



## **Development Of The 2022 Pencak Silat Pull Training Model Using Resistance Bands In The Pre-Competition Phase**

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### **Abstract**

Changes to the pencak silat rules in 2022 have had a significant impact on techniques in sparring category pencak silat matches, namely the fall technique with a pull. However, to fulfill the demands of the task when playing, the need for adjustments to techniques during training is the key to the success of techniques when playing. Therefore, researchers are interested in developing a variation of the fall technique model with a pull. The purpose of this research is to develop a variation of the pull training model using resistance bands to support techniques in addressing the 2022 pencak silat regulations. This research uses the Research and Development (R&D) method. The results of this study are 11 variations of the pull training model with resistance bands. The results of the martial arts expert validation were 90% declared excellent, meaning that it is feasible to be applied in pre-competition phase training activities. The results of the respondent test in the small group trial showed 90% in the excellent category and the large group trial showed 91% categorized as excellent. The results of the product validity test were declared feasible to use.



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## INTRODUCTION

Sport is an activity that requires physical activity and aims to facilitate physical development and motor skills (Hidayat & Haryanto, 2021; Nabihah et al., 2024). One type of sport that is popular today is pencak silat. The rapid development of pencak silat sports today is due to the positive response and attention from the community or government because the development of pencak silat in Indonesia is quite good (Mirfen & Umar, 2018). Pencak silat is a Malay martial art sport that involves the whole body to defend itself. It is related to a person's expertise to defend themselves by deflecting, attacking, and defending themselves (Insaiyah & Wahyudi, 2024). Pencak silat is the result of a cultural heritage of martial arts from the region so it should be preserved (Saputra et al., 2018). The martial arts form of pencak silat is carried out to oppose various kinds of crimes, but currently pencak silat is also used as a way to achieve achievements in sports (Prabowo et al., 2024). Sport can also be defined as a physical activity with the aim of obtaining certain things, one of which is achievement. As an achievement sport, pencak silat is a sport that is in demand among the community, students, and students (Nopitasari & Wahyudi, 2022). This is carried out through a competition organized from national to international events in order to achieve sports achievements. Sports achievement is the result of the achievement of a sport that is competed through efforts that have been achieved, carried out, and done (Adi, 2016). Achievement in the world of sports is not only limited to one's ability

and experience, but also requires adjustments to the times, one of which is by utilizing the development of science and technology (IPTEK) (Rohendi & Rustiawan, 2020). One form of utilization of science and technology in sports is by realizing competition as one of the implementations of systematic sports coaching and development. Achievement can be proof of the success of the sports coaching process as evidenced by the victory in every competition held from regional to international levels (Latifa & Niswah, 2017). At the national level, sports performance coaching is implemented in the National Sports Week (PON) multi-event competition. PON activities are carried out every four years and have become the largest sports event in Indonesia (Pandunata et al., 2022). The national event aims to increase dignity as an individual or country through screening for outstanding athletes who will then take part in international events, where this can be said to be an achievement (Dongoran et al., 2020). There are many martial arts sports that are competed at the national and international levels to achieve an achievement, one of which is pencak silat.. Pencak silat became one of the sports that contributed the most gold medals for Indonesia in the 2018 Jakarta - Palembang Asian Games, so it was concluded that pencak silat became one of the unifying tools of the archipelago, made the nation proud, and became the identity of the Indonesian nation (Ari et al., 2022). As an achievement sport, pencak silat certainly has standard rules that have experienced many changes in competition regulations. In the 2022 rule change there are fundamental changes, one of which is a

