significant changes were observed between pre-test and post-test of the experimental group. As a result of this study, that can be said that 12-week service training positively affect self-confidence of rackets sports athletes.

Keywords: Tennis, badminton, self-confidence, service.

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INTRODUCTION

The serve is an important stroke in high level tennis. A well-mastered serve is a substantial advantage for players (Girard et al., 2005; Johnson et al., 2006). However, the serve is extremely complex and requires a wide range of technical and physical skills (Elliott et al., 2003; Girard et al., 2005; Kovacs and Ellenbecker, 2011). This stroke is learned and improved upon throughout the entire player career development process, from beginner to professional level (Whiteside et al., 2013). Success in tennis depends on several physical, technical/tactical and psychological factors, and in order to be competitive, players require a mixture of speed, agility, and power combined with medium to high aerobic and anaerobic capacity (Fernandez-Fernandez et al., 2009).

Badminton is a racket sport which is characterized by a temporal structure with actions of short duration and high intensity coupled with a short resting time, as recently reviewed. This sport gathers five disciplines, including Men's and Women's singles, doubles and mixed doubles,

each of them requiring a specific preparation in terms of patience, control and physical fitness (Chen and Chen, 2008; Laffaye, 2011; Pearce, 2002).

Table tennis is a complex and asymmetric sport, and whose serve is the fundamental closed skill that requires active movement and accurate control. The ability to serve well in table tennis is a crucial part of the game. This enables the player to score quickly, and to gain an advantage. In addition, a powerful swing that transmits the moment of inertia to the ball with high speed, in the appropriate direction is vital for success. The table tennis serve is also an extremely important element that could provide a link to the next phase of play. A forceful lower limb drive is considered as the "starting point" of the kinetic chain at the serve point (Elliott, 2006).

In sports, self-confidence can be understood by focusing on high levels of success. Scientists have stated that self-confident athletes are people who are both physically and mentally capable of revealing their existing

skills to win (Yıldırım, 2013).

Self-confidence is the subjective formation that occurs as a result of self-esteem and self-satisfaction. As it is negative or positive (high or low self-confidence), it is not static and therefore differs depending on the circumstances, the situation assessed inside. The basic theory of self, which plays a role in the formation of self-confidence, is how the person is; how the ideal self wants to be is what self-esteem of the individual adopts and how the individual desires to be in what way the love is between them (Akagündüz, 2006).

The level of lack of self-confidence stops depending on the frustration, frequency, and severity of the life. All mixed childhood, development age and adulthood are damaged as a result of this disappointment and the individual's self-worth (Lauster, 2005). The feeling of self-confidence is the opinion that individuals can overcome their difficulties and problems in their lives based on their inner world, self-power, self-ability and self-intelligence (Sayar, 2003).

From a developmental perspective, babies are known to have gone through an era called trust or insecurity in a period of 0 to 12 months. In this age, education, the way the child is raised and the feeling established with the child have a big share in the formation of feelings of trust or insecurity in the child (Cüceloğlu, 2003).

MATERIALS AND METHODS

The universe of the study is composed of secondary schools in Van province, and the sample is composed of 60 students in total, including 30 experimental and 30 control groups between 10-14 age group studying in Van Province Hasan Ali Yücel Secondary School and TOBB Middle School. Experimental and control groups consist of 3 branches and there are 5 female and 5 male athletes in each branch. While the special study program specific to the branches was applied to the experimental group (Badminton, Tennis and Table Tennis) for 12 weeks, 3 days a week, 80 minutes a day, the control group continued their normal training. Piers-Harris self-confidence scale was applied to the participants before and after the study (Piers, 1984). Before and after the study, the service skills of the students were tested and it was investigated whether the study had an effect on self-confidence. Ethics approval was obtained from the Yüzüncü Yıl University Medical School non-interventional clinical research ethics committee (date: 04.04.2017 decision no: 05). This research was supported by Van Yüzüncü Yıl University Research Projects Coordination Unit as SYL-2017-6245 project.

