

# The Concept Development of The Practice Model Speed Reaction of The Match Category in Pencak Silat

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**Abstract.** *Pencak silat is the original culture of the Indonesian people which must be preserved and continued to be developed. This article aims to enrich the research approach to develop pencak silat reaction speed training model concept. The development carried out focuses on the study of the development of the reaction speed training model for the sport of Pencak Silat. Development Research adapts development research steps from Borg & Gall (1993). The subjects of this research were pencak silat athletes from the South Sulawesi Student Sports Education and Training Center (PPLP) or the Student Sports Education and Training Center. The data analysis techniques used are quantitative descriptive analysis and qualitative descriptive analysis. The content of the product contains 54 training models. Experts conclude that in the model there are cognitive, affective, and psychomotor aspects, so the model created is considered feasible and effective for use. The reaction speed training model in the sport of pencak silat can be used as an alternative to increasing reaction speed in pencak silat*

**Keywords:** *Development of training, reaction speed, pencak silat*

## 1. INTRODUCTION

Pencak silat is one of the original Indonesian cultures from Indonesia, where it is strongly believed by the warriors and pencak silat experts that the Malay people at that time created and used this martial art since prehistoric times. At that time humans faced harsh nature to maintain by fighting vicious animals and hunting, which ultimately resulted in humans developing self-defense movements.[1]. Pencak silat is a branch of Indonesian martial arts that has been known since the time of our ancestors. Along with the development and progress of the times. The aims and objectives of self-defense lessons for students are so that students become familiar with martial arts sports and can defend themselves if they receive interference that endangers them.[2]. The basic principle of Pencak silat is self-defense, which contains the values of attack and defense. Attacking and defending are things that pencak silat athletes must have, this is what will determine the quality of a pencak silat athlete. Defending, such as dodging, and avoiding the opponent to anticipate the opponent's attack, is the main key in the concept of pencak silat competitions. Apart from that, it is clearly emphasized that the value of attack is something that must be possessed by pencak silat athletes. Attacking movements are not just a pencak silat athlete doing a kick or

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punch, but the underlying basis of this movement is how a pencak silat athlete can do what and when the type of punch or kick is used.[3]. Based on the type of attack in pencak silat, it can be divided into two, namely punches and kicks, where kicks consist of straight kicks, side/T kicks, crescent kicks, spinning kicks, and sweeps. Pencak silat has become a sport that has begun to be competed in various regional and international events, with the consequence that this sport has been accepted as a world sport, so that all countries that develop pencak silat will try as optimally as possible to get/achieve medals, in various ways, namely calling pencak silat trainer and utilizes Sports Science and Technology as support[4]. Four aspects need to be considered in a sport, namely: physical, technique, tactics, and mental. The same thing was stated by Bompas, namely, another condition that is no less important for achieving sporting achievements is the athlete's ability. The utilities in question consist of four main aspects, namely: Physical preparation, Technical preparation, Tactical preparation, and Psychological and reparation[5]. In the physical component, there are three things in martial arts athletes, namely reaction action, coordination, and speed[6]. In pencak silat, speed of action and reaction are very important. Especially anticipating every attack launched by the opponent. The aim is to anticipate the opponent's attacks so that the opponent does not produce points. The tendency for the dominant receptor in the sport of pencak silat sparring is through optics (eyes) or the sense of sight. Apart from the eyes, the receptors that receive stimuli are the acoustics or ears. The speed of action is a continuation of the speed of reaction. Action speed is the speed at which body parts or parts of the body carry out movement commands that have been processed from reaction speed. The pencak silat sparring category is a competition that displays two martial artists from different angles. The two of them face each other using rules with elements of defense and attack, namely parrying, dodging, evading, attacking the target, and knocking down the opponent using fighting tactics and techniques, stamina and fighting spirit, using step patterns that utilize a wealth of techniques to get the most points.[6]. According to Harsono, speed is the ability to carry out similar movements in succession in the shortest possible time or the ability to cover a distance in a short time.[7]. Meanwhile, Sajoto explained that reaction is a person's ability to act immediately as quickly as possible in response to stimuli generated through the senses, nerves, or other fillings. Such as anticipating the arrival of leg or arm attacks from the opponent[2]. Furthermore, according to Fakhi, reaction speed is a person's ability to respond to something and act as quickly as possible in response to stimuli that come through the nervous senses. Reaction speed is the initial capacity of the body's movements to receive stimuli suddenly or quickly[8]. Reaction speed is the time required to provide a kinetic response after receiving a stimulus or stimuli. Because through stimulation (stimulus) the reaction gets its source from hearing, sight (visual), touch a combination of hearing and touch[9]. From several opinions about speed and reaction, it can be concluded that reaction speed is an individual's ability to carry out repetitive movements in response to stimuli in the shortest possible time.

