

Do Resistance Bands Increase Punch Speed? Experimental Evidence from Persinas Asad Pencak Silat Athletes in Garut

Sayid Kamilatul Insan <sup>1</sup>, Azhar Ramadhana Sonjaya <sup>2</sup>, Ani Kurniawati <sup>3</sup>,Z Arifin<sup>4</sup>

\*Corresponding Author: , e-mail: [sayidkinsan@gmail.com](mailto:sayidkinsan@gmail.com)

<sup>1</sup>Universitas Garut, Indonesia

Abstract
<p><b>Purpose.</b> Based on Formulation Issues raised above , Research This try For know in detail about blow straight martial arts martial arts , then objective study This is as following :</p> <p>“ Is There is influence Resistance band exercises against speed blow straight martial arts martial arts in the Regency Garut ”.</p> <p><b>Materials and Methods.</b> As for the methods study in study This is use method study quantitative with type research that will be used is experiment . Research method experiment can interpreted as method research that will be used For look for influence treatment against other conditions under control .</p> <p>Research <b>result</b> This succeed show existence improvement significant in blow straight to the participants after follow a resistance band training program . This seen from pretest results showing the average value speed , namely 8.70, which then increase sharp to 11.30 on the posttest. Improvement speed this is 2.6 indicates that resistance band exercises effective increase ability speed blow straight . Coordination is something ability very complex biomotoric coordination . close the relationship with speed , strength , power stand ,</p> <p><b>Conclusion .</b> In research This succeed show existence improvement significant in blow straight to the participants after follow a resistance band training program . This seen from pretest results showing the average value speed , namely 8.70, which then increase sharp to 11.30 on the posttest. Improvement speed this is 2.6 indicates that resistance band exercises effective increase ability speed blow Straight . A resistance band training program that has been proven to be very effective. in increase speed blow straight , as indicated by an increase significant scores . In addition , the method the analysis used , namely the gain test, is suitable For sample small and capable catch change significant in individuals . .</p>
<p><b>Keywords :</b> Resistance band training, Punch speed, Pencak Silat athletes, Experimental study.</p>

## **Introduction**

Sport is something systematic and achievable activities encourage , foster , and develop potential physical , spiritual and social . Sports ` continue develop with rapidly along with development modernization and technology that is increasingly advanced with existence various characteristics in form needs , activities , and style life (Models et al., 2020) . (Gristyutawati et al., 2012) Many types or branch sports that are developing and known by the public , one of them is is sport defense self that is martial arts martial arts . Pencak silat is sports that originate from from Indonesia. Pencak silat is results culture Indonesian people for defend , maintain , existence ( independence ) and integrity ( unity ) against environment life or natural surrounding area For reach harmony life to improve faith and piety .

martial arts become sports of interest many people, until there is various clubs and also hermitages as receptacle For martial artists training (Practice et al., 2021) . With thus can We know that martial arts martial arts is A sport traditional which is art defense self . This is prove that Lots regions in Indonesia that have various type typical and existing martial arts Miscellaneous scattered colleges both domestically and internationally abroad . Pencak Silat is also a art martial arts, so that in it there is element beauty and action . In Pencak Silat there is various techniques that must be learned namely one of them is the Straight Punch Technique (Negeri & Bengkulu, 2018)

Blow straight is one of the technique attack in martial arts martial arts that uses one of the hitting hand straight to front the target is the chest and the other hand close the direction of the point is part stomach to above . (Handoko, 2018) Blow straight graded in match martial arts martial arts is blow straight that hits target togok ( body ) is part body except neck to above . In pencak martial arts There is a number of various punching techniques , but the most used in martial arts martial arts category match is blow straight and punch bandol or “swing”.

Blow straight is one of the most widely used techniques moment match . Therefore a athlete martial arts martial arts must own ability blow straight and precise so that you can get points , however reality on the ground Still Lots athlete martial arts martial arts in the paguron persinas Asad regency arrowroot Not yet have speed at the moment do blow straight caused lack of exercises that have influence to speed blow straight the .

Speed the reaction in question in matter This is speed reaction arm . Speed reaction arms are very much needed in do blow straight to produce speed optimal stroke and with existence speed reaction arm capable produce agile movements that are not suspected by the opponent who brought it a martial artist on victory and achievement maximum performance .

Based on regulation the results of the XIV IPSI National Conference (2016) that blow produce value 2 compared previous regulations only produce value 1.