fall accompanied by a pull. Changes to the new rules need to be understood and mastered by athletes so that they can attack or defend in accordance with the provisions that have been regulated (Saleh et al., 2024). In order to support understanding and mastery of the new rules, it is necessary to apply sport science in pencak silat achievement sports. Sport science has the aim of supporting and assisting athletes in improving their sporting achievements by applying several supporting sciences (Rohendi & Rustiawan, 2020). This can be done by paying attention to physical conditions, technical training, tactics, and mentality. In addition, the application of sport science in the sport of pencak silat achievement certainly also applies a specific training program to train pulling techniques in pencak silat according to certain phases. Specific exercises are the result of training stimuli that are similar or resemble movements in sports so that they can provide optimal and maximum benefits (Ali et al., 2022). Specific training can be a support for achievement supported by a persistent effort and extensive knowledge to carry out careful training of all that is needed, namely by improving abilities including tactics, mental, physical which includes strength, endurance, speed, agility and flexibility (Bahauddin & Sulistyarto, 2022). In addition, other elements such as tactics, strategy, and mental techniques also affect athlete performance in matches. Technique is a skill that characterizes a particular sport. A technique that appears most dominant is the pulling technique which has an important role to get points without having to buy and sell attacks. In

the sparring category, two fighters from two different angles and facing each other use elements of self-defense and attack by deflecting, evading, hitting, or attacking a specified target, as well as using techniques, tactics, and stamina endurance to bring down opponents in order to get the highest score during the match (Ramdani et al., 2024). In addition, the strategic tactics used by athletes during pencak silat matches through the attack and defense movements listed in the match regulations determine the assessment (Muslikhin et al., 2023). Techniques can be trained through effective and continuous training in training periodization. The basis of an athlete's training plan is determined by periodization. Training periodization is considered important which aims to design training programs during preparation and in the rest period (Oemar & Marsudi, 2019). In a periodization there is a different training menu in each phase. According to Bompa (2009) in (Oemar & Marsudi, 2019) periodization is a method in which training is divided into the smallest parts to organize a training menu with its own type called training phases. These phases are divided into sub-phases of training, one of which is the pre-competition phase where training has reached an accumulation between physical, technical, tactical and mental.

In the sport of pencak silat, which applies the 2022 regulations, it has an effect on its technical techniques, one of which is the fall where the opponent is dropped by pulling the opponent's vest. Pulling techniques with the provision of one hand are allowed to be used in fall techniques including, catches, scissors and

sweeps (Ilmi, 2024). The pulling technique has changed to an advantage in the new rules, namely by pulling during the fall process, where in the previous rules it was considered an offense (Rosmayani et al., 2023). Effective pulls in pencak silat can be produced in the use of training methods using resistance band equipment. Resistance Band is an elastic band made of rubber or latex which has several benefits including strengthening muscles, increasing speed, and agility (Ali et al., 2022). Training with resistance bands is an innovation to improve athlete performance both in terms of physical or technical and overcome boredom when carrying out training (Rosmayani et al., 2023). Its ability to provide resistance that can be adjusted by the user and its flexibility and elasticity make this tool able to provide a good effect to support pulling. The use of resistance in training methods can help increase muscle strength, pulling strength, and pulling speed quite effectively.

Based on observations made of Malang Regency pencak silat athletes and referring to the pencak silat regulations in 2022, there are many athletes who make a pull to knock down opponents with a pulling technique. However, the pulling technique is done just to pull the opponent down without thinking about the risk of injury he experiences if the position of the pull is not correct. The coach should provide a specific training model to support the pull so that the athlete does not just pull but also uses a technique. The lack of a specific training model variation is the reason that the resistance band has not been integrated in the variation of the pull training model.

Therefore, developing a variety of training models with resistance bands is very important to meet the needs of athletes in the latest pencak silat regulations in 2022. In addition, this research provides practical guidance for athletes and coaches regarding variations in pulling training models and also contributes to improving athlete performance. Thus this research opens up new space for innovation in training methods that are more effective and efficient in the latest pencak silat regulations. The purpose of this research is to develop a variation of the pull training model using resistance band equipment that is in accordance with the rules of the pencak silat competition in 2022.

## METHOD

This study uses the Research and Development (R&D) method which is modified according to the characteristics of the product being developed due to limited time, energy, and costs. The research development of this variation of the pull training model was modified by the researcher, into 7 steps including;



Sugiyono (2009: 407) in (Hayati, 2012) argues that, research and development methods are research

methods used to produce certain products and test the effectiveness of these products.