Piers-Harris self-concept scale

The 80-item Piers-Harris Self-Concept Scale for Children,

developed by Piers and Harris in 1964, was applied to students between 9-14 age group (Piers, 1984). The questions are answered as "yes" or "no". Scale score can range from 0 to 80. The high score indicates the existence of a positive, and the low score indicates the existence of a negative self-concept. The scale consists of 6 subscales. Respectively, these are: 1. Happiness-Satisfaction, 2. Anxiety, 3. Popularity, Social Likes or Favorites, 4. Behavior and Compliance-Conformity, 5. Physical appearance and 6. Mental and School Status. The reliability and validity of the scale was made in a wide age range from primary school to university students (Öner, 1996).

The purpose of this scale is to obtain data on self-confidence in children. The scale, which was adapted to Turkish by Öner (1996) and Çataklı (1985), aims to evaluate children's thoughts, feelings and attitudes towards them. The scale, which is answered as "Yes" or "No", consists of 80 items and consists of "Behavior", "Mental/School status", "Physical appearance", "Anxiety", "Being trendy" and "Happiness" subscales. Answers are scored with a key, and scores ranging from 0 to 80 are obtained. High scores indicate the existence of a positive self-concept and low scores indicate the existence of negative self-concept. The reliability coefficient of the scale varies between 78 and 93 for its subscales. Six factors explain 42% of the total score change. The reliability coefficient of the Turkish form varies between 81 and 89. The factor structure of the Turkish form is parallel to the factor structure of the original form. As a result of factor analysis, it was determined that six factors explained 41.7% of the total score change. The questionnaire was applied to randomly selected students in each branch as pre-test and post-test before and after the training sessions that continued for 12 weeks. Scoring was done based on the scoring principles of the self-confidence scale.

Training programs

In the study, the intensive training method was applied and the intensity in training was determined as 65%. The rest period in the training is 15 min between training, and based on the principle of efficient rest, the athletes' pulses are expected to fall to the 110 to 120 limit, during which 2-4 min rest is given. Then it starts to training again for 15 min. During the training sessions that will continue for 12 weeks, they were allowed to drink fluids according to personal needs. The training sessions were carried out by expert coaches. In training sessions, priority was given to service training.

Badminton service test

The subject fires 20 service shots to the target, whose

diagram is illustrated and explained below.

Preparing the court: a) A string is stretched 50 cm (20 inches) above the net line of the net and parallel to the net line. b) To the point where the centerline intersects with the short service line, 4 arcs are drawn, respectively, 55 cm (22 inches), 75 cm (30 inches), 95 cm (38 inches) and 115 cm (46 inches). It will be easy for the bowlines to be in different colours.

Application and scoring: -0- score is recorded for each trial that does not pass between the rope and the net and/or do not land on the doubles court. Apart from these, invalid shots are repeated. Balls falling on the line are considered to have fallen into the area with a high score (Kamar, 2008).

Table tennis target service test

Setting the table: 1 Dynamic Delux Foldable Table Tennis Table Indoor (Origin: China) with 1 MAS brand steel ruler, the target areas of 30 × 15 cm are only 37.5 cm away from the net to the side of the opposing half court compared to the right-handed players. Whiteboard pen is marked and 5 is written in this field. Another 80 × 40 cm target marked at a distance of 12.5 cm is marked and 3 is written in this field. On the remaining area, which is the other unmarked side of the table, and between the middle line, 1 is written.

After the warm-up phase in the training was over, the dominant hand directed each athlete with the right hand to the side of the table tennis table (left) relative to the athlete. The trainer placed 6 ITTF-approved Butterfly table tennis balls in 1 ball basket and left the basket on the right side of the table. They were asked to come to the throwing position. The coach gave the command "start test" after the command "ready". The service shots recorded by the camera were implemented according to the International Table Tennis Federation (ITTF) service shots rules, all kinds of service shots in accordance with the rules were allowed, and the regions where the service shots were recorded.

