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The Contribution Percentage of  
Certain Body Measurements to  
the Skill of the Long Straight  
Front Punch in Karate,  
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## The contribution percentage of certain body measurements to the skill of the long straight front punch in karate

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### Abstract

This study aims to explore the relationship of body measurements in performing the skill of the long straight front punch and understand the impact of diversity in body measurements on skill execution in karate. To achieve this, the study was conducted on a stratified random sample of (60) players, and the researcher employed a descriptive survey method for its suitability and the nature of the research. The researcher drew conclusions and provided recommendations.

**Conclusions:** There is a statistically significant relationship between some body measurements and the performance of the long front straight punch.

### Recommendations

1. Emphasize the importance of body measurements in selecting players for efficient investment of time and effort.
2. Conduct similar studies focusing on the psychological and mental aspects to establish a comprehensive foundation for the game in the future.

**Keywords:** Contribution percentage, long straight, karate

### Introduction

**Introduction and Importance:** The evolution process in sports has become challenging using traditional training methods. Accessing high-achieving performance requires coaches to familiarize themselves with various sciences related to the training process, including physiological, psychological, social, and environmental sciences. Understanding the athletes' motor skills is crucial, and body measurements play a significant role in reaching high levels of skill performance, especially in sports like karate.

Physical fitness is determined by the suitability of an individual's physical characteristics for the required activity. The anthropometric measurements, types of bodies, and their alignment with each sport are essential for reaching the pinnacle of athletic performance. Karate, encompassing both offensive and defensive skills, requires specific body measurements and physical abilities, such as the long straight punch skill.

Utilizing tests and measurements becomes crucial for assessing athletes' motor and skill capabilities.

Sports selection aims to identify talented individuals with the necessary requirements for a particular activity, predicting their potential for future development. The process involves systematic observation, studying physiological variables through continuous measurements, and considering various aspects and capabilities. The ability to perform sports movements depends on the compatibility of an individual's body measurements with the performance requirements.

Understanding the impact of certain body measurements on the performance of the long straight punch skill in karate is a scientific approach. The researcher emphasizes the importance of establishing a connection between these measurements and skills, highlighting the scientific relevance of exploring the contribution of specific body measurements to the karate skill.

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In conclusion, the research underscores the significance of identifying key body measurements directly influencing the execution of the long straight punch skill in karate, emphasizing the scientific exploration of the relationship between these measurements and skill performance.

### The problem of the research

Lies in the need to determine the contribution percentage of certain body measurements to the skill of the long front straight punch in karate. The advancements in high-level sports achievements, particularly in recent global tournaments, are not coincidental but rather the result of progress witnessed worldwide across various fields, with a specific focus on sports. Countries are investing efforts to excel in the sports domain, and specialists in physical education harness various sciences and knowledge to serve their goals.

Body measurements have garnered substantial attention, becoming a prerequisite for success and excellence. Hassanin emphasized the correlation between body measurements and various motor abilities, highlighting their crucial role in sports success. Consequently, body measurements significantly impact team accomplishments, with distinctive specifications for each sports activity. Given the unique characteristics of karate, which demand multiple skills requiring speed and precision, there is a need to explore the contribution percentage of certain body measurements to the skill of the long front straight punch.

### Research Objectives

1. Investigate the relationship between body measurements and the execution of the long front straight punch skill.
2. Examine the impact of body measurement diversity on the execution of the skill in karate.

### Research Hypotheses

1. There is a statistically significant relationship between body measurements and the long front straight punch skill in karate.
2. The analysis of body measurements can serve as an effective indicator for evaluating athletes' capabilities in the sport of karate.

### Research Areas

1. **Human Field:** Athletes from the National Center for Sports Talent Care in Taekwondo in Nineveh.
2. **Temporal Field:** From October 12, 2023, To October 29, 2023.
3. **Spatial Field:** Andalus Youth Forum Hall.

### Research Terminology

#### Concept of Body Measurements

It is a branch of natural anthropology, a term that refers to measuring a set of indicators such as height, body circumference, breadth indicators, skinfold thickness indicators, and weight. These are essential determinants that should be focused on in the player's testing process, emphasizing measurement and evaluation to provide suitable

training methods to achieve the desired level. Body measurements are also crucial in guiding individuals towards activities where success can be achieved. Each sport has specific requirements for body measurements that must be present to practice it successfully. Therefore, body measurements play an active role in shaping the athletic champion and selecting suitable elements that can yield results in training efforts (Al-Mahshash, 1999, p.76) <sup>[5]</sup>.

