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Development of Groundstro Forehand Aids for Field Tennis Games

Dwi Hartanto[1],Zainal Arifin[2]
Pendidikan Jasmani,FPOK, IKIP PGRI Pontianak

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Abstract
Coaching for the sport of field tennis includes various aspects involving players, coaches and the infrastructure needed to develop abilities and skills in the sport of field tennis. The aim of this research is to develop a Forehand groundstroke tool for playing tennis. This research uses an Assist ball tool made using iron to develop forehand groundstrokes for beginners. This research study used 9 experts divided into several expert fields, 3 material experts in the field of sports, 3 experts in the field of equipment or media and 3 in the field of trainers, in testing the equipment using small groups involving 6 experts in their respective fields, 2 material experts with 87% participation, 2 trainer experts 88% and 2 produk experts 86%. The research method used is research and development, research and development activities which aim to develop and create a new technological product or process end in the end seeing the ball fall can be said to be accurate. It is hoped that this research can help the world of field tennis in Indonesia so that it can trigger the emergence of new ideas or concepts in technological tools in the futur

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Abstrak
Pembinaan olahraga tenis lapangan mencakup berbagai aspek yang melibatkan pemain, pelatih, dan sarana prasarana yang dibutuhkan untuk mengembangkan kemampuan dan keterampilan dalam olahraga tenis lapangan. Tujuan penelitian ini adalah mengembangkan alat bantu *Forehand groundstroke* pada permainan tenis lapangan. Penelitian ini menggunakan alat bola Bantu yang dibuat dengan menggunakan besi guna mengembangkan pukulan forehand groundstroke untuk pemula. Studi penelitian ini menggunakan 9 ahli yang dibagi dibeberapa bidang ahli 3 ahli materi di bidang olahraga, 3 ahli di dalam bidang alat atau media dan 3 di bidang pelatih, dalam pengujian alat menggunakan kelompok kecil yang melibatkan 6 orang ahli didalam bidangnya masing-masing, 2 ahli materi dengan pesertanse 87%, 2 ahli bidang pelatih 88 % dan 2 ahli bidang alat produk 86%. Metode dalam penelitian yang digunakan adalah penelitian pengembangan Research and Development kegiatan yang bertujuan untuk mengembangkan dan menciptakan suatu produk teknologi atau proses baru dan pada akhirnya melihat bola jatuh dapat dikatakan akurat. Diharapkan dari penelitian ini dapat membantu dunia olahraga tenis lapangan di Indonesia sehingga dapat memicu munculnya ide atau gagasan baru dalam alat teknologi di masa depan

Corresponding Author:
Name of Corresponding Author,
Dwi Hartanto
IKIP PGRI Pontianak
Email : dwihartanto308@gmail.com

1. INTRODUCTION

PaIn the modern era, technology continues to develop in almost every aspect of human life, including tennis, for example, rackets have evolved over time with new materials that can be used to help players play from the lowest point to the highest point or from the lowest level to the highest level, even in terms of shoes, they go hand in hand or coincide with the continuous evolution of rubber-soled shoes that are very durable to find comfort in playing. Apart from that, the development of eagle eye technology to help the decisions of referees, players and even line judges is a significant thing in the game that makes tennis a sport that is close to perfect at the highest level. Another technological advancement that is less talked about among tennis players is the use of telemetry sensors. These sensors help players track their tennis performance and improve their technique. These additions have made tennis a completely different sport compared to what it was some thirty years ago.

PerTechnological developments are not only in terms of equipment for playing such as rackets, balls and sensors in decisions to help referees, there are also developments in tools to help athletes increase the speed of the ball or how to hit it so that the ball is right on the field of the racket. One

example in recent years, the game of tennis has seen equipment modifications that mimic the physical growth and development of children, which is similar to other sports such as field scaling, baseball diamonds, or gyms for young athletes. If researchers are serious about taking the game of tennis to the next level, then researchers need to start practicing like a professional. And that means using professional-level training tools to help improve skills. Training aids can help improve striking technique,

Pencan Fenter (Fenter, Marzilli, Wang, & Dong, 2017) in a study the average player's groundstrokes in a game are 35 - 45% of the total strokes during a game or match. Therefore, it is necessary to innovate various training aids in order to attract the attention of athletes to maintain their enthusiasm in training so that they can master good forehand groundstroke and backhand groundstroke techniques so that they can achieve maximum performance (Myers, Sciascia, Kibler, & Uhl, 2016). Sports achievement is determined by the player's performance in the match (Allen, Haake, & Goodwill, 2010). In competition, athletes need to provide good performance through practice and effort. Besides that,

IWatsuki, Takahashi, & Van Raalte, (2016) explain or explain the meaning of hitting correctly or well, which is one of the most important principle elements in a game of tennis. No less important than hitting, there is one element that a player should not forget, namely excellent physical condition to support playing or basic movements in hitting (Loffing, Wilkes, and Hagemann (Loffing, Wilkes & Hagemann, 2011)

Melihat the above phenomenon means that researchers want to develop a forehand groundstroke aid to get the shot the player wants. The materials used in this research are very easy to obtain and environmentally friendly. Apart from that, making this tool will provide a new color in the field of coaching, especially tennis. This tool is believed to be able to improve the quality of hitting techniques in tennis, especially forehand groundstrokes. The aim of this research is to make a ball bouncing aid that works like a scale that can go up and down depending on the weight beneath it.

