Kinestetik : Jurnal Ilmiah Pendidikan Jasmani 7 (3) (2023)
Kinestetik : Jurnal Ilmiah Pendidikan Jasmani
https://ejournal.unib.ac.id/index.php/kinestetik/index
DOI : 10.33369/jk.v7i3.29104

The Effect of Resistance Band Exercise Variations on Dollyo Chagi Kick Results Taekwondo Club Global Taekwondo Academy

I Bagus Endrawan[1*], Martinus[2], Ahmad Yani[3], Adi S[4], Hilmy Aliriad[5]
[1] Physical Education, Postgraduate, Universitas Bina Darma, Palembang, Indonesia
[2]Sports Education Study Program, Faculty of Social Humanities, Universitas Bina Darma, Palembang, Indonesia.
[3]Universitas Islam Riau, Riau, Indonesia
[4]Universitas Negeri Semarang, Semarang, Indonesia
[5]Universitas Nahdlatul Ulama Sunan Giri, Bojonegoro, Indonesia

Article Info

Article History :

Received : July 2023

Revised : September 2023

Accepted : September 2023

Keywords:

Dollyo Chagi,
Exercise Variations,
Resistance Bands,
Taekwondo Kick,

Abstract

This study aims to determine the effect of resistance band variations on the results of Global Taekwondo Academy taekwondo dollyo chagi kicks. This type of research is experimental, with data collection techniques using documentation and tests. Taekwondo kick speed test using Measurement Foundation Skill Taekwondo The test is carried out by kicking as fast as possible within 10 seconds. The research subjects were five athletes from the Global Taekwondo Academy. Data analysis technique using the t-test From the results of data analysis, it was obtained that the average value of Resistance Band exercises was tcount = 8.850 > ttable = 1.729 and at a significant level of 5%. These results can be interpreted as indicating that there is an effect of resistance band variations on the results of the Global Taekwondo Academy dollyo chagi kick. The conclusion of this study is that there is an influence of resistance band variations on the results of dollyo chagi taekwondo kicks at Global Taekwondo Academy.

*Corresponding
email: bagus.endrawan@binadarma.ac.id

ISSN 2685-6514 (Online)
ISSN 2477-331X (Print)

INTRODUCTION

Sports can be defined as human body movements that involve certain techniques, elements of the game, feelings of pleasure, carried out in leisure time, and have their own satisfaction (Aliriad, 2021; Rachman, 2020). Sport is an activity or series of exercises that are carried out systematically, regularly, planned, and continuously to achieve certain goals, especially maintaining health (Ahmed et al., 2021; Robinson, 2023).

One of the interesting types of sports is Taekwondo. Taekwondo is a modern martial art derived from the Korean tradition, highlighting the use of barefoot and hand techniques (Kim & Nam, 2021; Norjali Wazir et al., 2019). The main concept of Taekwondo is the combination of strength and ability, as expressed by (Son et al., 2020)in Korean, "Tae" means "kicking or crushing with feet," "Kwon" means "clenching hands," and "Do" means "walk" or "work. Thus, Taekwondo can be translated as" hand and foot craftsmanship, "" walking around, "or"foot and fist method". Kick technique in Taekwondo is an attempt to use the foot to defend or attack, contributing to the acquisition of value in the match (da Silva Santos et al., 2016; Korkutata, 2016). One of the basic techniques that must be mastered by Taekwondoin is the basic kick of Dollyo Chagi technique, which is a kick towards the front using footwear and soles. The basics of Taekwondo are formed from the combination of various techniques of attacking and defensive movements by using various parts of our body to deal with opponents (Ju-sik, 2019; Khayyat et al., 2020; Zeng et al., 2015).

