

The Effect of "Precision with Tempo" Exercises on the Accuracy of Groundstroke Punch Techniques in the Tennis Students Activity Unit of Yogyakarta State University

Wisnu Nugroho¹, Fathoni Hidayat¹, Abdul Alim¹

¹Faculty of Sport Sciences, Universitas Negeri Yogyakarta, Jl. Colombo No.1 Yogyakarta, Indonesia

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Abstract: The purpose of this study was to determine the effect of "precision with tempo" exercises on the accuracy of groundstroke punch techniques in the Fields Tennis Students Activity Unit of Yogyakarta State University. This was a quasi-experimental research using the one group pretest posttest design method. The population in this study were players of Fields Tennis Students Activity Unit of Yogyakarta State University with sample of 12 players whose accuracy of groundstroke punch technique was still low, not the core players and mid-level players. The instrument for the test used is the Hewitt Tennis Test to assess the level of accuracy by forehand and backhand groundstroke by using a predetermined target. The data analysis technique uses paired-t test, which is intended to compare the mean values of the pre-test and post-test results before and after treatment with the same sample. Before the paired-t test, performed the normality test and homogeneity test. The results showed that after practicing precision with tempo methods, the average forehand groundstroke and backhand groundstroke scores increased, namely the forehand groundstroke of 2.77 and the backhand groundstroke of 3.87. Thus, it can be concluded that there is an influence of the "precision with tempo" training model on the accuracy of groundstroke at the players of Fields Tennis Students Activity Unit of Yogyakarta State University.

1 INTRODUCTION

A tennis athlete must have a good understanding of the right time for an athlete to hit the ball coming from the opponent's direction. An athlete must consider the speed and know the rotational motion of the ball and take it into account. All of those things must be done in a short period of time. The success of the game for an athlete depends on ten physical components, which are: (1) strength, (2) endurance, (3) power, (4) speed, (5) flexibility, (6) balance, (7) coordination, (8) Agility, (9) accuracy, (10) reaction (Sajoto, 1988).

Tennis game is a game full of risks of making mistakes. Based on tennis experts' observations on each level of players, only about 15% of the points scored by tennis players are a result of an accurate hit. The remaining 85% was a result of the opponent's mistakes in hitting the ball (USTA, 1996). Mistakes by a tennis player could be that the ball was stuck in the net, out of the court's lines, or

an inaccurate application of tactics that it benefits the opponent.

To reduce risks in tennis, one of which is when the ball is out of the court lines, accuracy is needed. Accuracy is one's skill to change his or her movement as quickly as possible according to the target or to adjust his or her movement to the target. Accuracy is almost associated with speed. Accuracy is one's skill to control voluntary movements for a particular purpose. Accuracy in tennis game has a very important role. Generally, any hit in tennis requires accuracy (Sikumbang et al, 1982). If there is no accuracy when hitting the ball in tennis game, it will be a huge loss for the athlete in terms of game performance quality.

Based on the observation done in *Unit Kegiatan Mahasiswa Tennis Lapangan* Universitas Negeri Yogyakarta (Tennis Student Activity Unit at State University of Yogyakarta) both during exercises and matches, there are some players who seem to lack accuracy especially in groundstroke technique. Echol and Sadili (1996) defined groundstroke,

coming from two words 'ground' (land) and 'stroke' (hit), as a hit done after the ball touches the ground. According to J. Brown (2001), groundstroke is a hit after the ball bounces off the court. Whereas Yudoprasetyo (1981) suggested that groundstroke is a hit done towards the ball touching the ground (court). Based on those definitions, it can be concluded that groundstroke is a technique to hit the ball after it touches the ground or court. M. Crespo and Dave Milley (1998), for the right-handed, the stroke is on the right side of the body, and it is the other way around for the left-handed. Forehand groundstroke is the skill to hit the ball with the hand palm holding the racket facing forward, or the back of the hand facing backward. Backhand groundstroke is the skill to hit the ball with the back of the hand facing forward, or the hand palm facing backward.

Some factors causing the problem is lack of exercise, inadequate exercise mode to increase accuracy, how long the player has been playing tennis, the coach's lack of knowledge on exercise mode, and less structured exercises. Based on the problem, we know that accuracy level of groundstroke technique in UKM at UNY some players is still low for some players.

2 RESEARCH METHOD

2.1 Type of Research

The research used in this paper is an experimental research. Hadi (1985) stated that an experimental research is a research conducted to determine the effect caused by a certain treatment given by the researchers on purpose.

