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THE EFFECT OF BATTLE ROPES EXERCISE ON INCREASING POWER ENDURANCE OF PENCAK SILAT ATHLETES

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Research Background

1. **Pencak Silat competition regulations 2022, especially in the match category.**
2. **Techniques and Physical Conditions of Pencak Silat Athletes**
3. **Power endurance is defined as the ability of muscles to contract repeatedly quickly and strongly in a relatively long time (Zafar Sidik et al., 2019; 138).**
4. **Power Endurance is one of the physical components that plays an important role in executing punches**
5. **Therefore, a form of training is needed that can increase the strength, speed and endurance of the arm muscles of pencak silat athletes. Researchers took the initiative to use Battle Ropes Exercise (Slam Wave & Up Down Wave).**

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Formulation of the Problem

1. **Is there any influence between Battle Ropes Exercise on increasing Power Endurance of pencak silat athletes?**
2. **How big is the influence between Battle Ropes Exercise on increasing Power Endurance of pencak silat athletes?**

Research purposes

1. **To find out whether there is an influence between Battle Ropes Exercise on increasing Power Endurance of pencak silat athletes.**
2. **To find out how much influence there is between Battle Ropes Exercise on increasing Power Endurance of pencak silat athletes.**

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Literature review

1.Pencak Silat (Munas IPSI, 2022).

2. Technique and physical condition (Edwarnsyah, 2017).

3. Power Endurance (Zafar Sidik et al., 2019;138).

4. Battle Ropes Exercise (Wijaya et al., 2020).

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METHODS

1. Research Methods : Eksperimen
2. Research Design : One Group Pre-test Post-test Design
3. Population and sample : 15 Athlete UKM Pencak Silat UPI, Purposive Sampling
4. Research Instrument : Push- Up Clap Test 1 Minute
5. Research Procedure: Giving Battle Ropes Exercise, namely Slam Wave & Up Down Wave Battle Ropes
6. Data Analysis: SPSS Version 29: Normality Test, Homogeneity Test and Paired Sample T-test

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RESULT

1.Deskription data Pretest & Posttest

N		Minimum	Maximum	Mean	Std. Deviation
Pretest	15	18	25	21.13	2.748
Postest	15	24	30	26.67	2.093
Valid N (listwise)	15				

The data obtained in conducting the pretest and posttest, in the pretest there was a minimum value of 18, a maximum value of 25, the average pretest value of 15 athletes was 21.13, and a standard deviation of 2,748, in the posttest there was a minimum value of 24, a maximum value of 30, the average posttest value of 15 athletes was 26.67, and a standard deviation of 2,093.

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RESULT

2. Normality Test Shapiro-Wilk

Shapiro-Wilk		
Statistic	Df	Sig.
.871	15	.035
.888	15	.062

From the results of the normality test, it shows that there is a significance value that is normally distributed because the significance value of the pretest is 0.035 and the posttest is 0.062. So the next step is to use the paired sample T-test.

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RESULT

3. Homogenitas test

Levene Statistic			df1	df2	Sig.
Nilai	Based on Mean	2.741	1	28	.109

Levene's test for equality of variances Homogeneity Test was obtained based on mean at a significance value of 0.109 which means >0.05. Therefore, the values of both the initial test data and the final power endurance test are interpreted as homogeneous or come from the same variant.

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RESULT

4. Paired Sample T- test

Paired Differences							t	df	Sig. (2-tailed)
Mean			Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest - Postest	-5.533	.915	.236	-6.040	-5.026	-23.41	14	< .001

Based on the table above, the output results of the t-test, initial test and final test of the push up clap test are known to have a sig. (2-tailed) value of 0.001 <0.05, which means it is smaller than a 0.05. Strengthened by the calculated t value of -23.41 <2.131 for a sample of 15 people in the t table. Thus, Ho is rejected and Ha is accepted. So it can be concluded that there is a significant effect of battle ropes training on increasing the power endurance of pencak silat athletes.

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CONCLUSION

1. **There is a significant influence between Battle Ropes Exercise on increasing Power Endurance of Pencak Silat athletes**
2. **There is a 20% influence between Battle Ropes Exercise on increasing Power Endurance of Pencak Silat athletes**

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DISCUSSION

Training using battle ropes is very important in increasing the specific strength of the shoulder muscle group and the arm muscles, which are the muscles that receive a greater load when performing any type of stroke (Nasser & Ahmed, 2022). This can result in greater increases in arm muscles (Marín et al., 2015). The findings of this study are in line with previous studies which stated that battle ropes training is an effective exercise to increase arm muscle endurance and arm muscle strength (Wijaya et al., 2020). In addition, training using battle ropes with high intensity has a positive impact on increasing cardiorespiratory endurance (Energi et al., 2020). Cardiorespiration can also be produced by 10 minutes of battle ropes training with high intensity, resulting in high heart rate and energy expenditure (Xercises, 2015). These findings also show significant specificity of strength, speed, and endurance of athletes due to regular battle ropes training.

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