They were asked to take two different technical services, each containing three shots (3 shots from the flat service + 3 shots from the cut-out service). The accuracy score obtained is given by the ball jumping in the marked areas. The sum of the best three shooting scores from the two shots constituted the score of the athlete in this test. The athlete will test the same service for 1 min. After resting, the hand applied the test using the straight and cut service (Purashwani et al., 2010).

Dewitt-Dugan tennis test

Service test: The subject makes 10 service shots in

accordance with the rules. A score is recorded for each successful shot. If the shot was made in accordance with the rules but not hit, it is evaluated with half a point. The score is a record of points after 10 shots.

Service shot to the board: This test consists of 5 service shots to the board consisting of 5 circles. The board is 1.5 meters high. The diameter of the circle in the middle is 30 cm, the diameter of the second circle is 90 cm, the diameter of the outside circle is 150 cm, the diameter of the outside circle is 210 cm, the diameter of the outermost circle is reported as 270 cm. The subject fires 5 service shots from the 12.5 m distance to the board. The innermost circle is evaluated from 9 to outwards as 7, 5, 3 points.

Backhand and forehand test: This type of test is more effective with an automatic tennis ball throwing machine. 10 or 15 balls are shot for Forehand and the same number of balls are shot for Backhand. 1 point is recorded for each ball covered within the boundaries of the game. There may be different versions of the test, such as hitting the ball to a specified point on the court.

Speed test: The subject throws the ball to the wall at least 3 m from the wall for 1 minute using the stroke technique he wants. The score is determined by the number of balls hitting the wall during this time (Kamar, 2008).

Statistical analysis

SPSS 17.0 package program was used to evaluate and calculate the obtained data. Averages and standard deviations are given in the tables. By looking at whether the data show normal distribution or not, it was concluded that it was normal distribution after testing with the Kolmogorov Smirnov test. Since the obtained data show normal distribution, Independent Sample T-test was used to determine the difference between independent variables and Paired Sample T-test was used to determine whether there is a difference between dependent variables. The effect of self-confidence on hit was tested by regression analysis.

RESULTS

As seen in Table 1, when the self-confidence pre-test for women in the experimental group compared to the groups in terms of groups, there was no statistically significant difference between the experimental and control groups ($P > 0.05$). However, the self-confidence of women in the experimental group was found to be statistically significant between the post-test, experimental and control groups ($P < 0.05$). In addition,

Table 1. Comparison of the self-confidence tests of the athletes in the experimental group in terms of groups.

Gender	Groups	n	Self-Conf. Avg	S.D	T	P	
Woman	Self-confidence pretest	Experimental	15	63.20	6.63	0.73	0.477
		Control	15	60.80	8.34		
	Self-confidence pretest	Experimental	15	67.47	5.36	2.09	0.049*
		Control	15	62.40	6.69		
Man	Self-confidence pretest	Experimental	15	64.00	6.98	3.83	0.002**
		Control	15	54.93	9.04		
	Self- confidence pretest	Experimental	15	68.53	5.69	4.41	0.001**
		Control	15	55.93	8.99		

Table 2. Comparison of the self-confidence test of the branches related to the experimental group participating in the study in terms of pre-test-post-test.

Branches	Gender	N	Pre-test Avg.	Post-test Ort.	S.D	P
Badminton	Woman	5	60.40	66.20	1.93	0.040*
	Man	5	59.20	64.80	1.94	0.045*
Ping Pong	Woman	5	63.60	67.60	0.95	0.014*
	Man	5	67.60	72.00	1.29	0.027*
Tennis	Woman	5	65.60	68.60	0.84	0.023*
	Man	5	65.20	68.80	1.17	0.037*

when the self-confidence pre-test and self-confidence post-tests of the experimental group were compared in terms of groups, a statistically significant difference was found between the experimental and control groups ($P < 0.05$).