Based on the explanation above, it is clear that reaction speed is very important in moving speed. Factors that influence reaction speed are physical factors, internal factors, and external factors. Physical factors consist of agility, Neuromuscular Coordination, and balance. Then internal factors consist of genetics, body type, age, gender, weight, fatigue, and motivation while external factors consist of external conditions, environmental atmosphere, and focus.[9].

## 2. METHOD

The concept of developing a model for Pencak Silat reaction speed training described here is a model that originates from the results of thinking, is still conceptual and its implementation is organized starting from planning, and implementation to evaluation of the results. The research and development steps are shown in Figure 1. The following stages of Borg and Gall.

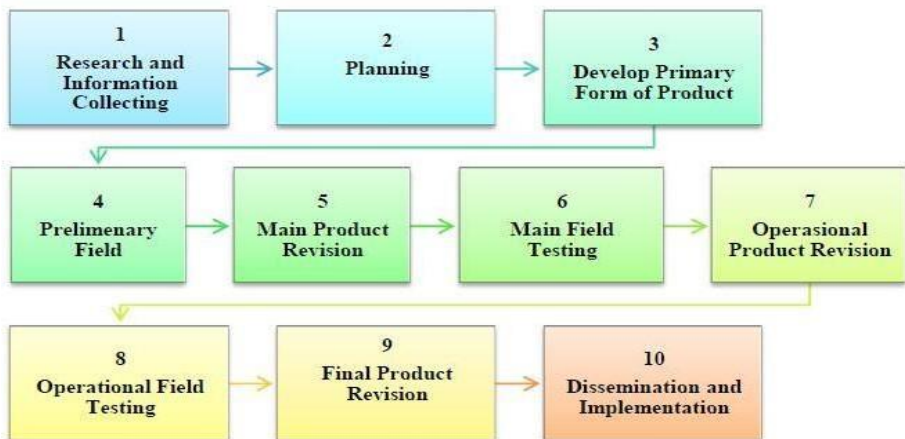


Figure 1. Model Development Steps (Research and Development)

Source: (Borg & Gall, 1983)

However, in this research, researchers were only at stage 7.

his research involves experts in carrying out model feasibility tests, expert judgment is carried out to obtain input and improvements. The following are the stages carried out to produce the final model: Revisions are carried out based on the results of expert validation of the model that has been prepared. Validation is carried out by expert judgment. The experts chosen to validate the model that has been prepared are people who are competent in their fields and have knowledge both academically and in terms of coaching. Validation aims to determine the suitability of the model that the researcher wants to produce and develop.

## 3. RESULTS AND DISCUSSION

The results of the needs analysis by distributing questionnaires to fighters in the sparring category, from the distribution of questionnaires it can be concluded that developing reaction speed training models for the sparring category agrees to be developed

with a percentage of 64.96%. With this supporting data, it further strengthens that the reaction speed training model needs to be developed.

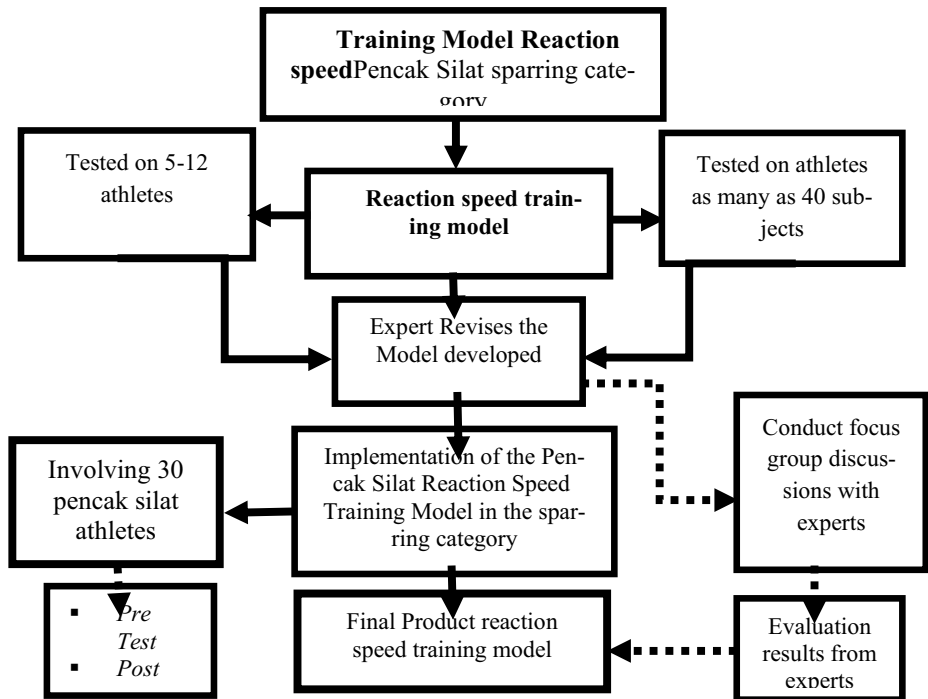
### **Preliminary research (Research and information collecting)**