The Global Taekwondo Academy in Palembang is one of the most active Taekwondo clubs with more than one year of existence. Although athletes who train have potential, specific exercises are needed for maximum results. Through observation, it can be seen that the results of dolly kick, one of the kicks that are often used, are not optimal. Therefore, intensive training is needed, especially in the power training element, to improve the results of athletes when competing (Endrawan et al., 2023; Kern & Armstrong, 2022). The use of medium-sized resistance bands is a very helpful method in various exercises to improve athlete performance, especially leg strength (Iversen et al., 2017, 2018). This study highlights the importance of strength training with a technical approach using attacking and counter kicks. Thus, it can be expected that the implementation of this exercise will make a significant contribution to the improvement of the strength of the legs of Taekwondo athletes at the Global Taekwondo Academy in Palembang. Although the Dollyo Chagi kick is considered a basic technique that must be mastered by Taekwondoin, there is a void in the understanding of how variations of the exercise using resistance bands can improve the results of this kick. Previous studies may not have specifically revealed the optimal potential of this training method. Therefore, this study will attempt to fill this gap by examining the direct impact of resistance band exercise variations on Dollyo Chagi's kicking ability.

The literature review will cover recent trends in the use of resistance bands in sports practice, focusing on their applications and benefits in improving kick strength and technique (Smith et al., 2017). The study will also consider the latest developments in the world of Taekwondo, both in terms of training methods and technologies that

can improve the effectiveness of training.

The main purpose of this study was to assess the effect of exercise variations using resistance bands on the results of Dollyo Chagi kicks by athletes at the Taekwondo Club Global Taekwondo Academy. This study will explain in detail whether exercises with resistance bands can provide significant improvements in the strength, accuracy, and technique of such kicks. By understanding the positive impact that might be produced, this study also aims to provide practical guidance for the development of training programs that are more effective in improving athletes ' kick ability.

METHODS

The research method used in this study is experimental. According to (Sugiyono, 2015), experimental research methods can be interpreted as research methods used to look for the effect of certain treatments on others under controlled conditions.

The research design used in this study is the one-group pretest-posttest design. Where pretest is a test before being given treatment and posttest is a test after being given treatment. This design can be described as follows: O1 X O2 Description:

O1 X O2

Figure 1. Research Design :

O1 X O2: Initial test or initial observation (pretest): Treatment in the form of training using a rubber resistance device: Final test or final observation (posttest). B. Operational Definition of Research Variables According to Sugiyono (2014:3), a variable is an attribute, trait, or value of a person, object, or activity that has certain variations determined by the researcher to be studied and then withdrawn. There are two kinds of variables in the study, namely independent variables and dependent variables. 1) Independent variables are variables that affect other variables. The independent variable in this study is training with rubber resistance. 2) The dependent variable is a variable that is influenced by other variables. The dependent variable in this study is dollyo chagi kick speed in taekwondo. The operational definitions of each variable in this study are: 1) Exercise with rubber resistance is a form of training using rubber tied to the legs. This exercise aims to increase power because of the rubber load that students use. In addition to the increase in kicking, there was also an increase in the movement of the students' feet from the starting position, then kicking and returning to the starting position. 1) Dollyo Chagi Dollyo is one of the kicks taught in taekwondo martial arts. This kick is interpreted as a circular kick to the front with the direction of the stomach targeting, or it can also be aimed at the head. The technique used in dollyo kicks is to utilize waist rotation so that it can produce more kicking power.

Participants

The research subjects were five junior athletes at the Global Taekwondo Academy club. While the object of research is the effect of resistance band training on the power and speed of Dollyo Chagi's kicks,

Table 1. Names of athletes

No	Names of Athletes	Age
1.	N A D	15 years
2.	E F	15 years
3.	A Z	14 years
4.	V M K	16 years
5.	Z K	16 years

Procedures

Data collection techniques used in research include tests and measurements. A test is an instrument used to obtain some information about individuals or objects. Instruments can be in the form of questions written on paper or in the form of interviews, observations about physical or requested work, or observations about behavior through check-lists or anecdotal notes. This training activity is carried out four times a week, in as many as 16 meetings.

Design or Data Analysis

The data collected is the result of the final test of the exercise method with resistance bands on leg muscle power using the Margaria Kalamen test. The T-test was utilized in the data analysis method, which involved comparing the average value of the post-test findings for the experimental group and the control group. Check the data for normality and homogeneity before testing the hypothesis. Chi-Square normality test and F-test homogeneity test To determine whether the data's results are regularly distributed or homogeneous, normality and homogeneity tests are run. The data were computed using SPSS version 23 for Windows, with a significance threshold of 5% for the choice to accept or reject the hypothesis.

