

## The Effectiveness of Using Reaction Ball in Improving Counterattack in Taekwondo

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### Abstract

The main purpose of the current study was to identify the effectiveness of Using Reaction Ball in Improving Counterattack in Taekwondo. The researchers used the experimental method for its suitability for the nature of the study. Sample was chosen in a deliberate method from the players of Hawler New Hall-Erbil, which involved of (12) male players in same or close weight category; from a total of 23 players. To determine the accuracy of the sample's selection and the scope of its normal distribution. The law of the skewness coefficient has applied to find out the homogeneity of the sample in these variables (Height, body mass, and age). Bearing in mind that the skewness coefficient in these variable it is between -1 to +1 so the sample is normally distributed. Using response balls improved counterattack in taekwondo, and the posttest results favored the experimental group. There were statistically significant differences between the two groups, and the posttest findings favored the experimental group.

Keywords: Counterattack, Response time, Taekwondo.

## 1- Introduction

Taekwondo is a Korean martial art that categorized by diverse kicking and punching techniques. It has been propagated worldwide and is currently a popular sport reaching about 70 million practitioners in 204 countries (softschools, 2021). Athletes are categorized into four weight classes in the Olympic context, ranging from "flyweight" to "heavyweight." Taekwondo competitors compete with the goal of knocking out or outscoring their opponent. In order to do so, athletes must demonstrate the capacity to react quickly in a short amount of time. (Kazemi et al., 2009). It is generally known that in Taekwondo, a match result success is often determined by quick movements taken in response to a stimulus (the movement of the opponent). (Bouhlel et al., 2006). Therefore To perform a well shown skill in sports not only, physical training is sufficient to reach high performance but psychological skills required as well. Most athletes have relatively close physical abilities, which makes the difference in completions is the psychological preparation, and one of the important psychological ability is the response time (Sarteep, 2021) In taekwondo, the importance of psychological abilities has been likened to the importance of physical skills. (Yun et al., 2006). Time is one of the most commonly utilized factors in the study According to (Fortier et al. 2005) In Taekwondo, the kick start, as a sprint start, is a difficult motor activity characterized by significant pressures applied in several directions and the capacity to create these forces in a short amount of time. As a result, rapid reaction time may be an important element and could be a key to sports success. The link between the time (quick response time) and kick execution is critical for kick performance in a taekwondo sparring match since the athlete is frequently required to execute kicks in response to the opponent's attack. Therefore, having a quick response time might be a very important factor in winning a sparring match.

Counter attack in Taekwondo plays crucial role in winning matches .According to the findings of Menescardi and colleagues (2015), the winners of the National University Taekwondo Championship utilised a greater number of counterattacks. This finding suggests that Taekwondo athletes may need to execute counterattacks as effectively as they possibly can in order to score points.

Hence, the aim of the current study was to determine the effectiveness of using Reaction Ball in enhancing counterattack in Taekwondo, as well as knowing the differences in the posttest between the experimental and control groups. The researchers hypothesized that, utilising reaction balls might improve the

effectiveness of counterattacks in taekwondo as well as using reaction balls has a positive effect on improving counter attack in Taekwondo as well as There are significant differences between the control and experimental groups, and they are significantly in favor of the experimental group .

1-2 statement of the problem: As a result of their teaching and observing the game, researchers concluded that taekwondo success is closely linked to the players' reaction times and counter-attack speed, since the sport involves both action and reaction (attack, defense, and counter attack). It depends entirely on how swiftly the player makes decisions and acts (response time). To strengthen the counterattack, the researchers utilised reaction balls, which are designed to promote speed and agility and are a relatively new technique.