### Participants

This research was conducted on Malang district pencak silat athletes by sampling using purposive sampling technique with a total of 10 athletes in the sparring category. The average research sample is 16 years old and above and has entered the adult category in a match.

### Materials and Apparatus

Research data were collected through questionnaires (expert validation questionnaires and student response questionnaires), Forum Group Discussions (FGD) with physical condition experts and martial arts experts.

### Procedures

The collected data were then analyzed using validity data analysis techniques. The validity analysis was carried out by calculating the assessment results from expert validators which were interpreted based on the validity categories presented in table 1.

Table 1. score interpretation

presentase	Kelayakan	Makna
81% - 100%	Excellent	Used
61% - 80%	Good	Used
41% - 60%	Fair	Used (conditional)
21% - 40%	Poor	Repaired
5<21%	Very poor	Discarded

## RESULT

Based on the results of observations and interviews conducted with pencak silat coaches, it was found that the coach did not have a specific training program to support the pulling technique in the match. Therefore, the researcher developed 11 variations of training models that apply the pulling technique in pencak silat into an exercise tool, namely the resistance band. The results of using a this development research are as follows;

### Pull 1 (variation 1, pulling the resistance band downward)

Start with a front stance and the position between the legs and hands crossed. Then pull the resistance band down with a fixed foot position and the knee of the back leg bent forward. This pull trains arm muscle power to support the pull in the real match. (<https://bit.ly/variasi1>)



### Pull 1 (variation 2, pulling resistance band, with footsteps)

Begin with a front stance and hands holding the resistance band. The position between the feet and hands is parallel, then pull the resistance band down at the same time as stepping the front foot back. This pull involves the strength of the arm and shoulder muscles and utilizes body weight to maximize the pull. (<https://bit.ly/variasi2>).



**Pull 1 (variation 3, pulling the resistance band 2 hands alternately)**

Starting with both hands holding the resistance band and the position of the feet shoulder-width apart and the body position slightly lowered. Then pull the resistance band alternately in rhythm with stepping back. This exercise uses the strength of the arm and shoulder muscles to maximize the pull.

(<https://bit.ly/variasi3>)



Begin by sitting with your knees bent and one hand holding the resistance band. Then lie down together and pull the resistance band back simultaneously. In addition to using the strength of the arm and shoulder muscles, this pull utilizes the body to maximize the pull.

(<https://bit.ly/variasi4>)



**Pull 2 (variation 2, counter pull by pulling towards the outer side)**

Begin by sitting with your knees bent and one hand holding the resistance band. Then lower the body at the same time as pulling the resistance band towards the outer side. This exercise uses the arm, shoulder and chest muscles and utilizes the abdominal muscles to

maximize the outward pull.  
(<https://bit.ly/variasi5>)



**Pull 3 (variation 1, pulling the resistance band towards the outer side of the body)**

Starting with the front horse position and one hand holding the resistance band in parallel between the hands and feet. Then pull the resistance band towards the outside of the body with a trajectory forming a semicircle. This exercise uses the strength of the arm muscles, shoulders and chest muscles.

(<https://s.id/variasi6>)



**Pull 3 (variation 2, pulling the resistance band with the inside leg hook)**

Begin with a mounted position and one hand holding the resistance band parallel to the foot. Then pull the resistance band outwards at the same time as stepping the back foot forward and hooking inwards. This is used to remove the opponent's balance and make it easier to make a legal fall in the real match.

(<https://bit.ly/variasi7>)





#### **Pull 4 (variation 1, pulling the resistance band inward)**

The initial attitude in doing this exercise is to position the body of the from the side of the resistance band. The resistance band is held with both hands in front of the body. The resistance band is pulled inward towards the center of the body. The resistance band is held with both hands in front of the body. The resistance band is pulled inward towards the center of the body.



