



Analysis of the Use of Push Up Board Aids as an Alternative Exercise for Biceps and Triceps Brachii Muscles in the Kediri Regency Karate Sports Branch

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Abstract

In the sport of karate there are punching movements that center on muscle strength in athletes. To get the maximum blow, proper training is needed on the muscles, the imposition of muscles for this blow movement on the biceps and triceps brachii muscles. There are innovative tools that can be used for alternative training for karateka athletes, namely the push up board tool that has been developed according to the needs of karate athletes. This research was conducted with the aim of knowing the attractiveness, safety and feasibility of push up board aids to help karate athletes train the biceps and triceps brachii muscles as an alternative to karate athletes' punch training. This research uses descriptive Quantitative research methods. The data collection technique used in this quantitative research is by direct observation and distributing questionnaires. The results obtained in this study are a percentage of 51.4% based on trials on respondents and declared "Worthy".

Keywords: Karate sport; Biceps and Triceps Brachii muscles; Push Up Board

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Artikel Info:

Submitted: 04/01/2024

Revised: 08/02/2024

Accepted: 13/04/2024

Published: 13/05/2024

How to Cite: Arismanda, I, V, P., Pratama, B, A., Muharram, N, A., Herpandika, R, P. (2024). Analysis of the Use of Push Up Board Aids as an Alternative Exercise for Biceps and Triceps Brachii Muscles in the Kediri Regency Karate Sports Branch. *Journal Coaching Education Sports*, 5(1), 177-186. [https://doi.org/10.31599/jces.5\(1\).43767](https://doi.org/10.31599/jces.5(1).43767)

Author's Contribution: a – Study Design; b – Data Collection; c – Statistical Analysis; d – Manuscript Preparation; e – Funds Collection



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A. Introduction

Playing sports is not just a game that is practiced by many people. This shows that sport is not only considered a game, but also an activity that builds human relationships and friendships across the world community (Muharram et al., 2023). Even further, sport has developed into a field of science that impacts a country's economy through the sports industry, tourism, education, health, culture, entertainment, information technology, and so on. Thus, it opens up job opportunities for the global community (Muharram & Putra, 2019). Sport is physical fitness that is closely related to physical activity. Every human being has different physical activities, automatically their body fitness varies. The more physical activity you do, the higher your physical fitness level will be (Safaringga & Herpandika, 2018). The better the basic technical skills done every day, the better the technique. To achieve good physical fitness, it is necessary to carry out activities to improve physical fitness, for example by doing routine and planned physical activities (M. Yoga Dwi Risaldi dkk., 2023).

A balance is needed between public interest in exercising and the availability of adequate sports facilities. The existence of sports facilities, both in the form of facilities and infrastructure, is the main

factor that encourages increased public interest in engaging in sports activities (Muharram, 2020). Media is a tool used to improve and facilitate performance, and the demands of technological development encourage the need for development. Innovation is always applied to the media to achieve better quality.

Development in the field of research aims to test existing products, improve existing products, and find new and original products that are more effective (Muharram et al., 2023). Development is basically an educational endeavor, both in formal and non-formal forms, which is carried out with full awareness, planning, direction, order, and responsibility (Winarno, 2018).

The aim is to introduce, foster, guide, and develop the foundations of a balanced, whole, and harmonious personality, as well as knowledge and skills in accordance with individual talents, desires, and abilities. This becomes the capital for self-initiative to add, improve, and develop oneself towards achieving optimal human dignity, quality, and ability, and achieving personal independence (Sugiyono, 2018).

Karate is a martial arts sport where the form of movement activity uses the feet and hands such as punches, parries and kicks. Karate was created by ancient masters to defend themselves, not to attack. Karate was brought to Indonesia by students. In

every karate match the technique most often used is the punching technique. This is because attacks using punches are more likely to get points / scores than using other techniques (kicks). Gyaku tsuki chudan and kizame tsuki punches are the dominant punches performed by a karate athlete in a committee among other punches such as Oi-Tsuki Chudan, Oi-Tsuki Jodan and Uraken. It takes stages and an intensive training process with various kinds of training variations to help master the movement skills of gyaku tsuki and kizame tsuki punches well (Hudain & Ishak, 2020).

