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Effect of boteli and frequency modification exercise in improving groundstroke forehand really skills in tennis

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Abstract

Learning to improve sports skills takes a long time to master. Assistive devices and modifications to training time are needed to improve students' abilities. This study aims to determine the effectiveness of use by modifying exercises that can help in mastering forehand groundstroke skills in sports students learning court tennis. The subjects of the study were 48 sports students, with male gender. The method of dividing subjects into treatment groups is to match pairs in consideration of Pretest scores before treatment. This research instrument uses Kemp-Vincent Rally Test with validity levels of 0.80 and 0.93 while reliability is 0.90 and 0.86. The data analysis technique uses a paired t-test with a signification level of α = 0.05. Test the normality and homogeneity of groundstroke skills using the Bartlet test. The analysis of these results showed that boteli exercises with a weekly frequency of twice affected forehand groundstroke skills. Second-time comparison of sig data results. (2-tailed), values 0.000 < 0.05. This means h0 rejected h1 is acceptable, so it can be concluded that the frequency of exercise a week is twice as good as the frequency of exercise once a week in influencing boteli exercise to improve the reliability of tennis groundstroke forehand rally. This study concludes that providing equipment modifications and training time can improve the ability of sports students to master rally forehand groundstroke skills.

Keywords: Frequency modification, groundstroke forehand, tennis.

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Author's contribution: a – Preparing concepts; b – Formulating methods; c – Conducting research; d – Processing results; e – Interpretation and conclusions; f - Editing the final version

INTRODUCTION

Sports education is organized as part of the educational process, carried out both on formal and non-formal education paths through intracurricular/extracurricular activities. These sports activities in the curriculum, especially for universities, have been arranged in such a way through self-development activities that aim to: provide opportunities for students to develop and express themselves according to the needs, talents and interests of each student in accordance with university conditions (Bean

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et al., 2018; Kramers et al., 2022). Self-development activities are facilitated and/or guided by counsellors, teachers or educators and can be carried out in the form of learning activities.

Self-development in mastering the abilities of students comes from the learning process that has been designed as a form of providing movement experience so that players can master skills. A student to be able to play court tennis well, in addition to having good physical and mental abilities, they must have basic technical skills playing court tennis (Yasriuddin., 2017). This means that mastery of technique is important to have because the game of court tennis is a fast-tempo game, so the time to control the ball is very limited and if you do not master the technique well (perfectly) will allow more significant technical errors (Söğüt et al., 2012). In accordance with the description above, a conclusion can be drawn that mastery of basic techniques in the game of court tennis is important for students to play well. The method can be interpreted as how to play the ball effectively and efficiently per applicable regulations to achieve an optimal result (Fauzi et al., 2021). Thus, it can be interpreted that good technique in the game of court tennis is certainly based on applicable regulations and is carried out effectively and efficiently in ball possession.

Tennis is currently considered a sport that changes the shape of the game, so players are required to repeatedly perform movements with high intensity in a nutshell, such as sprints, acceleration-deceleration, turns, change of direction and jumps (Sanchez-Sanchez et al., 2019). We emphasize accuracy and speed because tennis requires accuracy and speed for the game to develop (Buszard et al., 2020). High-speed groundstroke rally with sufficient accuracy is one of the conditions for developing modern tennis game patterns (Shimokawa et al., 2020). Ball speed and accuracy are the two most important components of the groundstroke rally technique in tennis, a groundstroke rally technique that is accurate but does not have a high ball speed will benefit the opponent, which is to give the opponent more time to prepare (Id et al., 2021). These developments include rallying techniques and playing styles, in tennis, most

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points are earned through groundstroke rallies, so this technique becomes the most important hit and a key factor in the game's success (Fett et al., 2021). There are so many basic techniques in the game of tennis, but one of the most important basic techniques that tennis athletes must master is groundstroke because, in a game, the method of hitting is most often done by players (De Almeida Carvalhais et al., 2021). Not only can you do this, but a player must have good hitting accuracy in order to get points and win the game. "From statistical data, only 25% of all seeds of defeat are caused by precise and directed blows from the opponent, so own mistakes cause 75% of all seeds of defeat" (Giles & Reid, 2021). In matches and even training, athletes often make mistakes, such as the ball getting stuck at the net or out of the field. Therefore, athletes must be trained in the accuracy of their strokes so that athletes have precise and directed strokes and minimize their own mistakes. The accuracy of the punch is key for a player to be able to win the game.

