

**Increasing Upper Body Strength of Wrestling Athletes through Bulgarian Bag Exercise****M. Tobibi Maki<sup>1✉</sup>, Berliana<sup>2</sup>, Dede Rohmat Nurjaya<sup>3</sup>, Geraldi Novian<sup>4</sup>**Study Program of Sport Education, School of Postgraduate Studies, Universitas Pendidikan Indonesia, Indonesia<sup>1234</sup>**Article History**Received June 2021  
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Published Vol.10 No.(2) 2021**Keywords:**Strength; Upper Body;  
Bulgarian Bag; Wrestling Athlete.**Abstract**

Wrestling is a fighting sport that requires strength, especially in the upper body. However, the strength training carried out so far is still conventional and monotonous, while literature studies have provided various other, more modern and effective alternatives for strength training, one of them is the Bulgarian Bag. This study aims to examine the effect of training using Bulgarian Bag on the strength of the upper body of wrestling athletes. Research on Bulgarian Bag itself is still relatively small because Bulgarian Bags themselves are still relatively new. The research method used is an experimental method with a pre-test post-test control group design. The subjects of this study were wrestling athletes in West Bandung Regency with 10 male athletes taken by total sampling from the population. The research instrument used was a dynamic endurance hand grip strength test and a push up test which was given 2 times to the subject. Subjects were divided into two groups, namely the experimental group which was given the Bulgarian Bag exercise and the control group which was given the conventional exercise. T-test using SPSS version 24 was performed as data analysis in this study. The results showed that the Bulgarian Bag exercise had a significant effect on increasing the strength of the upper extremity of wrestling athletes. So it can be concluded that training using Bulgarian Bags can be used as the right choice to increase the strength of the upper body of wrestling athletes.

**How to Cite**

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## INTRODUCTION

Achievement sports require time and a long process to achieve at the highest level. In addition to the long process that must be taken by athletes, many factors must be owned by athletes such as components of good physical and psychological conditions so that athletes can have good achievements. Components of physical and psychological conditions are factors that cannot be separated in sports achievement. We know that the physical, technical, tactical, and mental aspects are factors that athletes must have well to be at the highest level. To succeed and be able to excel in wrestling you must have skills that are combined with intelligence (Berliana & Purnamasari, 2016), upper and lower body strength (BAYRAKTAR & KOC, 2017), speed, balance, muscle endurance (Pdate et al., 2017) above average flexibility, aerobic and anaerobic capacity to avoid injury and to be able to perform at a high level (Taskiran, 2014; Hosseini-mehr, Norasteh, Daneshmandi, Rahpymay-Rad, & Rahimi, 2009; Muehlbauer, Gollhofer, & Granacher, 2013). Wrestling is different from other sports, wrestling requires athletes to have special strengths, to reach the Olympic level requires a prime level of physical fitness, wrestling requires athletes to have special physical conditions and wrestling is a sport that pays attention to body weight (Saygin, 2014), special aerobic and anaerobic capacities (Özer, 2019; Ramirez-Velez et al., 2014). Wrestling is a very hard sport and is prone to injury if the components of the athlete's physical condition are not good.

Wrestling is a sport that requires athletes to have a good physical condition component to support athlete performance on the field. Since 2016 United World Wrestling (UWW) has modified several regulations, thus wrestling becomes a more aggressive, hard sport and requires greater aerobic and anaerobic conditions (Isik et al., 2017), therefore wrestling demands Athletes have components of good physical condition from head to toe. Several components of the physical condition that wrestling athletes must possess include strength, endurance, power, speed, flexibility, balance, coordination, agility, and reaction. Wrestling athletes need the strength and endurance of hand and arm grip strength to perform repeated slams, attacks, and defenses. Wrestling athletes need strength endurance when defending or attacking (Rahmani & Mirzaei, 2019), because if these components are weak, they will experience difficulties. Strength endurance is one of the factors to be successful in wrestling (Cieslinski et