This preliminary research is part of development, where before proceeding to the development stage, research is carried out to determine a needs analysis (need assessment). Preliminary research intended in this context is the stage of identifying symptoms that exist in the field. From here researchers can find out whether there are obstacles in providing the training menu and what training methods are used. Has the training met the requirements outlined in the training principles? To answer all of this, research was carried out in a small scope. Preliminary research aims to find out the picture in the field regarding the importance of the need for training models.

### **Planning and Model Development (Planning)**

The quality of the pencak silat reaction speed training model is assessed through validity, practicality, and effectiveness. The model will be assessed through expert judgment from coaching experts and pencak silat experts. Apart from that, expert judgment also provides suggestions and input on the model being developed. Researchers must consult the product with expert judgment, peer, and physical training to produce the perfect product.

Planning for the development of the model is also based on a needs analysis that has been carried out in preliminary research. Based on this, a plan is then drawn up regarding the development of the model that will be developed, as shown in the picture below.



**Figure 2. Research Development Planning concept design**

The image above is a model development concept plan that is ready to be tested and implemented in the field, ready in the sense that the draft model has been created, and at the same time validation is also carried out by experts. Experts act as people who have the right to evaluate the training model being developed. This step is carried out before the training model is tested. This is very useful whether the draft training model developed is appropriate or not. The planning stages as in the picture above can be described in table form as follows

**Table 1. Concept of Development Planning Stages**

Development Planning Concept	Activity
Gather information and identify existing problems in the field	<ul style="list-style-type: none"> <li>▪ Preliminary research using interviews with trainers and field observations as well as collecting questionnaires.</li> <li>▪ Literature study</li> </ul>
Creating an initial	<ul style="list-style-type: none"> <li>▪ Design training based on expected needs</li> </ul>

product in the form of a draft model for pencak silat reaction speed training for ages 15-21 years	<ul style="list-style-type: none"><li>▪ Consult experts regarding initial products</li><li>▪ Create practice images</li></ul>
Testing the initial model with subjects of 6-12 athletes	<ul style="list-style-type: none"><li>▪ Practice with a revised initial draft</li><li>▪ Application in the field with athletes</li></ul>
Revising the Model	<ul style="list-style-type: none"><li>▪ Evaluation with experts in the form of input/suggestions/responses</li><li>▪ Focus Group Discussion</li></ul>
Testing the model on a wider scale with 40 athletes	<ul style="list-style-type: none"><li>▪ Practice with the revised model.</li><li>▪ Application in the field with athletes</li></ul>
Revising the Model	<ul style="list-style-type: none"><li>▪ Evaluation with experts in the form of input/suggestions/responses</li><li>▪ Focus Group Discussion</li></ul>
Testing the effectiveness of the training model involving 60 pencak silat athletes	<ul style="list-style-type: none"><li>▪ Practice with the final model</li><li>▪ <i>Pre-test</i></li><li>▪ <i>Post-test</i></li></ul>

The table above is the planning concept for developing a training model, so in this stage, it is also necessary to measure the quality of the model which includes the validity, practicality, and effectiveness of the model. Measuring the quality and practicality of the model uses a questionnaire instrument in the form of questions addressed to competent experts. Then, if it is felt that something is missing, the expert will revise the model developed. The results of the revision are used to improve the model being developed. In testing the effectiveness of the model, the data collection technique is based on quantitative data.

**Validation, Evaluation, and Revision of the Model (Development of the preliminary form of the product)**

From the resulting model product, validation is then carried out by experts. Validation is carried out as an effort to see if a product, is the product suitable. The procedure for this validation is that an expert or specialist looks at the product being

tested, and then the expert will provide an assessment of the product being developed. This input and assessment from the expert is then used as a reference in developing the product to an even better stage. The technique used for evaluation uses a questionnaire instrument, from the evaluation it will be found which parts need to be revised. In this section, it is also explained in detail regarding expert review, small group trial procedures, large group trials, and effectiveness test procedures as follows, stated in the following points. Expert review in pencak silat reaction speed training models is useful for evaluating parts of the training model that need to be corrected, eliminated, or perfected, this is done on the design results in the form of written designs, drawings, or from direct demonstration techniques in the field when designing the model.