Given that mastery of techniques such as groundstroke and forehand, rally is very important, athletes must be able to master the ability in field tennis techniques. Knowledge of Techniques in sports is carried out in the training process, where the coach provides methods of mastering techniques so players can master them correctly (Kim & Xie, 2021). The essentials in motion learning can be acquired and produce the expected abilities only by a multilevel introduction of the elements of the topic, ranging from the simplest to the most complex level (Karadut, 2012). Law of Effects researchers logically connect goals and expectations because new materials can be internalized only when they lead to success. According to the laws of practice, the relationship between stimuli and responses strengthens with certain repetitions. Some basic responses are made to the presentation of already acquired behaviours. To this end, students are expected to gain the ability to change responses depending on various stimuli under different circumstances (Karadut, 2012). The development of tennis game patterns requires that each athlete focuses on developing skills relevant to the form of the game he is playing (Murphy et al., 2022). This

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exercise aims to develop a pattern of play in the groundstroke forehand rally so that players can hit the ball harder, faster and more precisely in tennis (Bakhtiar et al., 2020).

The training sessions (exercise frequency) in tennis games a week is more than three times. Current tennis practice relies on a training overload cycle (i.e. appropriate daily workload and rest time between sessions), i.e. number of sessions, frequency, duration, and stroke analysis to objectively measure external loads (Imbach et al., 2022). Tennis is a game that focuses on observation and accuracy due to the need for smooth tasks with the ball, so it requires minimum training sessions three times a week (Athanailidis, 2020). The self-reported frequency of tennis training is six weekly sessions in men and women (Coe & Behavior, 2021). Tennis training is a continuous process that aims to improve athletes' skills, pedagogically organized and organized into a complete unit called training sessions (Manzoor et al., 2020). Tennis training sessions begin, and athletes are trained regularly and continuously with three sessions a week and 45 minutes each session (Noghondar et al., 2021). The main training sessions in the exercise group are carried out by training 3 times a week for 2 hours, per the Russian Federal Standard of sports training (Mischenko et al., 2021). Tennis practice sessions are three days a week and take about two hours for each training group (Biçer, 2021). Correspondingly, there is a moderate improvement in skills for participants who exercise at least 3 days per week and at least 30 minutes per session (Tomkinson et al., 2021). They will exercise tennis 4 times a week, each exercise for 120 minutes, and then add a warm-up time of 10 minutes and a cooling time of 7 minutes (Wang, 2021). Tennis athletes have a weekly training volume of 25 hours/week, of which 5 hours are for fitness training and 20 hours for technical and tactical sessions (Colomar et al., 2020). Exercise Methods in the process of sports Education cannot be as efficient as achievement sports (Roetert et al., 2011). The learning process of mastering techniques requires a long time through several processes that allow students to master the exercise material well. However, in sports students, the learning process is very short

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because the material provided is quite a lot. Hence, it is not possible to concentrate on one material during the learning period. It needs efficient learning methods that can improve the process of mastering skills in students. The learning process in students must be carried out as efficiently as possible so that students can master the skills provided by educators (Behm & Carter, 2020).

