

Improving the Basic Groundstroke Forehand and Backhand Techniques of Male Beginners Aged 8-12 through the ACENTOS Method-Based Training Model

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Abstract Background: Good basic technique in tennis can only be achieved through intensive, programmed training and using appropriate training methods according to actual tennis playing situations. **Purpose:** This research aimed to develop an effective training model and make it easier for beginner male tennis players aged 8-12 years to learn basic forehand and backhand groundstroke techniques based on the actions method. **Design/methodology/approach:** The research used an experimental design with one group pretest-posttest, for both experimental and control groups. The sample used was 12 male beginner tennis players aged 8-12 years using a purposive random sampling technique. Next, the 12 novice tennis players were divided into 2 balanced groups randomly (ordinal pairing). The research instrument used the ITN 10.3 forehand and backhand groundstroke accuracy and consistency skills test from the International Tennis Federation (ITF). Skills tests were carried out before and after treatment given for 12 weeks with a frequency of 3 times per week. Data analysis was carried out using ANCOVA which was reinforced with a paired t-test using the SPSS version 22 program. **Result:** From the results of the Ancova test data analysis, $t = -2.79$ (p value = $0.021 < 0.05$). Thus, it can be concluded that the training model using the actions method is effective for improving basic forehand and backhand groundstroke technical skills when compared to conventional methods. **Conclusions:**

The study showed that the basic forehand and backhand groundstroke technique training model based on the actions method: (1) had a significant effect on the basic forehand and backhand groundstroke technical abilities of tennis beginners; (2) was effective for improving basic forehand and backhand groundstroke technical skills for male tennis beginners aged 8-12 years.

Keywords Backhand, Forehand, Tennis, Groundstroke, ACENTOS Method

1. Introduction

The forehand and backhand groundstroke techniques are two of the most dominant basic techniques used in tennis. Both techniques are the most difficult for children to learn, especially those aged 8-12 years. However, in reality, the technique is a basic technique for playing court tennis that is first trained/taught to the child [1]. Therefore, the teaching must be done with the right methods, using the correct stages, and adapting to the actual game of tennis. The use of appropriate teaching methods will make it easier for children to practice learning the correct basic techniques as a solid basis for the development of advanced playing techniques. A perfect mastery level of the stroke

technique could be achieved by a proper mastery of basic techniques that requires a process and intensity of training for a long time/years, as well as training using the right methods [2]. Furthermore, mastery of the tennis basic techniques is a very important factor and must be acquired by a tennis player at the first time learning to play tennis because it will be the main foundation for developing advanced-level playing techniques.

The existence of proper teaching methods in accordance with the characteristics of the actual game of tennis is indispensable [3]. With teaching methods based on actual playing situations, students can get used to learning to play tennis by always thinking critically before making decisions about the shots. One method of teaching tennis that accommodate the demands of these characteristics is the ACENTOS method (Athlete Centred and Open Skill) through the open skill process [4]. ACENTOS method is an athlete-centered tennis teaching method and provides a framework for training children to integrate and develop each stage of the open skill process. The stages of the open skill process consist of perception, decision, execution, and feedback. Perception is the ability to perform system analysis, identify, and understand characteristics of the coming of the ball through the speed of reacting or anticipating before making a decision. The decision is the ability to determine action as quickly as possible before taking a hit, relating to what plans should be done. While execution is the ability to perform a task of motion or the stage of the execution of a stroke, and feedback here relates to the feedback on the outcome of a hit that has been done [5].

Williams [6] said that in playing tennis, it is necessary to have a level of sharpness of perception and anticipation before making a shot. Based on the theory of action perception, the player must extract a more valuable source of visual information and further use the extracted source to receive the information in order to trigger and initiate a motion to produce the corresponding reaction. The ability to identify and understand the characteristics of the ball coming through the speed of reaction or anticipation is indispensable before making a decision [7]. To achieve success in playing tennis, there are three types of perceptions that can be used, including visual perception, auditory perception, and kinetic perception. Stimulation is initiated by movements of the body or parts of the body and carried through the afferent pathways to the brain [8]. Therefore, the perception ability of the children needs to be trained from the beginning to learn basic techniques in order to have good anticipation skills.