As seen in Table 2, a statistically significant difference was found when the self-confidence pre-test and post-test for women who participated in the study as an experimental group were compared ($P < 0.05$). Post-test scores were significantly higher than the pre-test scores in the experimental group comparisons. When comparing the self-confidence pre-test average and self-confidence post-test average for male participants who participated in the study as an experimental group, a statistically significant difference was found ($P < 0.05$). Post-test scores were significantly higher than the pre-test scores in the experimental group comparisons.

As seen in Table 3, when the pre-test and post-test related to female participants in the experimental groups participating in the study were compared, a statistically significant difference was found ($P < 0.05$). Post-test scores were significantly higher than the pre-test scores in the experimental group comparisons. When hitting pre-test and hitting post-test were compared between male participants who participated in the study as an

experimental group, a statistically significant difference was found ($P < 0.05$). Post-test scores were significantly higher than the pre-test scores in the experimental group comparisons (Table 4).

DISCUSSION AND CONCLUSION

In our study where the effect of 12-week service on self-confidence in racket sports was examined the research groups consist of 3 different sports branches as experimental and control groups and consist of 60 students in total, 30 experimental and 30 control groups consisting of 5 females and 5 male athletes in each branch.

Ergül (2008) examined the target studies that he added to the end of 8-week skill training in the study he conducted on 10-12 year-old male infrastructure students with the Hewitt test and found a significant difference in the experimental group pre and post-test scores ($p < 0.05$). The control group also found a significant difference in score values in the pre and post-tests. In this study, the DeWitt Dugan test experiment and control group found a significant difference in the first and last measurements ($p < 0.05$). Since the skill training in the

Table 3. Comparison of the service hit test of the branches related to the experimental group participating in the research in terms of pre-test-post-test.

Branches	Gender	N	Service Avg. Test	Post-test Avg	S.D	p
Badminton	Woman	5	41.20	64.20	4.30	0.006**
	Man	5	49.20	68.80	3.54	0.005**
Ping Pong	Woman	5	5.20	7.80	0.24	0.000**
	Man	5	8.00	9.80	0.37	0.009**
Tennis	Woman	5	10.40	15.60	0.66	0.001**
	Man	5	15.20	19.40	0.86	0.008**

Table 4. Groups comparison of self-confidence pre-test and self-confidence post-tests.

Groups		N	Mean	S.S	F	P
Control group	Badminton	10	56.7	9.80	1.749	0.19
	Tennis	10	54.9	8.13		
	Ping Pong	10	62.0	8.44		
	total	30	57.8	9.05		
Self-confidence post-test	Badminton	10	56.1	7.57	2.700	0.08
	Tennis	10	56.7	9.48		
	Ping Pong	10	63.8	7.50		
	Total	30	58.8	8.71		
Experimental group	Badminton	10	59.8	7.26	2.694	0.08
	Tennis	10	65.4	5.35		
	Ping Pong	10	65.6	6.25		
	total	30	63.6	6.70		
Self-confidence post-test	Badminton	10	65.5	5.35	1.763	0.19
	Tennis	10	68.7	4.34		
	Ping Pong	10	69.8	6.10		
	Total	30	68.0	5.45		

literature studies is close to the target training, it supports the research.

Gezer (2012), in his study where female athletes aged 10-12 investigate the effect of targeted and untargeted work on tennis skill, as a result of untargeted studies, the Dewitt-Dugan hit test for tennis (first measurement-13.3 \pm 1.767, last measurement-14 \pm 2.055) could not detect a significant difference ($p > 0.05$). In the study, DeWitt Dugan test detected a statistically significant difference between the groups in the first and last measurement values ($p < 0.05$).

Salman (2007), at the end of a study conducted in 400 reps were reached in the forehand short service shots from group X = 53.0 9.0, X = 56.8 increased from 8.3 while 1200 reps were reached in the backhand short service shots from X = 58.3 9.8, X = 63.7 increased to

11.4. Accordingly, the rate of pre-test-post-test increase in forehand short service is 7%, and the rate of pre-test-post-test increase in backhand short service is 9.2%.