(<https://bit.ly/variasi8>)

#### **Pull 4 (variation 2, pulling with outer leg leverage)**

Start with a pony position parallel between the legs and hands. Then pull the resistance band inward in sync with the leg leverage to the outside of the body. At the time of pulling the leg that was originally behind steps forward, then the leg that was originally in front does the leverage. (<https://bit.ly/variasi9>)



#### **Pull 5 (variation 1, pulling the resistance band horizontally)**

Start with a front horse stance with one hand holding the resistance band. Then pull the resistance band horizontally with a fixed body position. When doing this exercise involves the strength of the shoulder and arm muscles. (<https://bit.ly/variasi10>)



#### **Pull 5 (variation 2, pulling 2 different areas)**

Beginning with a pony position parallel between hands and feet. Then pull the resistance band horizontally backwards and follow the hand hook on the other resistance band in rhythm with dropping the body. This is to provide more pressure so that the pull can be maximized. (<https://bit.ly/variasi11>)



Product development of a variety of pull training models using resistance band equipment including bottom pulls, counter pulls, outside side pulls, inside side pulls, and two-handed pulls on different limbs. assessed by pencak experts martial arts and media experts with instruments that have been provided. With a Likert scale of 1-4, the martial arts expert validator value instrument consists of 10 questions that contain ease, attractiveness, effectiveness, and suitability of techniques in martial arts. While the media expert validator instrument consists of 5 questions that contain ease of access, clarity of sound and video, attractive appearance and suitability for training material. The results of the assessment of experts (validators) regarding the product

development of exercise variations are described as follows.

**Table 1.** Pencak Silat Expert Validation Test

Expert Code	Instrument Number									
A1	1	2	3	4	5	6	7	8	9	10
Assessment Score										
	4	3	4	4	4	4	3	4	3	3
N	4	4	4	4	4	4	4	4	4	4
F	4	3	4	4	4	4	3	4	3	3
$\Sigma N$	40									
Percentage	100%	75%	100%	100%	100%	100%	75%	100%	75%	75%
Amount Percentage	90 %									
Explanation	Veru Good									

**Table 2.** Media Expert Validation Test

Expert Code	Instrument Number				
A2	1	2	3	4	5
Assessment Score					
	4	4	4	4	4
N	4	4	4	4	4
F	4	4	4	4	4
$\Sigma N$	20				
Percentage	100%	100%	100%	100%	100%
Amount Percentage	100%				
Explanation	Very Good				

**Table 3.** Small Group Trial Results

Small Group Trial Recapitulation											
Number	Name	Questionnare Answer Score									
Instrument Number		1	2	3	4	5	6	7	8	9	10
1	Rgl	4	3	4	3	3	3	4	4	4	4
2	Skr	3	4	3	3	3	3	3	3	3	3
3	Arl	4	3	2	3	3	4	4	4	2	4
4	Ynsa	4	4	4	4	4	4	4	4	4	4
5	Ryhn	4	4	4	4	4	4	4	4	4	4
N		20	20	20	20	20	20	20	20	20	20
F		19	18	17	17	17	18	19	19	17	19
$\Sigma N$		200									
Percentage		95%	90%	85%	85%	85%	90%	95%	95%	85%	95%
Amount Percentage		90%									
Explanation		Very Good									

**Table 4.** Large Group Trial Results

Large Group Trial Recapitulation											
Number	Name	Questionnare Answer Score									
Instrument Number		1	2	3	4	5	6	7	8	9	10
1	Dp	4	4	4	3	3	4	3	3	3	4
2	Ryhn	4	4	4	4	4	4	4	4	4	4
3	Stra	4	4	4	4	3	4	4	3	3	4
4	Cdra	3	3	4	3	3	4	3	4	3	4
5	Ynsa	4	4	4	4	4	4	4	4	4	4
6	Arl	4	4	3	3	4	3	3	3	3	4



7	Rgl	4	4	4	4	4	3	4	4	4	3
8	Skr	3	3	3	3	3	3	3	3	3	3
9	Ids	4	3	3	4	3	4	4	3	3	4
10	Jno	4	4	4	4	4	4	4	4	3	4
	N	40	40	40	40	40	40	40	40	40	40
	F	38	37	37	36	35	37	36	35	33	38
	$\Sigma N$	400									
	Percentage	95%	93%	93%	90%	88%	93%	90%	88%	83%	95%
	Amount Percentage	91%									
	Explanation	Very Good									

addition to the strength element, the speed element.