In the combine a number of aspect physique naturally speed can influence aspect among which are speed reaction . Speed the intended reaction in matter This is speed reaction arms are very necessary in do blow straight to produce optimal speed . And with existence exercise speed arm capable produce unexpected agile movements thought by the opponent . Because of the speed will profitable athletes especially athletes in the paguron Persinas Asad Regency Garut . (Maulana & Wijaya, 2018) said that " speed is ability For walking , running or move very quickly Where speed covering body parts such as throwing , pushing , hitting , kicking and so on". So the speed For a martial artists in the paguron Persinas Asad Regency Garut must important to be improved . According to Sugiono (2012: 07) he stated that speed is ability For do movements in a way consecutive in short time or ability For go through something distance with fast time in effort develop and improve quality speed blow straight on the paguron Persinas Asad Regency Garut No There is other way besides with practice , practice serious really guided by the training program physical . So that with exercise the desired goals achieved come true that is high achievement . With good practice , then will produce good performance too . (Teguh Andibowo et al., 2024) , stated “ Understanding exercises that originate from the word practice is activity For increase sports skills ( proficiency ) with use various equipment in accordance with goals and needs branch his sport ” ( p. 47).

So for increase speed blow then it is necessary with Resistance Band media assistance . (Ridlo & Saifulloh, 2019) "Resistance Band is a tool efficient and easy fitness exercise carried around made from rubber . resistance bands are available handle ( grip ) for make it easier users in use resistance band exercises ” (p. 50). Exercises using resistance bands are something form exercise physique burden with use burden from outside in the form of rubber with thickness different things that are made as burden in practice . Of course it's very big possibility method training using resistance bands will be very effective If used by Pencak Silat athletes in Paguron Persinas Asad Regency Garut matter That strengthen with Frank et al.'s opinion (2001: 08), where combination from resistance band exercises are very effective used For increase tall jump and power legs , increase speed , agility in volleyball players women . In addition , the exercise use resistance bands can also increase strength joints and can used For exercise aerobics (Ali et al., 2022)

Form exercise this also aims For practice strength and speed muscle the arm which is muscles that play a role important in do speed blow straight martial arts martial arts . (Smontara et al., 1996) state that : " speed kick can improved use exercise burden that is with exercise style spring characteristic elasticity inner tube rubber . Resistance rubber is tool help exercises that can used For increase speed kick Because exercise prisoners can increase speed "

Paguron Persinas Asad is one of the pavilion martial arts martial arts the best in the district Garut . Paguron This was founded in 2001 and is trained by 4 trainers who are experienced in the field martial arts martial arts , paguron martial arts martial arts persinas Asad This Already Lots reach achievements at the level regency and The province exercises are conducted 3 times in a week namely on the day Tuesday , Thursday , Saturday , for place training at the hermitage cinisti subdistrict bayongbong .

Blow straight on Paguron Persinas Asad Regency Garut No own speed . Punch straight is one of the paralyzing attack against Because the target is uluhati . Average speed blow straight athletes in the paguron Persinas Asad Regency Garut This is still very low . The role of the blow is very important and has difficulty alone as well as openness chance For get points , then expected by a athletes in Paguron Persinas Asad Regency Garut can combine a number of aspect condition physique among them speed reaction .

Based on description on so researchers interested research about speed blow straight through resistance band training . research This will be done in the paguron Asad Regency's Persinas Garut where at the time observation researchers look at the moment exercise but which is developed in practice in the paguron Persinas Asad Regency Garut This more to technique falls and techniques kick researchers see development exercise blow straight This less improved so that speed at the moment do technique blow straight this is very low Because in martial arts martial arts For get points That No from falls and kicks only . Straight Punch is also important at the time athletes compete For get points Because blow straight is very necessary in compete distance close . Researchers think For do innovation related exercise blow straight using resistance bands, to increase speed in do blow straight.later researchers will involving athletes Persinas Asad Regency Garut and will be assisted by the Coach . The title is study This namely "The Effect of Resistance Band Exercise on Speed Pencak Silat Straight Punch in Paguron Persinas Asad Regency Garut ”.

## **Materials and Methods**

Study This use method study quantitative with design experiment One-Group Pretest-Posttest Design type . Research sample is all over population of 10 athletes martial arts martial arts Paguron Persinas Asad, which was taken with saturated sampling technique . Instrument research used is test skills blow straight (Lubis, 2004), where athletes do blow straight hand right as soon as possible for 15 seconds , and the result assessed based on amount correct stroke as well as appropriate target . Research started with pretest for measure ability beginning , continued with treatment in the form of exercise blow straight using the resistance band 14 times , then ended with posttest for measure change ability .

Data collection techniques were carried out through method survey with tests and measurements , including election samples , pretest implementation , treatment administration , posttest implementation , and processing results . Data analysis was carried out using SPSS version 22, with normality test stages (Shapiro-Wilk) for ensure data is normally distributed , homogeneity test For test similarities variance , and hypothesis testing (t-test) for know significance influence treatment to improvement speed blow straight . The result of analysis This become base withdrawal conclusion study related effectiveness exercise blow straight using resistance bands .

