

Response Time and its Relationship with Some
Motor Skills in Taekwondo

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ملخص البحث العربي:

علاقة زمن الاستجابة الحركية بمستوى اداء بعض المهارات الحركية في لعبة التايكواندو

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كان الهدف الرئيسي من الدراسة الحالية هو التعرف على العلاقة بين زمن الاستجابة الحركية وبعض المهارات الحركية في لعبة التايكواندو. استخدم الباحث المنهج الوصفي بالطريقة الارتباطية لملاءمته لطبيعة الدراسة. تم اختيار العينة بطريقة عمدية من لاعبي هولير نيو هول - أربيل ، والتي ضمت (14) لاعباً من نفس فئة الوزن أو ذات الوزن القريب. من إجمالي 42 لاعباً. ولأجل معرفة صلاحية اختيار العينة ومدى توزيعها الطبيعي. تم تطبيق قانون معامل الانحراف لمعرفة تجانس العينة في هذه المتغيرات (الطول والوزن والعمر). مع الأخذ في الاعتبار أن معامل الانحراف في هذا المتغير يتراوح بين -1 إلى $+1$ لتظهر توزيع العينة بشكل طبيعي. أظهرت نتائج البحث أن هناك علاقة معنوية بين زمن الاستجابة الحركية لكل من (مهارة الركلة الأمامية ، والركلة القاطعة الأمامية، الركلة الهلالية) .

الكلمات المفتاحية : زمن الاستجابة الحركية ، التايكواندو

Abstract

The main purpose of the current study was to identify the relationship between response time and some motor skills in Taekwondo. The researcher used the descriptive method in a correlation manner for its suitability for the nature of the study. Sample was chosen in a deliberate way from the players of Hawler New Hall-Erbil, which involved of (14) male players in same or close weight category; from a total of 42 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 (length, weight, and age). Bearing in mind that the skewness coefficient in these variable It is between -1 to +1 so the sample is normally distributed. The results showed the following: There is a correlation between the response time and front kick skill, and the rear leg skip step (front –foot cut kick) and the Roundhouse kick. While there was a strong and significant correlation between response time and the spin back kick.

Keywords: response time ,motor skills, Taekwondo .

1- Introduction and the importance of research:

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). (Bouhlef 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 of human motion control from the standpoint of information processing. In particular, response time (RT) has emerged as one of the most important information processing dependent characteristics. (Song & J.-D (2004). This ability (response time) can define as the time necessary to make a voluntary movement after being presented with a stimulus (Magill, 2007). 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. Therefore, the purpose of the present was to find out the relationship between the response time and some motor skills in Taekwondo.

1-2 statement of the problem: Based on the researcher's experience in teaching this topic he realized that the winning in taekwondo has a strong connection with the players reaction time ,since this game is the game of action and reaction either in (attack, defense and counter attack)those elements depends on how quick the player decide and act (response time) .and because the skills in Taekwondo are open skills ,which means the player should expect the unrespecting during the game .Therefore, the researcher decided to study the correlation between some motor skills and the response time .

1-3-Research Aim: -

- Identify the relationship between response time and some motor skills in Taekwondo.

1-4 research hypotheses:

There is a relationship between response time and some motor skills in Taekwondo.

1-5 Researchfields:

1-5-1 the human field: 14 Taekwondo players of Hawleri new hall-Erbil.

1-5-2 Time field: 26/5/2021till 10/6/2021.

1-5-3 spatial field: The Taekwondo Hall in hawleri new – Erbil.

2-1 Research methodology and field procedures

2-1-1The Research Method: The researcher used the descriptive method in a correlative manner to suit the nature of the research problem.

2-1-2 the research community and its sample:

The research sample: The research sample was chosen in a deliberate way from the players of Hawler New Hall-Erbil, which involved of (14) male players in same or close weight category; from a total of 42 playersFor the purpose of knowing the validity of the selection of the sample and the extent of its normal distribution. The law of the skewnesscoefficient has applied to find out the homogeneity of the sample in these variables (length, weight, 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.

Statisticalprocessors	the mean	standard deviation	median	skewness factor	sample number
Height /cm	171 .45	8.35	172.5	0.351 -	14
weight /kg	68.55	10.67	71.41	0.272	
age / months	217.33	9.92	217.4	0.091-	

2-2 Tools and Devices:

2-2-1 tools:

- Arabic and foreign sources.
- Motor response speed assessment form.
- Questionnaire of selection Taekwondo motor skills.
- Assistance work team.
- Tests of the current study.

2-2-2 devices

- A device for measuring height and weight.
- Electronic stopwatch type (Diamond).
- Metric tape for measuring distances.