Decision making is a cognitive process in playing tennis, which results in choosing an option to meet the playing demands of the game situation at hand. Decision is a plan that is made carefully through the thought process before implementing the plan that has been made. Therefore, in designing training models, the design should facilitate children to train to develop their decision skills. Crespo [9] said that the decision-making process depends on the

demands of the tactical and technical aspects of the game. In other words, in any game situation, the situation should be evaluated according to the style of play and the style of the opponent faced (style of opponent). The decision-making skills are necessary to achieve tactical and technical goals since the scenario in playing tennis is very dynamic. The technical skills and decision-making are two factors that determine performance in sports games [10]. Thus, players must be able to adapt to technical decision-making quickly to the changing and difficult environmental conditions to predict in advance. This changing or dynamic playing environment demands a flexible decision-making process and requires a level of player training. Effective decision-making can only be developed through matches or in simulated practice situations. Therefore, varied training models and game/match simulations are the best training systems to teach how to make the right decision [11].

The decision process leads to the execution stage by stroking the ball that highly influenced by the player's skill in using the racket and body to gain comfort and effectiveness. In performing execution, there are some key terms that must be emphasized in the ACENTOS method to succeed in the achievement of the task [12]. The final stage of open skills is feedback that provided to the children about the nature and results of performance that has been done. The most effective time to give the feedback is immediately during the training according to the children's previous performance. Providing feedback in a positive way has very obvious benefits, but sometimes giving this feedback can also have a negative impact. The negative side can occur if communicated through certain selected words, and the tone of correction is given to the child practicing through body language only. The coach should provide feedback in a constructive way because constructive feedback will tell the student in a very positive way that he or she is doing wrong, how it will affect the child and how the information the coach provides will be very helpful [6].

The four stages of the open skill process of the ACENTOS method as the main characteristics of modern tennis teaching/training today need to be developed from the beginning age of playing tennis when the children are learning the basic techniques of forehand and backhand groundstroke. According to Turner [13], the value of teaching tennis is highly depended on ACENTOS method for novice players, especially under-12s based on tactics, and showed a better performance in the accuracy of punches and decision making when playing tennis. It was also said that in tactical game-based teaching/training, players will have a higher level of specific knowledge than players trained using traditional approaches. Zetou et al. [14] reported that a 12-year-old who is trained based on the real situation of the game of tennis, in addition to developing his motor skills, can also instill simple tactics and strategies in the game of tennis. With teaching based on ACENTOS methods at the beginning of learning to play tennis, it is expected that practicing children can adapt to

the actual situation of playing tennis. Therefore, it is important to study the effectiveness of ACENTOS exercise model in improving the basic technique of forehand and backhand groundstrokes of 8-12 years boy in playing tennis.

2. Materials and Methods

2.1. Participation and Procedures

The subjects used in the study were 12 children aged 8-12 years. Furthermore, the 12 children were divided into two groups that were randomly balanced (ordinal pairing). All participants agree to be involved in the research with permission consent from their parents/guardians. In addition, this study has also received ethical approval from the ethic committee at the university's research institutes.

2.2. Measurements Collected

The study used experimental designs with two groups: the experimental group and the control group. The experiment group (Group A) was trained using the ACENTOS method, while the control group (Group B) was trained using the conventional method. The experimental design used was pretest-posttest control group design. The basic technique practice model of the forehand and backhand groundstroke based on the ACENTOS method had previously been through the validation of experts and tennis practitioners. Expert validation results were analyzed using Aiken techniques and obtained a score = 4.46 (excellent), while the percentage of expert assessment agreement was 89.29%. Thus, it can be concluded that the design of the exercise model is declared valid and worthy of trial in the field. The experimental design in this study can be seen in Figure 1.

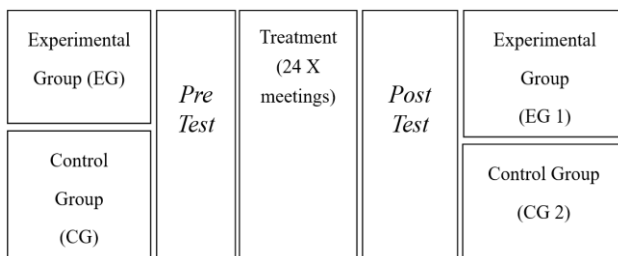


Figure 1. Design of experiment

2.3. Data Analysis

Researchers used basic skills assessment instruments and developed instruments to assess perception, decision, execution, and feedback skills on basic forehand and backhand groundstroke techniques while playing tennis. The validity of the instruments was analyzed using the Aiken Technique. The test validity coefficient is = 0.83 using subjective expert judgement rating, while the test