Based on the observations of researchers, when karateka athletes perform punches, this condition will affect the motion of the muscles in the arm, namely the biceps and triceps brachii muscles. The biceps muscle is a muscle located in the upper arm of the front. While the triceps brachii muscle is a muscle located in the upper arm of the back. The biceps brachii is located at the front of the upper arm and functions for arm flexion, while the triceps brachii is located at the back of the upper arm and functions for arm extension. In karate, these muscles are important for performing various movements such as punches and kicks, as well as helping to strengthen attacks and defenses. The biceps brachii is a muscle located at the front of the upper arm, extending from the shoulder to

the elbow. It has two heads, a long head and a short head, which work together to perform movements such as arm flexion. In the context of karate, the biceps brachii plays an important role in the execution of punches and movements that require the use of forearm strength. When a karateka performs strikes with the forearm, such as straight punches (choku-zuki) or circular punches (mawashi-zuki), the biceps brachii contracts to generate adequate power. Training and developing the biceps brachii can increase the power and speed of punches, which are vital aspects in karate. The triceps brachii is a muscle located at the back of the upper arm, extending from the elbow to the shoulder. The muscle has three heads: the long head, the lateral head and the medial head. The triceps brachii plays a role in arm extension movements, such as kicking or stopping an opponent's punch. In the context of karate, the triceps brachii helps to strengthen and optimize blocking (uke) and kicking (geri) movements. When a karateka performs a blockade movement with the back arm or a powerful kick, the triceps brachii work intensively to provide the necessary stability and strength. Training that focuses on developing the triceps brachii will help improve the effectiveness and safety of performing these movements. In the execution of karate techniques, coordination between the

biceps brachii and triceps brachii muscles is essential. For example, during a kick, the karateka uses the strength of the triceps brachii to generate speed and intensity in the kick, while the biceps brachii helps maintain balance and stability during the movement. Therefore, the incorporation of strength and coordination between these upper arm muscles is key to producing powerful and precise karate movements.

The engagement of the biceps and triceps brachii muscles during the punching movement requires special training to maximize the movement. However, from a survey conducted by researchers, several karateka coaches in Kediri District do not understand the biceps and triceps brachii muscle contact when the punch is performed. If there is no proper training on the impact of the biceps and triceps brachii muscles, it can result in injuries that are dangerous for athletes. This danger does not only refer to injuries in the arm but can result in injuries in other parts of the body. Exercises that can be done to maximize the punching movements performed by karate athletes are by doing push up exercises, therefore the existence of this push up board tool to help karate athletes in order to maximize the right push up exercises to train punches. The importance of hand position when doing push-ups is very necessary. This position determines the

strength to withstand the load both from the body itself and from additional loads. Donkers, An, Chao, & Morrey in Irawan & Sandiyudha (2018) reveal that the peak force exerted on the elbow joint along the forearm axis averages 45% of body weight for normal hand position. This tool is a push up board with a position that can directly train the strength of the biceps and triceps brachii muscles. There are several training positions that athletes can do to achieve biceps and triceps brachii muscle strength. Push ups are a basic movement that targets the pectoralis major, bicep brachii and tricep brachii muscles, as well as the scapular muscles which act as stabilizers (Irawan & Sandiyudha, 2018).

In this study, researchers focused on the use of push up board tools to maximize punching movements in karateka athletes and the focus of research on the use of tools is on the aspects of Attractiveness, Safety and Feasibility.

B. Methods

Suharsimi, Arikunto in Repo Unpas (2020) states that variables are the object of research or anything that is the point of attention. The object of research is Kediri Regency Karate athletes. The technique used in this research is descriptive with a quantitative approach. According to Sugiyono in Rahmaoktaviani & Setiawan (2020), quantitative research methods can

be interpreted as methods based on philosophy, used to research on certain populations or samples. The place of this research is at Dojo Basecamp Smaneka Kediri Regency and the research time is on Friday at 18.30 until completion.

According to Sugiyono (2019) says that population is a generalization area consisting or subjects have certain qualities and characteristics set by researchers to study and then draw conclusions. While the sample is part of the number and characteristics possessed by the population (Sugiyono, 2018). In this study there were 35 athletes who would be sampled.