Mathews defines body measurements as the science of measuring the human body and its various parts, utilizing this science to study human evolution and understand the variables that occur (Mathews, 1987, p.77) <sup>[12]</sup>.

According to Radwan, it is a term referring to measuring the structure of the body and its various proportions. The focus on body measurements started early compared to other measurement topics in physical education (Radwan, 1997, p. 20) <sup>[6]</sup>.

Both Khater and Albik emphasize that physical traits are essential foundations for reaching high athletic levels, as they reflect the functional and vital state of the body and clearly determine the individual's degree of physical abilities.

### The long front straight punch

It is one of the fundamental offensive movements, characterized by a powerful strike executed with an even hand, launching the closed fist straight from the side of the hip in a direct motion with a 180-degree rotation towards the target at maximum speed. The impact of this movement is significant on the opponent, typically directed towards the upper part of the opponent's body, with the trunk rotating upward for greater force and fluidity (Ibrahim, 2005, pp. 90-91) <sup>[9]</sup>.

### Research Procedures

#### Research Methodology

The researcher employed a descriptive survey methodology, fitting the nature of the problem.

### Research Population and Sample

The research population consists of athletes from the National Center for Sports Talent Care in Ninawa practicing Taekwondo, totaling 60 players. The research sample was chosen to be 50 players, representing 83.33% of the total population.

### Identification of Key Body Measurements

The researcher prepared a questionnaire to gather expert opinions. A questionnaire was distributed to experts and specialists in the field of measurement and evaluation, as outlined in Annex 1, to identify the most important body measurements. The questionnaire included 11 body measurements based on relevant sources.

After collecting the questionnaires, the researcher identified the most important measurements based on their relative importance. The researcher relied on measurements that achieved an 80% or higher rating, as indicated in the table below.

**Table 1:** Illustrates the relative importance and percentage of selected research variables

	Measurements	Percentage	Acceptance of nomination	
			Yes	No
1.	Weight	80%	✓	
2.	Total body length	100%	✓	
3.	Arm length	100%	✓	

4.	Chest circumference	80%	✓	
5.	Leg length	80%	✓	
6.	Palm length	40%		✓
7.	Palm width	20%		✓
8.	Waist circumference	60%		✓
9.	Hip circumference	40%		✓
10.	Thigh circumference	60%		✓
11.	Trunk length	60%		✓

Five body measurements have been adopted, attaining a consensus among the experts, namely: weight, total body length, arm length, chest circumference, and leg length.

### Data Collection Methods

1. Measurement tapes.
2. **Height measurement board:** Used for the subject to stand on when measuring height against a wall.
3. **Scale:** For weight measurement.

### Research Tools and Equipment

- Analysis of scientific sources.
- Testing and measurement.
- Expert survey forms to determine body measurements for the research sample.
- Utilized equipment: Measuring tape, ruler, stopwatch, training bag, registration form.

### Survey Experiment

Recommended by research experts, the survey experiment was conducted on 5 randomly selected players from the researcher's sample of 50 on October 5, 2022. The experiment aimed to:

- Ensure the validity and suitability of the tests
- Verify the safety of the equipment and availability of all necessary resources for facilitating the tests (punching pad, jumps, etc.).

### Study Tools

The study included a set of body measurements to measure limb lengths and weight. Additionally, a set of physical skill tests to measure the performance of the long straight front punch was used, consisting of 4 tests designed by Dr. Ahmed Mahmoud Ibrahim after being reviewed by a group of experts and reaching a consensus on their suitability.

### Long Front Straight Punch Tests: Test Objectives

1. Measure distinctive speed and power in a 10-second test
2. Measure speed endurance in a 20-second test
3. Measure power endurance in a 35-second test
4. Measure overall performance endurance in a 45-second test

### Auxiliary Tools

- Punching pad.
- Stopwatch accurate to 1/100<sup>th</sup> of a second.
- Adhesive guiding mark.
- Registration form.

