

Establishing a Test for Measuring Motor Skill in Judo

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Abstract: The research aims to establish a test for measuring Judo skills abilities to measure the power that is still measured through one variable "distance" like jumping or pushing a medicine ball whereas strength, distance and time are three variables could be maintained through the equation (power=strength X distance/time), strength can be determined by the opponent's weight, distance can be determined by throwing distance and time through using speed of motor response apparatus prepared and designed by the researcher in 2001 as no devices are available for measuring Judo skill's ability. Statistical coefficients were conducted where validity scored 10.384 at "T" test and "R" was 0.997 for correlation in measuring reliability of the test. Most of the experts ensured the test objectivity. The results confirmed the importance of using the test in training and measurements and conducting norms for all the skills for all ages.

Key word: Skill ability • Motor ability • Measurements

INTRODUCTION

Scoring the full point (Ippon) in Judo when throwing from above (Nage Waza) needs four elements: controlling, full falling on the back, noted power and speed, therefore the player must control his opponent and uses throwing techniques in throwing him from high point with power and speed leading the opponent to fully fall on his back, then achieving the full point that ends the contest [1].

Each of them agreed for the importance of the explosive power where muscular power needs good combination between muscular strength and speed that means the player who owns power will own high degrees of muscular strength and speed and skill remains in mixing muscular strength and speed [2-4].

According to the mechanical aspect of power the exact measure of power depends on three variables distance, time and strength that could be maintained through using motion photography. As the many facilities and difficulties that confront measuring in physical education, scientists deemed to measure explosive power (muscular power) through distance as it is the coordinative motion result between maximum power and maximum speed and also for the simplicity in measuring it by the indication of speed [5].

As we measure with one variable, the researcher reached the research's idea by establishing a test for measuring motor ability using speed of motor response

apparatus for accurately determine time, opponent's weight for determining power and measuring distance between the player and his opponent and the electronic mate for determining the throwing distance by using the following equation: (strength X distance/time) [6]. Power is the result of strength and speed and could be expressed through the above mentioned equation that has a great importance in discriminating athletes of each other [7].

The researcher felt a problem when using motor analysis with photography as it's very expensive, in addition to the unanimous opinions of kinetic scientists that power stage only measures push power whereas conducting an easy apply test in the practical application within the training halls. Moreover, there are no motor ability tests specific for Judo.

Mohamed one hand throw using shoulder (Ippon Seoi Nage) is the most common and used skill in Judo within the local and international competitions both for juniors and seniors and is considered as the most important skill to be taught to beginners as it's easiness and effectiveness in the same time, the researcher will use this skill in the research [8].

Aim of the Research: The research aims to establish a test for measuring motor ability in Judo in addition to scientifically standardizing the test through calculating validity, reliability and objectivity coefficients.

Hypothesis of the Research:

- The test has the ability for achieving high indications in each of validity, reliability and objectivity coefficients.
- The possibility of using the test in measuring motor ability in Judo.
- The possibility of using the test in measuring motor ability in Judo skills.

Terms of the Research:

- Muscular power (explosive power): the maximum power exerted when performing once at the highest speed [7].
- Motor ability: the individual's ability to perform movements that forms skills. (6)
- Ippon Seoi Nage: shoulder throw with one hand of hands throw skills, is the most common skill [8].

Previous Studies:

- The volley ball throwing device was designed with an electronic arm works with strong spring that moves that arm strong up ahead then throws the carried ball on the arm up and ahead [11].
- A Judo training apparatus was designed consists of a dummy used by the player in conducting misbalancing and used in training to develop isometric muscular power, speed and muscular endurance, the researcher calculated the scientific coefficients of validity, reliability and objectivity for the apparatus to be used in measuring [12].
- Bassin apparatus of hand ball players' simultaneous anticipation was developed to be used by foot for soccer players, the researcher calculated the scientific coefficients of validity, reliability and objectivity for the apparatus and used the descriptive method on a sample of 30 players and the results indicated high degrees of validity and reliability [13].
- An apparatus was designed for developing motor rhythm and timings for scoring touches in fencing, the researcher calculated the scientific coefficients of validity, reliability and objectivity for the apparatus to be used in measuring and training.[14]
- An apparatus was designed for measuring motor respond speed in Judo and used the experimental method on a sample of 12 elite national team players and calculated the scientific coefficients of validity, reliability and objectivity for the apparatus to be used in measuring and training [12].