reliability coefficient is = 0.89 using the test-retest method and the data is analyzed with the Pearson Product Moment Correlation Technique. The instrument assesses the basic technical skills of the forehand and backhand groundstroke using the International Tennis Number (ITN) 10.3 Test of the International Tennis Federation (ITF). The ITN 10.3 test aims to determine the accuracy and consistency of the basic techniques of forehand and backhand groundstroke. ITN Test Instrument 10.3 basic technique forehand groundstroke is done 6 times, 3 shots directed straight and 3 shots directed crossing the court. The basic technique test of backhand groundstroke is also done 6 times directed straight and cross the field. Maximum score of forehand groundstroke test = 32, while maximum score of backhand groundstroke test =32. Additional bonus points are given if the training child does not experience errors (unforced errors) when making forehand and backhand groundstroke 12 times. Total test points accuracy and the technical contingencies of the basic forehand and backhand groundstroke ITN 10.3 maximum points is = 84 [27].

The assessment scale instrument as an observation guideline used by tennis coaches to assess the ability of perception, decision, execution, and feedback techniques of basic forehand and backhand groundstroke while playing simple game (mini game) at the end of a training session contains 25 items, consists of 6 perception ability assessment items, 6 decision items, 6 execution items, and 7 feedback items using a Likert scale. Before the treatment, pretest was given to the experimental group and the control group. Furthermore, the experimental group was given treatment with a basic forehand and backhand groundstroke technique training model based on ACENTOS method, while the control group was given treatment with a conventional exercise model. After the treatment was given 16 times, post-tests were conducted on the experimental group and the control group.

The collected data were analyzed using the t-test and ANCOVA technique to determine the effectiveness rate of the basic forehand and backhand groundstroke technique practice model based on the ACENTOS method. Statistical analysis calculations are assisted by the SPSS-19. The t-test formula is presented below [15].

$$t_0 = \frac{\bar{x}_A - \bar{x}_B}{\sqrt{\frac{(\sum x_A^2 + \sum x_B^2)}{N_A + N_B - 2} \left(\frac{1}{N_A} + \frac{1}{N_B} \right)}}$$

$$\sum x_A^2 = \sum x_A^2 - \frac{(x_A)^2}{n_A} \text{ or } \sum x_A^2 = \sigma_{x_A}^2 \times n$$

$$\sum x_B^2 = \sum x_B^2 - \frac{(\sum x_B)^2}{n_B} \text{ or } \sum x_B^2 = \sigma_{x_B}^2 \times n$$

$$\frac{1}{N_A} + \frac{1}{N_B} \text{ atau } \frac{N_A + N_B}{N_A \times N_B}$$

Notes :

N_A = sample number of Group A

N_B = sample number of Group B

\bar{x}_A = average of x_1 sample

\bar{x}_B = average of x_2 sample

$\sigma_{x_A}^2$ = group A variance

$\sigma_{x_B}^2$ = group B variance

3. Results

Researchers designed an exercise model which was validated by expert judgment consisting of: (1) academics in the field of sports coaching, and (2) practitioners of tennis experts. From the assessment score on the expert validation process, the results showed the average score = 4.46 from each expert assessor, while the total percentage of the assessment score was 89.29%. The effectiveness of the exercise model based on the ACENTOS method is presented in two items. The two items consist of: (1) descriptive presentation of pretest data and post-test of experimental and control groups, (2) results of ANCOVA

analysis and paired sample t-test. Basic skills training models based on the ACENTOS method that have been declared viable for the effectiveness test can be seen in table 3. Stage 1, 2, 3, 4, and 5 training models aim to develop perception, decision, execution, and feedback skills. Giving mini games at the end of a training session is a fun exercise medium and can motivate 8–12-year-old to implement the training models they have learned into actual tennis playing situations. The training with basic forehand technique training models and backhand groundstroke based on ACENTOS method is expected to improve the basic technique skills of the child training through the models of exercises performed, providing correction, reflection, and implementation at the next training.

