



Journal Physical Health Recreation (JPHR)

Volume 5 Nomor 4 ; September 2025

<https://jurnal.stokbinaguna.ac.id/index.php/JP>

e-ISSN : 2747- 013X

## **Pengaruh Pliometric Terhadap Peningkatan Daya Tahan Vo2max Pada Atlet UKM Kabaddi STOK Bina Guna**

### **The Effect of Plyometrics on Increasing Vo2max Endurance in UKM Kabaddi Athletes STOK Bina Guna**

Nisa Andani<sup>1</sup>, Dewita Amelia Lumban Tungkup<sup>2</sup>, Arif Bernadi Zalukhu<sup>3</sup>, Aditya Rizky Pratama<sup>4</sup>, Meria Zega<sup>5</sup>, Mechrimdo Christian Zebua<sup>6</sup>

{nisaandhani25@gmail.com<sup>1</sup>, dewitaamelialumbantungkup2@gmail.com<sup>2</sup>, arifzalukhu9412@gmail.com<sup>3</sup>, pratamaadityarizky3@gmail.com<sup>4</sup>, meriazega20@gmail.com<sup>5</sup>, zebchristian2@gmail.com<sup>6</sup>}

Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Jl. Alumunium Raya No.77, Tj. Mulia Hilir, Kec. Medan Deli, Kota Medan, Sumatera Utara<sup>1</sup> Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Jl. Alumunium Raya No.77, Tj. Mulia Hilir, Kec. Medan Deli, Kota Medan, Sumatera Utara<sup>2</sup> Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Jl. Alumunium Raya No.77, Tj. Mulia Hilir, Kec. Medan Deli, Kota Medan, Sumatera Utara<sup>3</sup> Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Jl. Alumunium Raya No.77, Tj. Mulia Hilir, Kec. Medan Deli, Kota Medan, Sumatera Utara<sup>4</sup> Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Jl. Alumunium Raya No.77, Tj. Mulia Hilir, Kec. Medan Deli, Kota Medan, Sumatera Utara<sup>5</sup> Sekolah Tinggi Olahraga dan Kesehatan Bina Guna, Jl. Alumunium Raya No.77, Tj. Mulia Hilir, Kec. Medan Deli, Kota Medan, Sumatera Utara<sup>6</sup>

**Abstract.** This research uses an expression design on STOK Bina Guna UKM kabaddi athletes with the aim of finding out how much influence 'plyometric' training has on increasing VO2Max in STOK Bina Guna Bina Guna UKM kabaddi athletes. During the research period, approximately 16 meetings were held from preset to postset. To require programmed plyometric training. The results of this study using normality, descriptive and homogeneity tests showed that there was a very significant relationship between plyometric training and increased VO2Max endurance in STOK Bina Guna Bina Guna UKM kabaddi athletes. Sampling was carried out using purposive random sampling technique. Using SPSS 16 analysis techniques with a significance level of  $\alpha=0.05$ .

**Keywords:** Endurance Improvement, Kabbaddi, Plyometry Training.

## 1 Introduction

The kabaddi sport has been a popular sport in India since 4000 years ago and was only introduced and introduced in the 2018 ASEAN Games exhibition in Indonesia, while the parent of the kabaddi sport is FOKSI (Kabaddi Sports Federation of Indonesia) with provincial members almost throughout Indonesia and this sport has been very developed in the provinces of Bali and the island of Java since 2018. An overview of this sport is that it uses a field size of 13 meters x 10 meters, using the time duration according to the federation rules of 2x20 minutes, each team consists of 12 players with only 7 people taking to the field at one time. The characteristic of this sport is that it is a physical contact game bound by rules so that the players remain in a safe condition (Pardilla, 2021).

The description of the sport of kabaddi has a basic playing technique, namely that there is a raider (attacker) who is in charge of attacking when playing. In the rules, a raider must first touch the center line of the field after that the raider can get points by touching and kicking the opponent and can return to the ball line, and the raider must go out. In the process of attacking the player must shout the phrase "kabaddi-kabaddi" which has become a federation rule and to get a point/point the raider must touch the bonus line. Meanwhile, those who are defending must be able to immediately prevent the rider from entering the area, preventing them from touching the center line of the field or pulling on parts of the rider's body or legs (Pardilla, 2019).