According to Agung Sunarno in Arijal (2020) The instrument is a data collection tool and in fact the test is intended for athletes. The test instrument in this study is to use a questionnaire questionnaire that will be filled in by the sample. According to Sugiyono in Prawiyogi et al (2021) a questionnaire or questionnaire is a data collection technique that is done by giving a set of questions or written statements to respondents to answer. The questionnaire questionnaire in this study contained 10 questions with aspects of attractiveness, safety and feasibility.

A valid instrument means that the measuring instrument used to obtain data (measure) is valid. Valid means that the instrument can be used to measure what is to be measured (Sugiyono, 2019). From the definition of valid according to Sugiyono, it can be concluded that validity is the degree of accuracy or correctness of the instrument used to measure. Meanwhile, reliability is the determination of the measuring instrument in measuring what it measures. (Arijal, 2020).

C. Result and Discussion

Result

Instruments used for analysis of the use of push up board aids as an alternative to biceps and triceps brachii muscle training for karate sports in Kediri Regency using a questionnaire questionnaire, there are 10 questions with aspects of attractiveness, safety and feasibility. As a test criterion, if the value is greater than 0.05, it can be said that the test results are valid and if the results are smaller than 0.05, it can be said that the test results are invalid. The test results can be seen in the following discription table and histogram:

Table 1. Reliability test results

Cronbach's Alpha	N
0,335	10

Based on the reliability table data regarding the attractiveness, feasibility and safety of the analysis of the use of push up board tools as an alternative to biceps and triceps brachii muscle training for karate

sports in Kediri Regency, it can be concluded that there are results of a value of $0.335 > 0.05$ which means that the data is “valid”.

Table 2. Frequency Results

Variable	Valid	Ferquency	Percent	Valid Percent	Cumulative percent
X1.1	Ya	35	100,0	100,0	100,0
X1.2	Ya	35	100,0	100,0	100,0
X1.3	Tidak	1	2,9	2,9	2,9
	Ya	34	97,1	97,1	100,0
X1.4	Ya	35	100,0	100,0	100,0
X2.1	Ya	35	100,0	100,0	100,0
X2.2	Tidak	6	17,1	17,1	17,1
	Ya	29	82,9	82,9	100,0
Y1	Ya	35	100,0	100,0	100,0
Y2	Ya	35	100,0	100,0	100,0
Y3	Ya	35	100,0	100,0	100,0
Y4	Tidak	10	28,6	28,6	28,6
	Ya	25	71,4	71,4	100,0

Based on the table above, it can be concluded that the analysis of the use of push up board aids as an alternative to biceps and triceps brachii muscle training for karate sports in Kediri Regency from the frequency table there are “Worthy” results

about attractiveness, feasibility and safety with a percentage of 51.4% while the percentage that is not feasible about attractiveness, feasibility and safety is 48.6%.

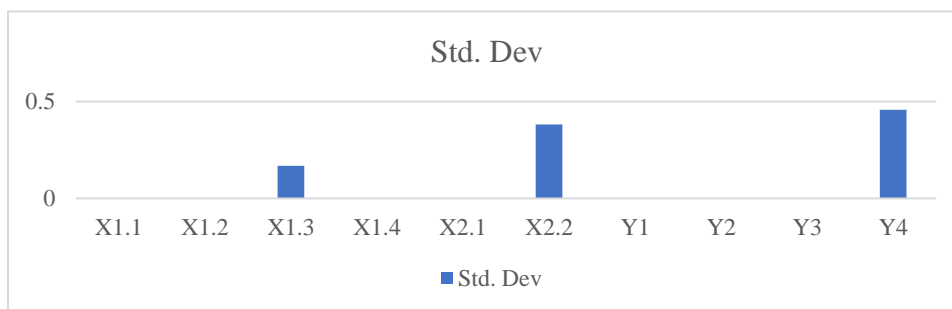


Figure 1. Histogram

Based on the histogram std. Dvs about the attractiveness, feasibility and safety of the analysis of the use of push up board aids

as an alternative to biceps and triceps brachii muscle training in karate sports in Kediri Regency, there is a conclusion that

XI.1 and XI.2 are 0, XI.3 is 0.169, XI.4 and are 0, Y4 is 0.458.
X2.1 are 0, X2.2 is 0.382, Y1, Y2 and Y3



Figure 1. Push Up Board Tool



Figure 2: Use of the Push Up Board Tool

Discussion

Based on the research that has been done, the results are “valid” and “feasible” in the analysis of the use of push up board aids as an alternative to biceps and triceps brachii muscle training in karate sports in Kediri district with research aspects of attractiveness, safety and feasibility with reliability test results of 0.335 with a percentage of 51.4%.