To test the effectiveness of the model, researchers used software or application of the Statistical Package Social Science (SPSS)-19 program through the ANCOVA test and paired sample t-test. The results of calculations and analysis of complete data can be seen in Table 1 and Table 2. Table 1 showed that the method variables have a significant effect on the results of basic forehand and backhand groundstroke (post-test) technical skills, where the value of $F = 7,790$ (value $p = 0.021 < 0.05$). The result of the covariance pretest variable had no significant effect on the posttest result because the value $F = 2.685$ (value $p = 0.136 > 0.05$).

Table 1. ANCOVA test results

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1130.944 ^a	2	565.472	5.101	.033
Intercept	294.237	1	294.237	2.654	.138
Method	863.631	1	863.631	7.790	.021
Pre	297.611	1	297.611	2.685	.136
Error	997.722	9	110.858		
Total	13170.000	12			
Corrected Total	2128.667	11			
a. R Squared = .531 (Adjusted R Squared = .427)					

Table 2. t-test results

Parameter	B.	Std. Error	t	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Intercept	24.017	9.920	2.421	.039	1.576	46.459
[Method=1]	-16.975	6.082	-2.791	.021	-30.733	-3.217
[Method=2]	0 ^a
Pre	.925	.565	1.638	.136	-.352	2.203

Table 2 showed the obtained value of t was $= -2.79$ (value $p = 0.021 < 0.05$), which means that the exercise model using ACENTOS method is effective for improving the basic technique skills of forehand and backhand groundstroke when compared to conventional methods. This is due to differences in basic skills improvement, $B = 16,975$ points in the ACENTOS method-based exercise group compared to the exercise group with conventional

methods.

The ACENTOS methods used in the experiment consists of several stage as listed in Table 3, while the instructional activities and interactions between coaches, assistants, and practicing children while performing basic forehand and backhand groundstroke technique training models based on the ACENTOS method stage I – V can be described in Table 4.

Table 3. Basic technique training model based on ACENTOS method for children aged 8-12 years

Basic Forehand Technique Training Model and Backhand Groundstroke Based on ACENTOS Method		
Training Stages		
In detailed systematic processes and stage-stage training models of stage I-V to train the basic techniques of forehand and backhand groundstroke based on ACENTOS methods are carried out as follows:		
Training Activities	Contents/Training Materials	Strategy
Warm-up	Warm-up activities, consisting of: runs around the tennis court 3-5 rounds, static and dynamic stretching ranging from arm muscles, core muscles, upper & lower limbs, and warming up in the form of games.	Guided activities from coaches or assistant coaches.
Stage I Training	Implementation of eight stages of the training model in stage I to develop perception and mini game skills (designed by researchers).	Implementing the basic technique training stages of forehand and backhand groundstroke based on ACENTOS method stage I, play mini games, provide correction, evaluation and reflection, and provide direction and motivation to the training children.
Stage II Training	Implementation of six stages of the training model in stage II to develop perception and decision, with addition of mini game skills (designed by researchers).	Implementing the stage II of basic technique training stages of forehand and backhand groundstroke based on ACENTOS method, playing mini games, providing correction, evaluation and reflection, and providing direction and motivation to the training children.
Stage III Training	Implementation of six stages of the training model in stage III to develop decision and execution skills, with addition of mini game skills (designed by researchers).	Implementing the stage III of basic technique training stages of forehand and backhand groundstroke based on ACENTOS method, playing mini games, providing correction, evaluation and reflection, and providing direction and motivation to the training children.
Stage IV Training	The implementation of the six stages of the exercise model in stage IV is to develop simultaneous and rhythmic perception, decision, execution and feedback capabilities, and also to build awareness when making errors in stroking, and mini games (designed by researchers).	Implementing the stage IV of basic technique training stages of forehand and backhand groundstroke based on ACENTOS method, playing mini games, providing correction, evaluation and reflection, and providing direction and motivation to the training children.
Stage V Training	Implementation of the six stages of the training model in stage V to develop perception, decision, execution and feedback capabilities comfortably and effectively, and improve consistency and mini games (designed by researchers).	Implementing the stage V of basic technique training stages of forehand and backhand groundstroke based on ACENTOS method, playing mini games, providing correction, evaluation and reflection, and providing direction and motivation to the training children.
Cooling down	Relaxation exercises in the form of static and dynamic stretching to lower body temperature.	Guided activities from coaches or assistant coaches