- An apparatus was designed for determining the kicks and punches electronic properties in Kung Fu, the researcher used both the experimental and descriptive method on a sample of 22 elite national team players [13].

MATERIALS AND METHODS

Methodology: The researcher used the descriptive method as it suits the nature of the research.

Sample of the Research: 20 junior Judo players under 13 years old from El-Zohour sporting club, the sample were represented in 10 surpassed players and 10 younger players under 11 years old and less in level for determining validity of differentiation and test re-test on the 10 surpassed players for determining reliability.

Tools of the Research:

- Judo motor respond speed apparatus, validity was 7.4 at indexed T=3.6, where reliability reached 91% at the coefficient correlation and the apparatus was subjected to the norms (Fig.1).
- Medical scale for measuring the player and his opponent's weights for determining strength.
- Measuring tape in centimetres for determining the throwing distance on the mate.
- Judo mate.
- Applying the equation of power as (power = strength (opponent's weight) X distance (throwing distance on the mate/time (motor responding time))

The Test Validity Coefficient: The researcher used the concurrent validity, where he applied the research on two groups one represented in the distinguished players

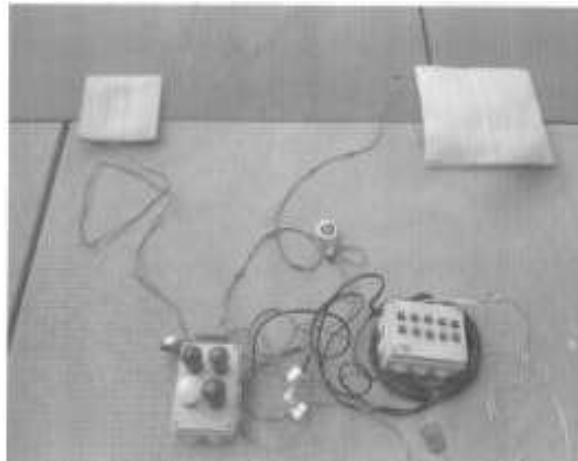


Fig. 1: Test for measuring motor skill in Judo

Table 1: Significant differences between the distinguish group and the less levelled group for measuring concurrent validity. N=20

Group	Number	Arithmetic mean	standard deviation	T value
Distinguish	10	16.1250	1.91130	10.384
Less levelled	10	8.8020	1.14889	

Indexed "T" value 0.05 and freedom

Degree 18= 1.734

Table 2: Coefficient correlation between the first and second application N= 10

Application	Arithmetic mean	Standard deviation	R value
First	8.8020	1.14889	0.997*
second	8.8030	1.13714	

Indexed "R" value at 0.05 and freedom

Degree 18 = 0.549

under 13 years old and the other represented in less levelled players under 11 years old through performing the skill of "Ippon Seoi Nage" as it is the most common skill in Judo (Table 1).

Reliability Coefficient: The researcher used the test re-test method, as he applied the test twice on the sample of the less levelled players with a week interval with the same validity properties (Table 2).

Objectives: Concerning the nature of performing the test, the researcher examined the opinions of some Judo experts whom have Ph.D. along with kinetic sciences professors to determine the equation, calculating power, distance and time.

The test was performed to determine the nature of conducting the test to realize the aim of its establishment.

RESULTS AND DISCUSSION

Table 1 illustrates the existence of significant differences between the two groups indicating that the test is able to discriminate between groups, thus the test is valid.

Table 2 indicates the existence of significant statistical correlation between the first and the second, Coefficient correlation value was 0.997, thus the test have high reliability.

Through practical application of the established test and through the expert's opinion, the researcher reached out the following results:

- The established test achieved high validity, reliability and objectivity indications, referring to the possibility of using the test in measuring Judo skills ability.

- The possibility of using the test in training which will lead to the development of Judo skills ability through the continuous measuring to improve the skills ability.

Recommendations:

- The researcher recommends of generalizing the use of the established test for its positive results in the measuring process.
- Using the test in training for developing Judo skills ability.
- Designing norms for both men and women at all ages and for different weight categories and for each Judo skill to be used as criteria of evaluating Judo player's skills standard.

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