Thus the analysis of the use of push up board aids as an alternative to training the biceps and triceps brachii muscles of the

Kediri district karate sports branch is declared feasible and can be used by karate athletes to improve the quality of strength and explosive power of the arm muscles that affect the athlete's punch with push up training. In accordance with the opinion of Heliza, Fetiloka (2023) that push ups are one of the physical condition exercises that aim to increase the strength of the arm muscles by doing repetitions that aim to connect speed and strength movements to produce explosive movements. Meanwhile, according to Rahayu, Sepdanius (2020)

Explosive power is part of the ability to release maximum energy in the shortest possible time. According to Rahayu & Sepdanius (2020) Muscle explosiveness is a combination of strength and speed or maximum muscle force, namely the ability to apply power in a short time.

Based on the expert opinion above, it can be concluded that the strength and explosiveness of the arm muscles is the ability to direct muscle strength quickly in a short time to provide the best momentum to the body in a fast movement to achieve the desired goal while push up training is a movement that can increase arm muscle strength, it can be concluded that arm muscle strength and explosiveness can be trained using push up movements. If a karateka has good arm muscle strength and explosiveness, they will be able to perform high achievements where the athlete's performance becomes better, especially in technical abilities (Ranti, 2020).

The push up movement is a basic movement that targets the pectoralis major and triceps brachii muscles, as well as the scapular muscles which act as stabilizers. Kencana, Candiasa, & Widiartini in Irawan & Sandiyudha (2018) also revealed that push-ups are ideal for strengthening the biceps and triceps muscles. The initial position in push-ups begins with a prone sleeping position with hands on the right

and left sides of the body. Then the body is pushed up with the strength of the hands. The position of the legs and body remains straight or upright. After that, the body is lowered while keeping the body and legs straight. The body goes down without touching the floor or ground. Go up again and do it repeatedly. According to Vossen, Kramer, Burke, & Vossen in Irawan & Sandiyudha (2018), a valid push-up is when the lowest distance of the body when the chest is almost touching the floor and without stopping or stopping for a moment then continuing the movement by straightening the arms and pushing the body as in the initial position of the push-up.

The results of the researcher's observations made in the field that some karate athletes perform push-up movements without any standard or understanding of the specified movements. The problem found in the field is that the push-up movements performed by athletes are sometimes done carelessly, there is no benchmark or standard push-up movement performed, and provisions about whether or not the movement is correct as a basis for achieving targets in strengthening the muscles trained. So it is necessary to have the latest innovations in the field of sports technology that can help solve this problem and can facilitate the push-up movement of

karate athletes.

It is hoped that the development of this push-up tool can minimize the mistakes made when doing push-up movements and can be used by karate athletes who want to do push-up movements personally. The end result is the creation of a product development tool to help karate athletes do push-ups correctly. The purpose of the push up board tool is to develop a digital push-up tool model that can be used to help athletes do their own push-up movements or be used to conduct more practical push-up skill tests, therefore researchers analyzed the use of push up board tools as an alternative to biceps and triceps brachii muscle training in Kediri Regency karate sports.

D. Conclusion

Based on research conducted in the field on the use of push up board aids, in this aspect of attractiveness, safety and feasibility is valid and feasible which obtained a reliability result of 0.335 and with a percentage frequency of 51.4%. So, it can be concluded that the use of this Push Up Board tool is “feasible” for use by Karate athletes.

E. Acknowledgments

On this occasion, sincere thanks and appreciation to those who have helped complete this research and journal article, especially at Basecamp Smaneka Kediri

Regency and the supervisors and other concerned parties. It is realized that this article still has many shortcomings, so it is hoped that criticism and suggestions from various parties are needed.

F. Conflict of Interest

The preparation of this article is part of a research plan for the thesis as one of the requirements for obtaining a Bachelor of Education degree in the Department of Physical Education, Health and Recreation.

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