RESULT

To ascertain the impact of different resistance band training regimens on the dollyo chagi kick speed of Global Taekwondo Academy athletes, hypothesis testing was done using paired t-tests. The calculations' outcomes lead to a value of 7.55, which is the result. Additionally, when this value is compared to the value with dk = n-1 (10-1 = 9) at the significant level = 0.05 = 1.833, it is determined that tcount > ttable (7.55 > 1.83), rejecting Ho and accepting Ha.

Thus, it can be stated that resistance band training variants have an impact on the speed and power of club athletes from the Global Taekwondo Academy. The second hypothesis test was conducted to gauge the degree to which differences in resistance band workouts would have on

The dollyo chagi kick speed test, which was attended by five young athletes at the Club Global Taekwondo Academy, yielded the data used to describe the research data that will be presented. Between December 2022 and January 2023, this study was carried out. Five trials were used to administer the pretest and posttest, with the final score representing the best outcome of those trials.

Table 2. Result Pretest and Posttest

No	Names of Athletes	Pretest	Posttest
1.	NAD	17	18
2.	EF	13	15
3.	AZ	11	12
4.	VMK	17	19
5.	ZK	17	18
Amount		75	82
Maximum Score		17	19
Minimum Score		11	12
Average		15,0	16,4

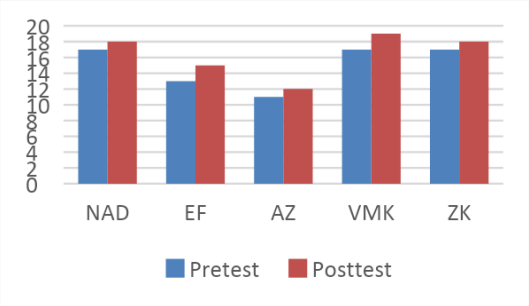

Fig 1. Graphic Result Pretest and Posttest

The results of the Dollyo Chagi Kick Speedtest have an average pretest score of 15, a maximum score of 17, and a minimum score of 11. This is inferred from the table above. The average pretest score for the measuring results of the Dollyo Chagi kick speed test was 16.4, with a maximum score of 19 and a minimum score of 12.

Table 3. frequency distribution of dollyo chagi kick speed categories

No	Score Test	FI	Percentage
1.	>24	-	-
2.	19-23	1	20%
3.	16-18	2	40%
4.	13-15	2	40%
5.	<12	-	-
	Amount	5	100%

See the Dollyo Chagi Kicks histogram below for further information.

1. Testing the requirements for data analysis

One of the crucial steps in a study is data processing, which gives the collected data significance and enables inferences to be made about the subject matter. The Dollyo Chagi Kick endurance test results are raw scores in the form of units of numbers that need to be processed and statistically analyzed in order to have any meaning. The following are the outcomes of the data processing:

Table 4. Description of Dollyo Chagi Kick Endurance Stats

Statistic	Pretest	Posttest
N	20	20
Mean	15,50	16,80
SD	2,666	2,821
Minimum	10	11
Maximum	20	22

According to the calculations shown in the table above, the pretest mean value (mean) was 15.50; the standard deviation was 2.666; the smallest value was 10, and the maximum was 20. The posttest results showed that the minimum value was 11 and the maximum value was 22, with an average value (mean) of 16.80 and a standard deviation of 2.821.