The technical-tactical training methods associated with the groundstroke forehand in tennis players exert an external load of sports intensity mainly for an increase in heart rate and lactate (Nista-Piccolo et al., 2019). Participants were trained in a groundstroke forehand rally with a boteli practice procedure before the test was conducted. A 15-minute warm-up consisting of dynamic movements, flexibility exercises, and tennis-specific warm-ups is performed before each training session (Hadžić et al., 2021). Tennis, a sport rich in tradition, its progress in the method of training groundstroke forehands really has been slow (Kovalchik & Reid, 2018). Colleges with sports, clubs, coaches, and players are trying to acquire a method of coaching to improve the skills of tennis groundstroke rallying individually and collectively to achieve certain goals (Giménez-Egido et al., 2020). Practice methods to improve Skills in holding and pushing rackets forward are important in producing groundstroke rally forehand tennis games (Furuya et al., 2021).

Boteli and aids in tennis practice are efficient groundstroke forehand methods. Tennis is a popular sport all over the world. However, there have yet to be studies examining efficient groundstroke forehand rally exercise methods for college students (Inoue et al., 2021). Gen Z athletes need an efficient structure and training boundaries for their tennis development, as they must balance tennis practice, school work, family, and social life (Gould et al., 2020). Learning skills using tools is one form of effort to facilitate the mastery of techniques that will be owned (Budi et al., 2020).

The groundstroke forehand rally method using the BOTELI method is one of the progressive teaching methods of groundstroke forehand rally skills with tennis balls using roped media. Groundstroke forehand rally is a

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difficult technique to learn, learning modifications in the hope that it can facilitate mastery of the method. Using Boteli efficiently using a practical ball and feeder can reduce the cost of practising tennis. In addition, using Boteli in groundstroke forehand rally exercises does not have to be carried out on the tennis court. This treatment can be done in a large place of at least 4 x 10 meters, such as roads and cars, garages, gardens, and others. Seeing the effectiveness of Boteli in mastering groundstroke forehand skills, researchers wanted to see the effectiveness of this use by making exercise modifications that can help in mastering groundstroke forehand skills in sports students in learning field tennis.

METODE

This study used experimental methods to find treatment effects on controlled conditions in research subjects. The research subjects selected by the researcher were 48 students with a sports student background of 48 students, of which number students would be divided into 2 treatment groups. The treatment in this study included the A1 Boteli training frequency group once a week and the A2 Boteli training frequency group twice a week, each group of 24 students.

The instrument or test equipment used is the Kemp-Vincent Rally Test 3-minute rally ability test with validity levels of 0.80 and 0.93 while reliability is 0.90 and 0.86. The data collection technique carried out by researchers in this study used a 3-minute rally test using forehand strokes. The implementation of the 3-minute rally, according to (Gandasari et al., 2023), was sampled in pairs. The sample will prepare 4 tennis balls at the beginning of the test. If all four balls were already in use, the subjects had to use their own balls for the rest of the game. Two subjects with the same ability play as opponents on one field. After the match signalled, one of the subjects bounced the ball behind the baseline and played it with a good shot. The students then kept playing ball for up to 3 minutes. If the ball hits the net or goes out of bounds while the game is stopped until one of the subjects picks up a new ball to play. The new ball is played in the same way as when starting a test rally. The manipulative independent variable in the

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study was boteli exercise frequency once a week and twice a week, a variable tied to the study of groundstroke forehand really skills.

Research Procedure

This study began by conducting a pretest using the Kemp-Vincent Rally Test to determine the group of research subjects. Then given, treatment using the frequency boteli method once a week and twice a week, and ended with a posttest using the Kemp-Vincent Really Test. The study was conducted on a tennis court for 6 weeks. The treatment in this study was really groundstroke using Boteli which was adjusted using tennis balls that used ropes with a frequency of once a week and twice a week. After the treatment process is given to the subjects, a final test is carried out with the Kemp-Vincent Rally Test to find out the evaluation results of the treatment given.

Data analysis

In this study, data analysis is needed that can provide data results from significant differences in the groups given in each treatment. The data analysis technique uses a paired t-test with a signification level of $\alpha = 0.05$. Test the normality and homogeneity of really groundstroke skills using the Bartlet test.