According to experts, the physical elements in this case include blood circulation, heart, respiration (respirator-cardiovascular endurance), explosive power, agility, muscle endurance, reaction, balance, coordination and flexibility (Budi, 2015; Hariyanta et al., 2014). In achieving plyometric achievements athletes using explosive power development is an important component (Radcliffe & Osternig, 1995). In plyometric training, sports have characteristics and characteristics, namely the strength of muscle contractions with the speed of movement reactions both physically and statically, plyometric training in principle has long and shortened muscle movements with the aim of increasing muscle nerve reactions, explosiveness, speed and the ability to change force in certain circumstances (Radcliffe & Osternig, 1995). According to (Chu, 1998) Plyometric speed and force movements are very beneficial in increasing muscle reactions.

In plyometric training, by doing it optimally and adding high intensity, you can achieve maximum results by adding repetitions and sets according to the training program. In increasing explosive power, plyometric training is the main choice for trainers to increase muscle strength and cardiovascular endurance (Edwan et al., 2017). According to Sandler (Octavianus et al., 2018) in plyometric studies, it comes from the word 'plyos' which means to increase speed and muscle reaction. The training method used is plyometric training using body weight or additional external load.

## 2 Method

This research is included in the experimental research category. (Sugiyono, 2006) stated that this research is the result of the influence of treatment with conditions that can be controlled. In general, an overview of experimental research regarding the research variables that will be treated or implemented. In experimental research, we have an idea of whether there is an effect of providing treatment on the variables studied. This research aims to see how much influence the plyometric training treatment of UKM kabaddi athletes has on increasing lung capacity and heart VO2Max. in this research there are dependent and independent variables. In this research, the type of data that has been obtained is quantitative data, both pre-test and post-test, and was

obtained through the VO2Max measurement instrument by carrying out a practical bleep test on a sample of 15 STOK Bina Guna kabaddi UKM athletes, by running back and forth (bleep test) using an audio bleep test tool which has become the measurement standard. This research was carried out at the STOK Bina Guna Campus.

Berikut ini merupakan gambaran desain penelitian.

Pretest	Treatment	Posttest
O1	X	O2

Information :

O1: Initial Test

X : Treatment/Targeted Training Method

O2 : Final Test

### 3 Result

The results of the descriptive analysis with the calculations listed in the attachment can be depicted in the following table: Table 1. Results of descriptive data analysis of plyometric training for groups A and B of STOK Bina Guna UKM kabaddi athletes.

Exercise	Descriptive	Initial Test	Final Test
Exercise Plyometrics (Group A)	N	15	15
	Sum	344,20	619,00
	Mean	29,6122	40,5222
	Std. Deviasi	1,71271	1,02321
	Range	5,20	3,00
	Min	27,90	38,60
	Max	32,30	42,30
Exercise Plyometrics (Group B)	N	15	15
	Sum	432,40	565,50
	Mean	29,4788	36,9778
	Std. Deviasi	1,68223	1,45826
	Range	5,10	4,40
	Min	27,30	34,30
	Max	32,30	39,70

Descriptive results of the normality test for the plyometric training group of UKM kabaddi STOK Bina Guna athletes are presented in the form of table 2.

Normality test results

Group	Kolmogoro Smirnov		a	Info
	Statistics	P		
Exercise Plyometrics (Group A)	0,184	0,185	0,05	Normal

Exercise Plyometrics (Group B)	0,161	0,200	0,05	Normal
--------------------------------	-------	-------	------	--------

Descriptive summary results of homogeneity test data on plyometric training variables for UKM kabaddi STOK Bina Guna athletes are presented in the form of table 3.

Homogeneity test results.

Increase in VO2 Max in South STOK Bina Guna kabaddi athletes	Levene Statistics	Df 1	Df 2	Sig
<i>Pretest plyometric training groups A and B</i>	0,017	1	28	0,898

From Table 3 you can see the pretest and posttest scores of UKM kabaddi athletes STOK Bina Guna sig.  $p > 0.05$ , meaning the data is homogeneous. Descriptive summary results of hypothesis processing for STOK Bina Guna UKM kabaddi athletes in Table 4.

Hypothesis 1.

Hipotesis	Mean	tobs	ttab	P	Info
<i>Pretest</i>	29,613 3	-21,388	2,145	0,0 00	Sig
<i>Posttest</i>	40,533 3				

Hypothesis 2.