Results

Descriptive Statistic Test

Table 1. Results of Descriptive Statistics Test for Straight Punches

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Standard Deviation
Pre_Ex	10	7	11	8.70	1,160
Post_Ex	10	10	13	11.30	.949
Valid N (listwise)	10				

The results of the descriptive statistics test are For know minimum and maximum results from the pretest and posttest , as well find out the average of the data . From the descriptive statistics test there is significant influence from the training program using resistance bands against improvement speed blow straight Paguron Persinas Asad Regency Garut . Pretest and posttest results the own average score of prettes of 8.70 and posttest 11.30.

Descriptive Statistics Test

Table 2. Results of the Straight Punch Gain Test

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Standard Deviation
Ngain_Score	10	.40	1.00	.6317	.17855
Gain_Percent	10	40.00	100.00	63.1667	17.85487
Valid N (listwise)	10				

Valid N (listwise) 10

Gain test results in study entitled " The Effect of Exercise Using Resistance Bands on Improvement Speed Straight Punch at Paguron Persinas Asad Regency Garut " shows that exercise This give impact positive to improvement speed blow straight . Based on results analysis , the average gain score was 0.6317 , with minimum value of 0.40 and maximum of 1.00. This show existence variation improvement speed between participants , start from improvement small until almost reach mark maximum .

Based on N-Gain Score category , the average value is 0.6317 in range  $0.3 \leq g \leq 0.7$ , so including in category moderate . In addition , the average gain percentage of 63.17% indicates quite an improvement effective in a way overall , with mark percentage the lowest is 40.00% and the highest is 100.00%, which shows existence participants who experienced improvement significant . From the results said , can concluded that mark effectiveness based on the N-Gain percent test show the figure of 63.17%, which is categorized as Enough effective . The data obtained of 10 participants show that exercise using resistance bands general give influence moderate to improvement speed blow straight .

Normality Test

Criteria used For know whether it is normal or not something distribution is if  $p > 0.05$  (5%) distribution declared normal and if  $p < 0.05$  (5%) then distribution it is said abnormal . Normality test results can seen in the table under This .

**Table 3.** Normality Test Results Straight Punch

Tests of Normality				
	Group Test	Shapiro-Wilk		
		Statistics	df	Sig.
Test Results	Pretest	.916	10	.328
	Posts	.911	10	.287
a. Lilliefors Significance Correction				

Normality test results using Shapiro-Wilk shows that the pretest and posttest data in the group experiment normally distributed . Significance value (Sig.) on the pretest of .328 and on the posttest of 0. 287, both of which more big from the significance limit of 0.05. With thus , it can concluded that the data meets assumptions normality and can analyzed using statistical tests parametric .

Homogeneity Test

Criteria used For know Homogeneous whether or not something distribution is If Based on Mean value ( $p > 0.05$ ) (5%) distribution stated homogeneous and if Based on Mean value ( $p < 0.05$ ) (5%) then distribution it is said No homogeneous . Homogeneity test results can seen in the table under This .

Table 4. Results of Homogeneity Test Straight Punch

Test of Homogeneity of Variance					
		Levene Statistics	df1	df2	Sig.
Test Results	Based on Mean	.279	1	18	.604
	Based on Median	.424	1	18	.523
	Based on Median and with adjusted df	.424	1	17,978	.523
	Based on trimmed mean	.293	1	18	.595

Homogeneity test results show that mark significance based on the average ( *Based on Mean* ) is 0.604, which is more big from 0.05 ( $p > 0.05$ ) at the level significance of 5%. Therefore that , can concluded that the data used nature homogeneous , which means variance between group can considered The same .

Hypothesis Testing

Based on results from study using 10 people as sample with results pretest and posttest testing blow straight then the data obtained processed using SPSS 26, there is descriptive statistics data as follows following :

Table 5. Hypothesis Test Results Straight Punch

Paired Samples Test				
	Paired Differences	t	df	Sig. (2-



		Mean	Standard Deviation	Std. Error Mean	95% Confidence Interval of the Difference				tailed)
					Lower	Upper			
Pair 1	Pretest_Ex - Posttest_Ex	- 2,600	.699	.221	-3,100	-2,100	-11,759	9	.000

It is known that sig(2-tailed) value is  $0.000 < 0.05$ , then can concluded that there is real difference from results exercise *resistance band* on pretest and posttest data .