1. Data normality test

The information being examined is evaluated using this regularity test to determine whether or not it is typically distributed. The Lilliefors test is combined with the variable regularity test because the participant is under 50 and the data is one-sided. Since then, the results of the Dollyo Chagi kick persistence test taken before and after treatment (pretest) have been used to establish the fairness test, as shown below:

Table 5. Lilliefors Normality Test Data

Variable	Kolmogorov-Smirnovα			
	Lhit	Ltab	Df	Sig.
Pretest	0,174	0,190	20	0,113
Posttest	0,165	0,190	20	0,159
Information	Normal			

It can be seen from the table above the Lilliefors normality test data that L table (Lt) with α = 95% and N = 20 is 0.190. The data obtained from the dollyo chagi kick endurance pretest before being given treatment and the posttest dollyo chagi kick endurance after being given treatment to Global Taekwondo Academy taekwondo athletes in the table above are: Lo pretest = 0.174, and Lo posttest = 0.165.

Based on these data, it can be concluded that the distribution of pretest and posttest results for Dollyo Chagi's kick endurance is normal, with the results of the pretest $t_{count} = 0.174 < t_{table} = 0.190$ and the posttest results $t_{count} = 0.165 > t_{table} = 0.190$.

2. Homogeneity Test

Because the data from the pretest and posttest were both normally distributed, the homogeneity test was conducted. This test compared the

outcomes of the pretest and posttest of dollyo chagi kick endurance in the junior taekwondo club athletes of the Global Taekwondo Academy in order to determine the same results from the variance data. Based on the aforementioned findings, this test is used to gather information on the homogeneity of the two research findings in order to determine their significance in the following analysis. Data from the following table can be used to calculate homogeneity:

Table 6. Data Homogeneity Calculation Results

Levene Statistic	df1	df2	Sig.
0,544	3	10	0,663

The level of magnitude used is 5%, or 0.05. From the results above, it is realized that it is critical at 0.663. Since the importance is 0.663 > 0.05, one tends to reason that the changes are similar. Levene's measurements show that the simpler the value, the more important its homogeneity. In this way, all the information becomes homogeneous, so checking the information can be done by parametric measurements.

3. Hypothesis Test

Hypothesis testing used the t-test to find the effect of training using resistance bands on dollyo chagi kick endurance in Global Taekwondo Academy junior taekwondo club athletes. With a significant level of 5% or 0.05. The results of the t test are summarized in the following table:

Table 7. Kick Endurance T-Test Dollyo Chagi

Paired Differences	Pretest Posttest
Mean	-1,300
Std. Devation	0,657
thitung	-8,850
ttabel	1,729
Df	19
Sign.(2-tailed)	0,000

Ha: The effect of training using resistance bands on dollyo chagi kick resistance in junior taekwondo club athletes at Global Taekwondo Academy

Ho :There is no effect of training with resistance bands on dollyo chagi kick resistance in junior taekwondo club athletes at Global Taekwondo Academy.

Judging from the estimated speculation of the dollyo chagi kick persistence for the Global Taekwondo Academy junior taekwondo athlete, As shown in table 4.5 above, it can be seen that the critical value is 0.000 < 0.005, or t_{count} = 8.850 > t_{table} = 1.729. Therefore, Ho, who stated that "There was no effect of preparing to use opposing bands on the persistence of dollyo chagi kicks in taekwondo club athletes at the Global Taekwondo Academy," was rejected, as was Ha, who stated that "There was an effect of using barrier group activities on the persistence of dollyo chagi kicks in taekwondo junior club competitions. Global Taekwondo Academy".

DISCUSSION

The premise of the results obtained is to describe the impact on athletes after preparing to use opposing bands and before preparing to use barrier bands. Based on speculation testing using the t-test for related examples, it appears that tcount is more important than ttable ($t_{count}t > t_{table}$), namely t_{count} = 8,850 > t_{table} = 1.729 with a critical degree of 0.05 or 5%, so it is very reasonable that speculation is acknowledged. That is, preparation by using opposing groups can build dollyo chagi kick persistence in Global Taekwondo Academy junior taekwondo club athletes.

The standard incentive to pretest information is at 15: 50, while the incentive to posttest information is at 16: 80, during the pretest session. These

findings indicate that after undergoing training with a preparatory approach using an opponent's band, persistence in the application of dollyo chagi kicks by taekwondo Club athletes at the Global Taekwondo Academy generally increased by 6.5% of the pretest value.