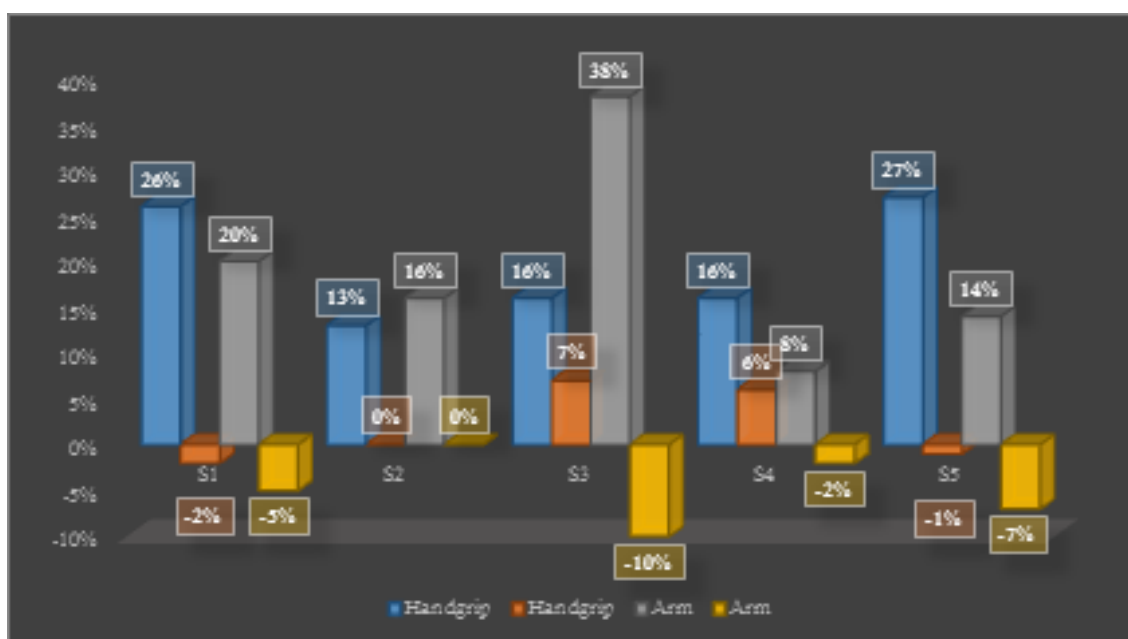
al., 2021), because it is good to support the training process or in matches and to be able to show the best performance (Pdate et al., 2017). In the competition itself, we know that athletes perform an attack or defend movements repeatedly with high intensity and pressure from the opponent, therefore athletes need to have Strength endurance to be able to display the best performance.

This study examines the strength and endurance of the upper body of wrestling athletes, specifically the handgrip and arms. Hand grips and arms are very important for pushing, pulling, throwing, and controlling opponents (Bonitch-Góngora et al., 2013). A number of studies have stated that athletes who have high achievement have good above-average hand grip and arm strength compared to athletes who have average performance (DEMIRKAN, ÜNVER, KUTLU, & KOZ, 2012; Rid et al., 2015; García-Pallarés, María López-Gullón, Muriel, Díaz, & Izquierdo, 2011). In Physiological determinants of wrestling success in elite, the handgrip is one of the success factors in wrestling (Nikooie et al., 2017). While arm strength will affect a sports activity that requires explosive movements, arm muscle strength contributes greatly to the success of athletes. Therefore, wrestling athletes need to train these components properly to produce good techniques (Iermakov et al., 2016). In this regard, there are several tools or training media that can be used to train strength, including sandbags, kettlebells, Bulgarian Bags.

In this study, the authors chose the Bulgarian Bag as the main study topic because it was considered appropriate for the purpose and is still rarely used by wrestling athletes with 3 types of handles and has a varying weight, with the lightest load being 3 kg to 38 kg. The Bulgarian bag was invented by Ivan Ivanov around 2005 with the aim of improving the components of the physical condition specific to wrestling. Bulgarian bag is useful for helping athletes train, such as increasing grip strength, training the upper and lower body, the unique shape of the Bulgarian bag makes this tool suitable for improving various components of physical condition, namely specific strength in wrestling (Maki et al., 2021). Exercise using a Bulgarian Bag requires more energy than training using iron or conventional exercises because it allows athletes to perform dynamic movements such as twisting, pushing, jumping, swinging, throwing, these movements will be risky if done using iron so that the variety of exercises can be more and effectively increase strength (Antony et al., 2015). The author sees that there is still limited literature that examines

**Table 1.** Statistical Description

Group	Item	Mean ± Std. Deviation	Min.	Max.	
Experiment	Handgrip	Pre-test	155,00 ± 29,824	144	194
		Post-test	184,00 ± 27,148	145	220
	Arm	Pre-test	50,00 ± 6,671	40	57
		Post-test	59,20 ± 5,630	52	65
Control	Handgrip	Pre-test	167,20 ± 36,765	110	200
		Post-test	166,00 ± 35,021	108	200
	Arm	Pre-test	48,00 ± 3,391	44	52
		Post-test	45,80 ± 4,494	42	52



**Figure 1.** Bar Percentage of Item

exercises using a Bulgarian Bag on the strength component of wrestling athletes in Indonesia, so the authors feel the need to conduct this research to examine the effect of increasing exercise using a Bulgarian Bag on the strength of the upper body of wrestling athletes.

**METHODS**

The research method used is an experimental method with a pre-test post-test control group design (Fraenkel et al., 2012). The study was conducted for 4 weeks with 3 sessions/week. The subjects of this study were 10 men's wrestling athletes from SWC who were taken using total sampling from the population. The research instrument used was the Dynamic Endurance Handgrip Strength Test (Gerodimos et al., 2017) to measure handgrip strength endurance and the Push Up Test (Mackenzie, 2005) to measure arm strength endurance. Both instruments were given

2 times to the subject as pre-test and post-test. Subjects were divided into two groups, namely the experimental group (5 athletes) who were given Bulgarian Bag training and the control group (5 athletes) who were given conventional training. The t-test using SPSS version 24 was performed as data analysis in this study.