Table 4. Instructional activities and interactions between coaches, assistants, and practicing children while performing basic forehand and backhand groundstroke technique training models based on the ACENTOS method

Stages of Exercise Activities	Coach Activity
Warm-up	The coach provides an explanation of the exercise, guiding the warm-up process so that the training children is ready to follow the core training model of stage I - V training.
Stage of Exercise I	The coach guides eight stages of training that have been designed in stage I, provides individual and group corrections, diagnoses difficulties and mistakes made by training children, motivates, and provides mini games at the end of stage I training sessions.
Stage II Exercise	The coach guides six stages of training that have been designed in stage II, provides individual and group corrections, diagnoses difficulties and mistakes made by training children, motivates, and provides mini games at the end of stage II training sessions.
Stage III Training	The coach guides six stages of training that have been designed in stage III, provides individual and group corrections, diagnoses difficulties and mistakes made by training children, motivates, and provides mini games at the end of stage III training sessions.
Stage IV Training	The coach guides six stages of training that have been designed in stage IV, provides individual and group corrections, diagnoses difficulties and mistakes made by training children, motivates, and provides mini games at the end of stage IV training sessions.
Stage V Training	The coach guides six stages of training that have been designed in stage V, provides individual and group corrections, diagnoses difficulties and mistakes made by training children, motivates, and provides mini games at the end of stage V training sessions.
Cooling down	The trainer guides the cooling exercise to restore the child's body temperature back to normal, then closing the exercise by praying.

4. Discussion

In accordance with the paradigm developed in the Long Term Athlete Development (LTAD) children at age range of 8-12 years is the age at which children must participate in a variety of well-structured activities that develop basic movement skills and overall movement skills (fundamental). Children aged 8-12 years also begin to enter the learning phase to train (learn to train), so that it should give the widest opportunity to the child to develop basic sports skills and thorough movement skills [16]. According to Ford et al. [17], LTAD models offered (no matter what form of the used models) trainers should realize that the most important competency of an effective training program is the concept of individualization by taking into account the level of mobility skills that the trainee has. Furthermore, Ford et al. [17] said that any model development program should have a holistic approach that includes some of the key interdisciplinary perspectives for the development of sport in general and the game of tennis in particular. Related to the paradigm of coaching long-term athletes, Istvan et al. [18] stated that there are ten key factors affecting long-term athlete development, including (1) physical literacy, (2) specialization, (3) age, (4) training ability, (5) intellectual, emotional, and moral development, (6) effective and efficient use of time, (7) periodization, (8) competition, (9) system seeding and coherence, and (10) continuous improvement.

The development of the basic forehand and backhand groundstroke technique training model based on the ACENTOS method developed was driven by several previous research [7], which compared the quality of their

physical fitness levels between the group that was given a multilateral exercise model and the group that was given direct specified branching exercise. The results showed that multilateral exercise model treatment had a more significant level of physical fitness development than the group that was given direct specialization model treatment. Turner [13] reported that teaching tennis with the GFU approach in children aged 12-14 years can: (1) provide an understanding of the overall dynamics in the game of tennis (motor skills and the application of tactics and strategies) when compared to the approach of teaching techniques, (2) can adapt to a variety of tennis skills learned in various situations and game conditions, and (3) the child will have factual declarative and informative knowledge. Research results showed that play is one of the methods that can be used to study movement [26]. Training methods through play can improve high-level skills. Therefore, the structure of motor learning in the sport game must include four steps, among which are: (1) the creation of prerequisites and the introduction by motor action, (2) mastering motor action, (3) consolidation and motor improvement, (4) integration of motor action.

Based on the description above, the physical aspect is the most important predictor in winning the match. However, in order to improve performance, especially aerobic endurance of wheelchair tennis athletes, a training program that is adapted to the periodization phase and the characteristics of the athletes' abilities must be prepared. This is supported by the literature stating that most sports require excellent physique in order to attack and defend effectively and efficiently. This is in line with the expert opinion that when athletes do not carry out regular physical

training, they cannot execute the technique to its full potential. In order to improve performance, a special programming is needed [19]. A training program is the part of training management that has to be well-designed [19], just like the accents training program.