This increase can be explained by the use of barrier bands that are flexible and can revert to a unique size, giving the athlete additional weight when kicking to the target (Labat & Hey, 2017). When the athlete kicks with the foot tied to the opponent's band, this provides significant resistance (Daryanti Saragih et al., 2022). When getting this treatment, the athlete executes the kick, as in the pretest when the kick starts from the back then directed to the goal, and the leg after kicking down to the front before re-raised to kick. At this point, the athlete counteracts the resistance of the opponent's flexible band, allowing them to kick faster.

Variation in training is intended to prevent burnout in coaching it serves to encourage the development and motivation of athletes practicing at a high level, coaches must be creative and skilled in finding and applying variations of exercise (Daharis & Rahmadani, 2018; Pranopik, 2017; Siregar et al., 2021).Training becomes the key to achieving optimal kick results if the athlete has good explosive strength. An athlete's progress aligns with how seriously they approach training. By varying exercises using resistance bands, athletes can strengthen their legs more effectively, which in turn can improve the quality of kicks (Hadi & Habibi, 2018; Mariyono et al., 2017; Winarno, 2019). These results suggest that innovative approaches in training, particularly with the use of resistance bands, can contribute positively to the advancement of taekwondo athletes ' technique and persistence at the Global Taekwondo Academy.

CONCLUSION

The use of resistance bands in taekwondo training with a preparatory approach using opposing bands at the Global Taekwondo Academy has proven its success with an increase in the persistence of athletes by 6.5% from the pretest. It was found that the flexibility of the barrier band provides significant resistance, allowing the development of explosive force and improved kick quality. Suggestions for future research could be to research the use of resistance bands with an exercise focus and add other exercise elements to maintain the athlete's motivation and development.

REFERENCES

Ahmed, K. R., Uddin, R., Kolbe-Alexander, T. L., & Khan, A. (2021). The effectiveness of physical activity interventions in Asian children and adolescents: a systematic review. Public Health, 194, 48–59. https://doi.org/https://doi.org/10.1016/j.puhe.2021.02.011

Aliriad, H. (2021). Dampak Olahraga Rekreasi Di Akhir Pekan Terhadap Mahasiswa Universitas Nahdlatul Ulama Sunan Giri BOJONEGORO. JEC (Journal of Education and Counseling), 3(1), 30–39.

Da Silva Santos, J. F., Takito, M. Y., Artioli, G. G., & Franchini, E. (2016). Weight loss practices in Taekwondo athletes of different competitive levels. Journal of Exercise Rehabilitation, 12(3), 202.

Daharis, D., & Rahmadani, A. (2018). Peningkatan keterampilan bermain bola basket melalui metode latihan variasi pada pembelajaran pendidikan jasmani siswa sma negeri 10 pekanbaru. Gladi: Jurnal Ilmu Keolahragaan, 9(2), 77–85.

Daryanti Saragih, I., Yang, Y., Saragih, I.

S., Batubara, S. O., & Lin, C. (2022). Effects of resistance bands exercise for frail older adults: a systematic review and meta-analysis of randomized controlled studies. Journal of Clinical Nursing, 31(1–2), 43–61.

Endrawan, I. B., Aliriad, H., Apriyanto, R., Da'i, M., Cahyani, O. D., Santoso, S., & Muryadi, A. D. (2023). The Relationship Between Sports And Mental Health: Literature Analysis And Empirical Study. Health Education and Health Promotion, 11(2), 1001–1011.

Hadi, A. P., & Habibi, A. I. (2018). Pengembangan video pembelajaran bulutangkis teknik dasar langkah kaki. Jurnal SPORTIF: Jurnal Penelitian Pembelajaran, 4(2), 171–189.

Iversen, V. M., Mork, P. J., Vasseljen, O., Bergquist, R., & Fimland, M. S. (2017). Multiple-joint exercises using elastic resistance bands vs. conventional resistance-training equipment: A cross-over study. European Journal of Sport Science, 17(8), 973–982.