**RESULTS AND DISCUSSION**

Based on the results of data processing and analysis that has been carried out by the author, the data are then described and presented in tabular form **Table 1**. Furthermore, the authors conducted a normality test using the Shapiro-Wilk Test. The results of the normality test of all data obtained the value of Sig. of 0.200 > 0.05, then all research data can be declared "Normal Distributed" so that the author can use the t-test as a hypothesis test.

**Table 2.** Hypothesis Testing

Group	Item	Sig. (2-tailed)
Experiment	Handgrip	0.000
	Arm	0.007
Control	Handgrip	0.749
	Arm	0.063

**Table 2** shows the results of hypothesis testing using paired sample t-test. Based on the test results, it was found that the experimental group had a Sig value. (2-tailed) of  $0.000 < 0.05$  for handgrip items and for arm items of  $0.007 < 0.05$ , it can be concluded that  $H_0$  is accepted. While the control group has a value of Sig. (2-tailed) of  $0.749 > 0.05$  for handgrip items and for arm items of  $0.063 > 0.05$ , it can be concluded that  $H_0$  is rejected.

**Figure 1** shows the percentage of item results from all research subjects. It can be seen that all subjects in the experimental group experienced an increase in handgrip strength by an average of 20% and arms by 19%. However, in the control group, only a few subjects experienced an increase, and even tended to decrease with an average of 1% for handgrip items and 5% for arm items.

The component of the physical condition of wrestling athletes is the main thing that must be possessed by athletes, not only in wrestling but in all sports that require athletes to have good and above-average physical conditions. We know that ongoing wrestling matches require greater effort with high competition intensity, with short rest periods causing a fairly high accumulation of blood lactate, therefore wrestling requires athletes to have good strength endurance (Yamashita et al., 2017), where during the match there is no time to rest until the specified time is over. We know that the arm muscles and handgrips are parts of the body that are in direct contact with the opponent or the training medium, the role of the arms and hand grips is very large in the success of wrestling. How is it possible for an athlete to excel if these two body parts have average strength endurance?

The results of research conducted by researchers regarding increasing the strength of the upper body of wrestling athletes through exercise using a Bulgarian Bag show significant results, in this case, training using a Bulgarian Bag has an effect on strength endurance in wrestling athletes. Training using a Bulgarian Bag gives the coach many options to design the type of exercise to be used because the Bulgarian Bag can be used with

dynamic or static movements. There was an increase in Strength endurance hand grip and arm after doing exercises using a Bulgarian Bag for 4 weeks in a row. The increase occurs because the exercise program given is always related to grip, such as the surplus spin movement which requires the athlete to grip firmly because this movement requires the athlete to grip, the surplus spin movement itself is a movement that requires muscle contractions in the hands and arms, especially in the deltoid, biceps, brachioradialis, when performing the surplus spin movement with a Bulgarian Bag and the media is not gripped firmly, the media used will come off and be dangerous. The movements given to athletes during exercise are not only one part of the muscle that contracts, by providing dynamic movements that require the athlete to grip firmly and lift, throw and rotate the Bulgarian Bag, so that the muscles of the arm and handgrip are trained and there is an increase.

The treatment itself is carried out in stages by the norms of exercise, where the load is given in the form of volume of exercise and the intensity of exercise is increased realistically and gradually (Bompa, 2012). We know that the Bulgarian has 3 types of grips, with these three types of grips making it easier for coaches to provide athletes with a variety of static or dynamic exercises. Based on the results of the t-test, it was found that there was a significant effect of increasing training using Bulgarian Bags on increasing upper body strength in wrestling athletes. Thus the author's hypothesis was proven, the results of this study are in line with previous research that there is a significant effect between exercise using Bulgarian Bag against strength (Antony et al., 2015). Strength components, especially Strength endurance are things that cannot be ignored because strength endurance hand grip, and arms are one of the success factors for athletes. Strength endurance training using a Bulgarian Bag is an alternative for coaches to increase specific strength in wrestling, due to the nature of the Bulgarian Bag which can be used with dynamic movements (Maki et al., 2021). In the future, it is hoped that the trainers will be more open to new and more specific training media in increasing strength in each sport, one example is the training media using the Bulgarian Bag.

## CONCLUSION

Based on the results of the study conducted by the author, it can be concluded that there is a significant effect of training using a Bulgarian Bag on increasing the strength of the upper body

of wrestling athletes. In addition, there is no significant effect of conventional training on increasing upper body strength in wrestling athletes. This shows that training using a Bulgarian Bag is effectively applied to wrestling athletes because it provides an improvement, while conventional exercises do not. Training using a Bulgarian Bag is an alternative for coaches to increase strength.

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