This paper is a quasi-experimental research, which means that this research has a drawback in that there is no control group. One group pre-test post-test design uses a pre-test before the treatment is given and a post-test after the treatment (Ali Maksum, 2012). This research method is used to determine the effect of an exercise of one variable in a group experiment through pre-test and post-test.

2.2 Place and Time of Research

This research was conducted in the tennis court of State University of Yogyakarta on November 6 – December 15 2018 every Tuesday at 16.00 until the end of the exercise, Wednesday at 16.00 until the end of the exercise, and Saturday at 08.00 until the end of the exercise. This research involved members

of the tennis club of State University of Yogyakarta; 10 male students and 2 female students.

2.3 Research Variable

The researchers used accuracy as dependent variable and precision with tempo exercise as independent variable, with operational variables as follows:

Accuracy. In this research, the researchers used cone as the target for forehand and backhand groundstrokes during treatment.

Precision with tempo. Precision with tempo is a method of exercise done by two players in a tennis game with the ball going on a straight direction for one (1) minute and the players do forehand and backhand groundstrokes as many as possible with cone as the target, players stand on the back line and the coach stays out of the court. Then, as the coach gives a cue to start, the players do the groundstroke concurrently for one minute. In precision with tempo treatment, the players serve the ball to each other, instead of getting the ball from the coach.

2.4 Research Population

Population is an area of generalization consisting of objects/subjects with certain quantity and characteristics decided by the researchers to study and from which to draw conclusion (Sugiyono, 2006). The population of this research is the players of the tennis club at State University of Yogyakarta, which are 30 students in total. Twelve of those students were the samples in this research, consisting of 10 male students and 2 female students.

This research uses purposive sampling technique because the samples did not include all members of the tennis club of the university, but they had these criteria: a) low accuracy in groundstroke technique; b) not the main player in the university tennis club and c) a medium level player.

2.5 Data and Data Collecting Technique

This research uses Hewitt tennis test accuracy instrument for data collecting technique. The aim of Hewitt tennis test accuracy is to assess accuracy rate through forehand and backhand groundstrokes using feeder (Strand and Wilson, 1993).

This research uses t-test for its data analysis technique, which compares the average score of the pre-test and post-test before and after treatment with the same samples. Before t-test, normality and

homogeneity tests were conducted. Those tests were done to determine the result of the data are normally distributed and homogenous. It has to be reliable and valid. Reliability and validation tests used descriptive statistics using SPSS 23.

3 RESEARCH RESULT AND DISCUSSION

3.1 Research Result

3.1.1 Forehand

Figure 1 shows a histogram of the frequency distribution of the forehand groundstroke accuracy pretest result. Two people (16.67%) were in Very Good category, 4 people (33.33%) in Good, 3 people (25%) scored Fair, 3 people (25%) scored Poor, and 0% scored Very Poor, of a total of 12 people.

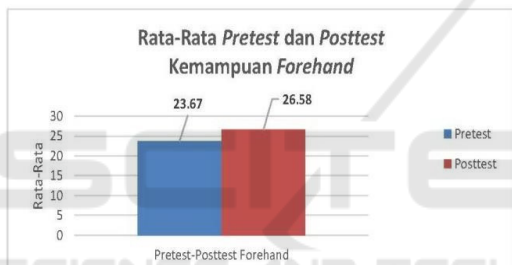


Figure 1: Shows a histogram of frequency distribution of forehand groundstroke accuracy pretest result.

Figure 2 shows a histogram of the frequency distribution of the forehand groundstroke accuracy posttest result. Four people (33.33%) scored Very Good, 3 people (25%) scored Good, 3 people (25%) scored Fair, 2 people (16.7%) score Poor, of a total of 12 players.

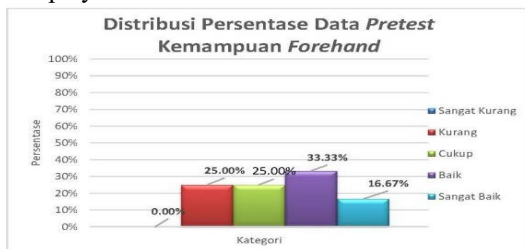


Figure 2: Shows a histogram of frequency distribution of forehand groundstroke accuracy posttest result.

A more detailed forehand data improvement can be seen in Table 1.

Table 1. Forehand skill improvement.