Tennis court has very complex movement characteristics, so demanding that the training children must have a good basic movement ability. This is because the game of court tennis is a sport that falls into the category of open motor movement skills/*open skill*. *Open skill* has the following characteristics: (1) situations and conditions of gaming that occur in the field are difficult to predict in advance, (2) environmental situations and conditions that are always changing so that aspects of the environmental context in motion determine when to start [20]. In *open skill*, the player never hits the same shot twice. Each punch requires the player to go through a process: perception-decision-execution, and feedback [21]. Based on the characteristics and characteristics of the game of tennis, in teaching/training children, teaching methods that are in accordance with the characteristics of the game of court tennis are required. The training also needs to provide basic knowledge and understanding of teaching/training methods that are in accordance with the characteristics of the game of tennis and the level of ability of the training child is what must be owned by a teacher/tennis coach. With the provision of teaching/training methods, it is expected that teachers/coaches will be able to design appropriate training models in accordance with the characteristics of tennis games and children's movement abilities. According to Unierzyski [3], when the coach in the teaching process uses the teaching method of tennis by taking into account the specific characteristics of the game, it will ensure several advantages, including (1) it will be a catalyst for structuring in the application of strategies and tactics from the beginning of learning to play tennis; (2) it can improve the overall performance of players because it directly combines tactical awareness and the implementation of technical skills/mastery; (3) ensure the accuracy of the player's punches in decision making, and (4) it has a higher level of specific knowledge than when the player is trained using traditional methods. Therefore, training method used should be a means to offer more strategic approaches to the development of children's movement skills so as to facilitate basic learning.

The presence of a coach as a fitness instructor carries the duty to serve as a role model in striving to enhance and refine the fundamental techniques of forehand and backhand groundstrokes. Coaches require an efficient exercise model approach to ensure that, while guiding the training process, they can offer an enjoyable experience for the young trainees. In addition, the coach must have the right strategy in order to achieve the planned training goals [21]. Through a good and correct basic technique training model, knowledge, understanding, and practice to learn through the stages of fun training will be achieved. With the right exercise model, the child will find pleasure and

help in improving learning achievement [22].

The exercise model provided is also expected to improve the multilateral movement skills of training children. The exercise model that refers to the recent LTAD paradigm became *trend* to offer more strategic approaches in the development of young athletes including tennis athletes. It is important to always emphasize the LTAD paradigm in the coaching of athletes no matter what model is used. Any development program should have a holistic approach that includes some key interdisciplinary perspectives for sports development in general [17]. The paradigm of coaching using the LTAD model should be applied by coaches in the training process of young athletes in the sport of tennis. One of the training models that can support the LTAD paradigm is the availability of an exercise model that can provide convenience to athletes in learning basic techniques, especially forehand and backhand groundstroke. At this time, the availability of basic technique training models is needed so that coaches can use it in guiding the training process in tennis associations/schools. The required model is an exercise model that matches the actual characteristics of the game of tennis. Training models that are able to develop the ability to perception /perception, decision/decision, execution, and giving feedback/feedback are needed [23].

Visual perception skills are also indispensable in playing tennis because tennis is a sport of rapid movements. Playing tennis requires a sharpness of perception and anticipation before making a throw. Perceptual ability is the basis for getting a successful *performance* which has practical benefits in a sport that uses a ball with fast characteristics such as tennis. Players must understand and interpret information quickly and effectively so that they have sufficient time to plan, initiate, and return blows successfully [6]. The ability to identify and understand the characteristics of the incoming ball through the speed of reaction or anticipation is indispensable before making a decision. Based on the theory of action perception, the player must extract a more valuable source of visual information and further use the extracted source to receive the information in order to trigger and initiate a motion to produce the corresponding reaction. The ability to identify and understand the characteristics of the incoming ball through the speed of reaction or anticipation is indispensable before making a decision. To achieve success in playing tennis, there are three types of perceptions that can be used, including (1) visual perception, which is the perception to interpret stimuli that enter the organism through eye receptor cells and carried through the afferent pathway to the brain; (2) auditory perception, which is the perception used for the repetition of stimuli that enter the organism through receptor cells in the auditory organ, the ear, and carried through the afferent pathway to the brain; and (3) kinetic perception, i.e. the perception used as the individual's interpretation of his body's relationship to space [24].