### Execution Method

1. The player adopts a front balance position facing the punching pad.
2. In the preparatory position, the non-striking hand is extended at shoulder level, with the palm facing downward. Simultaneously, the striking hand's fist is placed beside the body, adjacent to it, and above the hip joint.
3. Upon hearing the start signal, the player begins by pulling the non-striking hand backward while simultaneously extending the first of the striking hand forward in full straightness.
4. The player continues the performance until the stop signal is given.

### Registration

The correct number of accurate repetitions within the specified time for the test is recorded according to the intended objective (Ibrahim, 2005, p. 670-671) [9].

### Main Experiment

Body measurements and the long front straight punch skill test were conducted from Thursday, October 12, 2023, to Sunday, October 15, 2023.

Measurements and tests were carried out at specific times, utilizing the same measuring devices for all players under identical conditions.

### Statistical Processing

Data were processed using the SPSS program, employing statistical methods such as mean, standard deviation, median, and skewness coefficient.

Presentation, analysis, and discussion of the results. 3-1 Presentation and analysis of results.

**Table 2:** It illustrates the mean, standard deviation, median, and skewness coefficient values for the research sample.

T	Variables	Measurement unit	Mean	Standard deviation	Median	Skewness coefficient
1.	Weight	KG	65.739	3.2921	65	0.127
2.	Total height	CM	168	4.156	168	0.949
3.	Arm length	CM	74.78	2.696	75	0.161
4.	Chest circumference	CM	81.478	3.073	81	0.152
5.	Leg length	CM	90.521	2.609	90	0.208

Table (2) shows the values of the mean, standard deviation, median, and skewness coefficient for the variables. The fact that the means are greater than the standard deviations suggests limited variability among the sample individuals.

The skewness coefficients range between (0.127, 0.949), indicating that they are confined within the range of ( $\pm 1$ ), implying alignment with a normal distribution.

**Table 3:** It illustrates the mean and standard deviation for the skill test, as well as the median and skewness coefficient

T	Variables	Mean	Standard Deviation	Median	Skewness Coefficient
1.	Distinctive power-speed	14.957	1.0215	15	-0.4672
2.	Speed endurance	24.609	1.469	25	-0.751
3.	Power endurance	45.173	2.269	45	-0.3375
4.	Performance endurance	59.347	2.621	59	-0.184

**Table 4:** It illustrates the correlation coefficients between body measurements and the skill of the long front straight punch.

T	Variables	Measurement unit	Correlation coefficient	Statistical function
1.	.809	KG	.809	Significant
2.	.950	CM	.950	Significant
3.	.980	CM	.980	Significant
4.	.889	CM	.889	Significant
5.	.953	KG	.953	Significant

The table number (4): indicates the presence of a statistically significant correlation between the total body weight and the performance of the long front straight punch. The weight variable achieved a correlation coefficient of (.809) with the skill of the long front straight punch. Weight is considered a crucial element in sports activities, playing a significant role in various sports where athletes are categorized based on their weights, such as wrestling, etc.

### Conclusions

#### Conclusions and Recommendations

There is a statistically significant relationship between some body measurements and the performance of the long front straight punch.

#### Recommendations

1. Emphasize the importance of body measurements in selecting players for efficient investment of time and effort.
2. Conduct similar studies focusing on the psychological and mental aspects to establish a comprehensive foundation for the game in the future.

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### Annexes

**Annex 1:** The names of the experts and specialists who determined the crucial body measurements

The name	Academic title	Specialization
Thelam Younis Alawi	Professor Doctor	Measurement and Evaluation
Mahmoud Shukr Al-Hayani	Professor Doctor	Measurement and Evaluation
Ali Hussein Mohammed	Professor Doctor	Measurement and Evaluation
Firas Mahmoud Ali	Assistant Professor Doctor	Measurement and Evaluation

**Annex 2:** Statement of the Experts' Opinion on the Suitability of the Questionnaire Sections Name: Surname: Specialization:

	Measurements	Yes	No
1.	Weight		
2.	Total body length		
3.	Arm length		
4.	Chest circumference		
5.	Leg length		
6.	Palm length		
7.	Palm width		
8.	Waist circumference		
9.	Hip circumference		
10.	Thigh circumference		
11.	Trunk length		