No	Pre-Test	Post Test	Improvement
1.	27	28	1
2.	24.5	29	4.5
3.	26.5	25	-1.5
4.	21	20	-1
5.	29.5	33	3.5
6.	22.5	26	3.5
7.	17.5	28	10.5
8.	19	26	7
9.	17	20	3
10.	31.5	33	1.5
11.	26	27	1
12.	22	24	2
Mean	23.67	26.58	2.77

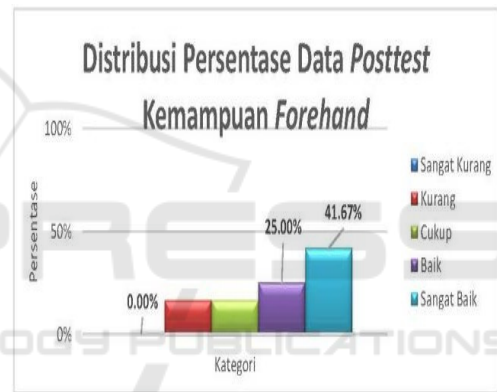


Figure 3: Histogram of forehand pretest and posttest.

3.1.2 Backhand

Figure 4 shows a histogram of frequency distribution of backhand groundstroke accuracy pretest data result. Four people (33.33%) scored Very Good, 5 people (41.67%) scored Fair, 2 people (16.67%) scored Poor, 1 person (8.33%) scored Very Poor, of a total of 12 players as the samples.

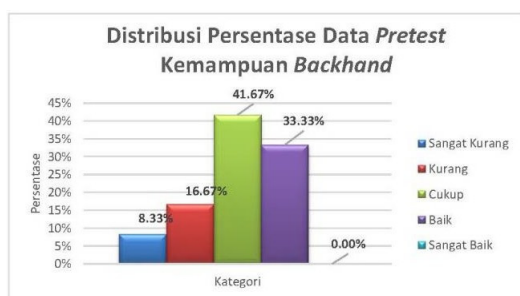


Figure 4: Histogram of frequency distribution of backhand groundstroke accuracy pretest data result.

Figure 5 shows the frequency distribution of backhand groundstroke accuracy posttest data result. Seven people (58.33%) scored Good, 5 people (41.67%) scored Fair, 1 person (8.33%) scored Very Good.

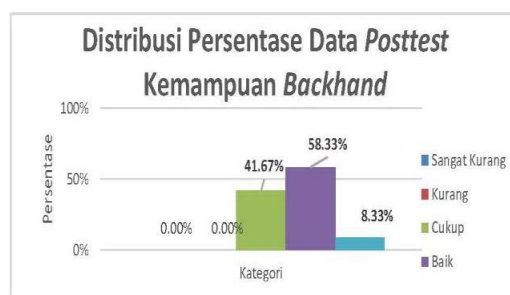
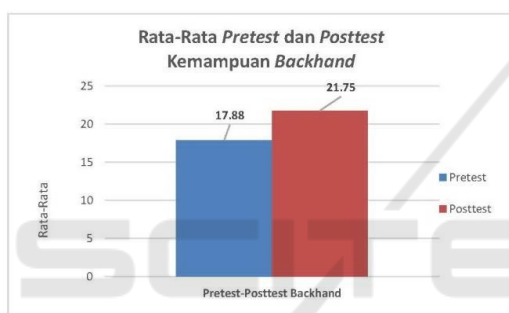


Figure 6: Histogram of backhand data improvement.

Figure 5: Histogram of frequency distribution of backhand groundstroke accuracy posttest data result.

A more detailed backhand data improvement can be seen in Table 2.

Table 2: Backhand skill improvement.

No.	Pretest	Posttest	Improvement
1.	16	22	6
2.	28	28	0
3.	22	20	-2
4.	14	25	11
5.	20.5	26	5.5
6.	21.5	24	2.5
7.	18	23	5
8.	14.5	20	5.5
9.	10	15	5
10.	15	18	3
11.	23	25	2
12.	12	15	3
Mean	17.88	21.75	3.87

3.1.3 Hypothesis Test

Hypothesis testing is done to determine acceptance or rejection of the proposed hypothesis. Hypothesis testing uses t-test (paired t-test sample) at 5% significance. The result of t-test hypothesis testing can be seen in table 3.

Table 3: Hypothesis test.

Variable	Sig.	Note
Forehand groundstroke	0.011	Significant
Backhand groundstroke	0.002	Significant

Based on the paired t-test test result for forehand groundstroke, the p value (sig) is 0.011 and backhand groundstroke 0.002.

3.2 Discussion

Precision with tempo exercise method is suitable for improving groundstroke accuracy. This can be seen from the improvement of the mean score in both forehand and backhand groundstrokes in players of tennis club at UNY.