3-3: The tests used in the research.

The researchers prepared a special form that includes taekwondo selection motor skills of the (current study) skills tests as well as the test of response time by using (Nelson test). After collecting and separating the forms, the following tests obtained the agreement of experts.

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

3-3-2 the motor skill test

All the motor skills of the current study were performed with a partner holding a focus Mitt for (roundhouse kick) and bag pads for rear leg skip step (front – foot cut kick) and spin back kick). Each skill was performed 5 times and filmed before being sent to the judges to evaluate them. Each skill was given a score out of five. Forwarded to Taekwondo¹ experts for evaluation.

- 1- Front kick
- 2-rear leg skip step (front – foot cut kick)
- 3- Roundhouse kick
- 4- Spin back kick.

3-4: Statistical Means:

The following statistical methods were used to process the results

- The mean.
- Standard deviation.
- Mediator.
- Coefficient of skewness.
- Simple correlation coefficient (Pearson).

¹ Mahmud Sardar trainer (black belt Dan 2) in taekwondo
 Najmadeen Abdullah , trainer (Balck belt Dan 3 in Taekwondo)
 Hussien abdulrahman trainer (black belt Dan in (Taekwondo).

4-1- Presentation and analysis of results

To determine the Response Time and its Relationship with Some Motor Skills in Taekwondo

Table (2) shows the means and standard deviations of the motor response speed and Taekwondo motor skills of the research sample.

Table (2)

Statistical parameters	the mean	standard deviation
Response Time	8.84	0.98
Front kick	4.21	2.55
Roundhouse kick	4.33	1.32
Rear leg skip step (front-foot side cut kick)	4.71	2.98
Spin back kick	3.11	3.21

Table (3)

shows the correlation between the response time and some Taekwondo motor skills of the research sample

Statistical parameters	R value	R
Front kick	0.721	0.532
Roundhouse kick	0.692	
Rear leg skip step (front –foot cut kick)	0.741	
Spin back kick	0.341	

$p > 0.05$ and $DF = 14 - 2$ (0.532)

4-2 discussion the results

The analysis of correlation revealed a significant correlation between Front kick and response time, which the R value reached (0.72) and comparing to the p value (0.532) confirmed the significant. In the same table for the Roundhouse kick the R value of the correlation was (0.692) which indicate a significant correlation between this skill and response time as well. Another significant correlation showed between Rear leg skip step (front – foot cut kick) and response time, the R value for the correlation between these variables was (0.741). The researcher attributes that for the players level in performance those motor skills. As the response time is based on the previous experiences as well as the difficulty level of the motor skill as well. The selected motor skills of the current study are considered as primary skills in scoring in the match. The experience of the research sample and their Previous information that helps them identify the surrounding stimuli and qualifies them to Quick response to each case of play. As many past researchers has demonstrated, it appears that a technique's success is strongly influenced by its execution time. 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. 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) (Ervin et al, 2020, Vieten, et.al 2007, Bouhlel et al., 2006). Our results also indicate that relationship between response time and performing motor skills are correlated and these findings are in line with the finding of. Sant'Ana et al. (2016) in which they discovered a moderate relationship between response times and kick impact, as well as between kick impact and performance time. It was also discovered that the longer it took to reach the target, the bigger the kick's effect. It has be notice from the same table that, there was not a significant correlation between response time and spin back kick .it may be due to that fact that this skill is considered as a difficult skill not just for beginners but for all level compared with other skills that selected in the current study .The spin back kick is one of the abilities that is 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 rechambering 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 targe. On the kicking leg side, swivel the torso and look over the shoulder towards the target...etc.) Finally, future research should look at what happens between the first movement and the foot leaving the ground, as well as what happens between the foot

leaving the ground and hitting the target. (Kil, 2006, Falco et.al 2011).

5. Conclusions and Recommendations

5-1 Conclusions.

1. The emergence of a correlation between the response time and front kick skill.
2. The emergence of a significant correlation between the response time and the rear leg skip step (front –foot cut kick)
3. The emergence of a significant correlation between response times Roundhouse kick.
4. The emergence of a non-significant correlation between the response time and spin back kick.

5-2 Recommendations:

- 1- The emphasis during the training units is on the abilities that have a direct influence on the players' skill performance, as response time plays a big role in taekwondo performances motor capabilities.
- 2-The need of doing various exercises to improve the speed of the motor response using tools and equipment that are readily available.
- 3- Since speed of reaction plays an essential part in the performance of motor skills in Taekwondo, researchers and

trainers should focus on developing and investing in a variety of instructional and training tools that promote it.

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