## 2. Methodology

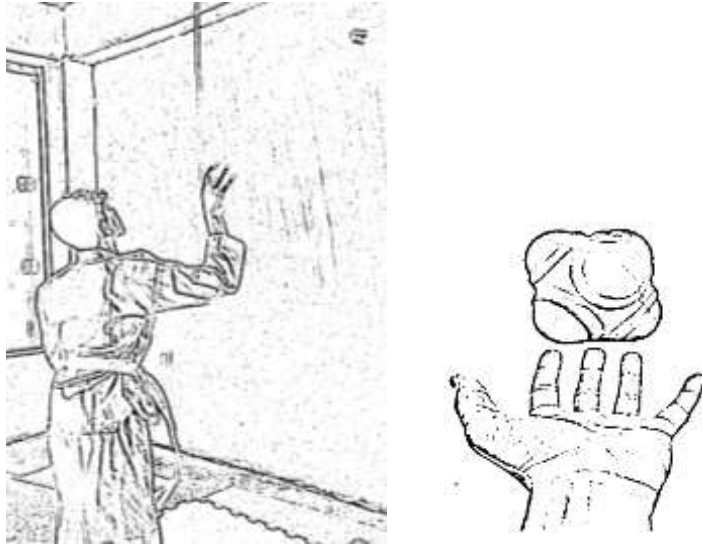
The Experimental Method was adopted by the researchers because of the nature of the research The research sample was chosen in a deliberate way from the players of Hawler New Hall-Erbil, which involved of (12) male players in same or close weight category divided into two group (experimental and control) each group 6 players. From a total of 23 players. For the purpose of knowing the validity of the selection of the sample and the extent of its normal distribution. The law of the skewness coefficient has applied to find out the homogeneity of the sample in these variables (Height, body mass, and age). (As shown in Table 1), bearing in mind that the skewness coefficient in these variable It is between -1 to +1 so the sample is normally distributed.

Table (1) shows the homogeneity of the sample in these variables (height, body mass, and age).

| Statistical processors | the mean | standard deviation | median | skewness factor | sample number |
|------------------------|----------|--------------------|--------|-----------------|---------------|
| Height /cm             | 170 ,16  | 7,95               | 170,4  | 0,441 -         | 12            |
| Body mass /kg          | 70,55    | 11,77              | 70,33  | 0,362           |               |
| age / months           | 217,33   | 8,82               | 217,5  | 0,094-          |               |

## 2.1 Instruments

The instruments utilized in this study consisted tools ,such as – Observation, - Performance evaluation form as well as the reaction balls , A device for measuring height and body mass, Electronic stopwatch type (Diamond), Metric tape for measuring distances, and Samsung galaxy s8 mobile.



## 2.2 Procedure

A pilot research was conducted before the main experiment to familiarize the Trainer with the main training days. A pilot study is a little experiment or piece of work that researchers conduct to identify the drawbacks and benefits that may arise during the execution of the research's main experiment. (Al-Shawk and Al-Kubaisi, 2004, 88). The researchers conducted the exploratory experiment with the assistant work team at the Boxing Hall of the College of Physical Education and Sports Sciences at (9) a.m. on Sunday, 9/1/2022, as one of the crucial processes that the researcher performs before conducting the main experiment.

On the training days of the players (3 times a week) the Trainer had used reaction balls as an aid in the section of training program that improving response time as well as agility .The trainer make sure how to use the reaction ball in these conditions that start from simple to complex ; stationary to movement . To maximize the benefits of the reaction balls, the trainer used them in those conditions (a gradual programmed that began with fast movement and increased the speed of throwing the ball between two players, progressed to solo training by bouncing the ball against the wall, and finally transitioned from using both hands to using a dominant hand as quickly and accurately as possible). (The experiment's duration begins on 11/1/2022 and ended on 8 /3/2022, with (24) instructional units for each group, three units each week. Every week, on Sunday, Tuesday and Thursday.

### 2.3 The pre-test

To determine the effect of using reaction balls, a pretest was conducted prior to implementing educational materials and conducting the main experiment. Both groups sparred for Two minutes and were filmed before being handed over to judges for evaluation of their counterattack skills. On a five-point scale, the ability was graded. The data has been submitted for review to Taekwondo experts. Concerning the post-test, the same producer was used eight weeks after the primary experiment.as shown in table (2) below.

Table (2) shows the means and standard deviations of the response time and the score of counterattack skill of the research sample of the pre-test.

| Group            | Response time |      | T test | Sig  | Counterattack |      | T test | Sig  |
|------------------|---------------|------|--------|------|---------------|------|--------|------|
|                  | M             | SD   | 1,27   | 0,12 | M             | SD   | 1,97   | 0,33 |
| Experimen<br>tal | 8,43          | 5,04 |        |      | 3,11          | 3,31 |        |      |
| Control          | 8,24          | 5,12 |        |      | 4,22          | 2,94 |        |      |

### 3-3: The test used in the research.

#### 3-3-1 Nelson response test:

The purpose of the test: to measure the ability to respond, move quickly.

Tools: a flat, unobstructed space area (20 m long) and 2 m wide, a tape measure, and a tape measure, an electronic stopwatch.