RESULT

The study results were correlated with the final test of tennis groundstroke forehand skills, resulting from boteli exercises with a predetermined frequency of exercises. Thus, the total value of the tennis really groundstroke forehand skill test results are influenced by the boteli exercise frequency. Hypothesis testing uses paired t-test samples, results from a really groundstroke forehand skill test from students. The results of the calculations obtained are further summarized in the following table.

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Table 1. Training rally groundstroke skills with the frequency of the Boteli method once a week

Training	Descriptive	Pretest	Posttest
Groundstroke, really, with the frequency of the boteli method once a week	N	24	24
	Mean	7.9167	24.0000
	Std. Deviation	3.14735	3.12076
	Std. Error Mean	.64245	.63702
	Correlation	.137	
	t	-19.138	
	Sig	.523	
	Sig. (2-tailed)	.000	

Based on Table 1, analysis of test sample results with a probability value of 0.000. Thus h0 is rejected as 0.000 < 0.05. This means that boteli training with a frequency of once a week affects the forehand skill of really groundstroke. The output also showed an average difference of 16, the average before treatment was 7.9, and the average after treatment was 24.0. After treatment was more significant than before treatment, it meant that the frequency of exercise once a week improved the results of the groundstroke forehand skill test rally.

Table 2. Training rally groundstroke skills with the boteli method twice a week

Training	Descriptive	Pretest	Posttest
Relly groundstroke with boteli method twice a week	N	24	24
	Mean	8.2500	32.1667
	Std. Deviation	2.69056	3.47246
	Std. Error Mean	.54921	.70881
	Correlation	-.237	
	t	-24.051	
	Sig	.264	
	Sig. (2-tailed)	.000	

Based on Table 2 analysis of test sample results in pairs, the probability value is 0.000. Thus h0 is rejected as 0.000 < 0.05. This means that boteli training with a weekly frequency twice affects really's groundstroke forehand skills. The output also showed an average difference of 24, the average before treatment was 8.25, and the average after treatment was 32.1. Having treatment was more significant than before

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treatment, it meant that the frequency of weeks twice improved forehand skill test results really groundstroke.

Table 3. Comparison of groundstroke skills really once a week and twice a week

Training	Descriptive	Pretest	Posttest
Relly groundstroke skills once a week and twice a week	N	24	24
	Mean	24.0000	32.1667
	Std. Deviation	3.12076	3.47246
	Std. Error Mean	.63702	.70881
	Correlation	.294	
	t	-8.569	
	Sig	.590	
	Sig. (2-tailed)	.000	

Based on Table 3 sig data results. (2-tailed), values 0.000 < 0.05. Meaning h0 rejected h1 accepted, so it can be concluded that the frequency of exercise a week is twice as good as the frequency of exercise once a week in influencing boteli exercise to improve the reliability of tennis groundstroke forehand rally.

DISCUSSION

Based on the results of research on really groundstroke skill exercises with the frequency of the boteli method once a week affect really groundstroke forehand skills. While the frequency of weeks twice increased, the results of the forehand skill test really groundstroke. Suppose these two pieces of training are compared. In that case, the frequency of training a week is twice as good as the frequency of training once a week in influencing boteli exercises to improve the reliability of really groundstroke forehand tennis. Really groundstroke forehand is the most dominant basic technique used in the game of tennis. Groundstroke forehand is one of the dominant and important techniques in the game of tennis because it is often played and significantly affects the game (Fauzi et al., 2021). The Forehand is considered the most important blow and is preferred by most players because it has a tactical advantage and is a weapon in dictating matches (Shimokawa et al., 2020).