The mean score of forehand pretest was 23.67, then after given a treatment of precision with tempo exercise method it improved to 26.58. It can be said that the forehand groundstroke accuracy improved by 2.77.

Regarding backhand groundstroke accuracy, the mean score improved by 3.87. In backhand pretest, the mean score was 17.88. Then, after given a treatment of precision with tempo exercise, the mean score of backhand groundstroke accuracy became 21.75.

Other than that, after data analysis using SPSS, the hypothesis testing demonstrated that the data obtained for forehand groundstroke variable was 0.011 and 0.002 for backhand groundstroke variable, those numbers were marked as significant.

Therefore, from the data it can be concluded that precision with tempo exercise method was effective to improve groundstroke accuracy in the tennis club of UNY.

Through precision with tempo exercises, the quality of tennis technique can be mastered well. According to Sukadiyanto (2002: 29) the basic principle of playing tennis is to hit the ball over the net towards the opponent's court side. When hitting the ball, one needs to make it difficult for the opponent to hit the ball back. In order to make it difficult for the opponent in hitting the ball back, there are some basic techniques in tennis game, one of which is the groundstroke technique.

Groundstroke is a hit after the ball bounces off the court (J. Brown, 2001), Groundstroke is a hit done towards the ball touching the ground (court) (Yudoprasetyo, 1981). Based on those definitions, it can be concluded that groundstroke is a technique to hit the ball after it touches the ground or court. For the right-handed, the stroke is on the right side of the body, and it is the other way around for the left-handed (M. Crespo and Dave Milley, 1998).

Tennis is a sport which has no age, sex, and physical limitation disability and background boundaries for its players. This sport can be played by anyone, without any condition that limits anyone to do this sport or to even make achievements in tennis. If an athlete wants to improve the game quality, regular and structured exercises are required.

An exercise is an application of a plan to improve sports skills in theory and practice, with methods and rules in accordance with the purpose and target one wants to achieve (Sukadiyanto, 2002). For example, for a tennis player to perform groundstroke accurately and precisely to the target, exercises to consistently hit the ball on target are necessary. In exercising, we also need a purpose.

The purpose of exercises is to make an achievement through an effective and structured drilling process. The research on precision with tempo exercise model has a purpose, which is to improve the accuracy quality in forehand and backhand groundstrokes. In the journal Test-retest Reliability for Hitting Accuracy Tennis Test, accuracy is one of the main mechanisms where points can be won (Estevam Strecker et al., 2011). It was explained in the journal that accuracy is an act of executing a shot which lands on a certain location in the tennis court, a tennis player may be able to keep the tennis ball far away enough from their opponent that the opponent cannot reach the ball (a winning shot) or that the opponent loses their balance, causing them to make a forced error. In the

journal Reliability, Precision, Accuracy, and Validity of Posterior Shoulder Tightness Assessment in Overhead Athletes that accuracy means the skill to hit the tennis ball to a specific target in tennis court.

One of the aims of this exercise model is the accuracy quality in performing forehand and backhand groundstrokes. Precision with tempo is a method of exercise done by two tennis players in a tennis game with the ball going on a straight direction for one minute and the players perform forehand and backhand groundstrokes as many as possible with cone as the target, players stand on the back line and the coach stays out of the court. Then, as the coach gives a cue to start, the players do the groundstroke concurrently for one minute (Frank van Fraeyenhove, 2018).

One of the purposes of this exercise model is to improve the accuracy of forehand and backhand groundstrokes because it is supported by some principles of practice. Suharja (2007), there are three principles of practice which can improve groundstroke accuracy. The first one is progressive overload principle, which means that the exercise needs to be done regularly, gradually, and progressively. Regularly means that it has to be done continuously, not occasionally. Gradually means that there needs to be more and more improvements. Whereas progressively means that each practice is a step further from the previous practice. The second one is specificity principle, where each stimulation will have a specific response from each athlete.

For that reason, the exercise material needs to be suited with the needs of the sports branch. The next one is variation principle of practice, which aims to avoid athlete's being bored.

Each exercise target has its own dose, thus helping the adaptation process into the organs of the body. An excessive dose of exercise in each session will cause overtraining. On the other hand, too little dose of exercise does not have any impact on the organs of the body. The above principles are ones of the effects of precision with tempo exercise to forehand and backhand groundstroke accuracy.

4 CONCLUSION

Based on the data analysis result, the proposed hypothesis test and the discussion of this research, it can be concluded that precision with tempo method of exercise has a big impact to improving the groundstroke accuracy of the members of Fields

Tennis Students Activity Unit of Yogyakarta State University.

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