Discussion

martial arts is one of the branch art defense self that originates from Indonesia, which combines element physical , mental, and artistic in movements certain . One of the technique important basics in martial arts martial arts is blow straight , which is used For attack against in a way direct and efficient . Punch straight in martial arts martial arts usually done with use palm hand or part front from hands , with objective give strong and fast impact to opponent . Speed the blow really affects effectiveness attack , because quick blow will difficult avoided or blocked by the opponent . Therefore that , the increase speed blow is very important thing in exercise martial arts martial arts . Exercises that focus on improvement speed blow can help martial artist For increase reaction and accuracy in every attacks , as well as speed up response to movement opponent . With consistent practice , speed blow can improved through strengthening muscles , coordination movements and techniques the right one . For allows improvement achievement , training must be based on theories as well as principles exercise certain (Pranata et al., 2017) .

Exercises using resistance bands have potential For increase speed blow straight to the martial artists in Paguron Persinas Asad Regency Garut . Resistance bands provide resistance that can increase strength muscles and flexibility body , especially the muscles the main involved in movement blow straight . With exercises that focus on strengthening muscle arms , shoulders, and body part above , resistance bands help martial artist develop Power explosive and speed in every punches . In addition , the exercise this also increases coordination between muscles involved in technique blow , so that allows martial artist For execute blow with more fast and effective . Therefore that , integration resistance band exercises in the training program at Paguron Persinas Asad is expected can contribute significant to improvement speed blow straight , which in turn will repair performance



martial artist in match . Training is a systematic process from train or work , which is done in a way repeatedly , with increasingly day increasingly add amount burden exercise or his job (Sciences, 2016) .

Study This succeed show existence improvement significant in blow straight to the participants after follow a resistance band training program . This seen from pretest results showing the average value speed , namely 8.70, which then increase sharp to 11.30 on the posttest . Improvement speed this is 2.6 indicates that resistance band exercises effective increase ability speed blow straight . Coordination is something ability very complex biomotoric coordination . close the relationship with speed , strength , power resistance , and flexibility ( Bompa , 1990). (Surya, 2018) put forward that coordination is ability body For do movement in a way fast , accurate , and efficient . In the context of speed blow straight , speed Good hands and reactions are essential for athletes can direct blow with effective and accurate . The resistance band training program is applied in study This proven effective repair elements which has an impact on increasing skills technical participant .

Coaching sport national in Indonesia is carried out through a number of pathways , namely : 1) School ( starting from from school base until with college height ), 2) Parent organizations sports , 3) Organization sport professional , 4) Existing organizations in community . Development should done at the age of early , because performance sport can achieved If seeds athlete fostered since early , with handling in a way natural , practice continuous , gradual , and sustainable during ten year (Candrawati et al., 2018) . Findings This consistent with study previously , such as Mega Gipar Barani's study (2021) which shows that resistance band exercises have influence significant to speed stroke . In his research , the Sig. value for resistance band exercise is 0.000 ( $p < 0.05$ ), and the Sig. For non-resistance band exercises also show significant results with 0.004 ( $p < 0.05$ ). Second method exercise This own influence to speed blow , but group the experiment given treatment resistance band exercises show an average increase of 37.4%, while group control only by 9.1%. This result strengthen conclusion that more resistance band exercises effective in increase speed blow straight to the athlete martial arts martial arts category match (Rifan et al., 2023) .

Excess study This lies in the use of a resistance band training program which has been proven to be very effective in increase speed blow straight , as indicated by an increase significant scores . In addition , the method the analysis used , namely the gain test, is suitable For sample small and capable catch change significant in individuals . However , research This own a number of limitations , one of which is is size small sample (10

participants ) , so generalization results Still limited . Duration short training (14 meetings ) is also possible become constraints , because Not yet fully explore impact term long from this resistance band training program . The instrument used from Lubis, 2004 which uses test blow straight for 15 seconds and how many Lots the blow received .

In a way practical , findings study This give implications important for trainers and managers Paguron Persinas Asad Regency Garut . Resistance band exercises can entered as an integral part of the training program Because proven increase ability speed blow in a way significant . With implementing a training program This regularly , trainer can help player increase speed reaction , coordination , and skills technical others , which in the end can increase performance player in a way overall in the arena. Although Thus , research advanced with size more samples larger and longer duration long required For explore effect term long and strong generalization findings This .

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### **Conflict of interest**

The author declares that there is no interest or conflict regarding the publication of this research journal.

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TRAINING ON 60 METRES RUNNING SPEED OF MALE STUDENTS OF GRADE XI IPA OF STATE HIGH SCHOOL 1 TANJUNG BUMI Handoko Handoko SMA Negeri 1 Tanjung Bumi Bangkalan INTRODUCTION The increasingly rapid development of sports today mer. *Learning, SPORTIF Journal: Research Journal* , 4 (1, p-ISSN: 2548-7833 e-ISSN: 2477-3379).

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