Iversen, V. M., Vasseljen, O., Mork, P. J., Gismervik, S., Bertheussen, G. F., Salvesen, Ø., & Fimland, M. S. (2018). Resistance band training or general exercise in multidisciplinary rehabilitation of low back pain? A randomized trial. Scandinavian Journal of Medicine & Science in Sports, 28(9), 2074–2083.

Ju-sik, P. (2019). The effect of functional training on the physical strength factor of elite Taekwondo athletes. Kinesiology, 4(1), 1–7.

Kern, M. L., & Armstrong, P. B. T.-R. M. in N. and B. P. (2022). Exercise, physical activity, and mental health. Elsevier. https://doi.org/https://doi.org/10.1016/B978-0-323-91497-0.00237-X

Khayyat, H. N., Sağır, S. G., Hataş, Ö., Smolarczyk, M., & Akalan, C. (2020). Physical, physiological and psychological profiles of elite Turkish taekwondo athletes. Biomedical Human Kinetics, 12(1), 187–196.

Kim, J.-W., & Nam, S.-S. (2021). Physical characteristics and physical fitness profiles of Korean Taekwondo Athletes: A systematic review. International Journal of Environmental Research and Public Health, 18(18), 9624.

Korkutata, A. (2016). Participation motivation in sport: A study on taekwondo athletes. Turkish Journal of Sport and Exercise, 18(3), 47–55.

Labat, G., & Hey, W. (2017). Can an elastic band resistance training program increase muscular strength. Kentucky Association of Health, Physical Education, Recreation and Dance Journal, 55(1), 33–38.

Mariyono, M., Rahayu, S., & Rustiana, E. R. (2017). Metode Latihan Kelincahan dan Fleksibilitas Pergelangan Kaki terhadap Keterampilan Menggiring Bola. Journal of Physical Education and Sports, 6(1), 66–71.

Norjali Wazir, M. R. W., Van Hiel, M., Mostaert, M., Deconinck, F. J. A., Pion, J., & Lenoir, M. (2019). Identification of elite performance characteristics in a small sample of taekwondo athletes. PloS One, 14(5), e0217358.

Pranopik, M. R. (2017). Pengembangan Variasi Latihan Smash Bola Voli. Jurnal Prestasi, 1(1).

Rachman, A. (2020). Olahraga Rekreasi Di Perguruan Tinggi. Olahraga Rekreasi Di Perguruan Tinggi.

Robinson, T. W. (2023). Physical activity and sports medicine (B. B. T.-E. of C. and A. H. (First E. Halpern-Felsher (ed.); pp. 420–434). Academic Press.

https://doi.org/https://doi.org/10.1016/B978-0-12-818872-9.00052-2

Siregar, F. S., Sembiring, M. M., & Siregar, A. (2021). Analisis Perbedaan Kontribusi Variasi Latihan Passing Bola Voli. Jurnal Olahraga Dan Kesehatan Indonesia (JOKI), 1(2), 102–108.

Smith, M. F., Ellmore, M., Middleton, G., Murgatroyd, P. M., & Gee, T. I. (2017). Effects of resistance band exercise on vascular activity and fitness in older adults. International Journal of Sports Medicine, 38(03), 184–192.

Son, B., Cho, Y. J., Jeong, H. S., & Lee, S. Y. (2020). Injuries in Korean elite taekwondo athletes: A prospective study. International Journal of Environmental Research and Public Health, 17(14), 5143.

Sugiyono. (2015). Metode Penelitian Kuantitatif, Kualitatif dan R&D (p. 64). Alfabeta.

Sugiyono. (2019). Metode Penelitian Kuantitatif Kualitatif dan R & D (Cetakan pe). ALFABETA.

Winarno, W. (2019). Upaya Meningkatkan Kecepatan Kaki Melalui Metode Shadow Badminton Dalam Permainan Bulu Tangkis. Jp. Jok (Jurnal Pendidikan Jasmani, Olahraga Dan Kesehatan), 2(2), 36–47.

Zeng, H. Z., Cynarski, W. J., Baatz, S., & Park, S. J. (2015). Exploring Motivations of Taekwondo Athletes/Students in New York City. World Journal of Education, 5(5), 51–63.