Training that is modified to the ability of sports skills affects the

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improvement of skills which in this case is an increase in groundstroke forehand Relly in court tennis because a person is given drills with many skill-improvement activities, so that it can make it easier to grow movement automation, especially for players who are classified as beginners (Larson & Guggenheimer, 2013). The advantage of training using Boteli with this exercise modification is that it can be done anywhere, without limited place and time in doing the exercise. Opinion about skill training in court tennis on the ability of really groundstroke forehand as stated by Buszard et al. (2014) states groundstroke forehand skills are skills that tennis players need, and this ability must be possessed with good technique because it has complexity in learning. Relly groundstroke forehands are the most commonly made strokes in a tennis game. A tennis player who chooses Really's groundstroke forehand in a tennis game can return the opponent's attack that will get points. According to Landlinger et al. (2010), of all the strokes in a game, three-quarters of the winning strokes produced are determined by Really groundstroke forehands are the most common technique used in returning attacks in tennis. Really groundstroke forehand is one of the most decisive strokes in tennis because Really groundstroke forehand is the most commonly used stroke in tennis, and in fact, Really groundstroke forehand is often used to get defence and attack to get points.

Aids used in training really groundstroke forehand. Boteli is a type of tennis ball modification that is useful for improving children's functional performance behaviour, facilitating the transition of participants through each stage and streamlining the path of performance in improving the skills of the tennis groundstroke really (Fitzpatrick et al., 2017). Boteli is a modification of equipment for the development of groundstroke forehand really skills focused on learning transfer (Larson & Guggenheimer, 2013). Training groundstroke forehand with the frequency boteli method once a week is more efficient than other methods. Different physiological and performance benefits can occur from an increase in the frequency of exercises so this increase in the frequency of exercises should be implemented progressively and systematically (Bompa & Buzzichelli, 2019).

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Frequency is a component that needs to be adjusted for novice tennis players, exercises can be done with just one training session per week and can increase by two training sessions per week (Roetert, Paul & Kovacs, 2011). The results of the boteli method exercises are carried out in the following way, initial tests, treatment for 6 weeks with a frequency of exercises once a week group 1 and a week twice group 2 with a dose of exercises each meeting of 300 strokes divided by 15 sets each set of 20 reps of groundstroke forehand punches, after which the final test is held. Training groundstroke forehand really with the boteli method does not need feeders. The exercise of the boteli method of frequency once a week can improve the skills of 48 people.

Regular practice with a good practice program using modification tools or boteli in the learning carried out by students is expected to be able to master the skill of Really groundstroke forehand in doing the game so that the game can run well. This increase was seen when taking posttest data on the Rally groundstroke forehand ability test in the experimental group, namely the improvement of ability in experimental group students. The results of the Really groundstroke forehand exercise group by modifying the duration of exercise showed that there was an effect of modifying the exercise time and using Boteli on improving the results of mastery of Rally groundstroke forehand in field tennis games in sports students. The athlete's condition influences this in doing exercises and repeating activities on the groundstroke forehand really skill, this form of training makes students better understand the techniques in the groundstroke forehand Rally so that they can implement it during the match. Rally groundstroke forehand exercises using Boteli had a more significant effect than exercises without the use of aids on improving Rally groundstroke forehand results in field tennis games in sports students. In addition to attracting interest in doing training, this model can make students actually perform the groundstroke forehand really movement during match situations. This study needs to include the characteristics of subjects consisting of students whose quality skills in tennis could be much better. In

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addition, the very small number of subjects makes the results obtained less significant in the final result. In the future, further research can take other methods that can be used to help improve skills in tennis and give to characteristics that do have good abilities.

CONCLUSION

The conclusion obtained from this study is that really groundstroke skill training with the frequency of the boteli method once a week affects really groundstroke forehand skills. While the frequency of weeks twice increased, the results of the forehand skill test really groundstroke. Suppose these two pieces of training are compared. In that case, the frequency of training a week is twice as good as the frequency of training once a week in influencing boteli exercises to improve the reliability of really groundstroke forehand tennis. Moving on from these results in providing training in field tennis, modification of training time and tools is very supportive in mastering player skills in mastering field tennis sports techniques.

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