Abdulahyoglu et al. (2015), as a result of their work, at the end of the eight-week training, there was no significant difference in the athletes who train with different types of stretching and then applied a skill test, but a limited significance is observed in the second target service test (post-test) application. There was a certain increase in the percentages of back-to-hand service, but no significant increase was observed in the other two accuracy rates. When the static stretching group, the dynamic running group and the control group are compared within themselves, the target service test (elarka) of the dynamic running group is 8.46 \pm 2.29, while the other static stretching group is 6.08 \pm 3.20 and

the control group is $5.69 \pm$ An increase of almost 2 points is observed compared to the others found 2.89.

In a study that examines the relationship between personality and sports movements, it is stated that the individuals engaged in sports are more mobile, disciplined, determined to communicate and adapt to the place where they are in difficult conditions compared to non-sports individuals (Tiryaki, 2000). It is known that people who are engaged in sports have various personality features such as being free, objective, and very little anxious than those who do not. It is also undeniable that individuals who do sports face too many issues (Pehlivan and Konukman, 2004).

In the study conducted by Vurgun (2010), no significance level was found between the cognitive and physical anxiety and self-confidence levels of athletes in the national team. In the same study, no difference was found in the sports confidence and bilateral communication of the athletes according to their situation in the national teams. In the study, it was found that there is no difference in the sports confidence of the male and female athletes in the national team compared to the athletes who are not in the national teams (Vurgun, 2010).

Ekinci et al. (2014) did not find a significant difference in the self-confidence levels of the participants in their study on the examination of self-confidence levels of high school students doing sports. Even if he is a high-level athlete, and his self-confidence scores are very high, there is no statistical significance (Ekinci et al., 2014).

In our study, as seen in Table 2, when the self-confidence pre-test for women in the experimental group compared to the groups in terms of groups, no statistically significant difference was found between the experimental and control groups ($P > 0.05$). However, the self-confidence of women in the experimental group was found to be statistically significant between the post-test, experimental and control groups ($P < 0.05$). In addition, when the self-confidence pre-test and self-confidence post-tests of the experimental group were compared in terms of groups, a statistically significant difference was found between the experimental and control groups ($P < 0.05$). The reason why there was no change in these athletes in terms of the self-confidence of the athletes in the sample group of the study conducted by Ekinci and his friends is that those athletes were professionals. The sample group in our study shows the development of self-confidence as they are on the way to become professional athletes.

Arslan et al. (2015) stated that self-confidence has also developed in those who started sports and regularly do sports together with athletes who ranked high in sports, achieving success such as trophies and medals in the study of sports and self-confidence in high school students.

According to Tasiemski et al. (2012), in the study conducted on the evaluation of the identity of disabled athletes using bicycles, it has been determined that the

perception of athlete identity has positive results in people with disabilities. According to Wiśniowska et al. (2012), athletes' perception of identity was assessed in athletes with disabilities playing volleyball, and their relationship with life satisfaction was examined and a significant difference was found in both studies. Depression, self-esteem, and anxiety of the swimmers were evaluated in the studies conducted with swimmers. The self-esteem scores of people aged 9-13 who are engaged in sports regularly were found to be significantly higher than those in the control group (Karakaya et al., 2006). These studies match and support our findings.

Self-confident athletes can easily turn their potential into performance during the match and directly contribute to the game. When they make mistakes, they are sure that they can do better and they stand up very quickly and continue to struggle for new opportunities. They do not hesitate to take responsibility for critical moments in the game. Athletes who are hesitating about their abilities, who think that this day is not theirs, and who are sceptical about this level, are easily affected by a small mistake they make during the match and start a chain of mistakes. Therefore, some athletes are not unhappy with being on the bench.

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