## DISCUSSION

This study developed a variation of resistance band pulling training in the pre-competition phase to fulfill the 2022 pencak silat regulations. The data presented includes qualitative descriptive data obtained from the Forum Group Discussion (FGD) with pencak silat coaches and physical condition experts, as well as quantitative data as evidence of the variations in the training model studied. The 2022 rule change affected the pattern of matches, where many pugilists used the 2022 rule. a defensive attack with a choke and finish it with a pull to knock the opponent down. The elements that influence the pulling technique are strength and speed which are trained before the pre-competition phase in general preparation and special preparation. strength and speed are important to produce explosive power that supports pulling training. Strength is a person's physical ability to use muscles to receive a load (Ulanda et al., 2021). Strength aims to overcome loads or resistance by using a group of muscles, and is useful for increasing muscle ability, and reducing the risk of injury. injury (Sugiharto & Rejeki, 2023). In

Speed comes from the physical component that produces consecutive movements or the transfer of the body from one position to another over a certain distance using the shortest possible time. (Ulanda et al., 2021). Speed is a form of a person's ability to move his limbs and produce stimuli in a short time utilizing muscle ability. (Sari & Indahwati, 2016; Sugiharto & Rejeki, 2023).

Training variation in the pre-competition phase is key to preparing athletes for high-level competition. The pre-competition phase is where the athlete has peaked before the actual competition with the main focus on honing specific skills. Basically, this training variation involves all the muscles of the body to perform a pull. The specifications in this exercise are upper body muscles which involve arm muscles (biceps and triceps), shoulder muscles (deltoid), back muscles (trapezius, deltoid, teres major, and teres minor) and abdominal muscles (serratus anterior, external oblique, internal oblique, rectus abdominis, tendinous intersection). According to Bompa

(2009) in (Oemar & Marsudi, 2019) in the pre-match phase the purpose of training is to improve athlete performance, to find out strengths and weaknesses, sharpen strategies and tactics and improve athletes' mentality before entering the main competition. Match simulation is also needed such as technique or tactics. Adjustment of techniques in a training requires specific training as in the conditions in the match. Pulling exercises using resistance bands that vary from horizontal to vertical pulls to meet the needs make this tool worth integrating with pulling techniques in martial arts. Pulling is the activity of pulling weight towards the body by involving the shoulder muscles, arm muscles and core muscles. The adjustment from the old match rules to the latest rules makes pulling training a mandatory technique because it is one of the determinants of victory in the match. (Rosmayani et al., 2023). The technique was adopted in other martial arts sports such as judo, due to the pulling technique and relying on a stronger horse base. (Susiana & Wahyudi, 2023). The most noticeable difference in the rules is in the fall fighting category. Training with a focus on a fall technique is training that is already in the pre-competition phase. By entering a variety of exercises in the pre-competition phase, it is hoped that athletes can develop strength and explosive power to meet the needs of the match. The results of conducting a Forum Group Discussion (FGD) with a pencak silat

coach said that the pre-competition phase is a phase where an athlete has reached a special training and maintenance of physical conditions that are implemented with a technique that matches the conditions of the real match. The results of the assessment can be described in the following discussion.

## CONCLUSION

The results of the Research and Development Research conducted on “Development of Variations of the Pull Training Model with Resistance Band Tools in the Pre-Competition Phase Based on the 2022 Pencak Silat Rules” are categorized as very feasible to use as a media tool in supporting a specific pull technique with a real match.

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