Hipotesis	Mean	t <sub>observasi</sub>	t <sub>tabel</sub>	P	$\alpha$	Info
<i>Pretest</i>	29,4933	- 12,132	2,145	0,000	0,05	Signifi kan
<i>Posttest</i>	36,9667					

## 4 Discussion

In the first hypothesis, it was concluded that there was a significant influence on groups A and B on increasing the VO2 Max endurance of STOK Bina Guna UKM kabaddi athletes with an observation value of - 21.388 which was greater than the t table value of 2.145 ( $- 21.388 > 2.145$ ) with a significance level of  $0.000 < \alpha 0.05$ . So H0 is rejected and H1 is accepted. And it can be concluded that there is a difference between the initial test and the final test. Thus, the researchers concluded that there was a significant influence between plyometric training on increasing the VO2Max endurance of UKM kabaddi athletes STOK Bina Guna. In the second hypothesis it could be concluded that there was a significant influence between group A and group B on increasing the VO2Max endurance of UKM kabaddi athletes STOK Bina Guna. The tobervation value obtained is -12.132 which is greater than the ttable value of 2.145 ( $-12.132$

> 2.145) with a significant value of  $0.000 < \alpha 0.05$ . Thus  $H_0$  is rejected and  $H_1$  is accepted. In this sense there is an influence between the initial test and the final test. Thus, it can be concluded that there is a significant difference between groups A and B in increasing the Vo2Max endurance of STOK Bina Guna UKM kabaddi athletes.

## 5 Conclusion

Based on research and analysis of the data obtained, the following conclusions are obtained: a. there is an effect of group A plyometric training on increasing the Vo2Max endurance of UKM kabaddi athletes STOK Bina Guna, b. There is an effect of group B plyometric training on increasing the VO2Max endurance of STOK Bina Guna UKM kabaddi athletes. Research provides a B effect on increasing the VO2Max endurance of UKM kabaddi Athletes STOK Bina Guna. The research provides suggestions so that in the future this research can be carried out more optimally by using more scientific references.

## References

- Agung, I. G. L., Hariyanta, I. W. D., Parwata, & Wahyuni, N. P. D. S. (2019). *Pengaruh Circuit Training Terhadap Kekuatan Otot Tungkai Dan VO2 Max*. Journal IKOR Universitas Pendidikan Ganesha Jurusan Ilmu Keolahragaan, 1, 1–10.
- Bakhtiar, S., Oktavianus, I., & Bafirman, B. (2018). *Bentuk Latihan Pliometrik, Latihan Beban Konvensional Memberikan Pengaruh terhadap Kemampuan Three Point Shoot Bolabasket*. Performa, 3(01), 21.
- Budi, M. F. S. (2020). *Circuit Training Dengan Rasio 1: 1 dan Rasio 1: 2 Terhadap Peningkatan VO2 MAX*. Journal of Sport Science and Fitness, 4(3).
- Chu, D. A. (1998). *Jumping into plyometrics*. Human Kinetics.
- Osternig, L. R. & Radcliffe, J. C., (2022). *Effects on Performance of Variable Eccentric Loads during Depth Jumps*. *Journal of Sport Rehabilitation*, 4(1), 31–41. <https://doi.org/10.1123/jsr.4.1.31>
- Pardilla, H. (2021). Physical Fitness and Learning Achievement Academic in Children Aged 10-12 years. *INSPIREE: Indonesian Sport Innovation Review*, 2(2), 165-of.
- Pardilla, H., Hanif, A. S., Humaid, H., Dlis, F., Henjilito, R., & Jufrianis, M. (2019). Effect of Motor Ability and Self-Confidence on Triple Jump Skills in Youth Aged 18–20: Path Analysis Study Among Students at University College. *Physical Education Theory and Methodology*, 19(2), 69-75.
- Sugiyono, D. R. (2016). *Statistika untuk penelitian*. Bandung: CV. Alfabeta.
- Sugiyono. (2018). *Metode-metode Penelitian*. Alfabeta.
- Sutisyana Edwan, E., A., & Ilahi, B. R. (2017). *Pengaruh Metode Latihan Plyometric Terhadap Kemampuan Jumping Smash Bola Voli Siswa Ekstrakurikuler SMPN 1 Bermani Ilir Kabupaten Kepahiang*. *KINESTETIK*, 1(1). <https://doi.org/10.33369/jk.v1i1.3380>.