2. RESEARCH METHOD

PeneR&D research or Research and Development is an activity that aims to develop and create a new product, technology or process (Fraengkel 2007). The main goal of R&D research is to increase innovation and progress in various fields, such as technology, health, social sciences, and so on. R&D research requires a systematic approach and scientific methodology to achieve its goals. Meanwhile, R research or research is a systematic activity carried out to discover or develop new knowledge or expand existing knowledge. The main goal of research is to discover the truth about a particular phenomenon, solve a problem, or develop a new theory. Research can be carried out in various fields, such as science, technology, social,

PeneThe development research carried out or carried out by researchers is the development of a hitting aid in the sport of tennis. This learning or training tool is in the form of a triangular shaped piece of iron where above the piece of iron there is a piece of light steel as a tool for dropping the ball. It works like a scale. This tool can help students or players carry out basic hitting techniques in the sport of field tennis which must be more interesting so that students or athletes will enjoy doing it.

3. RESEARCH RESULTS AND DISCUSSION

After testing the initial design that has been made, the design of the tool model that has been observed, validated, corrected and declared feasible requires trials by experts in the field. To create the tool or product developed by the researcher, the researcher first consulted with three trainers, three sports experts and three experts in the field of tools to produce a more perfect product. After testing the product, the average percentage score from the validated experts was 88%. The details of the data can be seen as follows.

Table 1. Recapitulation Data for Three Material Experts

Name	Maximum Score	Percentage	Category
Sandi Mulato, M.Pd	54	87	Worthy
Widaryanto, M.Pd	54	87	Worthy
Fared, M.Pd	54	89	Worthy

After processing the data obtained from material experts, the calculation results showed feasibility with an average of 87% in the very good category. From these data it can be described that the material or modules presented in the development of field tennis strokes have met the criteria

Table 2. Recapitulation Data for Three Expert Trainers

Name	Maximum Score	Percentage	Category
Fitri, M. Or	78	86	Worthy
Rakmat, M. Or	78	90	Worthy
Aris, M.Pd	78	88	Worthy

After processing the data obtained from expert tennis coaches, the calculation results showed that there was feasibility with an average of 88% in the very good category. From these data it can be described that the use of assistive devices created in the development of field tennis strokes has met the criteria and is suitable for use, especially for beginner athletes.

Table 3. Recapitulation Data of Three Product Equipment Experts

Name	Maximum Score	Percentage	Category
Eddie	78	84	Worthy
Busra	82	90	Worthy
Heri	80	86	Worthy

After processing the data obtained from expert field product trainers, the calculation results showed that there was feasibility with an average of 86% in the very good category. From these data it can be described that the use of assistive devices created in the development of field tennis strokes has met the criteria. The products made are easy to carry anywhere, very cheap and no less important, very practical.

Table 4. Average Score for Expert Fields

No	Member Name	Total score	Maximum score	Percentage	Category
1	Materials Expert	78	54	85	Worthy
2	Trainer Expert	140	78	88	Worthy
3	Product Tools Expert	155	82	90	worthy
Amount					

The form of equipment used for tennis practice, especially forehand groundstrokes. Development of media or tools for practicing Forehand strokes that are installed in the middle of the court when executing forehand groundstrokes in an effort to increase the accuracy of strokes for athletes.

The performance of the forehand groundstroke assist tool is as follows:

1. The tool is made of iron whose bottom base forms a triangle whose function is to maintain balance so that the tool does not fall to the floor and for the ball holder, the angle of inclination is approximately 80 degrees and at the end of the iron a tool is made that resembles a scale which is useful for keeping the ball down. .
2. The athlete stands in front of the equipment to make a forehand shot when the ball has touched the floor.

3. The ball is placed on the iron which has an angle of inclination.

Figure 1. Toolsforehand groundstroke

According to Agus Salim (2007), a groundstroke in tennis is a stroke made when the player is on or close to the baseline of the court. This shot is done by swinging the racket to hit the ball after the ball has bounced off the court surface. So the aim of a groundstroke is to send the ball back to the opponent's court accurately and powerfully, so that the opponent has difficulty returning the ball. This blow is also used to organize the game and control the course of the match, including producing blows that direct the opponent to move and make mistakes.

4. CONCLUSION

This research is expected to provide better insight into groundstrokes in tennis and the factors that influence their quality. Based on the research results, the development of learning tools, namely in the form of forehand groundstroke aids for training the game of tennis, has been validated by media experts, trainer experts and product equipment experts with very good average results.

The results of this research can provide guidance for tennis players and coaches in efforts to improve groundstroke hitting skills and ultimately, improve performance in field tennis matches. Additionally, this research can help enrich the scientific literature on lawn tennis and contribute to our understanding of this sport.

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