### **Review of Experts (Expert Judgment)**

In this section, the purpose of the expert review is that the expert examines the resulting model. At the beginning of making the product or initial draft, the researcher creates an exercise model in the form of an image along with the procedures for implementing it. From here the expert will see to what extent the model is ready for use. Does the model that has been created comply with the principles of training? Or is there still something that needs to be improved on the draft model that has been produced? If it is felt that something needs to be corrected, the expert will provide input or revisions to the initial draft.

### **Small Group Try-out**

After the training model has been revised by an expert, the next step is to introduce and practice pencak silat reaction speed training models. Small group trials were carried out with 6-12 teenage pencak silat athletes, before large group trials. Pencak silat trainers were involved in observing the training model. The observation stage is intended to determine the results of the achievements of the model product in the implementation process in the field. The revised results from small group this mall-grouped as a reference for large group.

### **Revision (Main product revision)**

Input from the results of the questionnaire and field notes in the small group test was used to revise the product. This is done to perfect the model that has been felt and experienced by the subject for the next group test.

### **Large group trials (Field-Try out)**

Large group trials or often also referred to as main trials. In large group trials, subjects were gathered as pencak silat athletes to undergo reaction speed training. In this trial, there is also the involvement of experts in providing input or suggestions if it is felt that there is something that needs to be given input or constructive suggestions. Pencak silat trainers were also involved in observing in depth the implementation of large group trials.

### **Effectiveness Test**

This trial aims to (1) find out whether the model design has been implemented properly and correctly by the trainer, and (2) how effective the results of implementing the model are for the objectives of this research. Before carrying out the training, the pencak silat group in the sparring category first carried out an initial test. This test aims to measure physical abilities in the sparring category or is often referred to as a pre-test. Then, after undergoing the treatment process, the pencak silat athletes in the sparring category again carried out a second test. The purpose of this second test (post-test) is to obtain data regarding the physical abilities of pencak silat in the sparring category after undergoing treatment.

### **Data Collection and Data Analysis**

In the analysis of needs for questionnaires using a Likert scale, the Likert scale is used to determine the range of answers to problems in the field. Meanwhile, the answer choices submitted to experts use the Gutman scale. The aim of using the Gutman scale is to get a firm answer regarding whether a model is appropriate or not. Next, the data obtained from the pre-test and post-test are processed using the help of statistical product and service solutions (SPSS). Analyze the results of the two tests using statistical methods (t-test). The purpose of the t-test is to determine the difference between the experimental group and the control group. In other words, from the test results it can be seen the effectiveness of the training model that has been developed.

### **Model Implementation**

The implementation of the model referred to here is the implementation of development results by conveying information both at the academic level and among practitioners. At the academic level, this can be done by conveying development results through scientific forums and publishing national and international journals. Meanwhile, among practitioners, dissemination is done by publishing a handbook on the reaction speed training model for Pencak Silat in the sparring category.

The development of this reaction speed training concept uses a training method that prioritizes the senses of hearing and touch, as explained by Jonath & Krempel states that reaction or reaction speed is the ability to respond quickly to stimuli or stimuli acoustically, optically and tactilely [2]. Acoustic stimuli are stimuli received through the sense of hearing, such as the sound of a gun when running a short distance, or the sound of a whistle, clapping hands, and so on. Meanwhile, optical stimulation is stimulation received through the sense of sight (eyes), such as a person moving by paying attention to the movement of the trainer's hands and following the direction of the movement by moving forward, backward, to the left, or the right. It can also be done through stimulation using light, balls, etc. Meanwhile, tactile stimulation is stimulation received through the sense of skin touch (tactile), for example by touching the hand or patting the back of the body on the shoulder.



Reaction speed as stated by Harsono is that reaction speed is a quality that allows starting a kinetic response as quickly as possible after receiving a stimulus. Meanwhile, performance is how well a person performs an activity. Performance in any sport is determined by a combination of three main elements: physical conditioning for competition, skill level, and psychological (mental) readiness to compete.[10].

#### **4. CONCLUSION**

Based on the results of needs analysis, expert validation, field trials, and discussion of the results of research and development on product development concepts for pencak silat reaction speed training models in the sparring category, the following conclusions can be drawn:

- a) The concept of the reaction speed training model can be developed and applied in pencak silat training.
- b) The concept of the reaction speed training model developed is effective for increasing the motor component of reaction speed in the fighting category of penPencaklat.

The results of the concept of developing this training model will indirectly have implications for the development of physical training models (especially training to increase the motor component of reaction speed specifically for fighting categories). The implications of this research are as follows:

1. The results of this research and development provide additional reference training models, especially pencak silat reaction speed training, especially for athletes in the sparring category.
2. The application of the results of this research and development for trainers makes it easier to carry out physical training, especially for the motor component of pencak silat reaction speed
3. For athletes, the results of this research are very helpful in efforts to increase the motor component of pencak silat reaction speed. Varied forms of training increase athletes' motivation to carry out training.

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