In playing tennis, decision making is a cognitive process

that results in choosing an option to meet the playing demands of the game situation at hand. The training model designed should facilitate to develop the decision skills of the training children. The decision-making process is based on the demands of the tactical and technical aspects of the game. In other words, in any game situation, the situation should be evaluated according to the style of play and the style of the opponent faced (style of opponent). The style of play and opponent in tennis consists of: (1) players who do not like to take risks, and (2) players who like to take risks. The player then decides "what to do" (tactical aspect review) and how, so that what has been decided can be achieved appropriately (technical aspect review).

The decision skills necessary to achieve tactical and technical goals are very important in playing tennis because in a playing environment, the scenario is very dynamic. Technical skill and decision-making are the two factors that determine *performance* in sport game [10]. Thus, players must be able to adapt to technical decision-making quickly to the changing and difficult environment conditions to predict in advance. For example, variables about the ball, such as speed, direction of trajectory, spin, altitude, distance, or variables about what the opponent faced, such as his position, desire-everything, is constantly changing. This changing or dynamic playing environment demands a flexible decision-making process and requires a level of player training. Effective decision-making can only be developed through matches or in simulated practice situations. Nevertheless, although by way of controlled game situations, this dynamic aspect is a reflection of the actual state of the game of tennis.

After the plan to execute a punch has been made, the stage that must be done by the player is to stroke (execution). Therefore, the training model designed can provide opportunities for training children to develop the ability to perform execution. In playing tennis, the execution chosen is based on the tennis player's skills in using the racket and body so that they will get comfort and effectiveness according to the game situation at hand. In carrying out execution, there are four key terms in which must be emphasized in the ACENTOS method, including (1) technical action which refers to training methods centered on the athlete/learner, (2) skills which refers to the open skill and the four components of the player consisting of technique, tactics, physical, and mental which is the basis of a full understanding of the skill of execution, (3) the characteristics of the game, a tactical and technical goal-oriented context, as well as (4) efficiency and effectiveness [25].

Giving feedback is a very important factor in the training process. Feedback has a fairly clear role, but it would seem surprising that coaches are often involved in the training process to feed for long periods of time but say nothing to the training child. Feedback is needed in order to improve some aspects of playing tennis [11]. Feedback provided is generally in the form of reinforcement and/or correction, and must be given based on the goals that have been agreed

upon by both the coach and the training child. Coaches often focus too much on giving corrections, i.e. trying to find what's wrong. The impact is that when players perform well, the coach never gives feedback because there is nothing wrong. Choosing the right time when providing feedback is very important because feedback is the most effective if given immediately during the performance. Sometimes the coach will give feedback before and after the student makes a punch.

The design of the basic technique training model based on ACENTOS method developed by researchers turned out to be effective for improving basic engineering skills forehand and backhand groundstroke. This is because the exercise model developed refers to the stages of the open skill process of ACENTOS method and is adapted to the characteristics of a real tennis playing situation. Practicing tennis using a modified exercise model using actual game situations will engage students cognitively, stimulate the interest of the training child, allow the practice child to play games more, and give the practiced child the opportunity to transfer concepts from game to game [4]. The exercise model for children aged 12 and under designed using the ACENTOS method is based on real tennis situations, in addition to developing their motor skills. It is also effective for embedding simple strategies and tactics in the game of tennis.

5. Conclusions

The development of perception, decision, execution, and feedback abilities should be carried out when children aged 8-12 years old learn basic forehand and backhand groundstroke techniques for the first time using the right training model. The development of these four abilities can only be done through an athlete-centered training model and has the characteristics of open skills. As explained, the purpose of this study was to determine the effectiveness of the forehand and backhand groundstroke based on the ACENTOS method for boys aged 8-12 years. The results showed that the ACENTOS-based exercise model method was otherwise effective for providing ease of learning and was able to improve the basic technique skills of forehand and backhand groundstroke. The results of this study try to help answer the mindset of tennis coaches and parents of training children who have the assumption that the basic technical training model for children aged 8-12 years does not need to develop perception, decision, execution, and feedback abilities, but training is done with conventional methods. The substance of the results of this study can be formulated that the exercise model based on ACENTOS method is effective to improve the basic technique skills of forehand and backhand groundstroke children aged 8-12 years. Future research is expected to identify and explore other basic techniques and this ACENTOS method-based training model can be used as a prototype for the creation of advanced-level technical training models. Efforts to find

the best training model continue to be carried out and later must be implemented in the training process of children aged 8-12 years boys to be able to improve the basic techniques of forehand and backhand groundstroke.

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