Procedures: The test area is planned with three lines. The distance between each line and another is a distance of (40.6 m) and the length of the line is 1 m.

Conditions of Performance:

- The player stands on one end of the center line, facing the referee, who stands on the other end.
- The player assumes the ready posture, bending his body forward a little and placing the center line between his feet.

The test man holds the stopwatch in one hand and lifts it to the top, then swiftly swings his arm to the left or right while turning the clock.

The player reacts to the hand signal by attempting to sprint as quickly as possible in the designated direction in order to reach the line side that is a distance away from the center line (40.6 m). When the player reaches the correct sideline, the game is over.

- If a player starts running in the incorrect way, the referee keeps running the clock until the player switches direction and crosses the proper side line.

The player gives (10) consecutive attempts between each attempt and the next (20 seconds) and at a rate of (5) attempts on each side.

Attempts on each side are picked at random and in order, and to do so, (10) pieces of paper are counted as uniform size and color, and the words left and right are written on (5) of them, then flipped and placed in a bag or box and then withdrawn without looking at it.

The requirement:

From attempts outside the measurement with the same basic conditions, for the purpose of identification; each player is given a number on testing procedures.

The referee must practice the start signal and the operation of the watch, in order to be able to give this signal arm and running the clock at the same time.

- The referee draws out pieces of the previous ten cards in a random way before taking the test, and scores them according to the choice.
- To arrange for it to be drawn on a special card, which places in one of his hands to lead him through the sequence of the signal directions.
- Recording the time for each player individually; this process prevents the player from anticipating the direction of the following try.
- The player must be unaware that he is needed to make (10) efforts spread out across (5) tries.
- Players must specify that their number of tries will not be evenly divided in both directions. Rather, it is feasible that the number of tries in one direction is higher than the number of attempts in the other, and that the sequence of performance of the attempts is sideline-sideline random and changes from player to player.
- The test man must provide the following signal (Get ready – start) to begin the test and he must do so in all tries.
- The time interval between the words (prepare-start) is close to (5.1 sec-2 sec)
- To warm up, the player should do some simple activities and wear light shoes.

The test performance area must be clear of any impediments.

Recording: Each attempt's timing is computed to the nearest tenth of a second. The average of the ten tries is the player's score

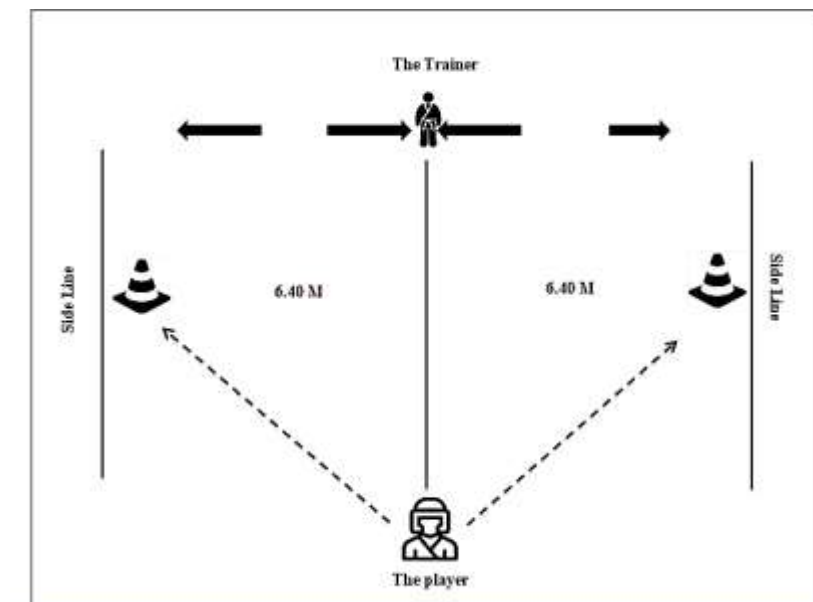


Figure 1 Nelson test

## 2.5

Statistical means: The researchers performed statistical analysis on the data using the statistical package (SPSS) using the following methods: mean, standard deviation, t-test for dependent and independent variables, and mediator coefficient of skewness.

## 3. Results

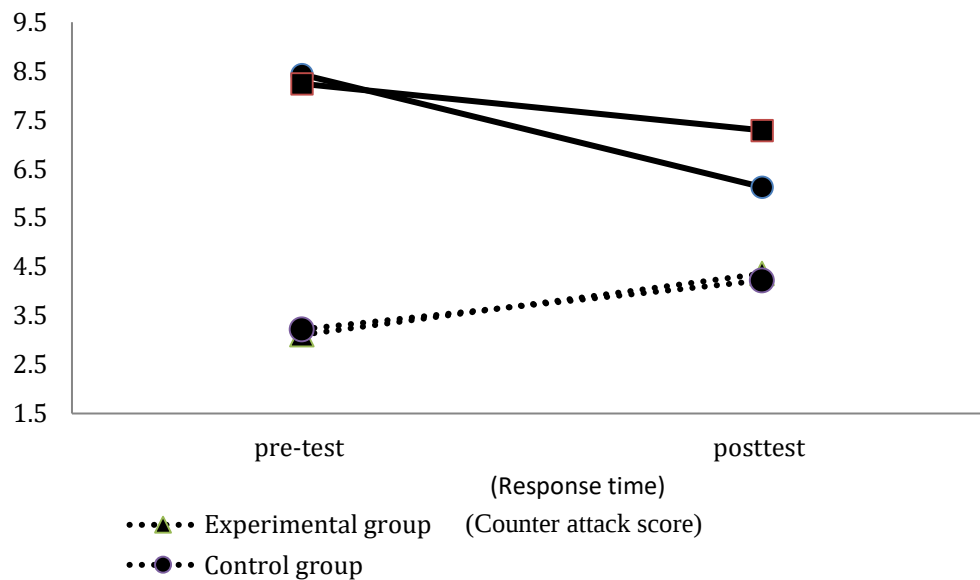
To determine the Response Time in Taekwondo the posttest had been conducted as the same condition of the pretest manner and the results shows in the table (3)

| Group            | Response time |      | T test | Sig  | Counterattack |      | T test | Sig  |
|------------------|---------------|------|--------|------|---------------|------|--------|------|
|                  | M             | SD   | 2,37   | 0,04 | M             | SD   | 2,67   | 0,03 |
| Experimen<br>tal | 6,13          | 4,14 |        |      | 4,36          | 2,41 |        |      |
| Control          | 7,29          | 5,09 |        |      | 4,22          | 4,22 |        |      |

## 4-2 Discussion

The analysis revealed a significant difference between the experimental and control groups in the post-test of the players' counterattack, with the T value reaching (2,67).and the same table shows the significant differences between both groups in response time , which the t value was 2.37 The researchers attribute this to the reaction ball's effectiveness, which improved response time. This resulted in a more rapid counterattack. Counterattacking is regarded as a critical primary skill in match scoring because response time is based on previous experiences as well as the difficulty level of the motor skill.The research sample's experience and previous information assist them in identifying the surrounding stimuli and qualifies them for a quick response to each case of play. As many

previous researchers have shown, the execution time of a technique appears to have a strong influence on its success.



Graph (1) shows the pre and posttest for the both groups and variables (response time and counterattack).

Aside from speed, one of the essential components for winning appears to be reaction time and responsiveness to the opponent's moves and in response to an opponent's movement; the taekwondo athlete must react as swiftly and precisely as possible. According to (Ervin et al, 2020, Vieten, et.al 2007, Bouhlef et al., 2006) ; The better execution of the skill, a match result success is often determined by quick movements taken in response to a stimulus (the movement of the opponent).. It was also discovered that the longer it took to reach the target, the bigger the kick's effect. . The spin back kick is one of the abilities that are primarily employed during a counterattack, and the inherent mechanics of these techniques need greater attention during execution. This is a powerful scoring kick, but it necessitates quick re chambering of the kicking leg. Many steps are involved in completing this ability, such as pivoting on the supporting leg with the rear of the heel directed toward the target. On the kicking leg side, swivel the torso and look over the shoulder towards the target...etc.) and previous studies showed that ,The counter fighter's mentality is to time and anticipate these kicks while also counter-attacking them.

## 5. Conclusions and Recommendations

### 5-1 Conclusions

1-Using reaction balls have a positive effect on counterattack in taekwondo.

1- The post-test results favoring the experimental group showed statistically significant differences between the two groups and in favor to the experimental group in the posttest.

### 5-2 Recommendations:

1-Ensure that the reaction ball is used to improve counterattacks in Taekwondo.

2-Applying reaction balls to different samples to know the extent of learning

3-Conducting studies that deal with other determinants that the current study did not discuss

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